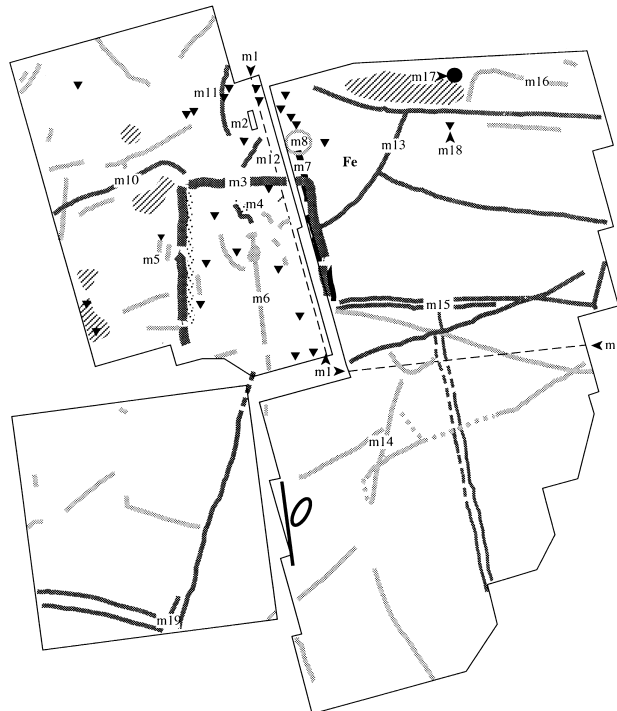


FOGOU AT BODEN VEAN, ST. ANTHONY-IN-MENEAGE, CORNWALL

Project Design for Evaluation, Recording and Conservation Works



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Front cover photograph

Magnetometer survey of Boden Veau (from Linford 1998).

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1 Background

1.1 Description of the site

1.1.1 Location

“At Bodean Veor, in the Parish of St Anthony is an artificial cave of about thirty yards in length. It is merely an excavation of the earth, without any stone for walls in roof, four or five feet under ground.”

R. Polwhele 1816

A fogou, or underground tunnel, has been documented at Boden since the early 19th century when it was viewed and recorded by Polwhele, the vicar of Manaccan and St. Anthony¹. The reports of later writers (Cornish 1906, Henderson 1912 and 1916) appear to “embellish Polwhele’s original report without reference to any further field observations” (Linford 1998, 188).

The site lies on a southerly slope near the summit of a gentle hill, some 300 metres to the west of the Boden Veon settlement (SW 7685 2405) (see Figs 1 and 2), itself one kilometre south of Manaccan village on the Lizard peninsula. The below-ground remains have been partly uncovered following two separate incidents in 1991 and 1996, while discussions with local residents have shown that the fogou had previously been exposed 75-80 years ago.

1.1.2 Period and type of site

Fogous, named after the Cornish word meaning ‘cave’, are peculiar structures, usually wholly or partly subterranean although some above ground examples exist. Characteristically they comprise a long main passage often aligned east to west or north-east to south-west. The passage is built of dry-stone walling, corbelled inwards, and roofed with massive capstones. Subsidiary chambers and small narrow side passages or ‘creeps’ are also characteristic features. Fogous are found only in the extreme west of Cornwall, mainly on the Land’s End and Lizard peninsulas. All known examples are associated with settlement sites and available dating evidence shows that they were built during the later Iron Age (400BC-AD43) (Christie 1993, 25-6).

Cornish fogous have affinities with a group of monuments variously described as souterrains and ‘earth houses’ found in other parts of Britain and Ireland, some of which date to the Iron Age but which continued to be built and used during and after the Romano-British period (*ibid*).

The function of fogous remains a subject of conjecture. The three most popular theories are; that they were refuges in times of trouble, cellars for storing food and livestock or that they served a religious function. Examples found within or associated with rounds (eg Halligye) may have an exit running out below the rampart, perhaps supporting the refuge theory, while that at Carn Euny is uniquely associated with a round chamber which may have had a ritual purpose (Johnson and Rose 2003; Christie 1993, 26-7). The artist Ian Cooke is a strong proponent for a general ritual function for the monuments (Cooke 1993).

There are only eleven other known definite or probable fogous: Boleigh, Carn Euny, Castallack, Chysauster, Halligye, Higher Bodinar, Lower Boscaswell, Pendeen, Porthmeor, Treveneague, Trewardreva, and twenty or so possible ones. Of these, only two have been excavated in recent years Carn Euny (Christie 1978) and Halligye in 1980-1 (Startin 1982, 185-6). In the interim note on Halligye, Bill Startin pointed out that ‘despite revealing quite a lot of information about the

¹ There is some inconsistencies with the local names recorded in the documents. The fogou is presently named through association with the holding of Boden Veon (recorded as Lower Boden on the 1813 one inch OS map, 1840 Tithe map and later OS maps). All early references locate the feature at Boden Veor (Higher Boden on Tithe map and all OS maps). The relevant fields are recorded as part of Higher Boden on the 1840 Tithe map.

Halligye site, these limited excavations have revealed little further evidence as to the function of fogous’.

1.1.3 Historic Landscape Character

The Historic Landscape Assessment (carried out by CAU in 1994) places the study area within Anciently Enclosed Land (AEL) (Cornwall County Council 1996). AEL is land which was first enclosed in the medieval or earlier periods and characterised by farming settlements documented before the 17th century AD and irregular field patterns. AEL tends to be on relatively sheltered land, not too steep and not too poorly drained, but can extend onto the high downs. Networks of winding lanes and roads connect farming settlements whose layouts are typically irregular, often clearly shrunken from hamlets; (some are still hamlets). Church towns and a few larger villages are scattered through the zone, which also contains most of the Cornwall’s ancient towns.

Much, even most, of this zone will have been enclosed and farmed since the Later Bronze Age (c 1500 BC). Land cleared and improved in later prehistory or in the Early Medieval period was re-organised in the later medieval period into extensive 'strip' field systems. These systems were associated with hamlets of co-operating families; while more solitary farmers laid out more irregular medieval field systems.

The original settlement of Higher Boden ‘dwelling of the ash-trees’ is of early medieval origin. It was first recorded in 1086 and then noted as *Bodenmur* in 1250, while Boden Vean was recorded as *Bodenbyghan* in 1419.

1.1.4 The extent and condition of the site

The extent of the remains at Boden Vean are best represented by the magnetometer survey which places the fogou within a wider context of significant archaeological features. The geophysical work was carried out in three fields. However, for this project the evaluation and other works will be restricted to the single field which includes the fogou because the other fields are rented out and under cultivation.

The fogou itself is surrounded by a strong rectilinear anomaly, which probably represented a round of Iron Age - Romano-British date, with an entrance to the west. This is consistent with our understanding of other fogous which are invariably associated with settlements of broadly Iron Age date. It may also be noted that Henderson recorded a further round to the south by Higher Boden, though there are no obvious surface traces of a rampart or a ditch (Fig 8).

Interpretation of the fogou from the geophysical survey and field visits shows the main core of the fogou stretching for about 30m on a north-south alignment, with a further section of tunnel leading off to the east (see Fig 6). This section aligns with the position of the open hollow. The survey also recorded a number of features within the enclosure which were divided into those of a “discrete nature indicative of buried pits and a cluster of fragmented ditch-type segments” south of the section of fogou uncovered in 1991 (Linford 1998, 194). It is possible that at least one of the linear features may represent a curving passage similar to that found at Halligye (Peter Rose *pers comm*).

Features located outside of the enclosure include a circular feature “with a scatter of attendant pit-type anomalies” to the NE (Linford 1998, 194). Through comparison to a similar geophysical survey and excavation at Reawla, it has been suggested that it represents a dwelling of Iron Age or Romano-British date (Appleton-Fox 1992). Also noted were “linear anomalies, discrete pit-type responses and areas of magnetic disturbance, the morphology of which denies a greater degree of interpretation” to the west of the fogou and a large number of linear ‘ditch-type anomalies’ to the east (Linford 1998, 194). The likely ditches produced a range of readings, both in terms of strength and direction, suggesting that certain features were contemporary with the round and fogou while others were not.

More is known about the fogou, due to the events of 1991 and 1996. The section explored in 1991 was found to be an infilled, stone-walled passage, 1.4m wide and at a depth of 1.85m below the ground surface. The present open section, found in 1996, has a hole \approx 0.6m in diameter which gives access to another passage - a void tunnel \approx 5m long cut into the rock and shillety subsoil. Just below the hole, at the base a ramp of collapsed soil, a 'pillar' of stones supports the roof of the tunnel.

The micro-gravity data identified three areas of possible void. These included a positive reading to the north of the area exposed in 1991 which was interpreted as part of the same section of this feature. A second negative reading was identified in the area that subsequently opened up in 1996 while the third negative reading was "located beyond the apparent enclosure ditch" (Linford 1998, 210) (see Fig 7).

It should be noted however that only a small part of the study area was investigated through micro-gravity and other areas of possible voids could exist to the south.

1.1.5 Anticipated state of preservation

The site is especially important because of its probable completeness, lack of disturbance, and its well preserved context. The proposed work aims to both safeguard the future of the monument and increase our knowledge and understanding of this site in particular and the enigmatic nature of fogous as a whole.

1.2 Previous work

In the summer of 1991, the present farmer Mr Christopher Hosken was laying a water pipe, and discovered a pit or well near Boden Vean. He cleared the well to a depth of 3.25m without reaching the bottom and recovered finds including Iron Age or Romano-British pottery and fragments of rotary querns.

Some 30m to the south of the well Mr Hosken cut a small trench to locate the underground tunnel which had not been viewed for 75-80 years. This was found to be an infilled, stone-walled passage, which was examined, recorded and briefly reported on in September 1991 by Peter Rose of CAU and Ann Preston-Jones, English Heritage Field Monument Warden (Rose and Preston-Jones 1991). The documentary and artefactual archive from the 1991 investigation is held by CAU (site code BDN 91).

The 1991 incident was followed by a geophysical survey undertaken by English Heritage's Ancient Monuments Laboratory, which was carried out in two separate visits in 1992 and 1993 (incorporating both a magnetometer survey and micro-gravity prospection to locate void features) (see Figs 4 and 5). This work indicated three possible void features, presumably related to the fogou, which is itself contained within a rectilinear ditched enclosure or round, surrounded by a landscape of considerable archaeological complexity (Linford 1998).

In July 1996, while Mr Hosken was sanding the field, a hole \approx 0.6m in diameter opened up giving access to another passage. This was a void tunnel \approx 5m long cut into the rock and shillet subsoil, within one of the 'void' areas identified by micro-gravity survey. Just below the hole, at the base of a ramp of collapsed soil, a 'pillar' of stones supported the roof of the tunnel. The site was visited by Peter Badcock, Senior Conservation Engineer, English Heritage, who identified a number of options as to how this section of the monument could be preserved, although the hole has remained open (Badcock 1996).

In May 2002 A-level students from Truro College with CAU supervision carried out a fieldwalking exercise in the southern part of the fogou field using 20m² grid squares (see Fig 3). The finds, which included flint tools and flint waste, medieval and post-medieval pottery, have been washed and bagged by grid square and are stored in CAU's finds archive store (site code BDN 02). The finds have yet to be properly catalogued.

1.3 Reasons for and circumstances of the project

1.3.1 Justification for this project

There are strong conservation, research and management reasons for this project. In particular, there is a pressing need to resolve the problem of the open section of tunnel, which needs to be conserved and made safe.

The basic justification for the project has already been agreed. In May 2003 CAU submitted a proposal for archaeological work to English Heritage which outlined three possible options (Johns 2003). The second option was chosen which aims to (i) record, safeguard and seal the open fogou through infilling, supports or some other engineering solution and (ii) undertake a programme of evaluation trenching to investigate geophysical anomalies, in order to better understand the monument and its context. This work will also guide future management of this important monument (Johns 2003a).

1.3.2 The legal status of the site

Although not scheduled at present, the fogou at Boden Vean is considered to be a site of national importance and is to be assessed for scheduling through English Heritage's Monuments Protection Programme. Mr Hosken does not raise any objection to the proposed protection of the fogou through scheduling

1.3.3 Timing of the project

The field containing the fogou is regularly cultivated by Mr Hosken. It is normally ploughed once or twice yearly. The open section of fogou is presently covered by a piece of hardboard weighted down with stones and the area immediately surrounding the hole is left fallow.

A meeting with Mr Hosken was held on 27th June 2003 to discuss the purpose of the proposed evaluation and the subsequent conservation work. Mr Hosken is willing to make the field available for archaeological investigations from September 2003 until January 2004. Because it is in an exposed location it is proposed to undertake the evaluation trenching between 13th and 31st October 2003 in anticipation of reasonable weather conditions.

1.3.4 Arrangements for access

The site is owned by Mr Hosken and he has confirmed that he will allow access to the site to allow the archaeological recording work to take place.

1.3.5 Proposed reinstatement

The evaluation trenches will be backfilled upon completion. A geo-textile membrane and buffer layer will be laid over features of archaeological significance prior to back-filling.

1.4 Archive deposition

Mr Hosken has agreed that artefacts retrieved during the evaluation trenching will be deposited at the Royal Cornwall Museum, along with the project's paper archive. There is a one-off storage fee (currently £13.80 per standard box) for material deposited at the RCM. Prior to its deposition the project archive will be fully indexed. Final arrangements for the deposition of the archive will be agreed with Mr Hosken, English Heritage and the Royal Cornwall Museum.

2 Project scope and aims

This project design has been compiled in accordance with English Heritage's *Management of Archaeological Projects* (1991), the supplementary draft document *Minimum Requirements for Project Designs* (1999) and *Commissioned Archaeology Programme Guidance for Applicants: Release 1.2* (2002).

2.1 Scope

The project falls within programme 7.2 ‘recording archaeology under threat outside the planning process’ as set out in *Exploring Our Past Implementation Plan*, English Heritage, 1998. It will also contribute to Programme 1.7; Assessing and Understanding Specific Landscapes and Monuments also in *Exploring Our Past Implementation Plan*, English Heritage, 1998.

The project seeks to understand the overall layout of the fogou, its relation to the settlement, the degree of preservation and the archaeological potential of the site. It combines two elements of archaeological work, namely conservation works to the area of exposed tunnel and a programme of further evaluation works and recording.

The evaluation works will take place first. This will comprise seven trenches excavated across anomalies, as identified through geophysical survey, to establish the depth of any buried archaeological remains and their general character and date (see Section 3.1.2). In particular, the works will better define the extent of the fogou. The geophysical survey was carried out in three fields; the evaluation trenching will be restricted to a single field, concentrating on the fogou, the round and an attached feature.

As well as the evaluation trenching, fieldwalking will take place in the northern section of the field away from the evaluation trenches and in the neighbouring field to the north (an area not covered by Truro College in 2002). This will provide educational benefits to local children and students. It is planned that schoolchildren from local primary schools at Manaccan, St Martin and Garras will visit the site and help with the fieldwalking. It is expected that some volunteers from the Cornwall Archaeological Society and students from Truro College will help with the excavation.

The necessary consolidation work to the monument (see Section 3.1.3) will be carried out through the Scheduled Monument Management Scheme. A limited watching brief will also take place at this time, with recording of the void carried out using a CCTV camera. Future management of the site will also be guided by the results of the campaign of evaluation trenches and the site will then be assessed for scheduling through English Heritage’s Monuments Protection Programme.

This Project Design covers the Fieldwork, Archive, and Assessment phases of the project. The archiving and assessment phases of the project will incorporate the results of the 1991 fieldwork. At the end of the Assessment phase, an Updated Project Design for the Analysis, Report Preparation, and Dissemination phases will be prepared.

The evaluation trenching and related works will be funded as part of the Archaeology Commission’s project, while the conservation works will be funded by English Heritage through its Scheduled Monument Management Scheme.

2.2 Aims and objectives

The project has four general research and conservation aims. These are:

- To secure and safeguard the future of this monument.
- To better understand the monument and its context, including its archaeological potential.
- To enhance our knowledge of fogous and settlement in late Iron Age and Romano-British Cornwall.
- To guide future management.

The project will contribute directly to two of English Heritage's primary research goals **A. Advancing Understanding of England's Archaeology** and **B Securing the Conservation of Archaeological Landscapes, Sites and Collections**. It will also contribute to the following Archaeological Research Priorities: **PC4** Briton into Roman (c300BC-AD200), P8 Late Iron Age hillforts, enclosures and settlements, **T3** Rural settlement, **MTD5** The study of formation processes, taphonomy and residuality, **MR3** Monument Protection Programme (Scheduling) ((English Heritage 1997).

The archaeological recording will be guided by the following objectives.

- To record and make safe the remains of the open section of tunnel to prevent any further deterioration in its condition.
- To establish the way in which the fogou was constructed.
- To establish the overall layout of the fogou, its associated settlement and hinterland.
- To establish the relationship between the fogou and the round.
- To establish the relationship between the known fogou and possible creeps or related subterranean structures.
- To establish the structure, function and, where possible, date of archaeological features identified through the geophysical survey.
- To characterise and establish the potential of deposits within the fogou, if health and safety and structural stability concerns allow.

2.3 Publication and presentation

It is intended that a full report of the project results will be prepared for publication in *Cornish Archaeology*, the annual journal of the Cornwall Archaeological Society. This will need to be confirmed. Funding for this stage of works will need to be considered separately, following the production of a updated Project Design (task 5), as specified in Commissioned Archaeology Programme Guidance notes.

3 Methods statement

3.1 Fieldwork

The fieldwork will comprise four separate tasks: fieldwork preparation (task 1), evaluation trenching (task 2), archive/archiving report (task 4) and consolidation/conservation works (task 3).

Volunteers from the Cornwall Archaeological Society will be invited to assist with the excavation and children from local schools will be able to participate in the related task of fieldwalking. The local media (television, radio and local newspapers) will also be alerted to the excavation through Cornwall County Council's press office in consultation with English Heritage. BBC's *Inside Out* programme has already expressed a possible interest in covering the works.

3.1.1 Fieldwork preparation (Task 1)

This will involve making the necessary arrangements for the evaluation and other works to take place. It will include the purchase or collection of site recording materials and equipment, site accommodation and storage, etc.

3.1.2 Evaluation trenching (Task 2)

A total of seven trenches (see Fig 7) will be excavated to investigate geophysical anomalies relating to the fogou, the round, associated linear and pit-type anomalies. The evaluation trenching will comprise five small-scale interventions and two larger trenched areas in the position of complex archaeological remains. The trenches will verify and build on what is known about the features from the geophysical results, establishing the depth of any buried archaeological remains, their general character and date. This work will be carried out using a combination of machine and hand excavation.

There will be no trenches excavated in the area of the open section of tunnel or the areas of possible void identified through the micro-gravity work. However, four trenches (4, 5, 6 and 7) will be excavated through or around the fogou.

There is considerable potential for both fogous (stone walled passages) and ‘creeps’ or tunnels cut through shillet rock. Extra care will therefore be taken in these areas (see below).

Four of the seven evaluation trenches will be 10 metres in length and 1.5m wide; one will be 20m in length and also 1.5m wide. The two larger areas will be 20m by 5m and 10m by 5m respectively, in order to fully explore particularly complex parts of the site. However, this Project Design will also allow a small number of hand excavated ‘keyhole’ slots to be dug, for example to confirm a complex archaeological relationship between features, if necessary.

A recent GPR study by Neil Linford, which has not yet been viewed by CAU, will be used when laying out the various trenches. The findings may slightly shift the position or orientation of trenches, especially in relation to voids that may be suggested by the GPR results.

The trenches are as follows:

Trench 1 (20m by 1.5m) will investigate a linear geophysical anomaly (m10), which appears to be physically linked with the round (m3), as well as a parallel un-numbered anomaly to its south.

Trench 2 (10m by 1.5m) will investigate the ditch on the northern side of the rectilinear round (m3). The trench has deliberately been placed away from the possible voids (identified through micro-gravity work) to the east. The ditch will be excavated to investigate whether there is evidence that the site is multi-phase and basal deposits will be sampled.

Trench 3 (10m by 10m) has been positioned to investigate the possible entrance through the western side of the round (m3). The trench will be orientated along the line of the enclosure ditch – encompassing the entrance and a major GPR anomaly on its north side (McAvoy *pers comm*). Given the possible complexity of archaeological remains at this juncture, this evaluation area may also need to be extended in part. A trench extension to the west may be possible should time allow.

Trench 4 (10m by 1.5m) will investigate an un-numbered, curving geophysical anomaly to the west of the known fogou. CAU has suggested that this feature may represent a passage similar to the fogou at Halligye. Micro-gravity prospection has not been carried out in this area, so the possibility of voids remain.

Trench 5 (10m by 1.5m) will investigate the fogou itself (m6), approximately 10m to the south of the area investigated in 1991. This trench is likely to encounter the deepest archaeological remains (if roof of the structure is no longer extent).

Trench 6 (10m by 5m) will investigate the possible junction of fogou itself (m6), with the possible creep to the west which appears to curve around and across to the

eastern side of the fogou (based on GPR results; McAvoy *pers comm.*). This trench may also encounter deep archaeological remains.

The possibility of excavating deposits within the fogou structure (which may be identified in **Trenches 4, 5 and 6**) will be undertaken, if circumstances allow, in order to establish the potential of deposits within the structure. The depth of such excavation will be decided following a proper assessment of the health and safety risks and the structural stability of the structure.

Trench 12 (10m by 1.5m) will investigate the linear anomaly leading south from the area of the known fogou. Micro-gravity prospection has not been carried out in this area, so the possibility of voids remain.

The general methodology of the evaluation trenching is as follows:

- Topsoil and overburden will be removed using a toothless bucket under archaeological supervision. When archaeological deposits are encountered, machine excavation will cease and appropriate hand excavation, sampling and recording will commence.
- Excavation of features will be restricted to the minimum necessary to assess their date, character and likely potential and to address the objectives and specific questions set out in the Project Design.
- If roofing for the fogou (or related voids) is discovered, sections of the roof structure may be removed after prior discussion with English Heritage. The nature and extent of any disturbance of the fogou or excavation within the structure will be determined during an on-site review by CAU and English Heritage once the machining has been completed. The review will take place on 15th October 2003.
- A drawn and photographic record will be made of each evaluation trench, with layers and features being allocated site-specific context numbers. Artefacts will also be retrieved by context.
 - Site drawings (plans and sections) will be made by pencil (4H) on drafting film; all drawings will include standard information: site details, personnel, date, scale, north-point.
 - All features and finds will be accurately located on plan at an appropriate scale.
 - All archaeological contexts will be described to a standard format linked to a continuous numbering sequence.
 - Finds will be collected in sealable plastic bags, which will be labelled immediately with the context number or other identifier. They will be removed from the site for processing and conservation where necessary, in preparation for further analysis and archiving. Provision will be made for specialist treatment of finds by a conservator.
 - Photography: scaled monochrome photography will be used as the main record medium, with colour slides used more selectively and for illustrative purposes.
- An on-site assessment (and if necessary sampling) of the soils exposed by the evaluation trenching will be carried out by Gianna Ayala of English Heritage's Centre for Archaeology. Vanessa Straker (English Heritage Regional Archaeological Science Adviser), Heather Tinsley and Julie Jones will advise on pollen and plant macrofossils. There is a possibility of the survival of buried soils under boundary and linear features, which would be of high potential for geoarchaeological and pollen assessment.
 - Bulk samples may be taken from suitable layers to recover material suitable for radiocarbon dating and plant macrofossil analysis. Sampling and processing of large

samples for flotation will follow the guidance published in *Guidelines for Environmental Archaeology* (English Heritage 2002). Sampling will ensure that the full range of context types and phases are covered to enable the full scope of potential for further work to be identified. This will be determined by discussion between the site director, specialists and the EH Regional Archaeological Science Adviser.

- Monolith or Kubiena tins or small spot samples will be taken for pollen, depending on the nature of the stratigraphy.
- Large samples of at least 40 litres in volume each will be taken from suitable contexts (e.g. pits, ditch fills, hearths, etc) for flotation to recover charred plant macrofossils.
- The trenches will be left open until the various archaeological specialists visiting the site have had an opportunity to inspect them.
- Open trenches which are considered to be a health and safety risk will be fenced off.
- The trenches will be backfilled upon completion. A geo-textile membrane and buffer layer (of an inert soil material) will be laid over features of archaeological significance prior to back-filling.
- The location of the trenches will be surveyed by electronic distance measuring equipment (EDM) and related to a scaled base map (linked to the National Grid).

The fieldwalking will take place in the northern part of the field which will be ploughed in advance of works by the farmer, as well in a second field to the north. A grid of 10m² squares will be laid out and the finds from each square placed in separate bags, continuing the unique numbering sequence started on 2002.

3.1.3 Consolidation /Conservation (Task 3)

Consolidation works will be carried out through the Scheduled Monument Management Project to make the open section of tunnel safe. Advice from English Heritage through Keith Weston informs the project that it would not be possible to fill the hole with a material such as polystyrene and the best means of protecting the hole would be to lay a metal sheet over the open section. This would both preserve the hole and allow future access if necessary.

The general methodology of the works is as follows:

- A thin layer of topsoil will be removed from around the open section of fogou to prepare a flat surface for the metal sheet.
- The metal sheet will be laid over the top of the hole. Specifications for the sheet are as follows: iron sheet 4mm thick, 5m square with an access cover (700mm square) including hinge to open outwards and an eye for padlocking. The sheet will also be painted an appropriate colour to guard against deterioration.
- The area will also be fenced. This will be set back, at least 1.0m from the metal sheet. The full extent of the area to be fenced will be agreed following the evaluation trenching.

Further archaeological excavation around the hole is not deemed appropriate as such works could undermine the stability of the remains. Likewise, detailed archaeological recording is not possible due to limiting and unsafe access into the void itself. The interior of the hollow will therefore only be recorded through a CCTV camera directed into the hole and a video, report and a series of photographs will be produced by the contractor. An archaeologist will undertake a watching brief during the works to place the metal sheet over the hole and fence the area.

A short report on the conservation works will be produced. This will be added to the archive summary account as an appendix.

3.1.4 Archive / summary account (Task 4)

During this phase the results of the fieldwork will be collated for archiving. This will involve the following key tasks.

- Indexing site drawings and photographs.
- Checking site context records.
- Processing any artefacts retrieved - washing, marking, re-bagging, boxing, and cataloguing (specialist advice will be sought as to the appropriate treatment for different types of finds).
- Sieving the bulk soil samples, in order to retrieve plant macrofossils, charcoal, bone fragments and any artefacts not recovered during the excavation. Advice will be provided by Vanessa Straker as to the most appropriate sieving method and mesh sizes. A representative of English Heritage will visit CAU during the early stages of the sieving to monitor progress. Material will be extracted from the residues by CAU. Note that there may also be bulk samples from the evaluation trenches that require processing (particularly from the midden exposed in the same field as the cist).
- Producing a summary account of the excavation results, for circulation to specialists in advance of the Assessment phase. This summary will contain a description of the recording, sampling, and processing methods used; a brief initial description and interpretation of the structural and stratigraphic data; a site matrix; a summary list of site contexts; tables summarising the artefactual and environmental material retrieved; selected maps and field drawings.
- Notifying the Inspector of Ancient Monuments of the results of the fieldwork. A copy of the archive summary will be sent to the inspector in order to assess the scheduling of the fogou and environs and to draw up a management agreement.
- Review the requirements and programme for the Assessment, for agreement with English Heritage.

3.2 Assessment/Updated Project Design (Task 5)

During this stage any artefacts and environmental material that has been retrieved will be despatched to specialists in order that the level of conservation and analysis can be assessed. An assessment will also be made of the level of research/analysis required to interpret the structural and stratigraphic data. This phase will also include thorough assessment of the results of previous investigations, including the artefacts recovered during the initial clearance by Mr Hosken and investigations by Peter Rose and Ann Preston-Jones, and the fieldwalking exercise carried out by Truro College in 2002.

It is envisaged that the geoarchaeological assessment could include a range of laboratory analyses, such as micromorphology, geochemistry or particle size analyses (for example) depending on the stratigraphy and the questions that laboratory analyses may be able to address. It is possible however, that a site inspection may be all that is required. The costing in the Project Design also allow for a pollen analysis and report on 20 samples, while the plant macrofossil assessment will be carried out on up to 30 samples.

The results of the assessment will be brought together in a report which will include the Updated Project Design for the Analysis, Report preparation and Dissemination phases of the project.

3.3 Analysis and Report Preparation (Task 6); Publication (Task 7)

Funding for will be considered separately for these stages as specified in Commissioned Archaeology Programme Guidance notes. It is proposed that the results of the project will be published in ‘Cornish Archaeology’, the annual journal of the Cornwall Archaeological Society.

4 Resources and programming

4.1 Staffing

4.1.1 List of project staff and responsibilities

NAME	TITLE	TASK
<u>CAU staff</u>		
Charles Johns (CJ)	Project Manager	Administer and guide project through its various stages; liaise with EH monitor; produce health and safety plan; co-ordinate work being carried out by staff, contractors & specialists; edit Archive and Assessment reports; produce Updated Project Design (includes Tasks 1-5)
James Gossip (JG)	Archaeological Supervisor	Preparation for fieldwork (Task 1) Supervise evaluation trenching (Task 2) Returning of equipment/samples (Task 4) Indexing of photos and plans (Task 4) Checking of context records (Task 4) Assessment report (Task 5) Oversee consolidation and conservation works on open section of tunnel. Watching brief of fogou during above works (Task 3)
tba	Archaeologist	Evaluation trenching (Task 2) Processing of artefacts (Task 4)
tba	Archaeologist	Organise fieldwalking (Task 2) Processing of bulk samples (Task 5)
<u>CAU Contractors</u>		
Henrietta Quinnell (HQ)	Freelance finds specialist	Assessment of non-metal artefacts (Task 5)
Helen Wilmot (HW)	Freelance finds specialist	Assessment of metal artefacts (Task 5)
Contractor	Digger operator	Topsoil removal, evaluation trenching and backfilling (Task 2). Topsoil removal (Task 3)
Contactor	Fencing	Fencing of open tunnel (Task 3)
On-Site	CCTV	Recording void (Task 3)
<u>English Heritage</u>		
Vanessa Straker (VS)	EH Regional Archaeological Science Officer	Advice on pollen & plant macros - site visit and (Tasks 2 and 5)
Heather Tinsley (HT)	Freelance specialist	Pollen assessment (Tasks 2 and 5)
Julie Jones (JJ)	Freelance specialist	Plant macros assessment (Tasks 2 and 5)
Gianna Ayala (GA)	EH Centre for Archaeology	Soils - site visit and assessment (Tasks 2 and 5)
Peter Marshall (PM)	EH Assistant Scientific Dating Co-ordinator	Radiocarbon dating (Task 5)
Keith Weston (KW)	EH Conservation Engineer	Advice concerning consolidation work on open section of fogou (Task 3)
Vanessa Fell (VF)	EH Conservator	Metal conservation (Task 5)
tba	EH Zooarchaeologist	Zooarchaeology (Tasks 2 and 5)
<u>Volunteer /contribution in kind</u>		
CAS volunteers	-	Assistance with the evaluation trenching (Task 2)
Truro College students	-	Assistance with the evaluation trenching (Task 2)

4.1.2 List of project tasks

TASK NO.	TASK	PERFORMED BY (see 4.1.1 for full names)	DAYS
	Project management	CJ	7
1	Preparation for fieldwork	JG	2
	Health and safety plan	CJ	1
2	Evaluation trenching		
	Evaluation trenching and overall on-site supervision	JG	15
	Evaluation trenching	CAU - tba	15
	Machine digging of evaluation trenching	Contractor	2
	Machine back-filling of evaluation trenches	Contractor	1
	2 site visits to advise on pollen/plant macro sampling	VS	2
	2 site visits to describe/sample soils	GA	2
	1 site visit to assess zooarchaeology	EH - tba	2
	Organise fieldworking for local schools	CAU - tba	2
	Site visits by project manager	CJ	4
3	Consolidation / conservation work on fogou		
	CCTV recording	Contractor	1
	Watching brief	JG	2
	Positioning of metal sheet	Contractor	1
	Fencing	Contractor	1
	Report on works	JG	2
4	Archive / summary account		
	Returning equipment & samples	JG	1
	Indexing site drawings and photographs	JG	2
	Checking site context records	JG	2
	Processing artefacts	CAU - tba	3
	Processing of bulk samples	CAU - tba	10
	Advising on processing of bulk samples	VS	1
	Summary account	JG	5
	Summary plans/drawings	JG	3
5	Assessment		
	Pollen	HT	n/a
	Plant macros	JJ	4
	Soils	GA	5
	Non-metal artefacts	HQ	2
	Metal artefacts	HW	2
	Radiocarbon dates	PM	tba
	Conservation of metal artefacts	VF	tba
	Zooarchaeology	tba	1
	Assessment report	JG	5
	Update project design	CJ	4
	Assimilation of comments on Assessment Report	JG	2
	Assimilation of comments on UPD	CJ	2

4.2 Project management and structure

4.2.1 Cornwall Archaeological Unit

Cornwall Archaeological Unit (CAU) is part of Cornwall County Council's Historic Environment Section within Planning, Transportation and Estates. CAU employs some 20 project staff with a broad range of expertise, undertaking around 90 projects each year. Of particular relevance to the present project:-

Excavation, evaluation and other works

- CAU has undertaken numerous excavations and evaluations of archaeological sites in Cornwall and Scilly since 1987.
- These include Bronze Age settlement and Iron Age cemetery at Trethellan Farm, Newquay (1987), A30 Project including Gaverigan Barrow, Penhale Round and Highgate ritual enclosure (1992-93), Bronze Age landscape at Stannon, Bodmin Moor (1998-9), the Bryher Iron Age sword and mirror burial (1999), the site of the medieval church/college at Glasney (July 2003) and the multi-phase landscape on the site of the new Cornish university at Tremough (ongoing).

Data collection, management surveys

CAU has a strong track record of survey and assessment projects, identifying the historic resource and providing management recommendations. For example:-

- Property and area surveys for the National Trust, English Heritage, Local Authorities, the Cornwall Wildlife Trust, Ministry of Defence, Highways Agency.
- Estuary audits for Fal, Fowey and Helford.
- Monuments Protection Programme for English Heritage; evaluation of importance for monument classes and production of scheduling proposals.

Historic Landscape Characterisation

CAU has pioneered the methodology for historic landscape characterisation, undertaking the first countywide characterisation in 1994.

Management works

CAU undertakes an annual programme of site management (the Monument Management Project) in partnership with English Heritage, Cornwall Heritage Trust and others.

Presentation

- Programme of walks and talks; annual report; contribution to leaflets, information panels.
- Popular publications: Cornwall's Archaeological Heritage; Archaeological Heritage of Scilly; Bodmin Moor's Archaeological Heritage.
- Academic and technical publications.

4.2.2 CAU project staff - expertise

Charles Johns, BA, MIFA, Senior Archaeologist

As a Senior Archaeologist Charles has a special responsibility for projects in Scilly and on the Lizard peninsula. He has extensive experience of fieldwork, post-excavation analysis and writing reports, notably directing the EH funded excavation of the Bryher Iron Age sword and mirror burial in 1999.

James Gossip, BA, Archaeologist

James has worked as an archaeologist for CAU since 1999. He has field experience in excavation and digital survey since 1987 and has been responsible for supervision and execution of a wide range of archaeological evaluations, watching briefs and excavations.

There will also be two further archaeologists from the Cornwall Archaeological Unit involved in the project. They will have considerable experience in archaeological evaluations, watching briefs and excavations.

4.2.3 Project staff - roles

Charles Johns, BA, MIFA, Senior Archaeologist

Charles is responsible for ensuring that the project is carried out to agreed standards. His tasks will include liaison with EH and the CAU project staff, the monitoring of the project budget as well as updating the Project Design for tasks 6 and 7.

James Gossip, BA, Archaeologist

James will be responsible for the evaluation trenching and the associated fieldwork. He will also construct the archive, organise specialists and produce the assessment in consultation with his manager.

Archaeologists from CAU (to be named) will assist with the excavation of the evaluation trenches, process artefacts, undertake the task of processing bulk samples taken from the excavation and organise the fieldwalking part of the project.

4.2.4 Project accommodation and infrastructure

The project will be based at CAU's Truro offices. CAU has a computer network running Windows XP Professional. Report texts are generated in Word 2000. Mapping will derive from the OS Mastermap and historic maps via Arcview GIS. Line drawings will be generated using AutoCAD and TurboCAD. The members of the project team each have Compaq PC of adequate specification. The Unit has adequate photocopying, scanning and printing facilities.

4.3 Equipment and recording materials

Task	Equipment/materials required	Source
Evaluation trenching (2)	Digger (Evaluation trenching and back-filling)	Contractor
	Spades, shovels, buckets etc	CAU
	Ranging poles, planning frames, EDM, staff, cameras etc	CAU
	Fencing (temporary for trenches)	CAU
	Recording materials (photo & mapping film, finds bags & boxes, large soil sample bags, context sheets etc)	CAU to purchase
	Geotextile membrane	CAU to purchase
	Landrover for transport	CAU to hire
	Canteen building/store	CAU to hire
	Portaloo	CAU to hire
	Specialist equipment/materials (eg soil sampling tins)	EH specialists
Consolidation of hole (3)	Digger (Evaluation trenching and back-filling)	Contractor
	Metal sheet	Contractor
	Fencing	Contractor
	CCTV camerawork	Contractor
Archiving (4)	Additional archive materials (eg sieving mesh, finds boxes, silica gel, acid-free tissue)	CAU to purchase

4.4 Health and Safety

4.4.1 Health and Safety statement

Cornwall Archaeological Unit is a section of the Planning, Transportation and Estates Section of Cornwall County Council. The Unit follows the County Council's "Statement of Safety Policy" and also the Planning Directorate's "Statement of Safety Policy". For more specific policy and guidelines the Unit uses the manual "Health and Safety in Field Archaeology" (1997) endorsed by the Standing Conference of Archaeological Unit Managers and also the Council for British Archaeology's Handbook No. 6 "Safety in Archaeological Field Work" (1989). Prior to work being commencing on site a Risk Assessment will be carried out and a Health and Safety Plan drawn up.

4.4.2 Insurance

As part of Cornwall County Council, CAU is covered by Public Liability, Employers Liability and Professional Negligence Insurance.

4.5 Project monitoring / milestones

CAU will undertake the project according to the Institute of Field Archaeologists *Standards and Guidance for archaeological field evaluation*. Suggested English Heritage monitoring points/milestones are

- Completion of archive and summary (Task 4)
- Completion of assessment (Task 5)

At each stage the project manager would provide the EH project monitor with a written progress report.

4.6 Timetable

No	Task	October	November	December	January	February	March	April	May	June	July	August	September	October
1.	Prep. for fieldwork													
2.	Evaluat. trenching													
	- Evaluat. trenching													
	- fieldwalking													
3.	Consolidation													
	- CCTV recording													
	- metal sheet													
	- fencing													
4.	Archiving													
	- sieving samples													
	- archiving													
	- archive summary													
5.	Assessment													
	-specialist reports													
	- draft assess. report													
	- final assess. report													
	- draft updated PD													
	- final updated PD													

◆ Project monitoring point/milestone

Note: There will be flexibility within this timetable to allow for more rapid assessment of the impact of specific proposals, strategies or developments if required.

4.7 Budget

4.7.1 Breakdown of project budget by task

General project management	7 days @ £142	£994
1. Fieldwork preparation	CAU: 2 days @ £120	£240
	1 day @ £142	£142
2. Evaluation trenching (inc. fieldwalking)	CAU: 32 days @ £120	£3840
	4 days @ £142; site visits by Project Manager	£568
	Purchase of recording materials, etc ²	£250
	Landrover Freelander hire (+ diesel) ³	£742
	Site building/store (16 ft)	£250
	Portaloo	£100
	EDM hire @ £100 per week	£100
	Geotextile membrane	£120
	Pollen specialist – site visits; 2 days @£140 ⁴	£330
	Macrofossils specialist – site visits; 2 days @£140	£280
	Specialists travel costs	£240
	On-site specialist involvement	EH contribution
	3 days hire of contractor (digger plus driver) @ £20 per hour)	£500
	Mileage 15 days @ 60 miles ⁵	£360
3. Consolidation, conservation & recording of collapsed fogou	CAU : 4 days @ £124	£496
	Metal sheet; construction and delivery	£2050
	Fencing of hole (with access gate)	£400
	0.5 day hire of contractor (digger plus driver) @ £20 an hour	£100
	Mileage 3 days @ 60 miles	£72
	CCTV ⁶	£670
4. Archiving	CAU: Returning equipment, samples (1 day @ £120)	£120
	Indexing of photos and plans (2 days @ £120)	£240
	Checking of context records (2 day @ £120)	£240
	Processing of artefacts (3 days @ £120)	£360
	Processing of bulk samples (10 days £120)	£1200
	Archive summary (5 days @ £120)	£600
	Archive drawings (3 days @ £120)	£360
	Other specialist involvement	EH contribution
	Archive materials ⁷	£200
	Hire of site for sieving ⁸	£200
5. Assessment	CAU: Assessment report (5 days @ £124)	£620
	Updated Project Design (4 days @ £146)	£584
	Assimilation of comments (2 days @ £146)	£292
	Assimilation of comments (2 days @ £124)	£248
	Pollen (20 samples at £55 per sample)	£1100
	Macrofossils (4 days @ 140)	£560

² This figure includes £120 for gridded drafting film, £20 for finds bags and sample bags, £75 for photography and a sundry amounts for finds labels, proforma record sheets, nails, pencils, masking tape, markers, etc.

³ The cost of the landrover hire is £642 while the cost of diesel has been estimated at £100.

⁴ This figure includes £50 for tins for sampling.

⁵ Mileage is worked out at £0.40 per mile. This covers staff travelling to the site in their own vehicles; this does not include the landrover.

⁶ This includes £50 for individual stills printed off from the video.

⁷ This figure includes £30 for 10 find boxes, £25 for 10 flat document cases and sundry amounts for finds sieving mesh, silica gel, acid-free tissue labels, proforma record sheets, etc. It also aims to cover cost of the archive deposition at the Royal Cornwall Museum @ £13.80 per box.

⁸ This figure equates to hire of premises to sieve samples near Truro, if it does not prove possible to undertake this work during the excavation period at Boden.

	Non-metal artefacts (2 days @ £120)	£240
	Metal objects (2 days @ £29 per hour)	£436
	Other specialist involvement	EH contribution
Sub total		£20,444.00
Unit overheads @ 25%		£4314.50
Specialist overheads @ 10%		£318.60
Inflation for 2004-2005		£237.12
Grand Total		£25,314.22

4.7.2 Breakdown of project budget into staff and non-staff costs

Fieldwork and Archiving - Financial Year April 2003-March 2004

Unit staff		Sc.	SP	Per day	Days	Cost	Total
Project Manager	CJ	SC 4/6	32	£142	12	£1704	
Archaeologist	JG	SC 4/6	26	£120	30	£3600	
Archaeologist	CAU-tba	SC 4/6	26	£120	18	£2160	
Archaeologist	CAU-tba	SC 4/6	26	£120	12	£1440	
Total salary costs							£8,904
Specialist fees							
Pollen	HT			-	2	£330	
Macrofossils	JJ			-	2	£280	
Travel costs	HT/JJ					£240	
Total specialist fees							£850
EH specialists							
Pollen/macrofossils	VS				3		
Soil	GA				5		
Zooarchaeology	tba				2		
Contractors fees							
Evaluation trenching	Contract.			-	3	£500	
Total contractors fees							£500
Non-staff costs							
Travel						£360	
Materials						£570	
Landrover hire						£742	
Building hire						£350	
Site for sieving						£200	
EDM hire						£100	
Total non-staff costs							£2,322
Sub total							£12,576.00
Unit overhead @ 25%							£2931.50
Spec. overhead @ 10%							£85
GROSS TOTAL							£15,592.50

Conservation Works - Financial Year April 2004-March 2005

Unit staff		Sc.	SP	Per day	Days	Cost	Total
Archaeologist	JG	SC 4/6	27	£124	4	£496	
Total salary costs							£496
Contractors fees							
Excavation	Contract.			-	0.5	£100	
Fencing	Contract.			-	1	£400	
CCTV	Contract			-	1	£670	
Total contractors fees							£1170
Non-staff costs							
Travel						£72	
Metal plate						£2050	
Total non-staff costs							£2122
Sub total							£3788.00
Unit overhead @ 25%							£947.00
Inflation @ 2.5%							£118.38
GROSS TOTAL							£4853.38

Assessment - Financial Year April 2004-March 2005

Unit staff		Sc.	SP	Per day	Days	Cost	Total
Project Manager	CJ	SC 4/6	33	£146	6	£876	
Archaeologist	JG	SC 4/6	27	£124	7	£868	
Total salary costs							£1,744
Specialist fees							
Non-metal artefacts	HQ			£120	2	£240	
Metal artefacts	HW			£218	2	£436	
Pollen	HT			-	-	£1100	
Macrofossils	JJ			-	-	£560	
Total specialist fees							£2,336
EH specialists							
Soil	GA				5		
RC dating	PM				tba		
Conservation	VF				tba		
Zooarchaeology	tba				1		
Sub total							£4,080.00
Unit overhead @ 25%							£436.00
Spec. overhead @ 10%							£233.60
Inflation @ 2.5%							£118.74
GROSS TOTAL							£4,868.34

4.7.3 Summary of total costs

Fieldwork and archiving	£15,592.50
Conservation works	£4853.38
Assessment	£4868.34
TOTAL COSTS	£25, 314.22

5 References

- Appleton-Fox, N, 1992. Excavations at a Romano-British Round; Reawla, Gwinear, Cornwall. *Cornish Archaeol.* **31**, 69-127.
- Badcock, P, 1996. *Boden Fogou, St Anthony in Meneage, Cornwall*. EH Conservation Engineering Team Report
- Christie, PML, 1978. The Excavation of an Iron Age souterrain and settlement at Carn Euny, Sancreed, Cornwall. *Proc Prehist Soc* **44**, 309-443
- Christie, PML, 1993. *Chysauster and Carn Euny*. English Heritage
- Cooke, I M, 1993. *Mother and Son: The Cornish Fogou*. Men-an-Tol Studio, Penzance
- Cornwall County Council 1996. *Cornwall Landscape Assessment 1994*. Report produced by CAU and Landscape Design Associates, Cornwall County Council
- English Heritage 1997. *Archaeology Division Research Agenda*. Draft document dated 8th April 1997
- Johns, C, 2003. *Fogou at Boden Vean, St Anthony-in-Meneage, Project Outline for Proposed Archaeological Work*. CAU document
- Johns, C, 2003a, *Fogou at Boden Vean, St Anthony-in-Meneage, CAU PRN 24875, NGR SW 7685 2405: Proposal for Archaeological Work*. CAU document
- Johnson N and Rose P, 2003. *Cornwall's Archaeological Heritage*. Twelveheads Press, Chacewater
- Linford, N T, 1998. Geophysical Survey at Boden Vean, Cornwall, Including an Assessment of the Micro-gravity Technique for the Location of Suspected Archaeological Features. *Archaeometry* **40, 1**, 187-216
- Rose, P and Preston-Jones, A, 1991. *Boden St Anthony (SW 7684 2404): Report of Site Visit and Survey, September 1991*. CAU typescript
- Startin, W, 1982. Halligye Fogou: Excavations on 1981. *Cornish Archaeol* **21**, 185-6

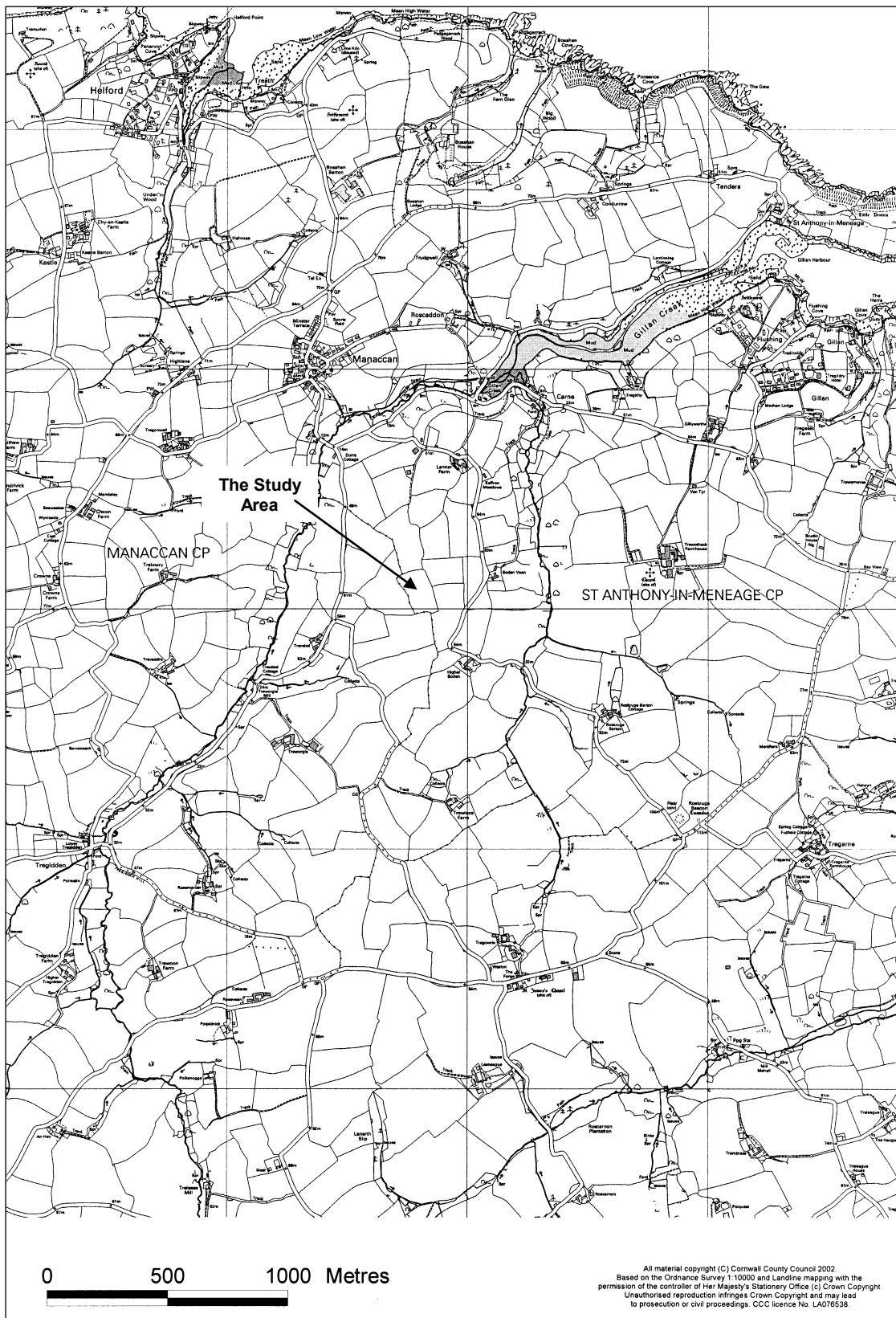


Figure 1 Location of Study Area in relation to Manaccan



Figure 2 Location of Study Area at Boden Vean.

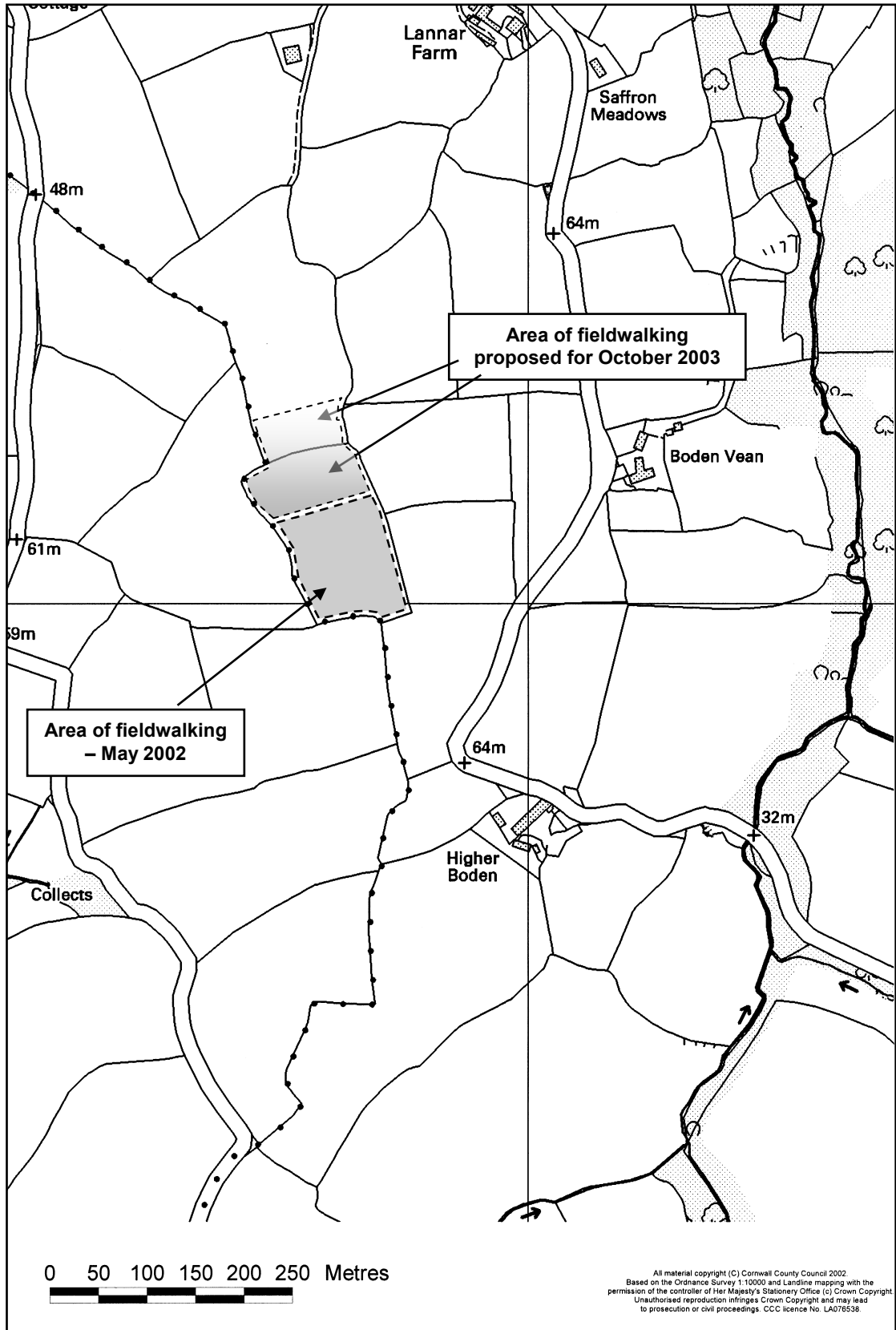


Figure 3 Location of areas for fieldwalking at Boden Vean.

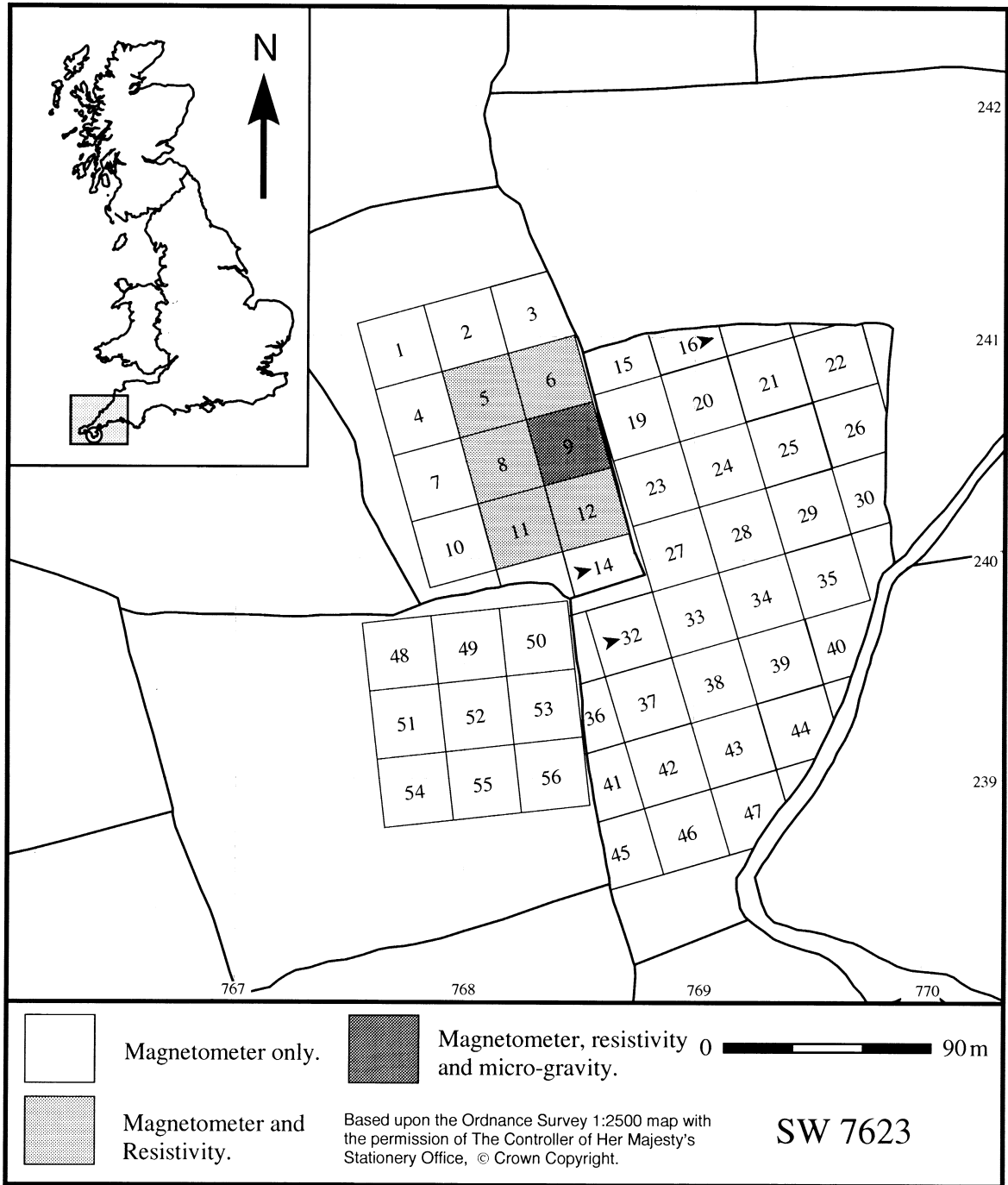


Figure 4 Location of geophysical survey - 1992-1993 (from Linford 1998, 191).

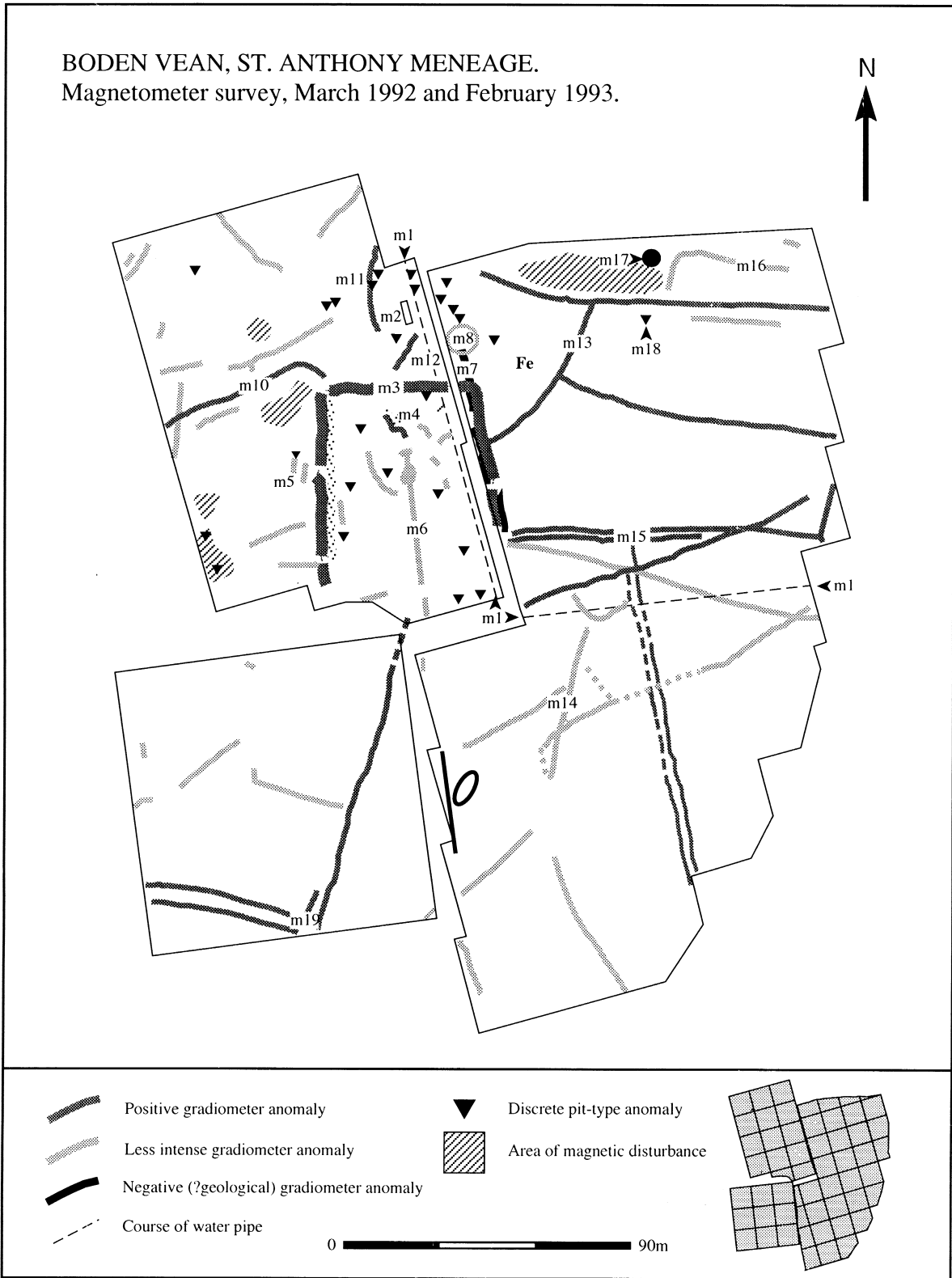


Figure 5 Interpretation of magnetometer survey (from Linford 1998, 1993).

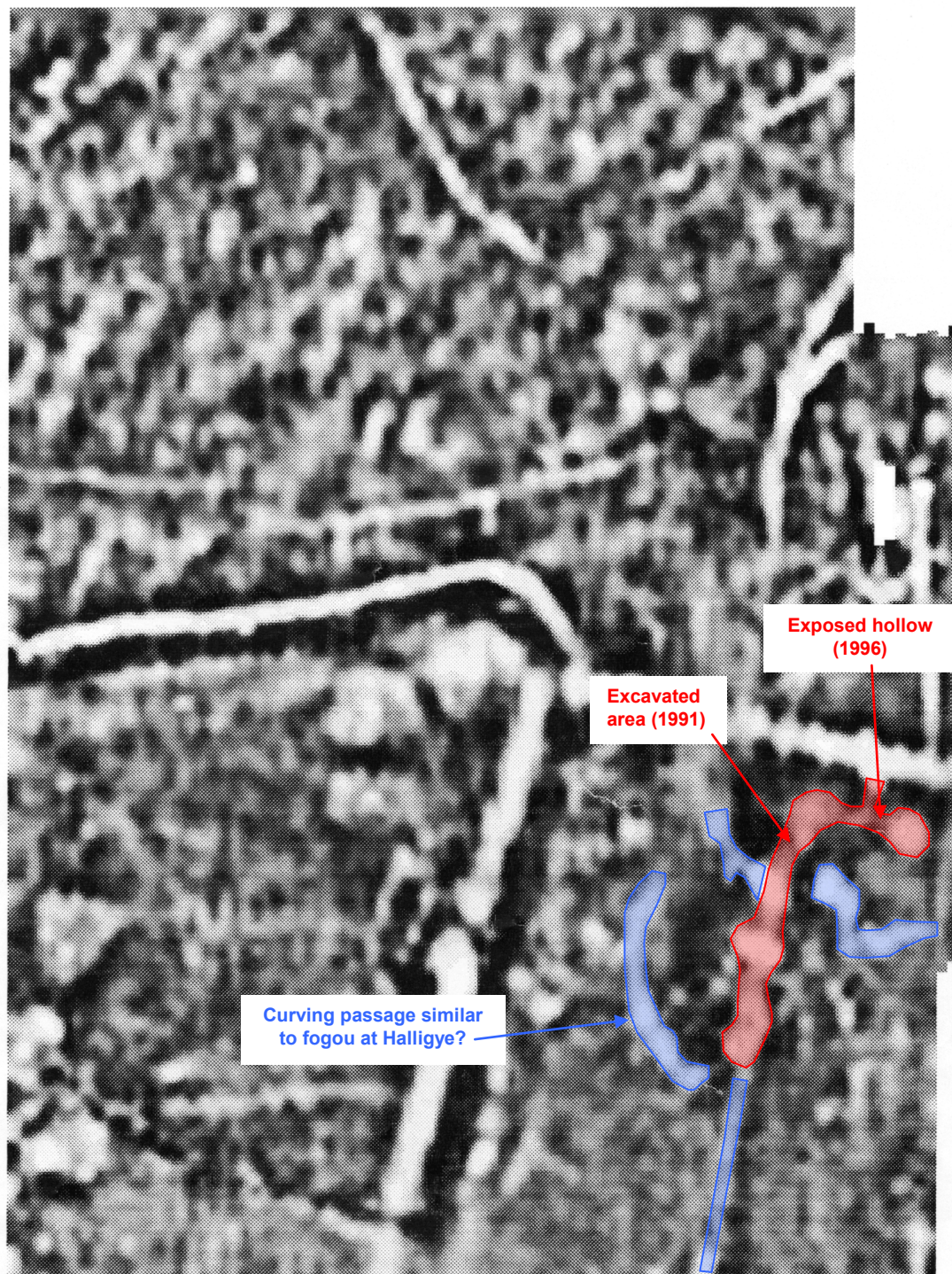


Figure 6 CAU interpretation of geophysical survey (based on Linford 1998).

The area shaded red represents the known and probable extents of the fogou. The areas shaded blue represent other geophysical anomalies which are possible components of the fogou.

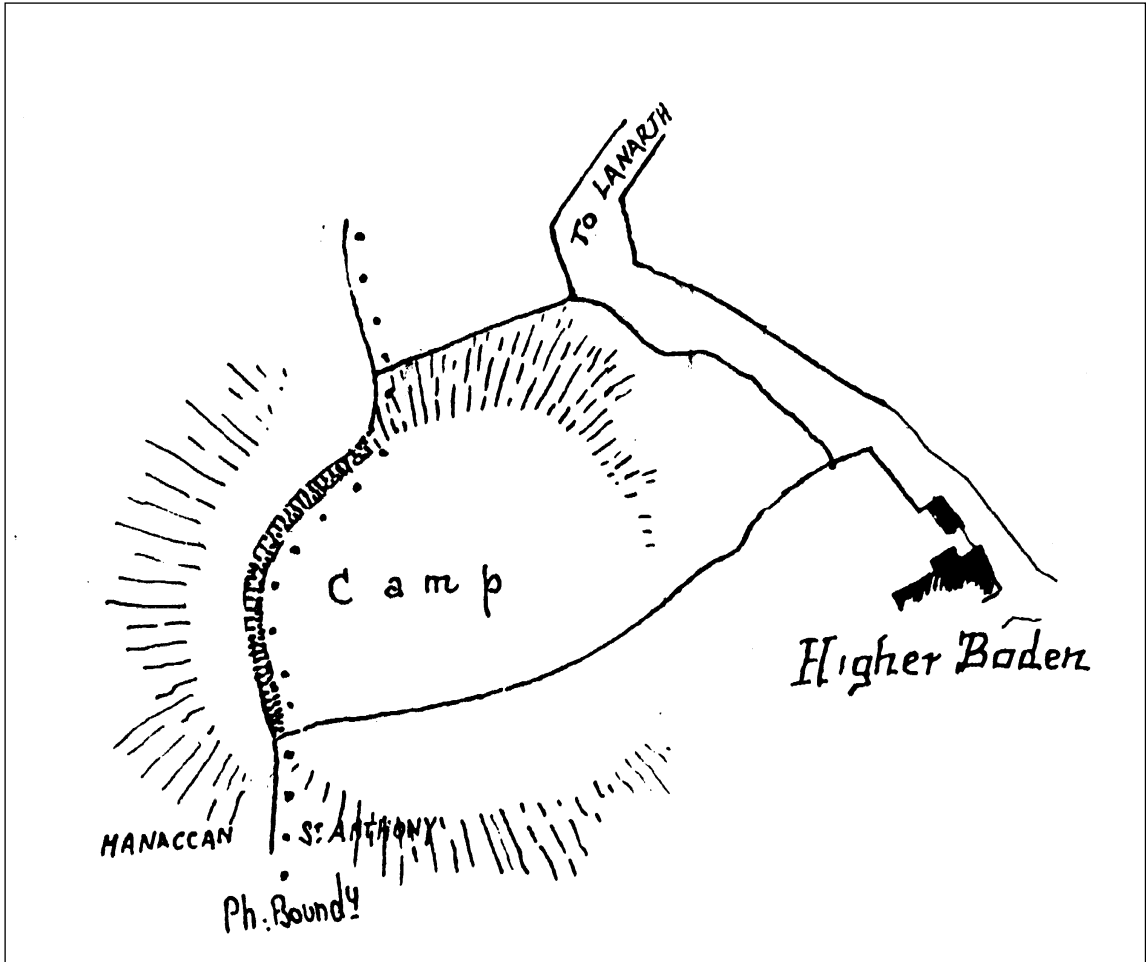


Figure 8 Location of round at Higher Boden (from Henderson 1916).