

**Boden Vean,
St Anthony-in-Meneage,
Cornwall**

**Assessment and
Updated Project Design**

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Abbreviations

BA	Bronze Age
CfA	EH Centre for Archaeology, Fort Cumberland
EH	English Heritage
HES	Historic Environment Service, Cornwall County Council
LEIA	Late Early Iron Age
NGR	National Grid Reference
RB	Romano-British
RCM	Royal Cornwall Museum

ASSESSMENT

1 Introduction

1.1 Project background

This report assesses the results of a programme of archaeological fieldwork, funded by English Heritage and carried out by the Historic Environment Service, Cornwall County Council (HES) at Boden Vean, St. Anthony-in-Meneage, Cornwall (centred on NGR SW 7685 2405) in October and November 2003.

The project arose following the re-discovery of a fogou (cf Rose and Preston-Jones 1991) and subsequent geophysical survey (Linford 1998), the circumstances and results of which are detailed in the 'Project Design' (Cole 2003).

The fieldwork consisted of evaluation trenching of geophysical anomalies and fieldwalking carried out in the surrounding field. The fieldwork results were presented in an Archive Summary (Gossip 2004a), which has been circulated to all the project team.

1.2 Original Research Aims (ORAs)

The archaeological recording was guided by the following original research and conservation aims as outlined in the Project Design (Cole 2003):

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

The project would 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).

1.3 Outline and content of this report

This report closely follows the guidelines set out in *MAP 2* (English Heritage 1991) and in *The Minimum Requirements for Project Designs*' (English Heritage draft report nd).

It should be noted that the artefactual, environmental and technological data contained in this report has been taken from the various specialist assessment reports on this data, copies of which appear (reformatted to conform to HES' house style) in Section 6 Appendices, at the end of this report. The specialists' comments are either quoted verbatim or have been summarised. In a few cases additional information has been gleaned through

conversation with a particular specialist and this has been included under the relevant section in the main report text.

2 Factual data

2.1 The site

The site consists of the following key components.

- A partially excavated Bronze Age structure containing well preserved pottery artefacts (**Trench 1**);
- An Iron Age/Romano-British enclosure ditch (of the possible ‘round’). This was investigated with two trenches (**Trenches 2 and 3**), neither of which were excavated to the base of the feature, although the section excavated in Trench 2 revealed deep, well stratified deposits from which artefactual and ecofactual information was obtained;
- Contemporary settlement remains – field system ditches exterior to the round, and internal features (ditches, postholes, alignments of stone) not yet fully understood (**Trenches 1-7**). Finds indicate dates ranging from the Iron Age to the post-Roman period for activity within the enclosure;
- An Iron Age/Romano-British fogou, comprising a subterranean stone-walled passage revealed in Trenches 8/9. Collapsed capstones indicate that the passage had originally been roofed. The passage curved towards the open earth-cut void assumed to be a ‘creep’ passage connected with the main fogou.

The geophysical survey shows the archaeological remains lying within a landscape of field systems and associated features (Linford 1998). Other anomalies exist to suggest the presence of additional Bronze Age structures nearby, and anomalies, possibly indicative of voids to the north and west of the identified fogou could indicate further passages (Linford 2004). The enclosed field system in existence today partly follows the line of the Iron Age/Romano-British enclosure along its southern and eastern edges.

2.2 Summary of stratigraphic data

Throughout this report context numbers for archaeological features such as cuts and structures are in square brackets eg [109] and context numbers for deposits, layers and fills are in parentheses eg (105).

2.2.1 The evaluation trenches (Trenches 1-9)

Nine trenches were excavated to evaluate the results of the geophysical survey. These were machine excavated to the level of the surviving archaeological deposits.

Trench 1 was positioned to investigate a linear geophysical anomaly that appeared to be physically linked with the round as well as a large amorphous un-numbered anomaly to its south. The linear anomaly proved to be a narrow, shallow ditch of uncertain date [113] (1.6m wide and 0.35m deep), and a second linear ditch feature [109] (1.6m wide and 0.52m deep) on the same alignment was located 2.6m to the south.

The larger amorphous anomaly to the south, when cleaned appeared to be a backfilled curved-edged hollow cut into the shillet. This feature is probably the remains of a Bronze Age structure, approximately 8.0m in diameter. The trench, positioned in the centre of the

anomaly, cut through the western half of the house; the geophysical survey therefore suggests there is another similar feature to the west of the trench.

The top of the unfilled hollow was revealed in plan at a depth of approximately 0.6m below the present surface of the field. Excavation of the upper stony fills **(105)** and **(106)** revealed the remains of some collapsed stone walling **(118)**, perhaps serving as a partial stone kerb around the edge of the hollow. These upper fills suggested deliberate infilling of the hollow. Further investigation was restricted to the south-western quadrant of the hollow, the floor of which was covered by sherds of pottery from a very large decorated Trevisker vessel **(T1)**, many sherds of which were placed with the decoration (incised and cord impressed chevrons and lines) upward. These sherds were lying within a charcoal-rich silt clay deposit **(107)** 0.12m deep that was bulk sampled for environmental and dating analysis. Much pottery was recovered but it is likely that more remains buried beneath the adjacent baulk. Although the quadrant was excavated to its apparent base, no structural features such as post-holes were revealed. A large sherd from a different decorated Trevisker vessel was also recovered from this deposit.

Trench 2 investigated the ditch forming the northern side of the rectilinear round. The 3.0m wide ditch **[202]** was excavated to a depth of approximately 2.5m, at which point the edges showed little sign of narrowing so that, unless the ditch is flat-bottomed, it is likely to be considerably deeper. Large sherds of pottery, provisionally dated as Iron Age, were recovered from the ditch fills. Fourteen distinct fills were recorded, suggesting erosion of the shillet edges following construction, gradual silting, refuse dumping and deliberate backfilling. Bulk environmental samples were taken from the ditch fills, including one comprising limpet shells.

Trench 3 was positioned to investigate a possible entrance through the western side of the round. The ditch **[315]** was approximately 4.0m wide and but no break was identified. Stratigraphy here was complex, however, and the ditch contained a number of fills including a spread of large stones **(316)**, possibly derived from an inner bank revetment. Due to the complexity of the stratigraphy only the uppermost fills were excavated and the ditch edges defined. It is still possible therefore that an entrance to the round does exist at this point, as indicated by the geophysical survey, although it is possible that the 'gap' was caused by the presence of the stone. A large number of pottery sherds, provisionally dated to the Romano-British period, were recovered from the upper ditch fills **(310)** and **(314)**. On the eastern side of the 'gap', and therefore within the enclosure was a curvilinear alignment of large stones (see **Trench 4**) trending north-east from the inner side of the ditch, a feature which could be associated with an entrance. The trench was extended by hand to trace this alignment, which extended for several metres. The stone alignment was not repeated on the south side of the gap. To the west of the enclosure ditch were two smaller ditches, **[305]** (aligned north-south and running parallel with the enclosure ditch) and **[307]** (south-west - north-east). **(304)** the fill of **[305]**, contained well-preserved sherds from a Romano-British vessel.

Trench 4 (amalgamated with **Trench 5**) investigated the fogou itself and extended to the west towards **Trench 3**, to the south of the area investigated in 1991. Two parallel lines of stones **[402]** and **[410]** were found on either side of a deep vertical-sided cut **[433]** into the shillet representing the anomaly running towards the stone-walled fogou passage (**Trenches 8 and 9**). This trench had been backfilled with a number of loose stony deposits, some of which yielded pottery identified as Iron Age or Romano-British in date. The purpose of this feature is not yet fully understood. It is possible that the stones may have been placed to mark the line of the fogou approach after it had been infilled.

To the west of the linear cut another diagonal cut [412] extended into the shillet. Within the backfill of this feature a stone 'box' [425] had been constructed from a number of small orthostatic stones. The fill of this feature (426) was sampled in its entirety.

To the east of the linear cut [433] was a large posthole [436] including a visible post-pipe and packing stones.

Further to the west a section of the curvilinear anomaly [431] was excavated. This proved to be a steep, almost vertically sided feature, with an almost flat base, filled with dark charcoal rich silts (430) and (432) (see **Trench 6** results). Finds included sherds of post-Roman platter provisionally dated to the 5th or 6th centuries AD. Abutting the feature on its eastern side was a compacted surface (442) 0.7m wide, comprising small, worn, beach and river pebbles, which in turn was abutted by a layer of worn natural shillet bedrock (443).

The curving alignment of stones (408) mentioned above (**Trench 3**) could be seen extending towards the western end of the trench. Deposits either side of the stones (403), (405) appeared to be silt clays accumulated around the structure, and produced Iron Age/Romano-British pottery sherds and a spindle whorl or ceramic bead similar to the two others recovered from **Trench 6**.

Trench 6 revealed more of the curving ditch [431] to the west of the fogou approach (see above **Trench 4**), recorded in this trench as [609]. This feature proved to be a rock-cut ditch approximately 1.5m wide by 1.0m deep. Two sections were excavated through the 'ditch', which terminated just to the west of the anomaly leading south from the fogou [612]. The two fills of the feature ((606) and (610)) were silty and charcoal rich, and contained large amounts of fragmented burnt bone. Finds included two ceramic beads and a fragment of copper alloy brooch. To the west of the feature was a spread of small stones (608) which may have been placed on an *ad hoc* basis to form a series of drainage channels, or alternatively comprise the rubble from a structure. The linear anomaly [612] leading south from the fogou was only partially excavated, but had a more gradual profile than in **Trench 4**. The backfilled ditch had been superseded by a small rubble filled pit [604]/(603), cut into the fill (602) of the ditch. Iron Age/Romano-British pottery was recovered from the ditch fill.

Trench 7 investigated the linear anomaly leading south from the area of the known fogou ([433]/[612]). This proved to be a steep-sided rock cut ditch [705] approximately 1.5m wide by 0.5m deep. No finds were recovered from the fills of this feature and no other features were recorded in this trench.

Trenches 8 and 9 the 1991 trench was reopened by hand excavation in order to elucidate the nature, extent and preservation of the fogou structure, revealing coursed stonework (801), as opposed to the single lines of stones in Trenches 5 and 6. The trench was extended to the north and the coursed stonework continued; two large orthostats on either side of the fogou defining a point at which the tunnel narrowed. This point may originally have defined an entrance into the main passage of the fogou. The coursed stone walling could be seen to become deeper, curving to the north-east in the direction of the existing open tunnel. The walling was corbelled and there were no *in situ* roof stones, although there were stones in the fill of the fogou that could have spanned the roof. Stones appear to have been imported to the site, but probably from fairly local sources, and comprise various rocks of the Meneage Mélange and Hornblende Schists (Bristow 1996, 69).

The interior of the fogou was mostly filled by a homogeneous deposit of shillet and clay, 1.10m deep (804), which appeared to indicate deliberate backfilling. Above the floor of the fogou were stony silty clay deposits (805), (806) and (806) from which pottery of provisional Iron Age date was recovered and a polished black mudstone pebble resting

against one of the upright stone 'posts'. Each of these deposits was around 0.10m in thickness.

The open tunnel **(808)** comprises a hole in the surface of the field measuring approximately 0.6m in diameter. The hole drops to a depth of around 1.0m onto collapsed shillet and soil. The void then extends for 4.0m towards the south-east, where it appears to have been blocked by a stone slab (possibly when the tunnel was visible at this end, earlier in the 20th century (Chris Hosken pers comm). The roof of the tunnel is arched and cut from the natural shillet subsoil. Recent collapse appears to have occurred just to the west of the open void, and some collapsed coursed stonework is visible at this point. The alignment of the stone-walled fogou passage **(801)** appears to be curving towards this earth-cut section, and it is assumed that they were originally joined.

2.2.2 Fieldwalking

The fogou field and the adjacent field to the north were gridded out in 10m squares for fieldwalking. Fieldwalking was carried out by local schoolchildren and students from Truro, College. The finds were mostly post-medieval ceramics with occasional medieval sherds and a handful of prehistoric pottery and a number of worked flints. This information has been added to the results of fieldwalking carried out by Truro College in 2002, and the material assessed in this report (Sections 6.1 and 6.5).

2.2.3 Metal detecting strategy

Metal detectors were used in transects across the fogou field, and three coins of Roman date were collected. These have been assessed in this report (Section 6.6)

2.3 Artefactual data

2.3.1 Collection policy

Stratified and unstratified finds were hand-collected from the evaluation trenches, some finds were recovered by surface collection from the spoil heaps, and others were extracted from the bulk samples. Note, however, that there was not total collection from the spoil heaps generated by the machine digging of the trenches.

The majority of finds from archaeological contexts within evaluation trenches were allocated the context number from which they were derived. Occasionally finds were recorded three-dimensionally and allocated an additional small finds number.

2.3.2 Pottery

The assemblage consisted of c 865 sherds with clearly defined groups belonging to:

- Bronze Age Trevisker ware (some 143 sherds, all from Trench 1 except for a residual sherd from Trench 3);
- Iron Age (152 sherds);
- Cordoned ware relating to the beginning of the Roman period (160 sherds);
- Material relating to the Roman Period
- Early post-Roman Gwithian Style material (149 sherds, 28 of which are much abraded and may be LEIA, 1 bowl and 3 platters).

The entire assemblage was in a range of gabbroic fabrics, except some of the Early Age that was granitic and two amphorae sherds probably of the same date as the Cordoned ware.

2.3.3 Ceramic beads

Three very similar nearly spherical beads of gabbroic pottery were found in contexts (405), (606) and (608). These beads had been modelled and fired in gabbroic clay, not reworked from broken sherds and are probably LEIA in date.

2.3.4 Daub (burnt clay)

Sixty-six fragments of burnt clay were recovered from deposits within the evaluation trenches. It is likely that these derive from the walls of structures or hearth linings. Many of the fragments were retrieved from Trenches 4 and 6 (adjacent trenches) and suggest structures in this area.

2.3.5 Stonework

The assemblage contains a range of 25 or 26 artefacts, most making use of probably local water worn stones or slate. In addition, some 40 pebbles found singly or in groups in a range of contexts, are of an appropriate size and weight to have served as sling stones.

2.3.6 Flint

A total of 127 pieces of flint and chert were assessed. Sixteen of these are from the evaluation trenches, 111 were recovered by fieldwalking.

The flint assemblage ranges in date from the Mesolithic/Early Neolithic to the Bronze Age. The material recovered from the evaluation trenches is most likely to be residual. There does appear to have been Neolithic activity in the vicinity as indicated by the use of nodular flint, although no features of Neolithic date were identified. The assemblage of material probably reflects a plough dispersed assemblage, although many of the pieces may have derived from beach sand introduced as a means of soil improvement.

2.3.7 Metal objects

Metalwork from the evaluation includes three coins, two fragments of what were originally thought to have been brooch and two other copper alloy fragments. The coins were all located during the metal-detecting exercise in the ploughed field covered by the fieldwalking.

2.3.8 Glass Bead

A single glass bead was recovered from an *in situ* deposit within the stone-walled fogou (recovered from an environmental sample).

2.3.9 Technological material

Seven samples of slag were recovered from Trenches 2, 4 and 6, suggesting limited evidence for small-scale iron smithing.

2.4 Environmental data

2.4.1 Sampling strategy

Bulk samples (at least 40 litres in volume each) were taken from suitable layers (eg pits, ditch fills, hearths, etc) to recover material with the potential for radiocarbon dating and plant macrofossil analysis. Sampling and processing of large samples for flotation followed the guidance published in *Guidelines for Environmental Archaeology* (English Heritage 2002). Sampling ensured that the full range of context types and phases were covered to enable the full scope of potential for further work to be identified. This was determined by discussion with the EH Regional Archaeological Science Adviser, Vanessa Straker. The

samples were processed by flotation. The residues from the evaluation trench samples were collected on a 1000-micron mesh and the floats on a 250-micron mesh.

Kubiena samples were taken for pollen by Heather Tinsley, from deposits at the base of the stone-walled fogou passage. Similar samples were extracted by Gianna Ayala for geoarchaeological analysis.

2.4.2 Animal bone

Only a small amount of burnt bone was recovered during the evaluation. The acidity of the local soil is not conducive to preservation of bone and this is likely to account for the absence of unburned bone from the evaluation trenches.

2.4.3 Burnt bone

Bone from 19 contexts – two Bronze Age and the rest Iron Age/Romano-British – were sent for assessment; the primary aim was to ascertain if any of the material was human. The majority of the bone comprised small fragments of well-oxidized (burnt) animal bone. In several cases, the small quantity of bone and its condition (small fragments; cortical surface of a slightly chalky appearance) made the identifications inconclusive, but most is believed to be animal.

The four fragments of long bone shaft from the Bronze Age context (107) may be human (fibula and a possible humerus shaft); the thin cortical walls of at least some suggesting it may have derived from an immature individual. The bone is generally well oxidised, white in colour with some grey patches. The type of deposit represented by this material is uncertain, however, the recovery of fragments of pottery from the same deposit may suggest that it represents the redeposited remains of an urned burial; such a conclusion could only be extremely tentative on the basis of the current evidence.

2.4.4 Marine molluscs

The shell material retrieved consists of one small bag of hand-picked shell from a deposit stratified within the enclosure ditch (Trench 2). It consisted of limpet shells and a single fragment of common dog whelk.

2.4.5 Plant macrofossils

A total of 46 bulk samples were taken during the evaluation. These included samples from the Bronze Age structure, the enclosure ditch, the fogou and features within the enclosure.

Plant macrofossil preservation was by charring and the condition of the cereal grains varied from poor to good. Wheat (*Triticum*) grains were the most common, their relatively long slim form suggestive of a glumed variety, possibly emmer (*Triticum dicoccum*) or spelt (*Triticum spelta*), although unfortunately there was little cereal chaff present to confirm which of these types occurred. There were also occasional barley (*Hordeum*) and oat (*Avena*) grains. Some samples included a small assemblage of mostly arable weed seeds in a good state of preservation.

2.4.6 Charcoal

33 samples of charcoal were recovered from the bulk soil samples. The assessment was based on the identification of three fragments from each sample to indicate:

1. The minimum range of species present.
2. The character of the wood from which the charcoal originated.
3. The potential of the samples to supply relevant data if submitted for full analysis.
4. Material suitable for radiocarbon dating.

2.4.7 Pollen

Two samples for pollen assessment were taken from a dark silty floor deposit (contexts (806) and (807) in the base of the fogou using Kubiena tins. This was the only 'buried soil' type deposit found in the excavations and therefore it offered the only possible opportunity for pollen analysis of a sealed layer associated with the site. Neither of these samples preserved pollen. In the upper sample from (806) just two pollen grains were found, one of *Fraxinus* (ash) and one of *Poaceae* (grass). Both these grains were very well preserved and it seems likely that they were modern and had become trampled into the floor deposit while the excavation was open. No other pollen was recovered from this sample, but 3 undifferentiated monolete fern spores were found along with one spore of *Polypodiaceae* (polypody fern).

No pollen at all was recovered from the sample from context (807). Clearly the floor deposit was an unfavourable environment for preservation; its friability suggests that oxidation may have destroyed any pollen that was once present.

Both samples contained frequent microscopic fragments of charcoal.

2.4.8 Geoarchaeology

Samples for geoarchaeological assessment were taken from deposits in the base of the fogou but were not considered appropriate for micromorphological description.

3 Statement of potential

In this section National Research Priorities (**NRP**) refer to academic research objectives as defined in the EH document *Archaeology Division Research Agenda* (draft document circulated 1997), which highlights areas of national significance. In particular Processes of Change (**PC**) and Chronological Priorities (**P**).

Regional Research Priorities (**RRPs**) refer to research frameworks for Cornwall and south-western England.

Local Research Priorities (**LRPs**) refer to research frameworks for the Isles of Scilly and Cornwall.

Original Research Aims (**ORAs**) refer to the project's original research aims (see Section 1.1.2)

3.1 Potential of stratigraphic/structural data

3.1.1 The Bronze Age roundhouse

The comparanda both for the very large decorated Trevisker vessel (T1) and the miniature Trevisker vessel (T3) are both from Early Bronze Age barrow contexts where deposition is related to ceremonial activity. Barrow deposition does not appear to survive in Cornwall into the Middle Bronze Age nor do roundhouses appear to be constructed before this period. So either the roundhouse at Boden Vean is of an unusually early date, or the site represents an extreme example of the practice of selecting and curating vessels for structured deposition linked to acts of closure. Analysis of the house deposits, supported by further study of the pottery and radiocarbon determinations from secure contexts, is therefore of great importance in investigating the details of structured deposition. A strong case could be made for more extensive excavation of the roundhouse, both to fully understand the deposition of the T1 vessel and to establish whether any other vessels form part of the assemblage.

LRP/RRP- there is potential for comparison with other relevant sites in Cornwall, eg Bronze Age houses such as Trethellan (Nowakowski 1991) and Callestick (Jones 1997-8) as well as elsewhere in Southern Britain (eg Ladle 2004).

The results will be relevant to the following **NRPs: PC3** Communal Monuments into The results will be relevant to the following **NRPs: PC3** Communal Monuments into settlement and field landscapes (c2000-300 BC); **P7** Late Bronze Age and Iron Age landscapes; **P9** Structured deposition: ritual and rubbish and **T3** Rural settlement.

3.1.2 The fogou

Analysis of the stratigraphic data from the trenches evaluating the fogou is to a large extent complete. Of particular interest are the basal deposits from which pottery and charcoal can provide a secure *terminus post quem* for the structure. The stratigraphic data has the potential to answer **ORAs 2 and 7**, and to partially answer **ORA's 3, 4, 5 and 6**.

Initial analysis of the fogou structure has been carried out and this has the potential to answer **ORA 2** concerning the way in which the fogou was constructed. The fogou itself is perhaps more complex than initially envisaged. The stone-walled section of fogou is built of stones that appear to have been chosen carefully for their size and shape and contrasting visual and haptic qualities. There is potential for further study of the architectural ordering of these stones, as well as the fogou structure as a whole, to explore topics such as orientation, ancient cosmological concepts, questions of ritual space and practice etc.

LRP - there is potential for comparison of the site with other relevant sites in Cornwall, in particular Chysauster, Carn Euny and Halligye (all fogou sites).

The results will be relevant to the following **NRPs: PC3** Communal Monuments into settlement and field landscapes (c2000-300 BC); **PC4** Briton into Roman (c300 BC – AD 200); **P7** Late Bronze Age and Iron Age landscapes; **P8** Late Iron Age Hillforts, enclosures and settlements; **PC5** Empire to Kingdom (c200-700 AD); **P9** Structured deposition: ritual and rubbish; **T3** Rural settlement and **T4** Field systems.

3.1.3 Other features revealed by the evaluation trenching

In general there is limited potential for further analysis of the structural and stratigraphic data relating to the other features revealed by the evaluation trenching. Although discrete layers and features have been identified, stratigraphic relationships between features identified in different trenches cannot be established without further excavation. Preservation of archaeological deposits is good and features beyond the fogou are complex and have at present only been sampled. The limited extent of excavation leaves questions such as the nature of the stratigraphic relationships between the fogou and other features unanswered. However clear dating may be obtained from the pottery and radiocarbon determinations from charcoal found in sealed archaeological deposits and may help to clarify the temporal sequence. Of particular interest is the enclosure ditch [202] and features such as the curvilinear ditch [431]/[609] and stone alignments [402] and [410] and stone box [425] that seem to be associated with the fogou itself. Further structural, stratigraphic and finds analysis have the potential to clarify the relationship of these features to the fogou.

Basic analysis of stratigraphic and structural data from the evaluation trenches has been carried out to address **ORAs 3, 4 and 6**.

LRP - there is potential for comparison of the site with other relevant sites in Cornwall, in particular Chysauster, Carn Euny and Halligye and with other rounds and their contemporary field systems in multi-phase prehistoric landscapes such as that revealed at Penhale Round, Fraddon (Nowakowski 1998).

The results will be relevant to the following **NRPs**: **PC3** Communal Monuments into settlement and field landscapes (c2000-300 BC); **PC4** Briton into Roman (c300 BC – AD 200); **P7** Late Bronze Age and Iron Age landscapes; **P8** Late Iron Age Hillforts, enclosures and settlements; **PC5** Empire to Kingdom (c200-700 AD); **T3** Rural settlement and **T4** Field systems.

3.2 Potential of artefactual data

3.2.1 Pottery

In addition to addressing **ORA6**, analysis of the pottery has considerable potential value for local and regional research topics.

Bronze Age Trevisker ware

There have now been some three decades of debate about typological development of Trevisker ceramics in which the chronological relevance of modes of decoration, incision and cord impression, have been pivotal. Cord impression was initially regarded as later than incision but the general current view is that decorative style and shape of vessel relate to function and probably change little during the 2nd millennium BC during which Trevisker wares were in use. At Boden there are unusual links between the two principal decorative modes, both on the same vessel and on vessels within the same context. There is potential for further investigation of the vessels and their comparanda, supported by radiocarbon determinations, which will make a significant contribution to understanding of the development of the Trevisker ceramic style. Regarding fabrics, recent work on a Trevisker assemblage from a roundhouse at Trevilson in mid-Cornwall (Quinnell & Taylor forthcoming) has shown that a distinctive gabbroic admixture fabric was used for all vessels and raises questions about the relationship of vessel users to those manufacturing pottery; vessels might be selected because of the nature, symbolic or otherwise, of their inclusions. The recent assessment of the Trevisker assemblage from Gwithian (Quinnell 2004a) has indicated at this site gabbroic clay was probably brought in for local potting, adding an extra strand of complexity. For Boden it will be important to establish if this unusual group of vessels had similar inclusions and whether these inclusions give any indicators as to location of manufacture.

The cord impression on vessel T1 uses exceptionally thin material (adding to the unusual character of the vessel as a whole). The detailed processes of cord impression are poorly understood, in particular the ways in which three or four lines of parallel impressions could be achieved. There is potential for a programme of experimental work aimed at understanding the ways these impressions were made, linking to current research projects with related aims.

Iron Age, Roman and Post-Roman material

The comparative scarcity of South Western Decorated and Roman forms, usually those most common on enclosed settlements, may be a result of the limited extent of the excavation. The dating of the fogou to the LEIA is extremely important but the amount of material from the enclosure ditch is minimal. Radiocarbon determinations should assist chronology here but further excavation is appropriate both for the enclosure ditch and for sample areas inside to provide a fuller biography of site use and development.

There is potential for further examination and analysis of the amphora sherds from the enclosure ditch and from the 'well' infill excavated in 1991. Further analysis of the Cordoned ware forms to the Threipland (1956) series and the Roman forms to that based on Trethurgy (Quinnell 2004c) would repay further study linked to the question of the

deposition of apparently deliberately broken stonework in the same deposit in the enclosure ditch.

Examination under the microscope of the four gabbroic fabric groups, LEIA, Cordoned ware, Roman and Gwithian Style, and the LEIA granitic fabric with a view to selecting 2 pieces for study in thin-section for each should provide a firm basis to support the visual differences between the various gabbroic fabrics, which appear to have chronological significance, and make a substantial contribution to the ways in which gabbroic fabric were used over time. The LEIA granitic fabric should be sourced to a specific granite area by this work.

3.2.2 Ceramic beads

Ceramic beads do not appear to have been published from Iron Age or Roman contexts in Cornwall; the biconical ceramic beads from the Crig-a-Mennis barrow represent an earlier and typologically different tradition (Christie 1960, fig 5). The Boden beads may be a local feature, developed from experimentation with the nearby Lizard Clay. It is possible that such beads have not in the past been distinguished from spindle whorls and that a close scan of literature and artefact archives has the potential to reveal parallels.

3.2.3 Daub (burnt clay)

There is limited potential for further analysis of the daub; no further work is required other than a note in the final report.

3.2.4 Stonework

Further analysis of the stonework has potential to demonstrate the way in which local lithic materials were utilized to perform a range of functions throughout the use of the site.

3.2.5 Flint

Since it is all residual, the flint has only limited potential for analysis. No further work is envisaged, other than a brief note in the final report. No illustrations are necessary.

However, in the event of future work it should be noted that residual Neolithic pieces are present and may indicate activity of this date in the vicinity. Although there is no flint within the sealed Bronze assemblage, it is possible that *in situ* Bronze Age flint is present either elsewhere within the Bronze Age structure, where deposits are deeply sealed and well- preserved or contemporary deposits, explaining its absence from the ploughsoil.

3.2.6 Metal objects

The Roman coins are all unstratified and as such tell us little about the enclosure during the Romano-British period. However, their presence is in itself interesting, and this should be considered in the event of future excavation, fieldwalking or metal detecting.

The other metal finds are unlikely to provide new information due to their poor state of preservation, but further identification may be possible after conservation and further analysis.

3.2.7 Glass bead

The bead is not a very diagnostic type, but has potential for comparison with other Cornish examples.

3.2.8 Technological material

No further work required in the case of the metalworking deposits, other than a note in the final report.

3.3 Potential of environmental data

3.3.1 Burnt bone

No further analysis of the bone is recommended, but there is potential for comparative study of human bones in structured deposits from Bronze Age roundhouses in Cornwall (NRP P9 Structured deposition: ritual and rubbish).

3.3.2 Marine molluscs

A straightforward analysis and documentation of the shell is recommended (LRP). No further work is recommended on the limpets.

3.3.3 Plant macrofossils

In total 35 bulk samples were assessed from features associated with the fogou and the round, as well as the Bronze Age structure. Sampled deposits included the basal fills of the Bronze Age structure, the fogou and deeply stratified deposits within the enclosure ditch. Most of these samples included only charcoal fragments, or very small assemblages of cereal grain, chaff and weeds and further work on the charred plant remains is not recommended.

There were however six samples where charred plant remains were more frequent. Although the assemblages recovered from these samples are relatively small, there is potential for sorting and extracting evidence from these deposits. This should allow some discussion of the economy of this important site, to hopefully complement the results of charcoal analysis and allow comparison with other contemporary sites in Cornwall.

The six samples concerned are :

Trench 1

Sample 1019	context (107)	from Bronze Age roundhouse
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Trench 4

Sample 1006	context (426)	fill of stone box (425), within the fogou
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Sample 1021	context (414)	charcoal rich fill within the fogou
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Trench 6

Sample 1012	context (606)	fill of curvilinear ditch
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Sample 1016	context (603)	pit fill
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Trench 8

Sample 1018	context (806)	dark silt associated with floor of fogou
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3.3.4 Charcoal

The charcoal is interpreted as probable residues or dumps of domestic hearth debris, originating from activities close to, or perhaps within, the fogou. The initial identification for the assessment indicates that firewood was gathered from a range of species and sometimes consisted largely of roundwood. The full analysis of selected samples may enlarge this list and would provide relevant environmental data for a period for which few records of woodland communities exist.

Full analysis of 10 selected samples has potential to elucidate the following questions:

1. The identification of the full range of taxa selected for use as firewood/ fuel in the Bronze Age and later periods and temporal differences fuel use.

2. The type and character of the fuel resources, e.g., roundwood/ largewood.
3. The use of managed woodland.
4. Evidence from plant macrofossils, especially those from common samples.
5. Evidence from comparable sites in the region.

3.3.5 Radiocarbon dating

Most of the charcoal samples included suitable material for radiocarbon dating. The site has considerable potential for scientific dating in particular:

- to obtain secure dates for the Bronze Age occupation;
- to obtain dating to determine the chronology of the fogou and enclosure ditch.

3.3.6 Pollen analysis

In view of the total lack of pollen preservation in the two samples examined no assessments were carried out on the remaining two samples and there is no potential for further pollen analysis of this material.

3.3.7 Geoarchaeology

In view of nature of the deposits and the results of the pollen assessment no further work is recommended.

3.4 Assessment of datasets against the Original Research Aims

ORA 1: The remains of the open section of tunnel have been recorded and the open section of tunnel has been made safe to prevent any further deterioration of its condition (Gossip 2004b).

ORA 2: Further analysis of the structural and stratigraphic data has the potential to establish the way in which the fogou was constructed.

ORA 3: Further analysis of the structural and stratigraphic data has the potential to establish the overall layout of the fogou, its associated settlement and hinterland.

ORA 4: Whilst it is not possible to establish the stratigraphic or structural relationship between the fogou and the round, clear dating from the pottery and radiocarbon determinations from the charcoal have the potential to establish their temporal relationship.

ORA 5: The relationship between the known stone-walled fogou and the void tunnel below the open hole in the ground surface has been established. It is possible that the curvilinear ditch [431]/[609] and stone alignments [402] and [410] represent the beginnings of a possible creeps and likely that ditch [705] represents continuation of the fogou tunnel to the south at ground level. Further structural, stratigraphic and finds analysis have the potential to clarify this.

No other subterranean structures were identified during the evaluation, the evaluation trenches were located to steer clear of possible voids identified by geophysical survey (cf Linford 2004).

ORA 6: The datasets have the potential to establish the structure, function and date of most archaeological features identified through the geophysical survey and targeted in the evaluation.

ORA 7: The character and potential of deposits within the fogou has been established by the datasets recovered during the evaluation.

3.5 Summary of potential for analysis of the dataset as a whole

Certain categories of artefactual and environmental data have been sufficiently studied during the assessment stage (daub, flint, technological material, pollen, geoarchaeology) but the potential for analysis of the other categories of data is considerable.

The Bronze Age Trevisker pottery from the roundhouse is unusual, in addition to its size and decoration, in that the only comparanda are from Early Bronze Age funerary deposits whereas there are no known roundhouses in Cornwall that predate the Middle Bronze Age. In addition four fragments of long bone from the roundhouse are possibly human. This implies that either the roundhouse at Boden Vean is of an unusually early date, or the site represents an extreme example of the practice of selecting and curating vessels for structured deposition linked to acts of closure. Further analysis and comparative study of the pottery and deposits from the Bronze Age roundhouse, supported by radiocarbon dates from the charcoal and burnt bone, have potential for investigating the details of structured deposition.

The ceramic evidence suggests that the fogou dates from the Late Early Iron Age. There is very little South Western Decorated ware or Roman pottery, usually the most common types on enclosed settlements (although this might be due to the limited extent of the excavation). Occupation of the site in the Early Medieval Period is indicated by a number of post-Roman Gwithian style platters and potsherds.

In addition analysis of the glass and ceramic beads, stonework, marine molluscs and selected charcoal samples will elucidate aspects of local economy, resource exploitation and woodland management in the prehistoric period.

The analysis of these data categories has the potential to contribute directly to English Heritage's primary research goal **A. Advancing Understanding of England's Archaeology**. It will also contribute to the following National Research Priorities: **PC3** Communal Monuments into settlement and field landscapes (c2000-300 BC); **PC4** Briton into Roman (c300BC-AD200), **PC5** Empire to Kingdom (c200-700 AD); **P7** Late Bronze Age and Iron Age landscapes; **P8** Late Iron Age hillforts, enclosures and settlements, **T3** Rural settlement, **T4** Field systems, **MTD5** the study of formation processes, taphonomy and residuality and **P9** Structured deposition: ritual and rubbish (English Heritage 1997).

4 Conservation, storage, and curation

4.1 Conservation of the metalwork

Vanessa Fell has assessed the conservation requirements for the metalwork, which comprises three coins and two fragments of a possible copper alloy brooch and two other copper alloy fragments (Section 6.7).

The three coins have been superficially cleaned to enable spot dating and are unlikely to require further treatment; two of them have been severely eroded through the acidic nature of the local soil.

The copper alloy fragments are corroded and fragile. They have been analysed by x-ray fluorescence to determine composition to assist the finds specialist's assessment and may require investigative examination to assist identification and study. Conservation requirements relate to investigative examination for publication purposes only and facilities for standard conservation and related scientific analysis for fragments are available at EH's Centre for Archaeology, Fort Cumberland.

4.2 Storage and curation

The metal artefacts are currently stored desiccated. Long-term desiccated storage is perfectly acceptable for metalwork and is often preferable to active treatment, though requires rigorous curation. There are no immediate storage requirements other than maintenance of desiccated conditions for the treated metal artefacts.

Long-term storage requirements for archaeological materials are set out in UKIC Archaeology Section Guidelines No. 3, 'Environmental Standards for the Permanent Storage of Excavated Material from Archaeological Sites'. Storage requirements for paper and other archives are set out in UKIC Archaeology Section Guidelines 'Guidelines for the Preparation of Excavation Archives for Long-term Storage' (Walker 1990).

The artefacts will be deposited at the Royal Cornwall Museum (RCM). 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 according to the Historic Environment Service's guidelines). These archive deposition arrangements will be agreed with the landowner, Mr C Hosken and the RCM.

UPDATED PROJECT DESIGN

5 Aims and objectives

5.1 Research design

The evaluation has demonstrated that there is exceptional preservation of archaeological remains at Boden Vean and an outstanding array of artefacts has been recovered. The overall research aims for the analysis stage of the project are to gain as much information as possible about the character and date of the Bronze Age roundhouse and the fogou and associated enclosure in order to investigate the chronological, social, economic and ritual context of the site, its relation to contemporary sites in Cornwall; and to demonstrate its credentials as a site of national significance. The project will take place under Programme 7.2 ‘recording archaeology under threat outside the planning process’ as set out in *Exploring Our Past Implementation Plan*, English Heritage, 1998 and will also contribute to Programme 1.7, Assessing and Understanding Specific Landscapes and Monuments in the same document.

The specific research aims fall into several broad categories.

5.1.1 Research aims for the Bronze Age structure

- 1) Establish secure dates for Bronze age activity on the site by radiocarbon dating and pottery analysis
- 2) Fabric analysis of the Trevisker pottery assemblage to establish if this unusual group of vessels had gabbroic inclusions and whether these inclusions give any indicators as to location of manufacture.
- 3) Analysis and comparative study of the pottery and deposits from the roundhouse (supported by radiocarbon dates). This study will make an important contribution to the understanding of Trevisker ceramics and their use in structured deposition (Tasks 1, 2, 3, 4, 13)
- 4) Investigation of the pottery vessels and their comparanda, supported by the radiocarbon determinations, to develop our understanding of the development of the Trevisker ceramic style. This will enhance local and regional research into Bronze Age pottery and form a reference for the study of future assemblages in Cornwall and elsewhere (Task 4).
- 5) Placing the structure in the context of other Bronze Age roundhouses in Cornwall (and elsewhere in Southern Britain) in order to add to understanding of the Boden Vean example (Task 1).
- 6) Analysis of a plant macrofossil and charcoal sample from the roundhouse to provide valuable economic/environmental evidence for the site and comparanda for other sites and for the later periods at Boden Vean.

5.1.2 Research aims for the fogou

- 7) Establish the nature and significance of the techniques and materials used in the construction of the fogou eg orientation, stones, clay, order and method of construction, use of colour and texture, in order to examine the ritual significance rite and contemporary belief systems (Task 1).
- 8) To establish a secure chronology for the fogou (Tasks 5 and 13).
- 9) Place the fogou in the context of other Cornish fogous, in order to add to understanding of the Boden Vean example and the distinctive Cornish fogou tradition as a whole (Task 1).

5.1.3 Research aims for the round and other Iron Age features

- 10) Ascertain the range and function of the settlement features that were uncovered – stone alignments, pits, gullies, burnt deposits etc – and their date through analysis of the structural and stratigraphic data (Task 1) and the various types of artefactual and environmental data (combined tasks).
- 11) Provide full fabric descriptions of the pottery assemblage. This will enhance local and regional research into LEIA/RB (and 6th–7th century AD) pottery and form a reference for the study of future assemblages in Cornwall and elsewhere (Task 5).
- 12) Comparative study to ascertain whether the ceramic beads from Boden Vean are unique in Cornwall in the IA/RB period.
- 13) Determine the date of the various settlement remains (primarily by stratigraphic analysis, radiocarbon dating and pottery analysis – Tasks 1, 6 & 14), in order to establish the relative chronology of the fogou and settlement remains.
- 14) Gain information on contemporary environment and the economy of the inhabitants through analysis of stonework, glass bead, metalwork, plant macrofossils and charcoal samples (Tasks 7, 8, 9, 10, 11 and 12) and compare with other contemporary sites in Cornwall.

5.2 Publication and presentation: full article in *Cornish Archaeology*

It is intended that a full report of the project results will be prepared for publication in *Cornish Archaeology* (the annual journal of Cornwall Archaeological Society). Agreement in principle for this has been obtained from the President of the society.

The *Cornish Archaeology* article will comprise of the following key sections:

Section	Text	Illustrations
Summary	Brief text summarising the contents of the article, focusing on the key results of the project.	
1. Location & setting	Brief description of the site location and the natural setting (ie geology, soils relief, rivers, vegetation).	<ol style="list-style-type: none"> 1. Map showing the location of the site in Cornwall (inset: map showing the location of Cornwall in relation to SW England). 2. Relief map of the immediate area showing the location and extent of the site
2. Archaeology, history and historic landscape setting.	The location and nature of archaeological sites in the vicinity will be summarised (eg Halligye, Gear) and the historic landscape character will be described.	<ol style="list-style-type: none"> 3. Map showing the historic landscape character and location of archaeological sites in the surrounding area
3. The project	A description of the circumstances of the archaeological project - (3.1) background, 1991 investigation, geophysical survey, rediscovery of the fogou, 2002 fieldwalking; (3.2) evaluation methodology, artefact retrieval, sampling strategy.	<ol style="list-style-type: none"> 4. The geophysical survey, showing the extent of the site investigated. 5. Detailed location map of the site showing the location of the evaluation trenches &

Section	Text	Illustrations
		fieldwalking grid
4. Bronze Age phase	Description of the roundhouse, layers and pottery.	6. Selected plans and section drawings 7. Selected photos
5. Iron Age phase	Description of the fogou Description of the round and other features.	8. Selected plans, section and elevation drawings 9. Selected photos
6. Romano-British phase	Description of features containing Roman pottery	10. Selected plans and section drawings
7. Post-Roman phase	Description of features containing post-Roman pottery	11. Selected plans and section drawings
8. Discussion	8.1 Discussion of the significance and context of the Bronze Age roundhouse and pottery 8.2 Discussion of the significance and context of the fogou and associated round	12. Distribution map of BA roundhouses/Trevisker pottery 13. Distribution map of fogous and comparative sites 14. Comparative fogou plans etc
9. References		
10. Appendices	Containing the specialist reports on the various types of artefactual and environmental material: 1. Pottery 2. Ceramic beads 3. Stonework 4. Metalwork 5. Glass bead 6. Plant macrofossils 7. Charcoal 8. Radiocarbon dates	Various supporting tables and illustrations
		NB Selected photographs will also be included – of the site, work in progress, key features and artefacts.
Acknowledgements		

6 Methods statement

6.1 Analysis of structural and stratigraphic data, comparative research and interpretation of results

This will involve the following tasks:

6.1.1 Analysis of structural and stratigraphic data (Task 1)

- Analysis in more detail of the character of the various structures, features and layers revealed by the evaluation trenching.
- Verifying the stratigraphic relationships within each evaluation trench.
- Comparing the stratigraphy of the different trenches in order to identify common layers/horizons.

6.1.2 Comparative research (Task 2)

- Gathering together information on comparative Bronze Age roundhouses in Cornwall and elsewhere in Southern Britain.
- Carrying out research into recent work and current thinking on structured deposition and closure of Middle Bronze Age houses in Cornwall and elsewhere in Southern Britain.
- Gathering together information on comparative fogous in Cornwall (and Scilly).
- Gathering together information on contemporary settlement sites in Cornwall.
- Carrying out research into recent work and current thinking on IA ritual sites and in Cornwall.

6.1.3 Interpretation of the results of Tasks 1 and 2 (Task 3)

- Collating the above information in order that it can be circulated to specialists prior to them carrying out their analysis, although it will need to be modified and updated in the light of specialists' reports.

6.2 Analysis of artefactual data

6.2.1 Bronze Age pottery (Task 4)

- Detailed study of deposition of vessel T1 to establish clearly intentional patterning. The study will take into account variations in abrasion on sherds that should establish whether the vessel is likely to have been broken immediately before deposition (Task 4.1).
- Preparation of thin sections (Task 4.2).
- Petrographic examination under the microscope to establish whether T5 is in fact a separate vessel and if T3 demonstrates distinctive features by detailed study (Task 4.3).
- Detailed descriptions of the vessels and close examination of published material for further comparanda. This study will make a contribution to the understanding of Trevisker ceramics and of their use in structured deposition (Task 4.4).
- Seek advice about the possibility of examining T1 for residues contained within the fabric that may give indications of the use of the vessel had been put. If analysis is

feasible then there might be additional costs which it is not possible to quantify at present (Task 4.5).

6.2.2 LEIA, Romano-British and post-Roman pottery (Task 5)

- Examination of the amphora sherds from context (200) in the enclosure ditch and from the 1991 'well' infill (Task 5.1)
- Preparation of thin sections (Task 5.2)
- Microscopic analysis of the four gabbroic fabrics (Task 5.3)
- Detailed study of the material including descriptions and comparanda (Task 5.4).

6.2.3 Methodology for thin sectioning and petrographic analysis (Tasks 4.2, 4.3, 5.2 and 5.3)

All samples will be examined in the hand specimen using a binocular microscope at x20 magnification. A list of inclusion types present, their frequency, size range and unusual characteristics will be made.

A series of sherds will then be selected for thin-sectioning to clarify data indicated by microscopic study. The sections will be taken as to include both outside and inside of the vessel, and special care will be taken not to destroy evidence for manufacture, form or decoration.

The samples will be thin-sectioned at the School of Earth Sciences, University of Birmingham. Sections will be cut using a diamond rotary wheel, which damages sherds with tough igneous rock inclusions less than hand sawing. Full details of the procedure can be supplied by the technician P.W.Hands@bham.ac.uk. Note that no staining procedures are likely to be necessary given the range of igneous rock minerals expected.

Each section will be examined in plane-polarised light using a petrological microscope and a second list of inclusions will be made. Details of the groundmass (i.e. material under 0.1mm across) will also be recorded.

The two lists will be compared and any discrepancies discussed.

Assessments will be made of the likely sources of the clays used, together with those of any added temper identified; if source of any clay body and its temper differs, problems associated with location of manufacture will be considered. Any available comparanda will be considered.

The thin-sections themselves will be catalogued and stored with the collection of ceramic thin-sections now being established at the Royal Cornwall Museum, Truro

Notes on thin-section procedure at Birmingham Earth Sciences

- a) sherds vacuum impregnated with resin
- b) suitable piece removed with fine diamond cutting wheel
- c) ground back with diamond cutting wheel and lapped with silicon carbide to maximum surface integrity
- d) cleaned in ultra-sonic bath to remove surplus silicon carbide particles
- e) mounted on glass
- f) c) and d) repeated to remove surplus material to leave thin-section of required thickness

6.2.4 Ceramic beads (Task 6)

- Examination of the fabric under a microscope to establish whether it has any distinguishing characteristic (Task 6.1).
- Full descriptions together with appropriate background on comparanda.

6.2.5 Stonework (Task 7)

- Preparation of a table of the possible pebble sling stones (Task 7.1).
- Examination and petrographic descriptions of the artefacts (Task 7.2).
- Detailed descriptions of the artefacts, set their typology and function in chronological context and consider aspects of structured deposition which interrelates to that involving ceramics (Task 7.3)

6.2.6 Conservation of metalwork finds (Task 8)

- Standard conservation methods will be used for examination, analysis and stabilization.

6.2.7 Analysis of metalwork finds (Task 9)

- Investigative examination of the conserved copper alloy to assist identification and study of comparanda.

6.2.8 Analysis of the glass bead (Task 10)

- A brief search for Cornish parallels, for completeness.

6.3 Analysis of the environmental data

6.3.1 Analysis of plant macrofossils (Task 11)

- Sorting and extraction of evidence from six samples, associated with the Bronze Age structure, deposits associated with the fogou and the curvilinear ditch where charred plant remains were more frequent.

6.3.2 Analysis of charcoal (Task 12)

- Full analysis of 10 samples.

6.3.3 Radiocarbon dating (Task 13)

- Selection and submission of samples; the samples will be submitted after discussion with the Scientific Dating Section (Task 13.1).
- Radiocarbon dating (Task 13.2)
- Assimilation and analysis of radiocarbon dating results (Task 13.3).

6.4 Publication of results

6.4.1 Preparation of a draft article for *Cornish Archaeology* (Task 14)

The results of the project will be published in full in *Cornish Archaeology*. Preparation of this article will involve the following tasks.

- Preparing the main text.
- Collating and formatting the specialist reports.

- Producing maps, plans, and section drawings (using a combination of hand drawing and AutoCAD).
- Producing line drawings of pottery, ceramic beads and stonework.
- Selecting and scanning photographs.

6.4.2 Comments on draft article (Task 15)

The draft articles will be circulated to HES staff and the project specialists for comment.

6.4.3 Assimilation of comments and submission of draft article to the EH referee (Task 16)

Comments from HES staff and project specialists will be assimilated and final drafts of the article will be submitted to EH by Friday 31st March 2006.

6.5 Collation and deposition of project archive (Task 17)

This will be carried out in accordance with the draft guidelines compiled by HES and the RCM and the research archive specification in Appendix 6 of EH's Management of Archaeological Projects 1991.

7 Resources and programming

7.1 Staffing

7.1.1 List of project staff and responsibilities

Name	Title/organisation/expertise	Task
<u>HES staff</u>		
Peter Rose (PGR)	Principal Archaeologist	Administrative support and guidance
		Report editing
Charles Johns (CJ)	Senior Archaeologist/Project Manager	Project management
		Liaison with specialists
		Supervision of project staff
		Report editing
James Gossip (FJG)	Archaeologist	Analysis of structural and stratigraphic data (Task 1)
		Comparative research (Task 2)
		Interpretation of Tasks 1 & 2
		Selection and submission of C14 samples (Task 13.1)
		Report preparation (Tasks 14-16)
		Collation and deposition of archive (Task 17)
Carl Thorpe (CT)	Archaeologist	Analysis of deposition of BA pot T1 (Task 4.1)
		Table of possible pebble sling

		stones (Task 7.1)
		Cleaning and line drawing of BA pot T1 (Task 14.4)
		Photography of BA pot T1 (Task 4.5)
		Line drawings of other BA pot (Task 4.6)
		Line drawings of LEIA, Roman & post-Roman pottery (Task 14.7)
		Line drawings of ceramic beads (Task 14.8)
		Photographs of ceramic beads (Task 14.9)
		Line drawings of stone artefacts (Task 14.10)
		Drawing of glass bead (Task 14.11)
HES contractors/specialists		
Henrietta Quinnell (HQ)	Freelance finds specialist	Analysis of deposition of BA pot T1 (Task 4.1)
		Description/report on BA pottery (Task 4.4)
		Analysis/report LEIA, RB & post-Roman pottery (Task 5.4)
		Description/analysis/report on ceramic beads (Task 6.2)
		Descriptions/analysis/report on stone artefacts (Task 7.3)
Dr Roger Taylor (RT)		Petrographic analysis of BA pottery (Task 4.3)
		Fabric analysis of LEIA, RB & post-Roman pottery (Task 5.3)
		Microscopic examination of ceramic beads (6.1)
		Petrographic analysis of stone artefacts (Task 7.2)
School of Earth Sciences, Birmingham University (SES)		Preparation of 5 thin sections of BA pottery (Task 4.2)
		Preparation of 10 thin sections of LEIA, RB & post-Roman pottery (Task 5.2)
Paul Bidwell (PB)		Examination of amphora sherds (Task 5.1)
Sarnia Butcher (SB)	Brooch specialist	Comment/report on metalwork finds (Task 9)
Fraser Hunter (FH)	University of Edinburgh	Report on glass bead (Task 10)
Julie Jones (JJ)	Archaeobotanist	Analysis of plant macrofossil

		samples (Task 11)
Rowena Gale (RG)	Wood anatomist	Analysis of charcoal samples (Task 12)
EH		
Dr David Dungworth	EH CfA	Advice on examining BA pot T1 for residues (Task 4.5)
Vanessa Fell (VF)	EH CfA	Conservation of metalwork finds (Task 7)
Peter Marshall (PM)	EH Scientific Dating Section	Radiocarbon dating (Task 13)

7.1.2 List of project tasks

Task no.	Task	Performed by	Days
	General project management	CJ	6
1	Analysis of structural and stratigraphic data	FJG	4
2	Comparative research	FJG	3
3	Interpretation of results of Tasks 1 & 2	FJG	3
4	Analysis of BA pottery		
4.1	Analysis of deposition of pot T1	HQ & CT	4
4.2	Preparation of 5 thin sections	SES	(£125)
4.3	Petrographic analysis	RT	3
4.4	Descriptions/report on pottery	HQ	3
4.5	Advice on examining T1 for residues	DD	
5	Analysis of LEIA, RB & post-Roman pottery		
5.1	Examination of amphora sherds	PB	(£25)
5.2	Preparation of 10 thin sections	SES	(£250)
5.3	Fabric analysis	RT	6
5.4	Analysis/report	HQ	14
6	Analysis of ceramic beads		
6.1	Examination under microscope	RT	- (included in pottery)
6.2	Descriptions/analysis/report	HQ	- (included in pottery)
7	Stonework		
7.1	Table of possible pebble sling stones	CT	0.5
7.2	Petrographic analysis/report	RT	2
7.3	Description/analysis/report	HQ	4
8	Conservation of metalwork finds	VF	1
9	Comment on metalwork finds	SB	1

10	Analysis and reporting on glass bead	FH	1
11	Analysis and reporting on 6 plant macrofossil samples	JJ	3.5
12	Analysis and reporting on 10 charcoal samples	RG	4.25
13	Radiocarbon dating		
13.1	Selection and submission of samples	PM	-
“	“	FJG	1
13.2	C14 dating, analysis and reporting	PM	-
13.3	Integration of results	FJG	1
14	Preparation of draft article for <i>Cornish Archaeology</i>		
14.1	Main report text	FJG	10
14.2	Collating and formatting the specialists' reports	FJG	2
14.3	Maps, plans and section drawings	FJG	10
14.4	Cleaning and drawing BA pot T1	CT	5
14.5	Photography of BA pot T1	CT	0.25
14.6	Line drawings of other BA pottery	CT	2
14.7	Line drawings of LEIA, Roman & post-Roman pottery	CT	4.5
14.8	Line drawings of ceramic beads	CT	0.5
14.9	Photography of ceramic beads	CT	0.25
14.10	Line drawings of stonework	CT	5
14.11	Drawing of glass bead	CT	0.25
14.12	Selecting & scanning photos	FJG	1
14.13	Editing draft article	CJ	3
15	Comment on draft article	PGR	1
		All specialists	-
		Other HES staff	-
16	Assimilation of comments & submission of draft article to EH referee	FJG	4
17	Collation and deposition of project archive	FJG	4

7.2 Project management and structure

The project will be based at HES's Truro Offices, where it will be managed by Charles Johns, one of the Service's Senior Archaeologists. The Project Archaeologist will be James Gossip. CAU has a computer network running Windows XP. Report texts are generated in Word 2000. Mapping will be derived from the OS Landline and historic maps via ArcView GIS. Plans, sections and elevations will be generated using AutoCAD. The pottery, ceramic beads and stonework will be drawn by hand, reduced, scanned and saved as digital files.

The Project Archaeologist has access to a Dell PC of adequate specification. The Service has adequate photocopying, scanning and printing facilities.

7.3 Equipment and materials

A small range of materials will be required by the project. These will consist of the following.

- Drawing materials – including drafting film, floppy and compact discs (to store and transfer drawings).
- Folders and boxes for storage of the project archive.

7.4 Health and safety

7.4.1 Health and safety statement

Historic Environment Service (Projects) is the trading name of the Historic Environment Section, within the Planning, Transportation and Estates Department of Cornwall County Council. The Service follows the County Council's *Statement of Safety Policy*. For more specific policy and guidelines the Service 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).

7.4.2 Insurance

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

7.5 Project monitoring / milestones

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

- Completion of line drawings etc (Tasks 14.4-14.11) and plant macrofossil and charcoal analysis (Tasks 11, 12).
- Completion of the following analysis Tasks: 1, 2, 3, 4.1, 4.2, 4.3, 4.5, 5.1, 5.2, 5.3, 6.1, 7.1, 7.2, 8, 9, 10, 11, 12, 13 but before the pottery, ceramic bead and stonework descriptions/reports (Tasks 4.4, 5.4, 6.2 and 7.3) and commencement of work on main report text (Tasks 14.1-3 and .12).
- Completion of draft report (Task 14)
- Completion of project (Task 17)

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

7.6 Timetable

No	Task	2005										2006				
		March	April	May	June	July	August	Sept	Oct	Nov	Dec	Jan	Feb	March	Apr	May
1.	Statigraphic & structural analysis															
2.	Comparative research															
3	Interpretation of 1 & 2															
4	Analysis of BA pottery															
4.1	Deposition analysis															
4.2	Thin sections															
4.3	Petrological analysis															
4.4	Analysis/report															
4.5	Advice on residues															
5.	Analysis of LEIA etc pottery															
5.1	Examine amphora															
5.2	Thin sections															
5.3	Petrological analysis															
5.4	Analysis/Report															
6	Analysis of ceramic beads															
6.1	Microscopic exam.															
6.2	Description/report															
7	Analysis of stonework															
7.1	Sling stone table															
7.2	Petrographic analysis															
7.3	Description/report															
8	Conservation of metalwork finds															

No	Task	2005									2006					
		March	April	May	June	July	August	Sept	Oct	Nov	Dec	Jan	Feb	March	Apr	May
9	Comment on metalwork															
10	Analysis of glass bead															
11	Analysis of plant macrofossils		◆													
12	Charcoal analysis		◆													
13	Radiocarbon dating															
13.1	Selection/submission		↓													
13.2	Radiocarbon dating															
13.3	Results															
14	CA draft article															
14.1	Main report text															
14.2	Collating & formatting															
14.3	Maps, plans etc															
14.4	BA pot T1 drawing		}◆													
14.5	BA pot T1 photo		}◆													
14.6	Other BA pot drawing		}◆													
14.7	Other pot drawings		}◆													
14.8	Ceramic bead draw.		}◆													
14.9	Ceramic bead photo		}◆													
14.10	Stonework drawings		}◆													
14.11	Glass bead drawing		}◆													
14.12	Select/scan photos															
14.13	Editing draft article															
15	HES comment on draft															

No	Task	2005									2006					
		March	April	May	June	July	August	Sept	Oct	Nov	Dec	Jan	Feb	March	Apr	May
16	Assimilation of specialists' comments & submission to EH															
17	Collation & deposition of archive															→♦

Monitoring points/milestones ♦

7.7 Budget

7.7.1 Costs per project task

General project management	CJ 1 day @ £152	£152
	CJ 4 days @ £159	£636
	CJ 1 day @ £159	£159
Tasks		
1. Analysis of stratigraphic and structural data	FJG 4 days @ £132	£528
2. Comparative research	FJG 3 days @ £132	£396
3. Interpretation of tasks 1 and 2	FJG 3 days @ £132	£396
4 Analysis of BA pottery		
4.1 Analysis of deposition of pot T1	HQ 2 days @ £120	£240
	CT 2 days @ £132	£264
4.2 Preparation of 5 thin sections	SES @ £25 per thin section	£125
4.3 Petrographic analysis	RT 3 days @ £120	£360
4.4 Descriptions/analysis/report on pottery	HQ 3 days @ £120	£360
4.5 Advice on examining T1 for residues	DD	*
5. Analysis of IEIA, Roman & post-Roman pottery		
5.1 Examination of amphora sherds	PB	£25
5.2 Preparation of 10 thin sections	SES @ £25 per thin section	£250
5.3 Fabric analysis	RT 6 days @ £120	£720
5.4 Analysis/report	HQ 14 days @ £120	£1680
6 Analysis of ceramic beads		
6.1 Microscopic examination	RT (included in pottery)	-
6.2 Descriptions/analysis/report	HQ (included in pottery)	-
7. Stonework		
7.1 Table of possible pebble sling stones	CT 0.5 day @ £132	£66
7.2 Petrographic analysis/report	RT 2 days @ £120	£240
7.3 Description/analysis/report	HQ 4 days @ £120	£480
8. Conservation of metalwork finds	VF c1 day	*
9. Comment/report on metalwork finds	SB 1 day @ £120	£120
10. Analysis/report on glass bead	FH 1 days @ £150	£150
11. Analysis of 6 plant macrofossil samples	JJ 3.5 days @ £150	£525
12. Analysis of 10 charcoal samples	RG 4.25 days @ £155	£658.75
13. Radiocarbon dating		
13.1 Selection and submission of samples	PM	*
“	FJG 1 day @ £127	£127
13.2 Radiocarbon dating	PM	*
13.3 Integration of results	FJG 1day @ £132	£132

14. Preparation of draft article for <i>Cornish Archaeology</i>		
14.1 Main report text	FJG 10 days @ £132	£1320
14.2 Collating and formatting	FJG 2 days @ £132	£264
14.3 Maps, plans and section drawings	FJG 10 days @ £132	£1320
14.4 Cleaning and drawing BA pot T1	CT 5 days @ £132	£660
14.5 Photography of BA pot T1	CT 0.25 days @ £132	£33
14.6 Line drawings of other BA pottery	CT 2 days @ £132	£264
14.7 Line drawings of LEIA, Roman & post-Roman pottery	CT 4.5 days @ £132	£594
14.8 Line drawings of ceramic beads	CT 0.5 days @ £132	£66
14.9 Photography of ceramic beads	CT 0.25 days @ £132	£33
14.10 Line drawings of stonework	CT 5 days @ £132	£660
14.11 Photography of glass bead	CT 0.25 days @ £132	£33
14.12 Selecting & scanning photos	FGJ 1 day @ £132	£132
14.13 Editing draft article	CJ 3 days @ £159	£477
15. Comment /editing of draft article	PGR 1 day @ £206	£206
16. Assimilation of comments & submission of draft article to EH referee	FJG 4 days @ £132	£528
17. Collation and deposition of project archive	FJG 4 days @ £132	£528
Sub-total		£15997.75

* English Heritage contribution to the project

7.7.2 Breakdown of budget into staff and non-staff costs

Financial year April 2004- March 2005

Unit costs	SC	SP	Per day	Days	Cost	Total
Project manager	CJ	I	5	£152	1	£152
Archaeologist	FJG	H	5	£127	1	£127
Archaeologist	CT	H	6	£132	20.25	£2673
Total salary cost					<i>sub-total A</i>	£2952
Specialist fees						
Plant macrofossils	JJ				3.5	£525
Charcoal	RG				4.25	£658.75
Total salary costs					<i>sub-total B</i>	£1183.75

Non staff costs

Unit costs	SC	SP	Per day	Days	Cost	Total
Materials					£50.00	
Total non staff costs					<i>sub-total C</i>	£50.00
Overheads						
Unit overheads @ 25%						£738
Overhead on external specialists @ 10%						£118.37
GROSS TOTAL						£ 5042.12

Financial year April 2005- March 2006

Unit costs	SC	SP	Per day	Days	Cost	Total
Project manager	CJ	I	£159	4	£636	
Archaeologist	FJG	H	£132	11	£1452	
Total salary cost					<i>sub-total A</i>	£2088
Specialist fees						
Pottery	HQ	-	£120	19	£2280	-
Pottery	PB				£25	
Stone	HQ	-	£120	4	£480	
Petrology	RT	-	£120	11	£1320	
Petrology	SES				£375	
Metalwork	SB			1	£120	
Glass bead	FH		£150	1	£150	
Total salary costs					<i>sub-total B</i>	£4750
EH Specialists						
Conservation of metalwork	VF			1		*
C14 dating	PM					*
Residue analysis	DD					*
Non staff costs						
Materials					£50.00	
Reprographics					£100	
Total non staff costs					<i>sub-total C</i>	£150

Unit costs	SC	SP	Per day	Days	Cost	Total
Overheads						
Unit overheads @ 25%						£522
Overhead on external specialists @ 10%						£475
Inflation for 2005-2006						£199.62
GROSS TOTAL						£8184.625

Financial costs April 2006 – March 2007

Unit costs	SC	SP	Per day	Days	Cost	Total
Project manager	CJ	I	6	£159	1	£159
Archaeologist	FJG	H	6	£132	31	£4092
Editor	CJ	I	6	£159	3	£477
Editor	PGR	K	6	£206	1	£206
Total salary cost					<i>sub-total A</i>	£4934
Non staff costs						
Reprographics					£20	
Archive documentation boxes (3)					£19.74	
Total non staff costs					<i>sub-total C</i>	£39.74
Overheads						
Unit overheads @ 25%						£1233.5
Inflation for 2006-2007 (2.5% twice)						£159.06
GROSS TOTAL						£ 6366.30

* English Heritage contribution to the project

7.7.3 Summary of total costs

Financial year April 2004 – March 2005	£5042.12
Financial year April 2005 – March 2006	£8184.62
Financial year April 2006 – March 2007	<u>£6366.30</u>
Grand total	£ 19593.04

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9 Appendices

9.1 Assessment of the Bronze Age, Early Iron Age, Cordoned ware, Roman and Early Post-Roman ceramic assemblage

By Henrietta Quinnell

9.1.1 Introduction

The assemblage consisted of c.865 sherds. There were clearly defined groups belonging to Middle Bronze Age Trevisker ware, the end of the Early Iron Age, Cordoned ware relating to the beginning of the Roman period, and the early Post-Roman Gwithian Style, all of major importance for reasons given below. There was also material relating to the Roman period. All the pottery was in a range of gabbroic fabrics, except some of the Early Age that was granitic and two amphorae sherds probably of the same date as the Cordoned ware. The collection currently needs marking.

This assessment report includes costings for analysis if no further excavation takes place and also highlights aspects where such work would be valuable. If further excavation takes place, the current costings will provide some guidance as to the likely expense of analysis after an extended programme of investigation.

9.1.2 Bronze Age Trevisker ware

Character and importance

Some 143 sherds were identified, almost all from contexts associated with the roundhouse in Trench 1. These could mostly be assigned on form and decoration to five vessels, provisionally numbered T1-T5. Of these T1, 2, 4 & 5 were of gabbroic admixture fabric, a distinctive fabric used for Trevisker pottery in which crushed materials of non-gabbroic character were added to gabbroic clay (Parker-Pearson 1990; Quinnell 1998-9). T3 was gabbroic without admixture. A few featureless gabbroic admixture fabric sherds from Trench 1, from (107) and (102), could not be assigned to these vessels and a possible sherd, abraded, occurred in (411).

T1 c. 128 sherds *charcoal rich silt deposit (107) in roundhouse* These represent perhaps 1/2 of a very large Trevisker vessel, mostly deposited as large fragments with fresh edges: plots of small find numbers assigned to sherds or sherd groups will allow detailed study of the deposition pattern. More, perhaps the remainder, of the vessel, remains in the unexcavated area. Sherds retrieved weighed c. 31 kg and the rim diameter of the biconically shaped vessel was c. 340mm. There were incised chevrons on the exterior beneath the rim, and strap lugs, probably two opposed, had deeply incised horizontal lines. The remainder of the decoration is impressed cord; very fine lines of parallel twist set three or four together. This decoration consists of two bordered zones of zigzags on the neck and shoulder, separated by a plain zone. A second plain zone separates the third decorated zone, around the girth, a bordered arrangement of two runs of chevrons: the lugs appear to have been set at the base of this. The use of incision and cord impression on the same vessel is unusual as is the size and the presence of three complex decorative zones separated by plain bands. The closest comparanda are the vessels from barrows at Chykarne (Patchett 1946, Fig 10, F2) and Chapel Carn Brea (Patchett 1950, Fig 2, D2), though both of these appear smaller and have simpler decoration. Nothing comparable is recorded from a domestic context, although the difficulties of establishing the full decorative patterning on vessels represented by small sherds should be noted.

T2 4+ sherds *charcoal rich silt deposit (107) in roundhouse* Rim from large vessel with row of finger tip impressions in neck angle and a band of incised zigzags beneath.

T3 2+ sherds *charcoal rich silt deposit (107) in roundhouse* Small straight walled vessel, plain rim, simple lug; size puts in almost in miniature category. The closest comparanda are the small lugged vessels from the cist in the Trelowthas barrow (Nowakowski forthcoming).

T4 1 sherd *charcoal rich silt deposit (107) in roundhouse* Abraded cord impressed body sherd that does not appear on initial examination to come from T1.

T5 1 sherd *yellow clay lens (106) in roundhouse* Rim with row of finger tip impressions beneath, form close to that of T2.

The comparanda both for the large and decorated and T1 and the miniature T3 both come from barrow contexts which can be assigned to the Early Bronze Age and where deposition is undeniably related to ceremonial activity. Barrow deposition does not appear to survive in Cornwall into the Middle Bronze Age nor do roundhouses appear to be constructed before this period. Either the Boden house is of an unusually early date, or the site represents an extreme example of the practice of selecting vessels for structured deposits linked to acts of closure, an example in which a vessel of a type appropriate for barrow deposition was either specially made or curated for a long period. The house deposits therefore are of great importance in investigating the details of structured deposition and a strong case can be made for more extensive excavation, both to fully understand the deposition of the T1 vessel and to establish whether any other vessels form part of the assemblage.

With regard to the understanding of Trevisker ceramics, there have now been some three decades of debate about typological development (summarised Woodward & Cane 1991, 122-7) in which the chronological relevance of modes of decoration, incision and cord impression, have been pivotal. Cord impression was initially regarded as later than incision but the general current view is that decorative style and shape of vessel relate to function and probably change little during the 2nd millennium BC during which Trevisker wares were in use. At Boden there are unusual links between the two principal decorative modes, both on the same vessel and on vessels within the same context. Further investigation of the vessels and their comparanda, supported by radiocarbon determinations, will make a considerable contribution to understanding of the development of the Trevisker ceramic style. Regarding fabrics, recent work on a Trevisker assemblage from a roundhouse at Trevilson in mid-Cornwall (Quinnell and Taylor forthcoming) has shown that a distinctive gabbroic admixture fabric was used for all vessels and raises questions about the relationship of vessel users to those manufacturing pottery; vessels might be selected because of the nature, symbolic or otherwise, of their inclusions. The recent assessment of the Trevisker assemblage from Gwithian (Quinnell 2004a) has indicated at this site gabbroic clay was probably brought in for local potting, adding an extra strand of complexity. For Boden it will be important to establish if this unusual group of vessels had similar inclusions and whether these inclusions give any indicators as to location of manufacture.

The cord impression on T1 uses exceptionally thin material (adding to the unusual character of the vessel as a whole). The detailed processes of cord impression are poorly understood, in particular the ways in which three or four lines of parallel impressions could be achieved. Consideration should be given to a programme of experimental work aimed at understanding the ways these impressions were made. Research projects with related aims are currently in progress with Dr L Hurcombe (Exeter University) and Dr MA Owoc (Mercyhurst College, Pennsylvania, USA).

9.1.3 Further work recommended for Bronze Age Trevisker ware

- 1) The detail of deposition of T1 should be studied in detail, to establish clearly intentional patterning. This study will take into account variations in abrasion on sherds that should establish whether the vessel is likely to have been broken immediately before deposition. Carl Thorpe (CT) and Henrietta Quinnell (HQ) should work together on this for 2 days.
- 2) T1 needs further cleaning, and then minimum joining to allow the vessel to be drawn. (Reconstruction is not recommended until any remaining parts of the vessel are retrieved during further excavation). This work, including drawing, will take CT 5 days.
- 3) Photographs of T1 should be published.
- 4) The remaining 4 vessels should be drawn. This will take CT 2 days.
- 5) The petrology of all five vessels should be examined under the microscope by Roger Taylor (RT) and allowance should be made for thin sections to be made of each. This work should establish whether T5 is in fact a separate vessel. Even T3 without apparent admixture may demonstrate distinctive features by detailed study. RT's work will take 3 days and £125 be allowed for 5 thin sections to be prepared by the School of Earth Sciences, Birmingham University.
- 6) HQ should provide detailed descriptions of the vessels, commenting on abrasion of broken edges, and examine the range of published material closely for further comparanda. This study will make a contribution to the understanding of Trevisker ceramics and of their use in structured deposition. This work will take 3 days.
- 6) Advice should be sought about the possibility of examining T1 for residues contained within the fabric which may give indications of the use to which the vessel had been put: however it will be more feasible to do this when the amount of the vessel available for study in the near future is definite.

9.1.4 Late Early Iron Age

Character and importance

Several contexts produced vessels with shallow concave necks and carinated shoulders. These are classified for Trevelgue Head as Form 3 (Quinnell 2003, 1.3.5), and were the 'off-set shoulder' form first defined by Avery, a term adopted by Elsdon (1978) for discussion of Carn Euny. The Trevelgue classification is intended as a start towards a system for Late Bronze Age and Early Iron Age in Cornwall and so LEIA Form 3 will be used here. The Form is by far the most common of the, admittedly sparse, Early Iron Age, range in Cornwall and is found either in contexts which just precede the introduction of South Western Decorated wares in the Middle Iron Age at Trevelgue Head and Carn Euny (Elsdon 1978) or intermixed with the later style as at Halligye Fogou (Elsdon and Quinnell forthcoming) or the Rumps (Brooks 1974). On current chronology firm dating is lacking but a date centring on the 5th century BC is probable. Some other forms of likely similar date are also present at Boden. There are 198 probable Late Early Iron Age sherds present.

Apart from a few granitic sherds, most of this material is gabbroic. It is generally less compact and evenly fired than the well-made gabbroic fabric used later for Cordoned ware. It is possible that microscopic study will identify distinguishing characteristics. The fabric in closed groups with fresh sherds has a general appearance that can be recognized but no distinguishing features that help with abraded material. The presence of granitic fabric so close to the area of gabbro might be considered surprising but small quantities of granitic fabric, apparently of Middle Iron Age date and deriving from the St Austell area, occurred at Halligye fogou (Elsdon and Quinnell forthcoming).

Table 1 provides a strong indication that the section of the fogou excavated was open at the end of the Early Iron Age. The material low down in the fill is fresh and does not look as though the layers have been much trampled but rather protected by the infill above. The presence of a single rim of South Western Decorated type in (805) is the only piece of this Middle Iron Age type from the site, probably reflecting the limited scale of the work to date. This ceramic style was probably introduced during the 4th or 3rd centuries BC, thus providing a *terminus post quem* for the fogou infill.

The pottery both in the fogou, and probably in the bottom of the enclosure ditch, indicate a date centring on the 5th century for both these features. This is rather earlier than the traditional position which links both the general construction of both fogous and small enclosures ('rounds') to South Western Decorated ware and the Middle Iron Age from the 4th century onward (Quinnell 1986, 119- note this paper assigns South Western Decorated ware to the 'Later Iron Age', a term covering both the Middle and Late periods). It is obviously time to revise this position. Study of the assemblage from Halligye (Elsdon & Quinnell forthcoming) shows a substantial quantity of 6th or 5th century ceramics were present, though the section of the fogou investigated was probably to be dated to the 1st centuries BC and AD; this leaves open the possibility that both part of the fogou and the enclosure ditch could be contemporary with this early pottery. The same is true of Boleigh, 5th or 6th century ceramics related to an enclosure wall (the site has no ditch) and present on a site with a fogou (Quinnell forthcoming). At Carn Euny the initial stage of the fogou was related to the start of the South Western Decorated tradition but there is a lot of Late Early Iron Age pottery present on the site and the relationship to South Western Decorated sherds was, strictly speaking, a date *terminus ante quem*.

Context	Description	Action
(806) on floor of fogou	35 sherds generally similar to (805) above it	Describe
(805) low down in fogou fill	49 sherds including two examples of EIA Form 3, a body sherd with thumb impressions forming a shallow lug, and an upright rim from a necked jar of the type standard within South Western Decorated ware. These sherds are fresh	4 DRAWINGS
(807) fill above (805) in fogou	6 sherds including a handle, triangular when seen from the side, with horizontal perforation: no close parallel but some broadly similar from South Western Decorated contexts at Trevelgue Head	1 DRAWING
(610) in base of ditch (609)	1 body sherd	Describe
(606) in fill of ditch (609)	16 granitic sherds including Form 3 jar; 44 gabbro sherds including Form 3 jar and base trimmed as disc	3 DRAWINGS
(605) in fill of ditch (609)	1 granitic sherds (part of jar in 606) and 14 gabbro including Form 3 with flared rim, thick large version of Form 3, simple rim with perforation	3 DRAWINGS
(430) in fill of (431)	12 sherds including part of Form 3 jar; note context also includes Post-Roman platter; (431) is continuation of (609) but presumably has been disturbed in Trench 4	1 DRAWING
(411) in cut (412)	7 sherds of this probable date on fabric	Describe

(414) in cut (416)	2 sherds of this probable date on fabric	Describe
(204) in base of enclosure ditch	23 sherds from one vessel; large flared rim, slight neck cordon, scars from small vertical handle in neck; no close parallels. Fabric and general style suggests LEIA date but could be variant of Cordoned ware	1 DRAWING

Table 1 Contexts with Late Early Iron Age pottery

Further work recommended

This is considered below together the subsequent Cordoned ware, Roman and Gwithian Style material.

9.1.5 Cordoned ware

Character and importance

Cordoned ware is now recognized to belong to three phases (1) a pre-Roman phase with a limited range of forms (2) a phase covering approximately the first century of the Roman period, mid 1st to mid 2nd centuries AD, which is characterized by an extensive range of forms including some which imitate Roman styles such as samian (3) a continuation from the mid 2nd century on through to the end of Roman style gabbroic pottery in which a limited range of vessels for storage and for cooking/eating with applied cordons were manufactured as part of the Roman period gabbroic pottery repertoire. In the first and second phases Cordoned ware is generally ‘well made’, hard with a well worked compact fabric and a burnished finished. This has been summarized by Quinnell (2004c, 5.6.2). At Boden there are several contexts which contain Cordoned ware of the 2nd phase and are therefore likely to date to the mid 1st-mid 2nd centuries AD, although given the limited extent of the work no stress should be put on the absence of the material of the other phases.

The initial alphabetic classification of Cordoned ware by Threipland (1956) can still be usefully used for Phases 1 and 2. For Phases 2 and 3 this is now supplemented by a numerical classification for Roman period gabbroic pottery (Quinnell 2004c, 5.6.3).

Sherds from (200) (201) and (203) in the upper levels of the enclosure ditch have not been included in Table 2, as they have no typological features. 11 sherds appear on fabric as though they are of this period or possibly earlier in the Iron Age. There is a single amphora sherd from (200), part of a handle, which probably belongs to a Late Iron Age or early Roman form. It has been suggested above that material in the ditch bottom (204) may be LEIA, but if not is Cordoned ware; if Cordoned ware this would be an unusual form appropriate to the 2nd phase of Cordoned ware. The biography of the ditch and its fills needs further study, with appropriate radiocarbon determinations; this is complicated by the presence of Post-Roman Gwithian Style in upper levels in the Entrance (314).

The small ditch (305) contains a dump with the fresh sherds representing large parts of several vessels; these probably represent dumped rubbish in a fresh condition that indicates that the ditch was then infilled quickly. (602) in the top of the fogou approach anomaly, a continuation of (433), contained the only distinctive piece from both Trenches 4 and 6. If the Late Early Iron Age date for this anomaly is maintained, then its top must have been open or disturbed to allow for the deposition of 2nd phase Cordoned ware in (602). The dump in the 1991 ‘well’ contains several large Cordoned ware pieces as well as an amphora sherds amongst about 25 abraded and non-diagnostic sherds: all the pieces have rather unusual features, including the form in well-made fabric related to Type 8 jars which to date appear to belong in the latter part of the Roman period; the group as a whole will

repay further study linked to the question of the deposition of apparently deliberately broken stonework in the same deposit.

Context	Description	Action
<i>(119) in fill of ditch (113)</i>	10 sherds including probable lid with beaded rim	1 DRAWING
<i>(311) in ditch (305)</i>	142 sherds, generally large and fresh, indicative of a dump quickly covered. Includes most of Type C bowl with two vertically perforated lugs; parts of two Type J storage jars; Type D necked jar; rim from Type H storage jar; part of copy of samian Dr15/17 (see Trethurgy Quinnell 2004c, 125, No 140)	5 DRAWINGS
<i>(602) in (612) continuation of (433) fogou approach anomaly</i>	3 sherds including variant Type J jar with handle stub	1 DRAWING
<i>1991 'well' infill</i>	5 large pieces: handled jar related to Type K, version of Type C jar with scar for vertical perforated lug on rim top, Type P jar, Type 8 jar rim, piece of amphora	4 DRAWINGS

Table 2 Details of 2nd Phase Cordoned ware

Further work recommended

This is considered below together the Iron Age, Roman and Gwithian Style material.

9.1.6 Roman

A few contexts produced pieces that appeared to belong to the Roman period, from the mid 2nd century after the 2nd Phase of Cordoned ware until the date at which Roman period forms were replaced by the Gwithian Style. Some forms such as Type 4 jars appear to occur throughout this period while others which occur belong to the 3rd or 4th century. However the stratigraphy suggests that some of this material may be redeposited as it occurs in contexts later than (314) with the Post-Roman Gwithian Style. The limited range of Roman period material probably relates to the scale of the investigation, as does the virtual absence of South Western Decorated ware. The presence of Roman material is important in indicating broad continuity on the site. From the perspective of ceramic studies it is useful in providing gabbroic comparanda for the preceding and succeeding styles.

Context	Description	Action
<i>(310) in enclosure ditch above (314) and so probably redeposited</i>	34 sherds including rims from several small Type 4 jars and from Type 16 storage jar probably 3 rd /4 th century	Describe
<i>(300) stone spread over top of enclosure ditch, redeposited material</i>	31 sherds, generally comminuted/abraded but including Type 16 decorated body sherd, Type 21 bowl rim (3 rd /4 th centuries, Type 19 bowl rim (2 nd century), everted bowl rim related to Type 20 (late 2 nd century onward)	3 DRAWINGS

Table 3 Details of Roman period pottery

Further work recommended

This is considered below together the Iron Age, Cordoned ware and Gwithian Style material

9.1.7 Post-Roman Gwithian Style

The presence of this Style was first indicated by the distinctive low-walled platters with sanded, not grass-marked bases, in (314), (430) and U/S in Trench 4. These platters at Gwithian form part of an assemblage in which necked jars with slightly concave rims otherwise predominate and which are currently dated, on the basis of association with Post-Roman import wares, to the 5th and 6th centuries. The Gwithian material has recently been assessed (Thomas *et al* 2004) and it is expected that analysis will provide more details of the Style that appears to succeed the late Roman gabbroic forms in West Cornwall. There are problems here because at Trethurgy the Style does not occur and late Roman forms appear to continue into the 6th century. There is the possibility that the date for the Style given for Gwithian is too early. The Style has not previously been identified for assemblages that have been published but a review of the literature shows that the platters are present at Goldherring (Guthrie 1969) and at Carngoon Bank, at the latter site with possible other forms of similar date (McAvoy 1980).

Context	Description	Action
<i>(314) in top of enclosure ditch</i>	120 sherds including Cornish flanged bowl Type 22 abraded, several Type 4 jar rims, thick version of Type 21 flat grooved rim bowl, parts of 5 different Gwithian platters, bowl with wide down-sloping flange, straight-sided jar or bowl with grooves below rim, small bowl with everted rim with finger modelling and perforation, rounded thick and everted jar rim, bowl rim, bowl with broad everted rim, bowl with carination on shoulder and rounded rim (all the vessels not assigned Roman Type numbers are potentially Gwithian Style forms)	14 DRAWINGS
<i>(303) above (314) in ditch</i>	Type 23 plain rimmed bowl, thick simple rounded bowl rim ?Gwithian Style	2 DRAWINGS
<i>(430) Probably intrusive in (431)</i>	Gwithian platter (see comments on LEIA)	1 DRAWING
<i>(405) silt relating to structure (498)</i>	Gwithian platter (as well as 28 abraded sherds many probably LEIA)	1 DRAWING
<i>U/S Trench 4</i>	Gwithian platter	1 DRAWING
<i>(420) ploughsoil in entrance</i>	Fresh sherd from sooted straight-sided vessel, possible lamp? No known parallels but appearance of fabric suggests possibly belongs with Gwithian Style	1 DRAWING

Table 4 Details of Post-Roman Gwithian Style material

(314) in the top of the enclosure ditch provides a context so far unique in Cornwall, Gwithian Style platters in a closed context in associated with an abraded Type 22 Cornish flanged bowl and Type 4 jars– the standard late Roman bowl and jar forms- and with fresh sherds from a range of forms described in the Table below which do not occur at Gwithian and which are so far unknown. (303) above (314) appears to represent the same material on a smaller scale. The presumption must be that the forms without known parallels represent new types within the Gwithian Style and that (314) provides an unusually important assemblage for the study of the Style. It may be noted that no Post-Roman import wares occur at Boden, nor do any sherds with grass marking. Study here will provide a valuable contribution to the understanding of the ceramics of the early Post-Roman centuries. It should be noted that, as at Gwithian, that most of the material although apparently handmade and sometimes uneven in shape is manufactured of well-mixed clay and hard fired, providing a fabric which can be distinctive and certainly not

indicating poor standards of potting. The retrieval of a further section of this deposit (314) would be of great importance as this would be likely to provide more examples of the unusual but important assemblage for study.

9.1.8 Undiagnostic material

The following contexts produced only gabbroic sherds undiagnostic as to form, decoration or fabric. It is likely that most, if not all of this material, belongs within the Roman period. The list should be used in conjunction with the *Archive Summary* for details of quantities. It is possible that, after petrographic study of the fabrics of typologically significant forms, some sherds from these contexts may be given a tentative date: (301), (309), (400), (401), (403), (406), (407), (409), (418), (423), (429), (432), (437), (441), (607), (900).

9.1.9 Further work on Iron Age, Roman and Post-Roman material

The comparative scarcity of South Western Decorated and Roman forms, usually those most common on enclosed settlements, emphasizes the limited extent of the excavation. The dating to the fogou to the LEIA is extremely important but the amount of material from the enclosure ditch is minimal. Radiocarbon determinations should assist chronology here but further excavation is appropriate both for the enclosure ditch and for sample areas inside to provide a fuller biography of site use and development.

1) The amphora sherds, from (200) in the enclosure ditch and from the 1991 'well' infill should be examined by Paul Bidwell. There will be a charge for this of £25 + VAT.

2) HQ should provide a detailed study of the material, noting abrasion, describing those pieces indicated for drawing and relating Cordoned ware forms to the Threipland (1956) series and the Roman forms to that based on Trethurgy (Quinnell 2004c). This study should address the points of importance outlined above, take into consideration the radiocarbon determinations that become available, and assess the results of petrographic study. Particularly attention should be paid to comparanda from Halligye for which a draft pottery report has been awaiting the full excavation report for publication since 1997 (Elsdon & Quinnell forthcoming). The study will take HQ 14 days.

3) The 47 drawings will take CT 4 ½ days.

4) Examples of the four gabbroic fabric groups, LEIA, Cordoned ware, Roman and Gwithian Style, and the LEIA granitic fabric should be examined under the microscope by RT with a view to selecting 2 pieces for study in thin-section for each. This should provide a firm basis to support the visual differences between the various gabbroic fabrics, which appear to have chronological significance, and make a substantial contribution to the ways in which gabbroic fabric were used over time. The LEIA granitic fabric should be sourced to a specific granite area by this work. £250 should be allowed for 10 thin sections to be prepared at the School of Earth Sciences at Birmingham University and 6 days work allowed for RT.

9.2 Ceramic beads

By Henrietta Quinnell

Character and importance

Three very similar nearly spherical beads of gabbroic pottery were found in (405) SF5, (608) SF9 and (606) SF10. These beads had been modelled and fired in gabbroic clay, not reworked from broken sherds. Their perforations were too narrow for use as spindle whorls to be considered; moreover spindle whorls are generally of cylindrical rather than spherical shape. (405) silt relating to structure (408) produced LEIA sherds but also a

Gwithian Style platter, (608) was a stone spread with no diagnostic pottery, (606) infill in ditch (609) with LEIA Form 3 vessels. The probability is that the beads are LEIA in date. Ceramic beads do not appear to have been published from Iron Age or Roman contexts in Cornwall; the biconical ceramic beads from the Crig-a-Mennis barrow represent an earlier and typologically different tradition (Christie 1960, Fig 5). The Boden beads may be a local feature, developed from experimentation with the nearby Lizard Clay. It is possible that such beads have not in the past been distinguished from spindle whorls and that a close scan of literature and artefact archives would reveal parallels.

It is obviously important that these beads should be fully published to enable their position as a potentially local developed artefact to be demonstrated. Work currently planned for Trevelgue Head (Quinnell 2003) should locate any further examples in LEIA contexts. The general background work required covers the same ground at Boden as that for the LEIA ceramics.

Further work recommended

- 1) Full descriptions should be published by HQ, together with an appropriate background on comparanda. This work is costed with that on the pottery.
- 2) RT should examine the fabric under a microscope to establish whether it has any distinguishing characteristics. The damage caused by thin-sections is unlikely to be justified. RT's work is included with that on the pottery.
- 3) Drawings should be prepared. This will take CT ½ day.
- 4) Photographs of the beads should be prepared for publication.

9.3 Daub (baked clay)

By James Gossip

Sixty-six small fragments of baked clay were found in the following contexts : (310), (314), (401), (414), (423), (602), (804), (805). One fragment was recovered during field walking (Area D7). These were of a variety of granitic fabrics. While some pieces had small areas of smoothed surface, none had any form that would provide some indication of function and no surface had any residue. A number of the smaller pieces were retrieved through wet sieving and were very eroded. It seems likely that all the pieces come from various domestic fittings, daub on walls, hearth or oven linings etc, although the possibility that objects such as loom weights were present can not be ruled out.

It is recommended that no further work is carried out and that this note on the baked clay fragments be reproduced in the final report.

9.4 Stonework

By Henrietta Quinnell with assistance from Carl Thorpe

Character and importance

The assemblage contains a range of 25 or 26 artefacts, most making use of probably local water worn stones or slate. These are listed in Table 00 together with recommendations for publication. Stone items not listed are those considered to show no details of use, wear or modification; details are given in the *Archive Summary*.

The artefacts are of importance in demonstrating the way in which local lithic materials were utilized to perform a range of functions throughout the use of the site. This is usual on settlement sites of Cornish Later Prehistoric and Roman date and shows reliance on a range of locally derived artefacts which change little typologically through time; this has

recently been graphically demonstrated by the assessment of the large assemblages from sites at Gwithian which have the same broad chronological spread as Boden (Quinnell 2004b). Each new site studied provides additional information. At Boden the context of deposition is of additional, and special, importance: the Trench 1 roundhouse, the fogou infill and the infill of the ‘well’ investigated in 1991 all contained artefacts which are likely to have been placed in acts of structured deposition. The 1991 ‘well’ deposit is unusual in that it is highly likely that the querns involved have been deliberately damaged, even to the extent in one case of removing working surfaces. Also the four querns appear to be forms of greisen, which is not immediately local (preliminary comment from R Taylor c 1992), unlike the other stone artefacts. The rotary querns appear unusually small in size; the continued use of saddle querns along side rotary querns – probably for different aspects of cereal preparation – is now well established in Cornwall (Quinnell 2004c, 6.12.4). The probability of structured deposition is heightened by association with large chunks of Cordoned ware with unusual characteristics. The artefacts in Post-Roman layer (314) are of interest because the large grooved whetstone is similar to examples found associated with Gwithian Style ceramics at Gwithian and (Quinnell 2004b) contexts with material of this affinity have not previously been identified and studied.

The only other items needing comment are some 40 pebbles, found singly or in groups in a range of contexts, which are of an appropriate size and weight to have served as sling stones.

Context	Dating	Artefact	Action
(105) silt in roundhouse	Middle Bronze Age	Granite cobble muller *	Describe
(105) silt in roundhouse	Middle Bronze Age	Granite saddle quern fragment *	Draw section
(806) fogou infill	Late Early Iron Age	Half granite cobble muller, edges dressed ? *	Draw
(806) fogou infill	Late Early Iron Age	Broken pebble whetstone *	Describe
(805) fogou infill	Late Early Iron Age	Highly polished slickstone, resting against side orthostat *	Draw
(606) in ditch (609)	Late Early Iron Age	Broken pebble, scratches, possible whetstone	Describe
(606) in ditch (609)	Late Early Iron Age	Large roughly trimmed slate	Describe
(606) in ditch (609)	Late Early Iron Age	Flat circular pebble trimmed as disc	Draw
(606) in ditch (609)	Late Early Iron Age	Small trimmed slate with hour glass perforation, broken, possible amulet	Draw
(605) in ditch (609)	Late Early Iron Age	Slate fragment with straight perforation	Describe
(423) in fogou approach anomaly (433)	?Late Early Iron Age	Pebble whetstone with polish and iron staining	Draw
(423) in fogou approach anomaly (433)	?Late Early Iron Age	Slate lump with scratches	Describe if RT considers utilized
(410) in fogou approach anomaly (433)	?Late Early Iron Age	Saddle quern fragment	Draw section
(401) in fogou approach anomaly (433)	?Late Early Iron Age	Pebble with side notch	Draw
(401) on top of fogou	?Late Early Iron Age	Saddle quern fragment	Draw section

approach anomaly (433)			
(411) in cut (412)	Late Early Iron Age	Trimmed slate disc with central perforation, 'pot lid'	Draw
(311) in ditch (305)	Cordoned ware 2 nd Phase mid C1- mid C2	Small slickstone with high polish	Draw
In fill of 1991 'well'	Cordoned ware 2 nd Phase mid C1- mid C2	Upper rotary quern fragment, early handle attachment worn through * greisen ?	Draw
In fill of 1991 'well'	Cordoned ware 2 nd Phase mid C1- mid C2	Central part of upper rotary quern, faces and edges removed * greisen ?	Draw
In fill of 1991 'well'	Cordoned ware 2 nd Phase mid C1- mid C2	Part of upper rotary quern * greisen ?	Draw
In fill of 1991 'well'	Cordoned ware 2 nd Phase mid C1- mid C2	Part of saddle quern * greisen ?	Draw
In fill of 1991 'well'	Cordoned ware 2 nd Phase mid C1- mid C2	Rubbing stone fragment *	Describe
In fill of 1991 'well'	Cordoned ware 2 nd Phase mid C1- mid C2	Small elongated cobble, end abraded from grinding type use *	Draw
In fill of 1991 'well'	Cordoned ware 2 nd Phase mid C1- mid C2	Chopper on elongated pebble, both sides modified for grip *	Draw
(314) upper layer in enclosure ditch	Post-Roman with Gwithian Style pottery	Large flake from cobble much worn from use as muller	Draw
(314) upper layer in enclosure ditch	Post-Roman with Gwithian Style pottery	Large grooved whetstone, broken	Draw

Table 5 Details of stone work. Starred items '*' indicate those which are likely to have been part of structured deposits.

Further work recommended

- 1) A table to be prepared of the possible pebble sling stones.
- 2) RT should examine the artefacts, providing petrographic descriptions, confirming the unusual character of the 'well' deposit, and commenting on the scratched stone from (423). This work will take 2 days.
- 3) HQ will provide detailed descriptions of the artefacts, set their typology and function in chronological context and consider aspects of structured deposition which interrelates to that involving ceramics. This work will take 4 days.
- 4) CT will provide drawings of 19 artefacts that will take 5 days.

Note that the daily fee for both HQ and RT is £120 until April 2005 and then £130.

9.5 Assessment of the Flint Artefacts

By Anna Lawson-Jones

9.5.1 Introduction

This report looked at a total of one hundred and twenty seven pieces of flint and chert. Sixteen came from the 2004 excavation; eighteen from the 2004 field walking exercise and ninety-three were collected during field walking in 2002.

The field walking grids during 2002 and 2004 were differently orientated and different in terms of grid square size, grid numbering and grid extent. The 2002 grid was divided into 20m grid squares covering the entirety of the field prior to excavation, while the 2004 field walking grid squares measured 10m across and were confined only to the north and west of the excavation area (not quite extending to the periphery of the field).

Only 12 of the total 127 pieces were found within context, the remaining pieces were all located via grid square or trench number. The vast majority of the pieces were flint, a sizable majority of which were recorded as being of pebble origin. The substantial number of primary and borderline primary/secondary pieces indicates on-site core reduction and tool production.

9.5.2 Raw material and on-site knapping

The vast majority of the material consists of primary flakes (see Table 6). The majority of the corticated pieces indicate use of a secondary (in this case pebble) flint source, the most likely source for which would be the local beaches (see Table 7). Local beaches produce a surprisingly abundant supply of flint offering a good variety in terms of quality, colour and size. The high proportion of primary material indicates on-site knapping, but is also a reflection of pebble use. Restricted pebble size frequently resulted in a larger percentage of corticated material within both the tool range and the associated waste assemblage. This is seen in this collection with a significant number of complete tools made on occasional primary and a number of secondary (1 – 50% corticated dorsal surface) flakes and blades (see Table 6).

Tertiary flakes and blades represent only a minority of the pieces present (see Table 6), and of these a notable proportion are blades or parts of blades (see tables 3, 4 and 5). Some of these pieces may represent earlier residual material (chronologically unrelated to the bulkier majority of material within the assemblage). The total lack of cortex on these pieces means that the raw material source is not known, although some of these pieces have an identical range of colours and mottling to known pebble material from within the assemblage.

	Complete pebbles	Primary (50 to 100 % cortex)	Secondary (1 to 50 % cortex)	Tertiary (no cortex)	Cores (% cortex not recorded)	Abraded / battered	Burnt	Waste (not used)
2002 Field walking	33	58	23	9	3	17	11	14
2004 Excavation	5	11	2	1	2	1	2	3
2004 Field walking	0 (not collected?)	5	8	5	0	3	0	3
Totals	38	74	33	15	5	21	13	20

Table 6 Simplified breakdown of assemblage in terms of location, source and material

A small but definite presence of nodular material indicates contact with more distant flint resources (by trade, exchange or other patterns of mobility). In Cornwall this has been found to be an earlier Neolithic trait (see Healy 1985, 18-20, Berridge and Roberts, 1986, 7-35). Devon represents the nearest and most likely source for much of this material. The piece from (2004) grid square B4 is particularly characteristic in terms of banded colour and according to Newbury's research (2002, 1-37) it is possible that it originated from the Furley/Membury or perhaps the Widworthy/Wilmington nodular flint deposits of eastern Devon. The core from Trench 6 may well have originated from Beer Head itself (Tingle 1998), located on the southeast Devon coast (based on the flint colour and type of cortex). Beer Head is known to have been actively quarried during the early to mid-Neolithic

period, producing high quality near black flint nodules, (although recently Newbury's work has highlighted other additional good quality, dark flint producing sites in Devon).

	Total assem. size	Known context	Unstratified	Pebble source	Nodular material	Unknown source	Flint	Chert	Flint/chert (inc. complete pebbles)
2002 Field walking	93	0	93	83	1	9	55	2	36
2004 Excavation	16	12	4	13	2	1	7	4	4 (+ 1 gritstone)
2004 Field walking	18	0	18	11	2	5	18	0	0
Totals	127	12	115	107	5	15	80	6	40

Table 7 Simplified breakdown of assemblage in terms of unused pebbles, remaining cortex, abrasion, burning and (non-utilised) waste

Included within the assemblage are a number of complete pebbles. Five were found during the 2004 excavations sealed within archaeological contexts, two from (310), one from (407) and two from (804) (all were flint/chert and one was gritstone). None were collected during 2004 field walking programme on the pre-excavation premise that they were likely to represent recently introduced material (ie be the result of recent agricultural or cultivation-related soil improvement regimes). The 2002 fieldwalking project generated a reasonably substantial pebble assemblage of thirty three pieces.

On the basis of the analysis of material from the excavation it is obvious that there is as much likelihood for complete pebbles as worked material to be brought to the surface by ploughing from archaeological contexts. However, distinguishing between archaeological and recently introduced material is problematic. Recently introduced pebbles are the result of soil improvement regimes involving the introduction of beach sand and gravel to improve soil drainage (and to reduce soil acidity). It is known that this field underwent such improvement (James Gossip pers comm).

In an effort to separate these two potential (recent and archaeological) elements from within the 2002 'complete pebble' assemblage, pebbles with a more useable size and shape (ie as knapping raw material, sling shot, polishers, hammerstones etc) have been tentatively termed 'possible raw material'. Those pebbles that were very small, amorphous and/or generally less obviously suitable for knapping etc have been described as a 'probable soil improvement by-product'. This sub-division is by no-means infallible, but it does illustrate the potential for pebble assemblage interpretation, in fields that are known to have undergone soil improvement and overlie archaeological sites – particularly those where excavation has shown that un-modified pebbles exist as a part of the archaeological assemblage (even if some of these are residual pieces that have been archaeologically sealed). Pebbles with a suggested 'soil improvement' interpretation are felt unlikely to have been incorrectly interpreted, but those interpreted as 'raw material' could include well proportioned pebbles suitable for knapping, which have been accidentally introduced.

9.5.3 Excavation Assemblage

A total of sixteen pieces of flint and chert were found during the excavations, and all but four of the pieces were found within archaeologically recorded contexts. No flint/chert material was found in association with Trench 2 or 7.

Unstratified finds included a single pebble core tool with probable engraver use associated with crushing at its working edge. Core tools are a recognised component of many Bronze Age assemblages. This piece would sit well within such a date range.

Trench 1 investigated a geophysical anomaly, interpreted on excavation as a Bronze Age round house. It produced a single split chert pebble from upper house fill [(107). It is prehistoric (based on context), but not diagnostically Bronze Age. It may or may not be contemporary with the occupation of the house structure. The total lack of other flint/chert material from the house is perhaps slightly unusual, although only a very small portion of the house was looked at. Bronze Age houses are not renowned for producing large quantities of lithic material (unlike Neolithic settlements which can produce vast quantities of material).

Trench 3 produced five pieces, probably reflecting the larger area of excavation rather than a limited concentration of lithic activity in comparison with Trench 1. Of these, two were burnt and two were complete pebbles (found in the uppermost enclosure ditch fill, context (310)). They represent sealed residual finds - probably raw material collected for knapping, but abandoned through loss etc. One of the pebbles could perhaps be sling shot, on the basis of size and shape. The third flint from (310), again considered residual on the basis of context, is a comparatively large ovate shaped knife worked on a primary pebble flake. The two remaining pieces are burnt. One is blistered and unstratified, but the remaining one is a split pebble (probable engraver tool). None of the pieces from Trench 3 are diagnostically Bronze Age, although they would not be out of place in such a context (with the exception of the probable late Neolithic knife).

Context	Nodular Pebble Unknown	Primary Secondary Tertiary	Flint Chert Unknown	Burnt / Abraded	Tool type /	Comment
U/S	P	-	F	-	Core tool / engraver	Tried core / possible chopping core tool use.
Trench 1						
[107]	P	P	C	-	Flake waste /	Near circular / split pebble.
Trench 3						
T3 U/S	P	S	F	Burnt	Flake waste /	Near round, thin, faulted flake, possibly made from an earlier piece.
[310]	P	P	F	Slightly battered	Ovate knife	Thick ovate flake with multi-directional ventral flake removals, reused / modified as a convex edged and backed knife.
[310]	P	P	F/C	-	Raw mat./ sling shot?	Complete near circular pebble.
[310]	P	P	F/C	-	Raw mat.	Complete pebble (elongate and slightly amorphous).
[311]	P	P	F	Burnt	Split pebble / engraver	Split, faulted pebble with bifacially worked, partially retouched, short knife-like scoring edge. Utilised.
Trench 4						
[403]	-	T	C	-	Burin removal./ borer	Damaged, elongate burin removal with breakage / scratching around tip. Possibly used as a small borer.
[407]	P	P	F/C	-	Raw mat./ sling shot?	Complete near circular pebble, with a near flat side.
Trench 6						

T6 U/S	N	-	F	-	Core (unclassified)	Non-exhausted / tried split nodule with limited flake / blade removals. Possible post-core use as an abrupt / very steep edged convex scraper.
[605]	P	P	F	-	Scraper	Split pebble with abrupt slightly convex scraper retouch. Utilised.
Trench 8						
T8 U/S	N	S	F	-	Small engraver ?	Blade-like piece with burin removal, associated use wear / damage, and distal hinge.
[804]	P	P	C	-	Waste	Split pebble.
[804]	P	P	F/C	-	Raw mat. ?	Complete pebble (elongate and amorphous).
[804]	P	P	U	-	Used ?	Complete slightly ovate pebble (possible minor surface rubbing wear).
[805]	P	P	C?	Very abraded	Pebble tool chopper.	Bifacially split flat pebble with heavy crushing use wear along length of straight working edge.

Table 8 Worked flint and chert from excavated contexts

Trench 4 produced two pieces; a complete, small unmodified pebble, and a burin removal possibly utilised in its unmodified form as a borer (leaving slight damage around the point). Awls and borers have often been noted as Bronze Age assemblage components, sometimes displaying fine retouch around the working point. Both pieces were found in deposits with no clear activity related interpretation.

Trench 6 produced two pieces; an unstratified nodular core, with post-core (presumably Bronze Age) re-use as a steep edged scraper. It is not a classifiable form and as such is not diagnostic in terms of date (although its nodular source gives an earlier Neolithic date for its primary introduction to site and use). The second piece, a split pebble scraper with abrupt, unsystematic retouch, came from context (605) (the upper fill of a curvilinear ditch). Although residual in origin it was sealed in context.

Trench 8 produced five pieces. Two complete and one split pebble were found in the main fill of the fogou itself, context (804). These must represent residual material associated with post-fogou-use backfill and/or collapse. Sealed below (804) was fill (805) that produced a single, battered split chopper-like knife made on a probable oval shaped uniformly flat pebble. It has undergone heavy use, which has left the piece with a very crushed and blunted appearance along the length of its working edge. The remaining, unstratified piece has had a burin removal and appears to form a fine engraver (with very limited use wear).

Comment

None of the excavated flint artefacts have come from contexts interpreted as being strictly *in situ*. A number of the flint producing contexts represent undated infilling, post-use build-up or later features cutting earlier features that have incorporated residual or probable residual inclusions. As a result of this later re-use of the site residual flint was disturbed, exposed and occasionally reused. Bronze Age reuse of previously worked flint as a raw material, in this case Neolithic flint, has been recorded elsewhere (Lawson-Jones 2004).

9.5.4 Field Walking Assemblage (2004)

A total of eighteen pieces of worked flint were found during this field walking exercise. All came from squares located to the north and northeast of the excavated site. Field walked

assemblages are known to represent only a small percentage of the actual ploughsoil finds content. It has been estimated that the visible surface material represents between 4% and 7% of the total (Bradley 1987, 39). The low number of pieces makes any comment on scatter density or concentration difficult, although there does appear to be a slightly higher northern focus.

Grid square	Nodular Pebble Unknown	Primary Secondary Tertiary	Flint Chert Unknown	Burnt / Abraded	Tool type	Comment
A 4	P	P	F	-	Side scraper	Moderately small, some backing modification to facilitate handling. Slightly convex working edge.
A 4	P	P	F	Slightly abraded	Scraper	Near circular with short, shallow convex working edge.
A 8	U	T	F	-	Denticulated blade	Distal tip missing. Bulbar preparation. Limited lateral retouch.
A 10	P	P	F	-	?Thumb - nail scraper	Small near-round with 2/3 of edge retouched.
A 10	P	S	F	Slightly abraded	Flake	Not modified.
B 1	N?	S	F	-	Utilised flake	Patch of gloss and heavily worn smooth lateral edge (same side) = Use wear. Possible opposing cutting wear.
B 4	N	S	F	-	Modified flake	Distinctive pale milky grey flint with clear dark transparent line under cortex. Short, thick piece. Minimal lateral retouch along short edge.
B 6	P	S	F	-	Chip	Small angular thick waste (debitage) piece, from a reused piece.
C 7	U	T	F	Very abraded	Waste	Heavily worn pale creamy brown piece.
C 8	P	S	F	-	Waste flake	Thin faulted broken flakelette, possibly from a reused piece.
C 10	U	T	F	-	Blade	Snapped bulbar end. Pale blue. Bulbar preparation. From blade core. No lateral retouch.
E 5	U	T	F	-	? End scraper.	Small fine flake / blade. Distal tip missing. From blade core. Tiny remnant retouch.
F 6	P	P	F	-	Flake/ blade	Distal portion, diagonally snapped off bulbar end. Not retouched.
G 9	P	S	F	-	Broken knife	Thin broad flake blade with fine lateral retouch and handling modification.
H 7	P	S	F	-	Flake/ blade	Bulbar end, probable plough damage removal of distal end. Not retouched.
H 9	U	T	F	-	Blade	Distal end missing. Pale creamy colour. Lateral cutting use- wear.
I 8	P	P	F	-	Waste	Near round flake. Probable plough damage.
L 4	P	S	F	-	?Broken cutting flake	Probable breakage rather than a burn removal. Remnant distal removals (probably use wear related).

Table 9 Worked flint collected during the field walking exercise

The 'northern' material includes field walking runs A, B and C and totals eleven pieces. Identified tools include three scrapers (including two round examples – one of which is a

thumbnail example of earlier Bronze Age date (Edmonds 1995, 140-141, Pierpoint 1981, 40-42) and a side scraper), a denticulated blade, a snapped blade (from a blade-producing core), a short thick modified nodular flake, and a nodular unmodified utilised flake with slight gloss possibly indicating hafting wear. The remaining four pieces constituted waste material. None of the pieces exhibited crazing or blistering indicative of heat damage, suggestive of hearths and settlement-related activity. Three pieces showed varying levels of all-over abrasion indicating post-depositional disturbance rather than focused use-related wear. The presence of nodular material indicates an earlier Neolithic presence.

The 'southern' material consists of runs E, F, G, H, I, and L, and produced seven pieces. It should be borne in mind that runs G, H and I were shorter than the other field walking runs. Identified material included a small blade with fine end scraper retouch (of probable Mesolithic date), a retouched flake knife, a broken blade with use wear, a cutting flake, two unmodified flake/blades and a piece of primary waste. None exhibited burning or abrasion, although some breakages were noted which may well relate to plough damage.

Comment

The 2004 field walking lithic assemblage consists almost entirely of pebble flint, (the exceptions being two nodular pieces). Five primary, eight secondary and five tertiary pieces were equally distributed across the field. There is no reason to think that the light scatter of material seen here does not spread north, west, east and south extending over and around the features located by geophysical survey and sample excavated during fieldwork. The collected material includes a probable Mesolithic end scraper, Neolithic nodular material and probable undiagnostic Bronze Age material.

9.5.5 Field Walking Assemblage (2002)

As with the 2004 field walking exercise this collection reflects a generalised spread of probably multi-phased flint work, including a reasonably substantial complete pebble element (see earlier comments - section 6.5.2). Unlike 2004, this larger collection shows three slight but discernable groupings of material in grid squares D2 (above and around Trench 2 within the excavated area), B5/C5/D5 (a north to south alignment of squares located to the west of the excavated area) and B1/B2/A3 (located above the southern part of the excavated area).

Square D2 produced fourteen flints (four of which are probably the result of soil improvement – see earlier comments in section 2.0). It directly overlay the later location of excavation Trench 2 (which ironically did not produce any flint during excavation). Worked material includes a core, a core tablet of probable Neolithic date, scrapers, knives, flakes and a notched piece. One piece was recorded as having been heavily abraded / battered and another was heavily burnt. These pieces, (see Table 10) suggest a mixed Neolithic and Bronze Age date range.

Squares B5/C5/D5 produced seventeen flints (six of which are probably the result of soil improvement). The squares overlie a short linear anomaly and two amorphous 'blob' shaped features identified during geophysical survey. The worked material includes a range of tool types including a burin, a core on a flake (potentially Bronze Age), one or two denticulated flakes, an ovate / side scraper (potentially Neolithic), a pebble / chopper tool, a heavily burnt unidentified tool and waste pieces.

Squares B1/B2/A3 produced seventeen flints (six of which are probably the result of soil improvement). The squares overlie both Trench 6 and a number of linear, curvilinear and pit like anomalies. Worked pieces include flakes, a multi-platformed core (probable Bronze Age date), a core / scraper (potential Bronze Age date) and waste. A single flake piece was heavily burnt.

Grid square	Nodular Pebble Unknown	Primary Secondary Tertiary	Flint Chert Unknown	Burnt / Abraded	Tool / type	Comment
A3	P (x 2)	-	F	-	-	Probable soil improvement by-product (one = recently plough ? damaged).
A3	P	P	F	Slightly abraded	Flake	Un-modified waste piece.
A3	P	-	F	Slightly abraded	Core / scraper	Remnant un-diagnostic core with probable side scraper function. Probable Bronze Age date.
A3	P	S	F	Slightly abraded	Point ?	Un-modified point on thick, angular chunk.
A4	P	-	F	Very abraded	Tried pebble	Tried, abandoned pebble core.
A5	U	T	F	-	Rejuvenation piece ?	Broken end of a probable core rejuvenation piece.
B1	P (x3)	-	F	-	-	Probable soil improvement by-product (all small and amorphous).
B1	P	-	F	-	-	Possible raw material (good size & shape for core - un-used).
B1	P	P	F	Heat blistered	Flake	Broken with blistered ventral face.
B2	P (x3)	-	F	-	-	Possible raw material (good size & shape for core - un-used).
B2	P	-	F	-	-	Probable soil improvement by-product (small and amorphous).
B2	P	S	F	Very battered	Core	Multi-platformed flake core with very damaged (semi-crushed-like) appearance.
B2	P	S	F	Slightly abraded	Flake - blade	Broken probable cutting flake with short heavily utilised surviving, un-retouched edge.
B2	P	S	F	-	Waste	Thick flake-blade with no use/retouch visible.
B3	U	T	F	-	Waste	Broken chip.
B5	P	-	F	-	-	Probable soil improvement by-product (small and amorphous).
B5	P	P	F	-	Burin	Point/engraver with minimal use-wear.
B5	P	P	F	Very abraded	Waste	Flake with near all-round edge use-wear (or affect of abrasion)?
B5	P	S	F	Very burnt	-	Blistered, broken un-identifiable piece.
B5	P	S	F	-	Core on flake	One straight worn edge suggesting core-tool cutting use. Probably Bronze Age
B6	P	S	F	Slightly abraded	Point / end scraper	Finely retouched end of a thick elongate piece with battered edges.
C1	P	P	F	Burnt	Split pebble	Half a burnt pebble with heat breakage.
C2	U	T	F	-	Small blade	Mid bladelette portion, with fine parallel dorsal scars. Mesolithic?
C2	U	T	F	-	Rejuvenation piece	Small probable rejuvenation waste piece.
C4	P	S	C	Very abraded	Flake	Denticulated (or perhaps damaged in antiquity/through use) edge.

C4	U	T	F	-	Waste	Small un-used flakelette piece.
C4	U	T	F	-	Waste	Small un-used bladelette piece.
C4	P	S	F	-	Waste	Small un-used chip.
C5	P	P	F	Abraded	Flake	Large thick, unmodified poor quality flake.
C5	P	-	F	-	-	Possible raw material (good sized but amorphously shaped with damage at two ends of uncertain cause).
C5	P	-	F	-	Split pebble	Quarter of a pebble with possibly utilised notch like working edge. Poor flint.
C5	P	S	F	-	Waste	Small chip.
C5	P	P	F	Slightly abraded	Waste ?	Possible abrupt edged, sparingly worked scraper ? or waste.
C5	P	S	C	Slightly abraded	Denticulated flake	Utilised, cutting-like flake. Complete.
C5	P	P	F	Slightly abraded	Scraper	Fine. Steeply retouched ovate/side scraper. Neolithic.
C6	P	S	F	-	Flake	Small, thin flake – un-modified.
C6	P	S	F	Burnt	-	Heavily burnt and fractured flint 'lump' ?
C6	P	S	F	-	Knife	Short, complete convex edged knife – obvious finger-hold modification.
C6	P	S	F	Slightly burnt	Rejuvenation piece	Rejuvenation/waste flake piece.
D2	P (x4)	-	F	-	-	Probable soil improvement by-product (small and amorphous).
D2	P	-	F	-	-	Possible raw material (good size & shape for core - un-used).
D2	U	T	F/C ?	Very, very abraded	Core	Very abraded and heavily re-patinated probable remnant core.
D2	P	S	F	Abraded	Flake	Un-modified/used, broken flake.
D2	P	S	F	-	Core tablet / flake	Flake with all round cortex and possible, minimal use-related/retouch like removals
D2	P	S	F	-	Flake/ knife ?	Flake with ripple-like removals across short dorsal surface. Probable tiny knife piece. Bronze Age.
D2	P	S	F	-	Scraper	Small, round partially retouched.
D2	U	T	F	Burnt	Knife / scraper ?	Blistered, broken flake with shallow retouch along entirety of remaining working edge. Neolithic/Bronze Age.
D2	U	T	F	-	Round scraper	Thin round scraper with shallowly retouched edge. Neolithic ?
D2	N?	S	F	-	Notched flake	Slightly 'Y' shaped, hinged piece with a utilised concave, possibly notched edge. Only small part of thin, nodular-like cortex remaining.
D2	P	P	F	Heavily abraded	Scraper	Slightly amorphous, flat side and pointed end scraper with heavy crushing use on most edges. Neolithic ?
D3	P	P	F	-	Scraper	Fine, small, steeply retouched round scraper. Bronze Age?

D3	P	S	F	Slightly abraded	Cutting flake	Thick unmodified flake with utilised, slightly concave cutting edge.
D3	P	P	F	-	Waste	Small broken waste chip.
D4	P	P	F	-	Waste	Un-used, un-modified flake.
D4	P	P	F	Burnt	Split pebble	Pebble possibly split due to heat damage and blistering.
D4	P	P	F	-	Waste	Elongate slither of un-used primary waste.
D4	U	T	F/C	Burnt	Broken scraper	Badly damaged, burnt 'lump' of what was a thick scraper.
D4	P	P	F	-	Scraper	Convex edged, steeply retouched side scraper.
D5	P (x5)	-	F	-	-	Probable soil improvement by-product (small and amorphous).
D5	P	-	F	-	Pebble tool	Pebble chopper tool with slight edge damage through use.
E1	P	S	F	-	Scraper ?	Thick flake with short length of probable/scraper-like retouch ?
E3	P	P	F	Burnt	Waste ?	Fractured, broken piece.
E3	P	P	F	Burnt	Split pebble ?	Blistered pebble, possibly broken through burning.
E3	P	S	F	-	Scraper ?	Elongate split pebble with two removals making it a possible scraper-like tool ?
E4	P (x11)	-	F	-	-	Probable soil improvement by-product (small and amorphous).
E4	P (x3)	-	F	-	-	Possible raw material (reasonable size & shape for cores/tools - un-used).
E4	P	S	F	-	Waste	Possible rejuvenation piece.
E4	P	-	F	Abraded	Core	Faulted, abandoned, elongate core.
E7 (?)	P	S	F	Burnt	Waste	Blistered, broken flake.

Table 10 All flint collected during 2002 field walking exercise

Unfortunately any lithic material found to the north of grid run E appears to be missing (or not collected?). On the basis of the results of the 2004 field walking exercise, lithic material should have been collected from this area in comparatively large amounts. The 2004 field walking results showed a greater concentration of material to the north (see section 4.0) than to the south.

9.5.6 Comment

This 2002 collection of material is the largest of the three looked at in this report. Like the excavation assemblage this material is not a 'selective' collection and as such a number of non-utilised flint/chert pebbles have been collected. Although a percentage of these can be disregarded as later agricultural additions, some – on the basis of size, shape and comparison with the excavated assemblage may well represent part of the archaeological assemblage.

A range of flint work is included, varying from abraded and/or burnt indistinguishable lumps to waste pieces and much finer, specialised tools. The potential date for these pieces ranges from the Mesolithic through to the Bronze Age. Elements of Neolithic material came from the broadly identified 'concentrations' of material around D2 and B5, C5, D5. A Bronze Age character of material was marginally more recognisable within squares B1, B2, B3 (located to the north of the excavated area).

Core rejuvenation pieces were found in grid squares A5, C2 and C6. These all suggest a more strongly Neolithic than Bronze Age date. Although rejuvenation pieces are found throughout the Mesolithic and Neolithic periods, the three examples here are not typically Mesolithic in character. Rejuvenation pieces can also be a more frequent element within pebble-based industries as knappers tried to maximise pebble core use, but again are less frequent within Bronze Age assemblages.

9.5.7 Discussion

This assemblage consists of a broad range of material in terms of raw material source, date range, levels of abrasion and types of use or activity reflected. Very little of the material has been found in close association with related or contemporary contexts. A broad range of utilised tools is present, but in terms of percentage they are small in number. A number of the pieces have seen clear use but little in the way of deliberate or focussed modification. Where retouch was noted, it varied between very fine, small scale modification to apparently rapid or spontaneous, comparatively rough execution. This is primarily a reflection of date and contemporary tool type/reduction procedures.

The vast majority of the assemblage consists of pebble material, primarily flint (rather than chert). However, the existence of worked nodular material clearly indicates an earlier Neolithic presence. A small number of finely worked blades and bladelettes (some of which have been finely retouched) and many of which have been broken suggest a Mesolithic to early Neolithic date. The lack of specialised blade cores, tranchet flakes, microliths or microburins (the resultant waste from microlith production) implies that this material may well reflect a peripheral Mesolithic location or a very early Neolithic presence. The relative lack of burnt pieces may suggest that the focus for earlier domestic activity is further away. As stated elsewhere the relative lack of closely associated Bronze Age domestic flint work is not an unusual feature.

A good proportion of the assemblage consists of flakes and broad (or flake-like) blades, plus occasional flake cores. Some of these pieces may represent Neolithic material, but much of it is considered broadly Bronze Age in date, although very little of it is diagnostically so, (with the exception of the thumb-nail scraper).

In terms of types of activity represented by the assemblage, it is clear that raw material transportation to site (from primary or secondary – beach sources) took place. On site core preparation, core reduction and tool production took place. Tool types varied from the finely worked to the spontaneously produced and included scrapers, knives, engravers, awls/points, denticulated pieces and waste (reflective primarily of production but also of breakage (and burning)). These pieces reflect a broad range of activity, much of it focussed around a domestic or peripherally domestic setting. No ‘special’ pieces of a more ‘ritual’ than domestic association were identified. Similarly no arrowheads or other particularly (conspicuously) fine workmanship were identified within the collection.

To summarise, this assemblage of material reflects a typically mixed, plough-dispersed assemblage found within a field that has undergone soil improvement in the form of beach sand and pebble introduction. The date range is broad ranging from the Mesolithic/Early Neolithic to the Bronze Age period. Few of the pieces are diagnostic, but use of nodular material does indicate a definite early Neolithic date. Some limited evidence for re-use was recorded. Minor pockets or ephemeral/limited concentrations of material were noted in the two field walking exercises, but none were sufficiently concentrated or diagnostic in terms of date to allow specific interpretation or focuses of activity. The slight slope of the field in conjunction with ploughing will have had an affect, although probably a minimal

affect on the movement of material within the plough-soil. Excavation did show minor evidence for plough-related truncation, but it was not recognised as a major complication.

9.5.8 Recommendations

No further work on this lithic assemblage is necessary. None of the pieces require further analysis or specific illustration.

9.6 Assessment of the Roman Coins

By Richard Reece

The three coins were found by metal detectorists, working in transects across the fogou field. The identifiers of the coins representing the site code and the fieldwalking grid square they were recovered are represented thus: <BF03 N(10)?>.

9.6.1 Sesterius, AD 96 - 160

A sestertius of the period AD 96 to 160, <BF03 N(10)?>. The portrait is probably that of Hadrian, 117 to 138. The reverse shows a standing figure facing left but is otherwise uncertain.

The conclusion is that this coin is a Sestertius certainly of the period AD 96-160. The portrait is probably that of Hadrian, AD 117 to 138. The reverse shows a standing figure left, but is otherwise uncertain.

9.6.2 As, AD 43 - 160

Although this coin, <BF03 D?(7)>, is very heavily corroded, there is a head showing. It is an As (middle denomination) with a date between AD 43 to 160. The reverse is either the inevitable ordinary standing figure, perhaps with an altar beside her. The other way up it could be seen as a typical Minerva with spear and shield which would make it a copy of a coin of Claudius I (43-64) which would help to account for the very thin and irregular flan.

An As of the period AD 43 to 160. Either a very worn and irregular issue of Domitian or Hadrian (81 to 138) with a standing figure by an altar on the reverse. Or, less likely, a typically thin and irregular copy of a coin of Claudius I struck between 43 and 64 showing Minerva walking right with spear and shield.

9.6.3 Barbarous radiate, AD 275 - 290

A barbarous radiate struck between AD 275 and 290 probably copying a regular coin of Victorinus or Tetricus I (268-273). The reverse is corroded and uncertain, <BF03 M(8)>.

I've heard from both Justine Bayley and Vanessa Fell that they think the Boden fragments highly unlikely to be part of a brooch. In view of this I don't think you need budget for a contribution from me, though if their further examination shows anything more positive I will be pleased to do a note.

9.7 Assessment report for conservation of the metalwork finds

By Vanessa Fell

The metalwork (two fragments of possible brooch) has been closely inspected by Vanessa Fell (English Heritage, Centre for Archaeology) and has also been discussed by Justine Bayley and Sarnia Butcher. It is thought that identification at this stage is unlikely to yield further results, and that investigative examination is required in order to assist identification and study.

9.7.1 Factual data

Quantification

3 coins, 4 other copper alloy

Condition

The copper alloy finds are corroded and fragile; two of the coins are severely eroded through the acidic burial conditions.

Means of collecting data

Based on x-radiographs (100% of metal finds) and visual examination.

The three coins have been superficially cleaned to enable spot dating.

The possible fragments of brooch have been analysed by x-ray fluorescence to determine composition to assist the finds specialist's assessment.

9.7.2 Statement of potential

The coins are unlikely to require further treatment. The other copper alloy finds may require investigative examination to assist identification and study.

9.7.3 Storage and curation

Storage requirements

The metal artefacts are currently stored desiccated.

Long-term desiccated storage is perfectly acceptable for metalwork and is often preferable to active treatment, though requires rigorous curation. There are no immediate storage requirements other than maintenance of desiccated conditions for the treated metal artefacts.

Long-term storage requirements for archaeological materials are set out in UKIC Archaeology Section Guidelines No. 3, 'Environmental Standards for the Permanent Storage of Excavated Material from Archaeological Sites'. Storage requirements for paper and other archives are set out in UKIC Archaeology Section Guidelines 'Guidelines for the Preparation of Excavation Archives for Long-term Storage' (Walker 1990).

Conservation requirements

Conservation requirements relate to investigative examination for publication purposes only.

9.7.4 Methodology

Standard conservation methods will be used for examination, analysis and stabilization.

9.7.5 Resources and programming

Resources

Facilities for conservation and related scientific analysis for the projects above are available at EH's Centre for Archaeology, Fort Cumberland.

Time estimates

The time estimate for the projects identified above is c1 day.

9.8 Assessment of the Glass Bead

By Fraser Hunter

Glass Bead from context 806 sf 1018 (from layer above floor in fogou).

Globular translucent dark blue glass bead, D-sectioned, with a perforation 3.5mm deep. One side has a protrusion where it was detached from a larger blob during manufacture. It is very worn on the ends and circumference, implying lengthy use in a necklace rather than as a pendant. Depth 9.5mm, height 7mm.

This bead falls into Guido's (1978, 70) group 7 (iv). Such beads are one of the least chronologically diagnostic bead types, starting in the later Iron Age and continuing throughout the first millennium AD.

Recommendations

A fuller report should include a brief look for Cornish parallels, for the sake of completeness, but in general the bead is not a very diagnostic type. It should be illustrated for the report.

9.9 Assessment of the technological material

By David Dungworth

9.9.1 Introduction

A total of eight samples were examined for evidence of technological activity. These comprised the following:

<i>Context</i>	<i>Comments</i>
Trench 2 unstratified (spoilheap)	Non-diagnostic ironworking slag (includes one possible smithing hearth bottom and a piece of vitrified ceramic lining)
200	Non-diagnostic ironworking slag
201	Non-diagnostic ironworking slag (includes a piece of vitrified ceramic lining)
400	Non-diagnostic ironworking slag
401	Non-diagnostic ironworking slag
405	Non-diagnostic ironworking slag
606	Non-diagnostic ironworking slag
607	Rocks (geological not archaeometallurgical, but some may have been [accidentally?] heated)

Table 11 Samples examined for evidence of technological activity

9.9.2 Assessment

The small assemblage of material suggests limited evidence for small-scale ironsmithing.

9.9.3 Recommendations

No further action is advised for this material, but environmental samples should be screened for hammerscale.

9.10 Assessment of the burnt bone

By Jacqueline L McKinley

9.10.1 Introduction

Bone from 19 contexts – two Bronze Age and the rest Iron Age/Romano-British - was received for assessment; the primary aim was to ascertain if any of the material was human.

After cleaning, the bone was subject to a rapid scan, the results of which are presented in Table 12.

9.10.2 Results

The majority of the bone comprised small fragments of well oxidized (burnt) animal bone. In several cases, the small quantity of bone and its condition (small fragments; cortical surface of a slightly chalky appearance) made the identifications inconclusive, but most is believed to be animal.

The four fragments of long bone shaft from the Bronze Age context (107) may be human (fibula and humerus shaft?); the thin cortical walls of at least some suggesting it may have derived from an immature individual. The bone is generally well oxidised (white in colour; Holden *et al* 1995 a; b), with some grey patches. The type of deposit represented by this material is uncertain, however, the recovery of fragments of pottery from the same deposit may suggest that it represents the redeposited remains of an urned burial; such a conclusion could only be extremely tentative on the basis of the current evidence.

context	date	wt. burnt bone	comment
(107) <1019>	BA	0.4g	?h/?a ; poss. fibula shaft fragment.
(107) <1029>	BA	3.5g	?h/?a; poss. thin humerus shaft fragment
(314)	IA OR Later	0.2g	u/b horse/cattle tooth; charcoal; burnt animal
(407)	IA/RB	5.6g	animal & charcoal
(409)	IA/RB	1.6g	?animal
(411) <1024>	IA/RB	1.8g	?animal
(411) <1031>	IA/RB	2.1g	?animal
(413)	IA/RB	0.9g	animal
(414)	IA/RB	4.9g	animal
(426)	IA/RB	0.5g	?animal
(432)	IA/RB	0.1g	?animal
(439)	IA/RB	0.3g	?animal
(603)	IA/RB	0.4g	animal
(605)	IA/RB	6.6g	animal
(606) <1012>	IA/RB	23.6g	animal
(606) <1033>	IA/RB	9.3g	animal
(606) <1039>	IA/RB	5.7g	animal
(805)	IA/RB		unburnt animal tooth (?pig) + stone
(806)	IA/RB	0.3g	animal

Table 12 Results of burnt bone assessment scan

9.10.3 Recommendations

No further analysis is recommended.

9.11 Assessment of mollusc deposits

By Jan Light

9.11.1 Background

An evaluation at the site of a re-discovered fogou with associated enclosure and internal features ranging from Iron Age to Post-Roman date has yielded a small deposit of limpet shells. These have been submitted for Assessment.

9.11.2 Description

A sample bag containing two complete limpet shells and partial shells and fragments representing probably no more than ten further individuals was examined. The shells are all of the genus *Patella* but it is not possible to say with certainty whether they are all the common limpet *P. vulgata* which inhabits all levels of the shore, or whether either of the two species which have more restricted distributions are present. *Patella depressa* is a low-spined species that is most frequent at midshore level and *P. ulysiponensis* is a species of the lower shore and permanently submerged pools across the littoral zone. The shells and fragments in the sample are all from small, low-spined individuals and the impression gained is that both *P. vulgata* and *P. ulysiponensis* may be present.

The shells are in poor condition: they are chalky and their mode of fracture is annular. This is typical in limpets where the shell material has been weakened. This very corroded condition is consistent with the level of preservation that is observed in shells that have been sealed in acidic soils. A number of the shells lack their apex. Holed shells are a recurring feature at archaeological sites where molluscs are retrieved and the perforations can be ascribed to a wide variety of natural and unnatural processes. In nearly all instances of holed limpet shells where the apical region is missing leaving an oval 'collar' of shell, the process of breakage is natural in that fracture has occurred along the weaker growth lines of the shell.

In addition to *Patella*, amongst the small fragments and associated soil there are two corroded basal whorl fragments of the common dog whelk, *Nucella lapillus* and a worn specimen of the land snail, *Aegopinella nitidula*.

9.11.3 Significance

Based on the assumption that the fogou site is not immediately adjacent to the shoreline, this small assemblage shells must represent an archaeological deposit. As this is an isolated find, my preliminary opinion is that its proximity to the fogou may imply some ritual purpose, however this would require reconsideration should more substantial quantities of shell be retrieved.

9.11.4 Recommendations

No further analysis of these shells is recommended at this stage. In the event of further excavation and the uncovering of further shell deposits, the following guidelines are given:

1. In view of the flaky nature of the shells, particular care should be exercised in the removal of shells from the soil.
2. Depending on the quantities of shell, time available etc., where feasible and possible the shells should not be excessively brushed or agitated and should certainly not be washed.
3. If the shells are 'fragile', storage and transport in boxes is preferable.
4. Where a substantial shell deposit(s) is identified this should either be excavated

completely, or if partially sampled an estimate of the subsample taken as a % of the whole deposit should be recorded.

5. Observations relating to stratification, size gradation within the deposit, shell orientation, mollusc species diversity and density of shells provide valuable information for the environmental specialist at the analysis stage.

9.11.5 Conclusion

Although only few in number, the limpet shells in the sample assessed appear to have some archaeological significance.

9.12 Plant macrofossil assessment

By Julie Jones

9.12.1 Introduction and methodology

Bulk samples were collected and flotation sieved on site by the excavation team to a 250 micron mesh size for the floats and 500 microns for the residues. The floats and residues were air-dried and bagged. The floats were scanned by the author under low-powered magnification and the plant remains assessed on a scale of abundance; the results are shown on Table 14. A record was also made of the sample float composition and an estimate of charcoal fragments of suitable size for species identification (>2mm overall dimensions), as well as noting other inclusions such as burnt bone.

Plant macrofossil preservation was by charring and the condition of the cereal grains varied from poor to good. Wheat (*Triticum*) grains were the most common, their relatively long slim form suggestive of a glumed variety, possibly emmer (*Triticum dicoccum*) or spelt (*Triticum spelta*), although unfortunately there was little cereal chaff present to confirm which of these types occurred. There were also occasional barley (*Hordeum*) and oat (*Avena*) grains. Some samples included a small assemblage of mostly arable weed seeds in a good state of preservation.

9.12.2 Results

Trench 1

The remains of a possible Bronze Age structure approximately 8m in diameter were found as a hollow cut into the shillet. In one section the floor of this feature was covered with decorated pot sherds within a charcoal rich silt clay deposit (107), 0.12m deep. Most of the samples recovered from here <1001> <1003> <1019> <1036> contained charcoal fragments although <1019> included wheat and barley grains in fair condition, with a small arable weed assemblage.

Trench 2

A 3.0m wide ditch forming the northern side of the rectilinear round was investigated and found to have a number of distinct fills containing Iron Age pottery. Of the two samples from here <1026> was not found and the float from <1035> was 98% charcoal although no other plant remains occurred.

Trench 3

Ditch [315], close to the western entrance to the round, also contained a number of fills. The only sample containing plant remains <1011> was from the fill of a circular stone-packed posthole (308). As well as charcoal fragments the sample float included occasional wheat grains in poor condition, and occasional unidentifiable cereal grains, together with a single wheat glume base.

Trench 4

This trench investigated the fogou structure. A number of deposits were associated with a diagonal cut [412] into the shillet. Samples <1007> and <1024> from context (411), a stony dark brown silt in cut [412] were predominantly charcoal, although with occasional wheat and barley grains and hazel (*Corylus avellana*) nut fragments. Two samples <1025> and <1041> from a layer [413] of black silt with charcoal and burnt bone below [412] also included occasional wheat and barley grains, occasional hazel fragments and a small fragment of a wild radish (*Raphanus raphanistrum* ssp *raphanistrum*) pod. A dark silt [414] below [413] (sample <1021>) contained few wheat and barley grains, with a weed assemblage including arable weeds and wetland indicators. Sample <1045> also from [414] included occasional hazel fragments.

The fill (426) of a stone box (425) constructed from small orthostatic stones was 98% charcoal (sample <1006>) and also included occasional wheat and barley grains with arable and grassland weeds.

A curvilinear anomaly [431] with steep almost vertical sides and flat base was filled with dark charcoal rich silts. Context (430) <sample 1044> had only 5 fragments of charcoal while the float of (432) <sample 1009>, was 40% charcoal with a single wheat grain and wild radish pods.

Trench 6

A further section of the curvilinear ditch [431] to the west of the fogou approach was investigated in this trench. One of the fills of this feature (606), a charcoal rich silt with fragmented burnt bone (sample <1012>) included frequent wheat, occasional barley and oat grains and a good weed assemblage including arable and grassland weeds, hazel and sloe (*Prunus spinosa*) fragments. A second sample <1039> from (606) contained charcoal and burnt bone fragments.

The fill (603) of a small rubble filled pit [604] containing Iron Age and Romano-British pottery was 95% charcoal, the sample (<1016>) also including frequent wheat, rare barley and occasional weed seeds in good to fair condition.

Trenches 8 and 9

The interior of the fogou appeared to have been deliberately backfilled with shillet and clay. Above the floor of the fogou stony silty clay deposits with possible Iron Age pottery were recovered. Samples <1018> from context (806) included frequent wheat grains, occasional barley and oats and occasional weed seeds. Sample <1027>, also from (806) included occasional wheat glume bases and hulled wheat spikelet forks, as well as charcoal fragments.

9.12.3 Summary and recommendations

In total 35 bulk samples were assessed from features associated with the fogou at Boden Vean and features associated with the rectilinear ditched enclosure, as well as an earlier Bronze Age structure. Most of these samples included only charcoal fragments, or very small assemblages of cereal grain, chaff and weeds and further work on the charred plant remains is not recommended.

There were however six samples, associated with the Bronze Age structure, deposits associated with the fogou and the curvilinear ditch where charred plant remains were more frequent. Although the assemblages recovered from these samples will still be relatively small, it is thought worthwhile sorting and extracting evidence from these deposits. This should allow some discussion of the economy of this important site, to hopefully complement the results of charcoal analysis and allow comparison with other contemporary sites in Cornwall.

The samples concerned are as follows:

Trench 1

Sample 1019 context (107) from Bronze Age roundhouse

Trench 4

Sample 1006 context (426) fill of stone box (425), within fogou

Sample 1021 context (414) charcoal rich fill within fogou

Trench 6

Sample 1012 context (606) fill of curvilinear ditch

Sample 1016 context (603) pit fill

Trench 8

Sample 1018 context (806) dark silt associated with floor of fogou

Sample number	Context number	Description	Sample size (litres)	Float size (ml)	Sample composition	Charred plant remains	Charcoal frags >2mm -approx	Other finds	Full analysis
1000	(110)	Mid brown silt	10	<1	Few small charcoal fragments. Few modern roots				No
1001	(107)	Mid brown silt	10	45	99% charcoal. Rare modern roots & seeds		170		No
1003	(107)	Burnt bone?	10	51	Charcoal 40%, mineral 60%	<i>Carex</i> (sedge) sp 1	50		No
1004	(900)	Fogou collapse/backfill	40	11	Charcoal 1%, mineral 99%. Occ modern stems/seeds		3		No
1005	(800)	Matrix around stone (802)	10	18	Charcoal 40%, mineral 60%	<i>Triticum</i> sp (wheat) occ Preservation fair	40		No
1006	(426)	Inside 'stone box' [425]	20	110	Charcoal 98%, mineral 2%. Occ modern roots	<i>Triticum</i> sp occ <i>Hordeum</i> sp (barley) rare Weed seeds occ Preservation fair	400	3 frags burnt bone	Yes
1007	(411)	Inside [412]	20	20	Charcoal 40%, mineral 60%. Occ modern roots/ seeds	<i>Triticum</i> sp occ <i>Hordeum</i> sp rare Preservation fair	40		No
1009	(432)	Charcoal rich fill in ditch [431]	40	80	Charcoal 40%, mineral 60%	<i>Triticum</i> sp rare <i>Raphanus raphanistrum</i> (wild radish)	150	4 frags burnt bone	No

Sample number	Context number	Description	Sample size (litres)	Float size (ml)	Sample composition	Charred plant remains	Charcoal frags >2mm -approx	Other finds	Full analysis
					Occ modern roots/seeds	- whole pods occ <i>Atriplex</i> sp (orache) rare			
1010	(300)	Fill around stones (300)	10	100	Charcoal 60%, mineral 40%		160		No
1011	(309)	Posthole [308]	30	40	Charcoal 50%, mineral 50% Occ modern roots	<i>Triticum</i> sp occ Cereal indet occ Poor condition <i>Triticum</i> sp – glume base rare	100		No
1012	(606)	Charcoal rich fill and burnt bone in [609]	60	1120	Charcoal 95%, mineral 5% Occ modern roots	<i>Triticum</i> sp v.freq <i>Hordeum</i> sp occ <i>Avena</i> sp occ Weed seeds v.freq	1500	10 frags burnt bone. 2 frags green ?bead	Yes
1013	(605)	Fill above [606] in ditch (609) slot 2	40	200	Charcoal 50%, mineral 50% Occ modern roots	<i>Triticum</i> sp occ Preservation fair	400	5 frags burnt bone.	No
1014	(605)	Fill above [606] in ditch (609) slot 2	40	11	Charcoal 40%, mineral 60% Occ modern roots		30		No
1015	(800) - says (610) on bag	Basal fill in ditch [609]	30	100	Charcoal 60%, mineral 40% Occ modern roots	<i>Triticum</i> sp occ <i>Hordeum</i> sp rare Cereal indet occ Preservation poor <i>Corylus avellana</i> (hazel) frags	200		No

Sample number	Context number	Description	Sample size (litres)	Float size (ml)	Sample composition	Charred plant remains	Charcoal frags >2mm -approx	Other finds	Full analysis
						occ			
1016	(603)	Fill of pit [604]	40	250	Charcoal 95%, mineral 5%	<i>Triticum</i> sp v.freq <i>Hordeum</i> sp rare Cereal indet occ Weed seeds occ Preservation good to fair	480	12 frags burnt bone.	Yes
1018	(806)	Dark silt below (805) between fogou 'gateway'	80	200	Charcoal 80%, mineral 20%	<i>Triticum</i> sp v.freq <i>Hordeum</i> sp occ <i>Avena</i> sp occ Cereal indet occ Weed seeds occ Preservation good to fair	330		Yes
1019	(107)	Bulk soil from roundhouse	60	260	Charcoal 90%, mineral 10%	<i>Triticum</i> sp occ <i>Hordeum</i> sp occ Weed seeds v.freq Preservation good to fair	400	2 frags blue ?glass	Yes
1021	(414)	Charcoal rich fill pit [416]	10	100	Charcoal 98%, mineral 2% Occ modern roots	<i>Triticum</i> sp occ <i>Hordeum</i> sp rare Cereal indet rare Weed seeds v. freq Preservation good to fair	280		Yes
1022	(424)	Fill of fogou 'approach'	<10	6	Charcoal 10%,		20		No

Sample number	Context number	Description	Sample size (litres)	Float size (ml)	Sample composition	Charred plant remains	Charcoal frags >2mm -approx	Other finds	Full analysis
					mineral 90% Occ modern roots				
1023	(439)	Charcoal and burnt bone in postpipe [440]	10	200	Charcoal 90%, mineral 10%	<i>Triticum</i> sp occ Weed seeds occ Preservation good to fair	500		No
1024	(411)	Fill of ditch [412]	40	60	Charcoal 50%, mineral 50% Occ modern roots	<i>Triticum</i> sp occ <i>Corylus avellana</i> fragments occ Preservation good to fair	160		No
1025	(413)	Black silt below [411]	40	55	Charcoal 80%, mineral 20%	<i>Triticum</i> sp rare <i>Hordeum</i> sp occ <i>Raphanus raphanistrum</i> – 1 small pod frag <i>Corylus avellana</i> frags occ Preservation good to fair	100		No
1026	(201)	Charcoal fill in ditch [202]	60		No sample found				
1027	(806)	Primary fill of fogou	40	28	Charcoal 98%, mineral 2%	<i>Triticum</i> sp (glume base) occ <i>Triticum</i> sp (hulled wheat spikelet fork) occ	130		No
1035	(201)	Charcoal fragments in enclosure ditch [202]	<10	380	Charcoal 98%, mineral 2%		700	2 pot sherds	No
1036	(107)	Charcoal fragments in roundhouse	<10				2 frags charcoal only		No
1037	(311)	Charcoal fragments in	<10	20	Charcoal 20%, mineral/unbroken		30		No

Sample number	Context number	Description	Sample size (litres)	Float size (ml)	Sample composition	Charred plant remains	Charcoal frags >2mm -approx	Other finds	Full analysis
		enclosure ditch [315]			down sediment 80%				
1038	(405)	Charcoal fragments in silt deposit sealing stone alignment [408]	<10				4 frags charcoal only		No
1039	(606)	Charcoal fragments in secondary fill of curvilinear ditch [609]	<10	80	Charcoal 20%, mineral/unbroken down sediment 80%		120	84 frags burnt bone	No
1040	(409)	Charcoal fragments in silt deposit sealing stone alignment [408]	<10				2 frags charcoal only		No
1041	(413)	Charcoal fragments in fill of possible ditch [412]	<10	240	Charcoal 2%, mineral 98%	<i>Corylus avellana</i> occ frags	120	21 frags burnt bone	No
1042	(423)	Charcoal fragments in fogou 'approach' passage (433)	<10				1 frag charcoal only		No
1044	(430)	Charcoal fragments in upper fill of ditch [431]	<10				5 frags charcoal only		No
1045	(414)	Charcoal fragments in fill of pit [416]	<10			<i>Corylus avellana</i> occ frags			No
1046	(314)	Charcoal fragments in enclosure ditch [315]	<10				1 frag charcoal only		No

Table 13 Plant macrofossil samples

KEY: rare 1; occ 2-10; freq 11-20; v. freq 21-40

9.13 Assessment of the Charcoal (includes potential for radiocarbon dating)

By Rowena Gale

9.13.1 Introduction

This report includes the assessment of 33 samples of charcoal recovered from bulk soil samples collected from trenches 1, 2, 3, 4, 6, 8 and 9. The charcoal was fairly well preserved and although most samples included suitable material for radiocarbon dating, many of the samples were too small to warrant further analysis.

The assessment is based on the identification of 3 fragments from each sample to indicate:

1. The minimum range of species present.
2. The character of the wood from which the charcoal originated.
3. The potential of the samples to supply relevant data if submitted for full analysis.
4. Material suitable for C14 dating.

9.13.2 Methods

The samples were prepared using standard methods (Gale and Cutler 2000). The anatomical structures were examined using incident light on a Nikon Labophot-2 compound microscope at magnifications up to x400. The taxa identified were matched to prepared reference slides of modern wood. When possible, the maturity of the wood was assessed (i.e., heartwood/ sapwood).

9.13.3 Results and recommendations for further work

The close association of the charcoal deposits with the Iron Age fogou and its subsequent occupation in the and Romano-British and post-Roman periods, suggests that it originated from activities within or close to the structure – perhaps from domestic hearths. Table 14 shows the taxa identified, the samples recommended for further work and the charcoal recommended for C14 dating.

Trench 1

Two samples were examined from context (107), silts associated with the remains of a Bronze Age structure or house, and identified as oak (*Quercus* sp.).

Recommendations: Full analysis for sample 1019 (context (107) from inside the roundhouse).

Trench 2

Charcoal recovered from ditch [202], from which ?Iron Age pottery was also recovered, was identified as oak (*Quercus* sp.) heartwood and the hawthorn/ *Sorbus* group (Pomoideae).

Recommendations: Full analysis of sample 1035

Trench 3

Charcoal was sparsely represented in ditch [315] (two samples) but included oak (*Quercus* sp.) and gorse (*Ulex* sp.) or broom (*Cytisus scoparius*). Charcoal from posthole [308] and from context (300) (from the fill around stones) was dated by pottery to the Iron Age/ Romano-British period. These samples were more abundant and included oak (*Quercus* sp.) and hazel (*Corylus avellana*) in the former and oak (*Quercus* sp.) and gorse (*Ulex* sp.) or broom (*Cytisus scoparius*) in the latter. Toolmarks were recorded on two fragments from context (300).

Sample	Context	Description	Quantity	Taxa identified	Comments	Full analysis
1000	110	Mid-brown silt	-	-	Insufficient charcoal	No
1001	107	Mid-brown silt	xx	1 x oak (<i>Quercus</i> sp.) h/w; 2 x oak (<i>Quercus</i> sp.) s/w	Remainder probably similar	No
1003		?Burnt bone	x	1 x oak (<i>Quercus</i> sp.) r/w; 2 x oak (<i>Quercus</i> sp.) s/w	Mainly stones	No
1004	900	Fogou collapse/backfill	x	1 x oak (<i>Quercus</i> sp.); 1 x gorse (<i>Ulex</i> sp.) or broom (<i>Cytisus scoparius</i>)	No further charcoal available	No
1005	800	Matrix around stone (802)	x	1 x oak (<i>Quercus</i> sp.) r/w; 1 x gorse (<i>Ulex</i> sp.) or broom (<i>Cytisus scoparius</i>); 1 x hazel (<i>Corylus avellana</i>)	-	No
1006	426	Inside 'stone box' (425)	xx	1 x oak (<i>Quercus</i> sp.) h/w; 1 x hazel (<i>Corylus avellana</i>) r/w; 1 x gorse (<i>Ulex</i> sp.) or broom (<i>Cytisus scoparius</i>)	?Bronze Age or Romano-British	Yes
1007	411	Inside (412), diagonal cut	x	3 x oak (<i>Quercus</i> sp.) ?h/w	Remainder probably similar	No
1009	432	Charcoal rich fill in ditch (431)	xx	2 x alder (<i>Alnus glutinosa</i>); 1 x ash (<i>Fraxinus excelsior</i>)	Romano-British pottery	Yes
1010	300	Fill around stones (300)	xx	2 x oak (<i>Quercus</i> sp.) r/w; 1 x gorse (<i>Ulex</i> sp.) or broom	Mostly roundwood, 2 with tool-marks. Iron	Yes

Sample	Context	Description	Quantity	Taxa identified	Comments	Full analysis
				<i>(Cytisus scoparius)</i>	Age/ Romano-British pottery	
1011	309	Posthole (308)	xx	1 x oak (<i>Quercus</i> sp.) r/w; 1 x oak (<i>Quercus</i> sp.) s/w; 1 x hazel (<i>Corylus avellana</i>)	Iron Age/ Romano-British pottery	Yes
1012	606	Charcoal rich fill and burnt bone in (609)	xxx	2 x oak (<i>Quercus</i> sp.) s/w; 1 x hazel (<i>Corylus avellana</i>)	Ditch associated with the fogou	Yes
1013	605	Fill above (606) in ditch (609) slot 2	xx	1 x oak (<i>Quercus</i> sp.) r/w; 1 x oak (<i>Quercus</i> sp.) s/w		No
1014			x	2 x oak (<i>Quercus</i> sp.) r/w; 1 x oak (<i>Quercus</i> sp.)		No
1015	610	Basal fill in ditch (609)	xx	2 x oak (<i>Quercus</i> sp.) r/w; 1 x oak (<i>Quercus</i> sp.) s/w		Yes
1016	603	Fill of pit (604)	xxx	2 x oak (<i>Quercus</i> sp.) h/w; 1 x hazel (<i>Corylus avellana</i>)	Unknown date	Yes
1018	806	Dark silt below (805) between fogou 'gateway'	xx	1 x oak (<i>Quercus</i> sp.) h/w; 1 x oak (<i>Quercus</i> sp.) s/w; 1 x hazel (<i>Corylus avellana</i>)	-	Yes
1019	107	Bulk soil from inside roundhouse	xx	2 x oak (<i>Quercus</i> sp.) s/w; 1 x gorse (<i>Ulex</i> sp.) or broom (<i>Cytisus scoparius</i>) r/w	Bronze Age	Yes

Sample	Context	Description	Quantity	Taxa identified	Comments	Full analysis
1021	414	Charcoal rich pit (416)	xx	3 x hazel (<i>Corylus avellana</i>) r/w	Mostly roundwood	No
1022	424	Fill of fogou 'approach'	x	1 x oak (<i>Quercus</i> sp.) r/w; 1 x hazel (<i>Corylus avellana</i>) r/w; 1 x gorse (<i>Ulex</i> sp.) or broom (<i>Cytisus scoparius</i>)	-	No
1023	439	Charcoal and burnt bone in postpipe (440)	xx	2 x oak (<i>Quercus</i> sp.) h/w; 1 x oak (<i>Quercus</i> sp.) r/w	-	No
1024	411	Fill of ditch (412)	xx	1 x oak (<i>Quercus</i> sp.) r/w; 1 x oak (<i>Quercus</i> sp.) s/w	Including roundwood	No
1025	413	Black silt below (412)	xx	3 x hazel (<i>Corylus avellana</i>) r/w	Narrow roundwood	No
1027	806	Primary fill of fogou	x	1 x oak (<i>Quercus</i> sp.) h/w; 2 x hazel (<i>Corylus avellana</i>)	-	No
1035	201	Charcoal fragments in enclosure ditch (202)	xx	1 x oak (<i>Quercus</i> sp.) h/w; 2 x hawthorn/ <i>Sorbus</i> group (Pomoideae)	Iron Age	Yes
1036	107	Charcoal fragments in roundhouse	x	3 x hazel (<i>Corylus avellana</i>) r/w	-	No
1037	311	Charcoal fragments in enclosure ditch (315)	x	2 x oak (<i>Quercus</i> sp.) h/w; 1 x gorse (<i>Ulex</i> sp.) or broom (<i>Cytisus scoparius</i>) r/w	-	No
1038	405	Charcoal fragments in silt deposit sealing stone	x	2 x oak (<i>Quercus</i> sp.) s/w; 1 x hazel (<i>Corylus avellana</i>) r/w	-	No

Sample	Context	Description	Quantity	Taxa identified	Comments	Full analysis
		alignment (408)				
1039	606	Charcoal fragments in secondary fill of curvilinear ditch (609)	x	1 x oak (<i>Quercus</i> sp.); 1 x hazel (<i>Corylus avellana</i>); 1 x elder (<i>Sambucus nigra</i>)	-	No
1040	409	Charcoal fragments in silt deposit sealing stone alignment (408)	x	1 x oak (<i>Quercus</i> sp.) s/w; 1 x hazel (<i>Corylus avellana</i>)	2 fragments only	No
1041	413	Charcoal fragments in fill of possible ditch (412)	xx	1 x oak (<i>Quercus</i> sp.) r/w; 2 x hazel (<i>Corylus avellana</i>) r/w	Mostly roundwood	No
1042	423	Charcoal fragment in fogou 'approach' passage (433)	x	3 x hazel (<i>Corylus avellana</i>)	-	No
1044	430	Charcoal fragments in upper fill of ditch (431)	x	1 x hawthorn/ <i>Sorbus</i> group (Pomoideae); 2 x gorse (<i>Ulex</i> sp.) or broom (<i>Cytisus scoparius</i>)	-	No
1046	314	Charcoal fragments in enclosure ditch (315)	x	1 x oak (<i>Quercus</i> sp.) s/w	-	No

Table 14 Charcoal assessment

Key. h/w = heartwood; r/w = roundwood (diameter <20mm); s/w = sapwood (diameter unknown)

C14: charcoal suitable for dating is indicated in bold type.

Recommendations: Full analysis for samples 1011 (posthole [308]) and 1010 (context (300)).

Trench 4

Thirteen samples were examined from features/ contexts [412] (a diagonal cut), [416] (a pit), (425) (from inside a 'stone box'), [431] (a ditch), (433) and (424) (the fogou 'approach' passage), (440) (a post-pipe) and (408) (a silty deposit sealing a stone alignment). Features [412] and [431] were dated by pottery to the Romano-British period. Many of these samples were very small. The taxa identified included oak (*Quercus* sp.), hazel (*Corylus avellana*), gorse (*Ulex* sp.) or broom (*Cytisus scoparius*), ash (*Fraxinus excelsior*) and alder (*Alnus glutinosa*) (Table 13).

Recommendations: Full analysis for sample 1006 ('stone box' 425).

Trench 6

Ditch [609] was located west of the fogou approach. The ditch contained numerous fills, some of which were charcoal-rich. The taxa identified from contexts (605), (606) and (610) included oak (*Quercus* sp.), hazel (*Corylus avellana*) and elder (*Sambucus nigra*) (Table 14). A large quantity of charcoal was also collected from pit 604 (of unknown date) and included oak (*Quercus* sp.) and hazel (*Corylus avellana*).

Recommendations: Full analysis for samples 1012 and 1015 (ditch [609]) and 1016 (pit [604])

Trenches 8 and 9

Features [802] and [805] related to the collapse and infill of the fogou and were provisionally dated by pottery to the Iron Age. Charcoal associated with these features included oak (*Quercus* sp.), hazel (*Corylus avellana*) and gorse (*Ulex* sp.) or broom (*Cytisus scoparius*). Context 900 also referred to the collapse/ backfill of the fogou and included oak (*Quercus* sp.) and gorse (*Ulex* sp.) or broom (*Cytisus scoparius*).

Recommendations: Full analysis for sample 1018 (between fogou 'gateway' (805)).

9.13.4 Aims and potential

The charcoal is interpreted as probable residues or dumps of domestic hearth debris. The initial identification for the assessment indicates that firewood was gathered from a range of species and sometimes consisted largely of roundwood. The full analysis of selected samples may enlarge this list and would provide relevant environmental data for a period for which few records of woodland communities exist.

It is recommended that 10 samples (indicated above) are included in the full analysis with reference to the following:

1. The identification of the full range of taxa selected for use as firewood/ fuel in the Bronze Age and later periods and temporal differences fuel use.
2. The type and character of the fuel resources, e.g., roundwood/ largewood.
3. The use of managed woodland.
4. Evidence from plant macrofossils, especially those from common samples.
5. Evidence from comparable sites in the region.

9.13.5 Estimate of costs

The following costs are based on a daily rate of £155 (inclusive of all costs except the return carriage of samples). This rate will be revised on April 1st 2005.

To identify 10 samples, 1.25 days..... £194

To tabulate the results and prepare a full report, 2.5 – 3 days.....£388 - £465

Total: 3.75 – 4.25 days.....£582 - £659

9.14 Assessment of potential for pollen analysis

By Heather Tinsley

9.14.1 Introduction

The Boden Vean Fogou was excavated by HES in the autumn of 2003. When the passage to the fogou chamber was cleared out a dark silty floor deposit was revealed, containing pottery sherds, charcoal and bone fragments. This was the only ‘buried soil’ type deposit found in the excavations and therefore it offered the only possible opportunity for pollen analysis of a sealed layer associated with the site.

9.14.2 Sampling

Two contexts were recognised within the floor deposit, an upper more friable layer about 6cm deep, context (806), and a lower very stony layer which graded into shillet rubble, context (807). Samples were taken from the floor deposit for micromorphological examination by Gianna Ayala (EH Centre for Archaeology), using two kubiena tins, the total depth sampled was 165mm. The floor deposit had been extensively trampled, it was very friable, and crumbled easily and it was difficult to retain orientated samples in the tins. As a result, it was decided that it was not appropriate to try to insert a second series of tins for the purposes of pollen analysis, instead a series of spot samples were taken, adjacent to the kubiena tins, at 0-10mm and 50-60mm in Context 806 and at 90-100mm and 120-130mm in context (807).

9.14.3 Methodology

Two samples (0-10mm context (806) and 90-100mm context (807)) were initially prepared for pollen assessment using standard techniques (Moore, Webb and Collinson, 1991). Digestion in dilute potassium hydroxide was followed by sieving, then treatment with cold hydrofluoric acid for a week. Samples were washed with hot 10% hydrochloric acid and acetolysed, stained with safranin and mounted in glycerol. Two tablets of *Lycopodium* spores were added to each sample at the start of the preparation in order to allow pollen concentration to be assessed (Stockmarr, 1971). Samples were counted at a magnification of x400 with x1000 magnification used for critical determinations. The aim of the assessment was to count at least 100 pollen grains from each sample level in order to assess the potential of the material for full pollen analysis. In the case of these two samples, virtually no pollen was found; in each case the microscope slide was scanned until more than 50 of the added *Lycopodium* spores had been recovered and more than 12 traverses of each slide made.

9.14.4 Results

Neither of these samples preserved pollen. In the upper sample, 0-10mm from context (806), just two pollen grains were found, one of *Fraxinus* (ash) and one of *Poaceae* (grass). Both these grains were very well preserved and it seems likely that they were modern and had become trampled into the floor deposit while the excavation was open. Ash grows

locally and grass pollen must have been abundant in the field, pollen deposited during the spring and early summer will constantly be recirculated during breezy conditions later in the year. No other pollen was recovered from this sample, but 3 undifferentiated monolete fern spores were found along with one spore of *Polypodiaceae* (polypody fern).

No pollen at all was recovered from sample 90-100mm from context (807). Clearly the floor deposit was an unfavourable environment for preservation, its friability suggests that oxidation may have destroyed any pollen which was once present.

Both samples contained frequent microscopic fragments of charcoal.

9.14.5 Conclusion

In view of the total lack of pollen preservation in the two samples examined no assessments were carried out on the remaining two samples and there is no potential for further pollen analysis of this material.

9.15 Geoarchaeological assessment

By Gianna Ayala

9.15.1 Introduction

The Boden Vean Fogou was excavated by the Cornwall Archaeological Unit in the autumn of 2003. When the passage to the fogou chamber was excavated a dark silty floor deposit was revealed, containing pottery sherds, charcoal and bone fragments. This deposit was sampled for both pollen and micromorphological analyses.

9.15.2 Sampling

Two contexts were recognised within the floor deposit, an upper more friable layer about 60mm deep, context (806), and a lower very stony layer which graded into shillet rubble, context (807). They are described below in Table 15.

Context #	Description
(806)	very dark greyish brown (10YR 3/2) silty clay; massive; friable with very common stones >2cm and flecks of charcoal, chaotic with no orientation, has a very discontinuous and gradual boundary with 807
(807)	very dark greyish brown (10YR 3/2) to very dark brown (10YR2/2) silty clay; massive; very common stones >2cm and flecks of charcoal, chaotic with no orientation, lower boundary is clear but discontinuous
? subsoil	yellowish brown (10YR 5/6) silty clay with frequent shillet stones

Table 15 Contexts with the floor deposit of the fogou

Samples were taken from the floor deposit for micromorphological examination, using two kubiena tins, the total depth sampled was 165mm. It was hoped that through micromorphological analysis, the microstratigraphy of the floor deposits could be understood. However, the floor deposit had been extensively trampled, it was very friable, and crumbled easily and it was difficult to retain orientated samples in the tins. A series of spot samples were taken, adjacent to the kubiena tins for pollen analysis by Heather Tinsley.

9.15.3 Conclusion

In view of nature of the deposits and the results of the pollen assessment it has been decided not to process the thin section of the samples taken. The samples were very stony

and the boundary between the two deposits gradual, therefore it would be highly unlikely that any form of microstratigraphy would be visible. Moreover, in light of the pollen assessment, in which it became clear that not only was there no pollen preservation but that there were signs of trampling and mixing, but that the samples are not appropriate for micromorphological description.