Gunwalloe Through The Ages:

Middle Bronze Age to the 12th century AD

Lizard Peninsula, Cornwall

Evaluation Report for works
carried out 2011-2012

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Summary

This report presents the results of a desk-based assessment, geophysical survey and archaeological evaluation carried out adjacent to Winnianton Farm and Gunwalloe Church, Gunwalloe Parish, Cornwall. This work was undertaken by Dr Imogen Wood, on behalf of the National Trust, and in collaboration with local and regional archaeological groups, members of the local community and The University of Exeter, which has successfully brought people together achieving a high level of public engagement. This work formed part of the Rural Development Programme for England (RDPE) -funded 'Unlocking Our Coastal Heritage' project concerning archaeological sites threated by coastal erosion along the south-west coast path.

The multi-period site at Gunwalloe, located on the western coast of the Lizard Peninsula in Cornwall, has been a locus firstly for burial and later for settlement for over 3000 years. This is a rapidly-eroding section of coastline, and the results of the evaluation have not only answered the many questions raised over the past century, but also recorded a visibly receding archaeological resource. Six Trenches were opened across the coastal strip: five within a known early-medieval settlement, and one across the ramparts of a suspected promontory fort.

The investigation of the Scheduled promontory fort revealed a complex stratigraphical sequence: a Middle Bronze Age cist burial unique in Cornwall overlain by Late Bronze Age midden, indicating the presence of a previously unknown settlement. This was buried beneath an Iron Age rampart defining a defended enclosed space that was in use until the post-Roman period when it appears to have been destroyed by fire. The accumulation of material within the interior of the bank suggests it was continuously occupied, and that the inhabitants had contacts beyond Cornwall, with the discovery of an Iron Age Kimmeridge shale bracelet fragment and a sherd of Roman Oxfordshire colour-coated ware.

The early medieval settlement in the sand dunes has now been firmly dated to the 8th to 12th centuries. The evaluation uncovered evidence for middens, working-surfaces and a sub-rectangular sunken-featured building, and revealed unique evidence of daily life during this period and of how the settlement changed over time. What was once a long-lived rural settlement and early Christian community transformed into an important Royal Hundredral manor site. The sunken-featured rectangular house, with its revetted clay-bonded stone walls and a central hearth dating to the 10-11th century, is the first of its kind to be encountered in Cornwall. The middens have revealed detailed faunal evidence of changes in diet over time, changes which are also reflected in the extensive ceramic assemblage. The preservation of animal bone was very good, due to the calcareous shell sand, and the fish bones recovered suggest that the inhabitants exploited the marine resources as well as farming the land and keeping animals.The evaluation also determined that the initial formation of the dunes took place in the Early Bronze Age.

An extensive programme of paleoenvironmental analyses was undertaken, including: soil micro-morphology and geochemistry, phytolith analysis, environmental profiles through mollusc analysis, charcoal species identification and radiocarbon dating. The results have examined the internal processes involved within middens, found evidence for cereal processing inside the house and the use of water reeds, and outlined the changes in the wider environmental from scrubland with wooded areas to grassland more conducive to agriculture.

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1.0 Introduction

1.1. Project Background

As part of a wider project delivered though the Rural Development Programme for England (RDPE) the South West Coast Path team (SWCP) and the National Trust, a number of archaeological sites have been selected in order to better conserve, enhance and manage them The sites were chosen on the basis that they were on or adjacent to the South West Coast Path and that they are currently at risk of being irreparably damaged or lost, or could be made more accessible for wider audiences. This strand of the project is entitled "Unlocking our coastal heritage – protecting the cultural corridor".

1.2. Objectives and scope

The objectives of this evaluation are the investigation and recording of an Iron Age promontory fort and medieval settlement site. Their archaeological and historical importance combined with the highly active coastal erosion make their investigation and recording imperative. The archaeological sites in question have been recorded as actively eroding into the sea for well over 100 years with an estimated approx. 70cm a year, due to the soft underlying slate bedrock. The scope of this evaluation will address this rapid rate of erosion that will subsequently result in the loss of a site of regional and national significance and one that is an integral part in the history of the local area and community. Its recording will contribute to the regions disparate understanding of medieval settlement in Cornwall and the long debated date and function of promontory forts along the Cornish Coast. In relation to the SWCP it is highly significant as it is on the edge of one of Cornwall's most popular beaches and is bisected by the SWCP.

1.3. Methodology

The overall scheme of works proposed comprises a geophysical survey of the scheduled Promontory fort, a topographical survey of the promontory and unscheduled medieval settlement and the excavation of six Trenches. One Trench targeted the Promontory fort bank with the aim of establishing the nature of its construction and possible date. The remaining five Trenches are focused on the medieval settlement targeting previously identified archaeological features and areas with high archaeological potential. The evaluation consisted of the hand excavation of Trenches by both professionals and amateurs under the direction of Dr Imogen Wood. Soils samples were taken for wet sieving and all spoil generated was sieved on site to retrieve all remains possible. The evaluation has enabled a clearer understanding of the archaeological resource and allowed an informed management and conservation plans to be made in relation to the threatened site.

1.4. Layout of report

The layout of this report will firstly present past research and investigations prior to the evaluation providing a context to the current aims and objectives. This will be followed by a Trench by Trench summary of the results of the evaluation carried out in 2011/12; and finally a review of the results in relation to their regional context and national significance to inform the future management of the site.

1.5. Site description

The archaeological site at Gunwalloe is situated in the parish of Kerrier on the western side of the Lizard Peninsula [SW 6598 2062] (Fig 1). The medieval settlement is located on sand dunes which rise up to the cliff edge from the road leading to the beach and Winninaton farm house. The promontory fort is not located on sand as it is a promontory jutting out between Jangey-ryn Cove (Dollar Cove) and Church cove (Fig 2).

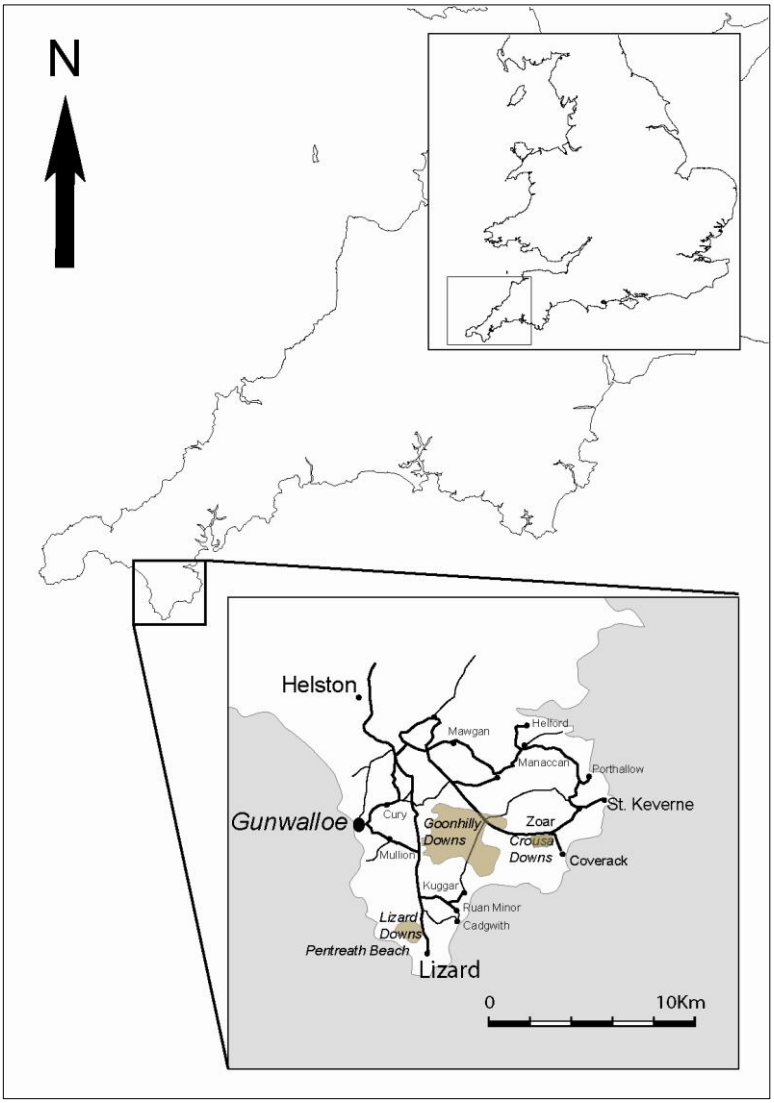


Figure 1: Location map of Gunwalloe on the Lizard Peninsula in Cornwall (Author's Illustration).

1.6. Topography

The overall character of Gunwalloe is characteristic of the Lizard Peninsula as a whole, described by the Historic Landscape Assessment as "a flat to gently undulating peninsula with a rocky, indented coastline and high cliffs" (H.E.S., 1994, 33). The site is located on a mixture of undulating sand dunes above a cliff backed by agricultural pasture land sloping upwards to the north-east. The ground cover is a mixture of coastal grassland and pasture. Behind Church Cove a broad valley runs inland which contains extensive marshland and small river that issues out onto the beach (Fig 3). It is possible that it may have been tidal in the past, similar to Loe Pool further up the coast.

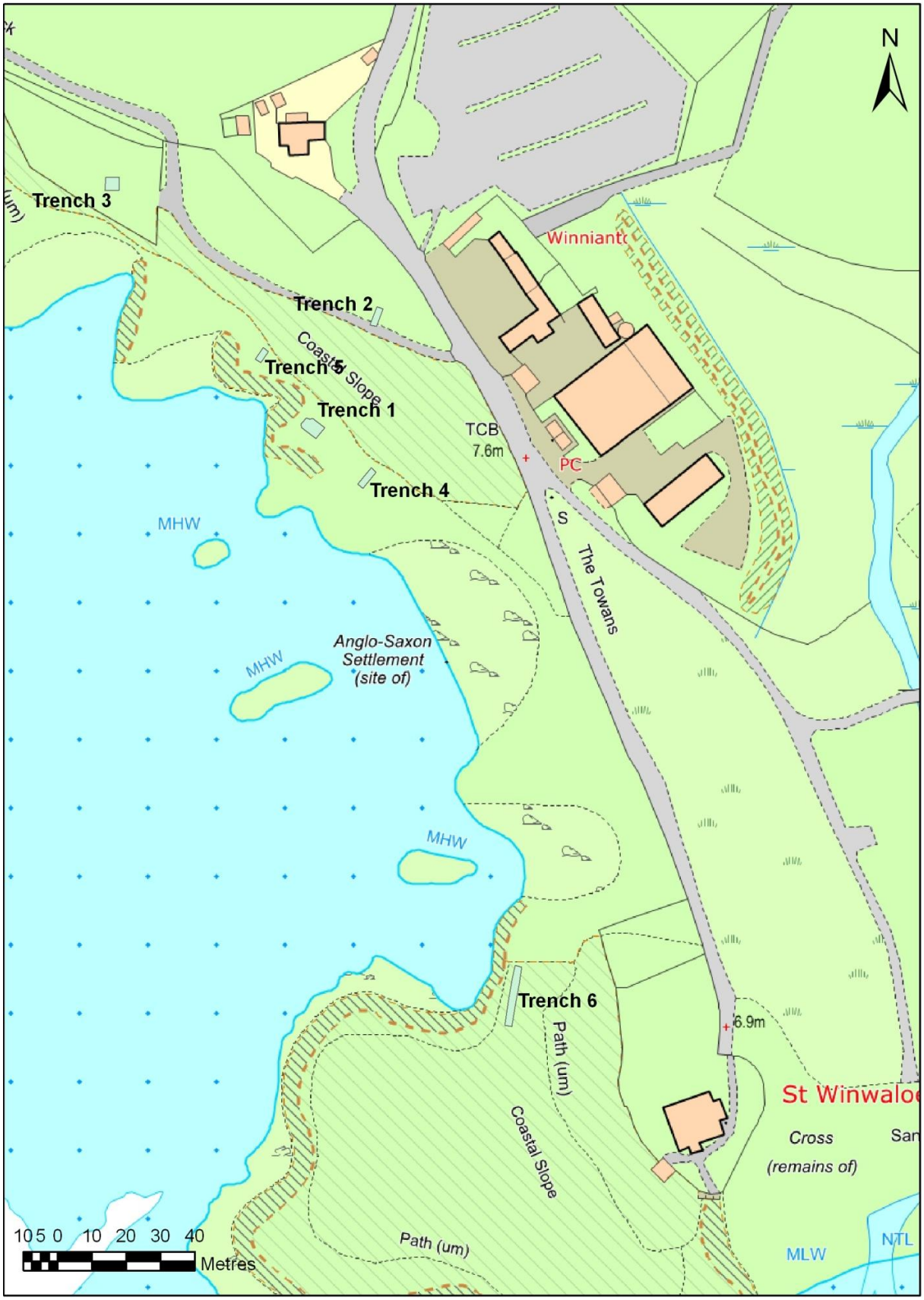


Figure 2: Location plan and overall site plan showing the distribution of existing groundwork's and any archaeological features (Illustration Bryn Morris; contains Ordnance Survey data © Crown copyright 2015)

Figure 3: Aerial photo of Jangey-Ryn, Dollar Cove and the locally called Valley of the Tithet leading inland, viewed from the west (© Steve Hartgroves, Cornwall County Council).

1.7. Geology *by Dr Robin Shail*

The bedrock comprises folded, cleaved and faulted very low grade regionally metamorphosed interbedded sandstones and mudstones of the late Devonian Gramscatho Group. The site forms the southern part of the Baulk Head (SW 6544 2232) to Gunwalloe Church Cove (SW 6605 2040), Geological SSSI and records deep marine sedimentation during the final stages of closure of an ocean basin and the tectonic processes during the ensuing 'Variscan' continental collision (Leveridge and Shail, 2011). Almost all the site is assigned to the Portscatho Formation and is present within a fault-bounded unit known as the Carrick Nappe. The southernmost part of the site (Trench 6 southwards) is assigned to the Carne Formation, present within the Veryan Nappe, which has been interpreted to have been thrust northwards over the underlying Carrick Nappe (Leveridge et al., 1990). The site was one of those at which poorly preserved fossil wood material was first recognised in the early 20th Century, subsequently leading to all the formations in west Cornwall being assigned a Devonian rather than Ordovician age (Lang, 1929). More recently it was recognised that a rich microfossil assemblage was present that supported an Upper Devonian (Frasnian) age (Le Gall et al., 1985). The structural geology of the site is complex and abundant evidence is present for two episodes of northerly directed ('Variscan') thrust faulting, associated with fold and cleavage development, followed by an episode of extensional faulting that partially reactivates earlier thrust faults (Alexander and Shail, 1996). The fault zones strongly influence slope stability and hence coastal geomorphology (e.g. Shail et al., 1998).

Superficial geology

The bedrock is overlain by a variable thickness of Quaternary superficial sediments comprising 'head' overlain by blown sand (Campbell et al., 1998). The head comprises poorly-sorted clasts of the underlying formations and represents down-slope mass movements during periglacial thaw periods. In addition, there are good examples of rock head deformation (e.g. Ealey, 2012). It is designated a Geological SSSI by the Geodiversity Action Plan for Cornwall and the Isles of Scilly (Wheeler 2005). It provides an excellent insight into sedimentological processes and depositional environments in the Portscatho and

Carne formations and provided the first dating evidence in 1901 of the Devonian Age in the geology of the south-west. This geology is in some ways the reason for such rapid coastal erosion in Jangye-Ryn cove, the slates are very soft and laminate which undermines the land surface above.

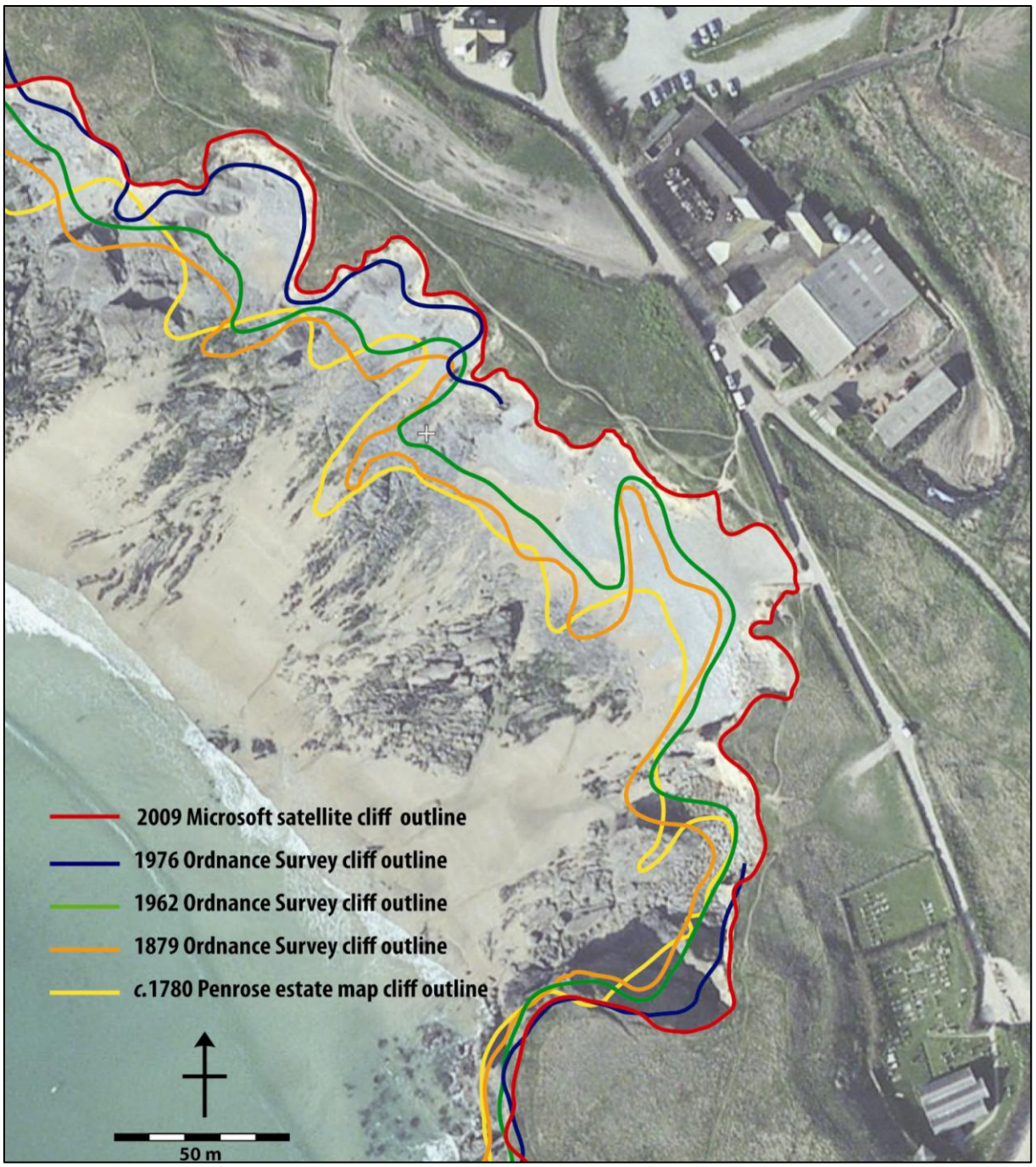


Figure 4: Rate of erosion based on historic cartographic sources (Tom Walker 2013).

1.8. Erosion

This soft geology has resulted in a considerable rate of erosion recorded over the past 233 years. A review of historic maps in comparison to the current coastline suggest around 70 meters have eroded in the past 233 years. The map below suggests that erosion was relatively steady up until the mid 20th century when it increased to roughly 1.70m per year (Fig 4). At this rate the area of the known archaeological resource will disappear in the next few decades presenting a clear threat to this site of national importance.

The sea is not the only cause of erosion to this archaeological resource. The transit of cows and agricultural machinery in the field adjacent to the road, in which Trench's 2 and 3 were located, has resulted in considerable damage to the upper layers of archaeological features. Recording in 2010 of the exposed archaeology in ruts caused by the transit of tractors, established that 0.50m of deposits had been cut through including early medieval hearths and clay floors (Fig 5). The action of water after heavy rain further deepens these ruts causing more damage. Wind is also a significant feature in the erosion of the sand dunes, if turf is removed the underlying sand is rapidly dispersed as is characteristic of dune formations.

Figure 5: Erosion caused by tractor (Author's photo).

1.9. Ownership, and statutory designations

The site is current owned by the National Trust Penrose Estate. Some of the archaeological site is worked by a tenant farmer John Curtis and not currently under an archaeological stewardship scheme. The site has been designated as a Site of Special Scientific Interest (SSSI) notified under Section 28 of the Wildlife and Countryside Act 1981 as amended. It is part of the Baulk head to Mullion zone. It is also designated an Area Of Natural Beauty (ANOB).The promontory fort is a scheduled monument no (CO 781) as 'cliff castle' and is monitored by English Heritage. The National Trust Sites and Monuments database lists 7 sites and one Listed Building within the environs of the evaluation area. The Cornwall and Isles of Scilly Historic Environment Record (CHER) lists some 25 sites. It is designated a Geological SSSI by the Geodiversity Action Plan for Cornwall and the Isles of Scilly (Wheeler 2005).

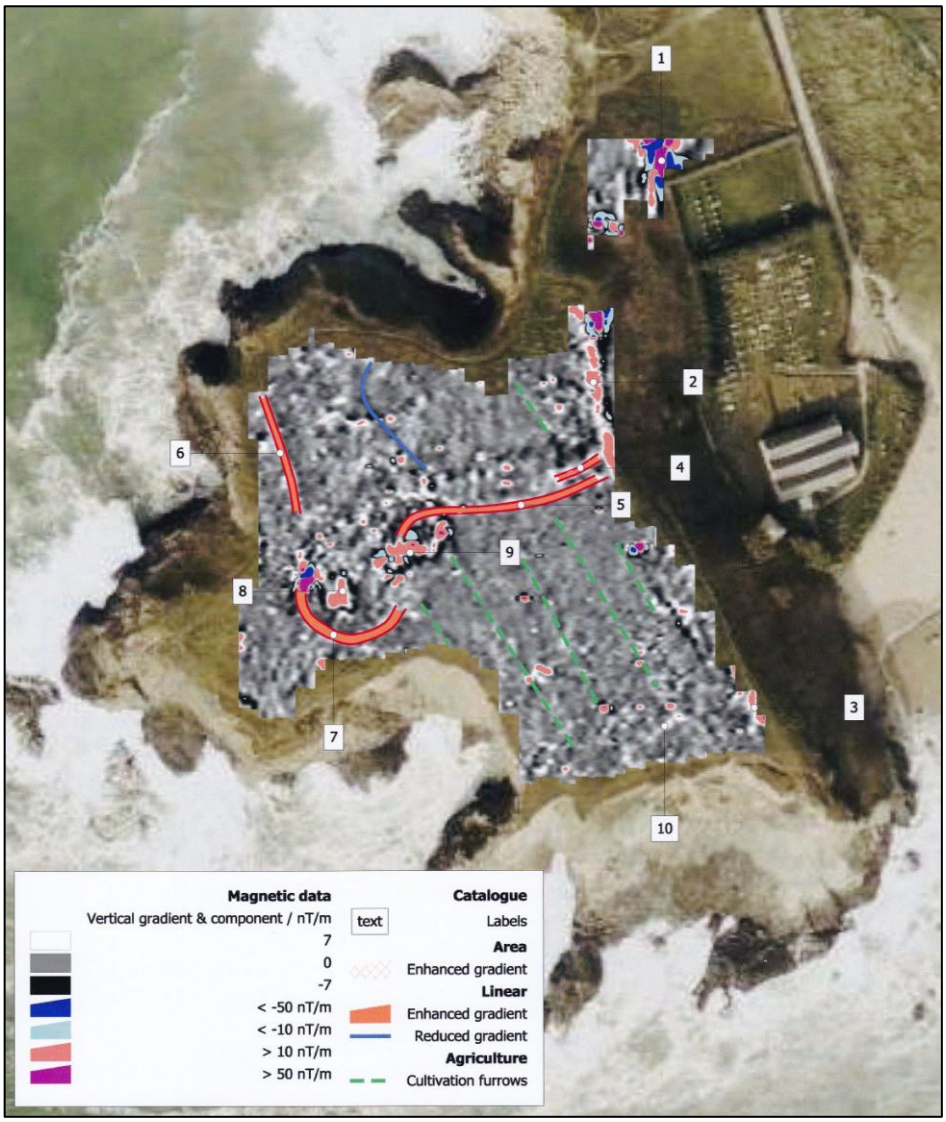


Figure 6: Geophysics map and interpretation (NTC 126 Gunwalloe DWG 3 ArchaeoPhysica Ltd).

1.10. Geophysical survey

The results of the Geophysical survey on the promontory fort demonstrate that there are a complex series of anomalies which represent many phases of activity on the site. The nature of the features is unknown, however, it does suggest the presence of enclosures, circular features and later agricultural activity (Fig 6).

1.11. Topographical Survey

A detailed topographical survey was carried out on the site over the course for several days in August 2011, supplemented by additional work in 2012. This work was undertaken using a Leica 1200 series dGPS, with the intention of creating a baseline topographic map against which current and subsequent work – and coastal erosion – could be measured. The results of this work follow (below); these maps were generated from the ASCII point data using ARCGIS.

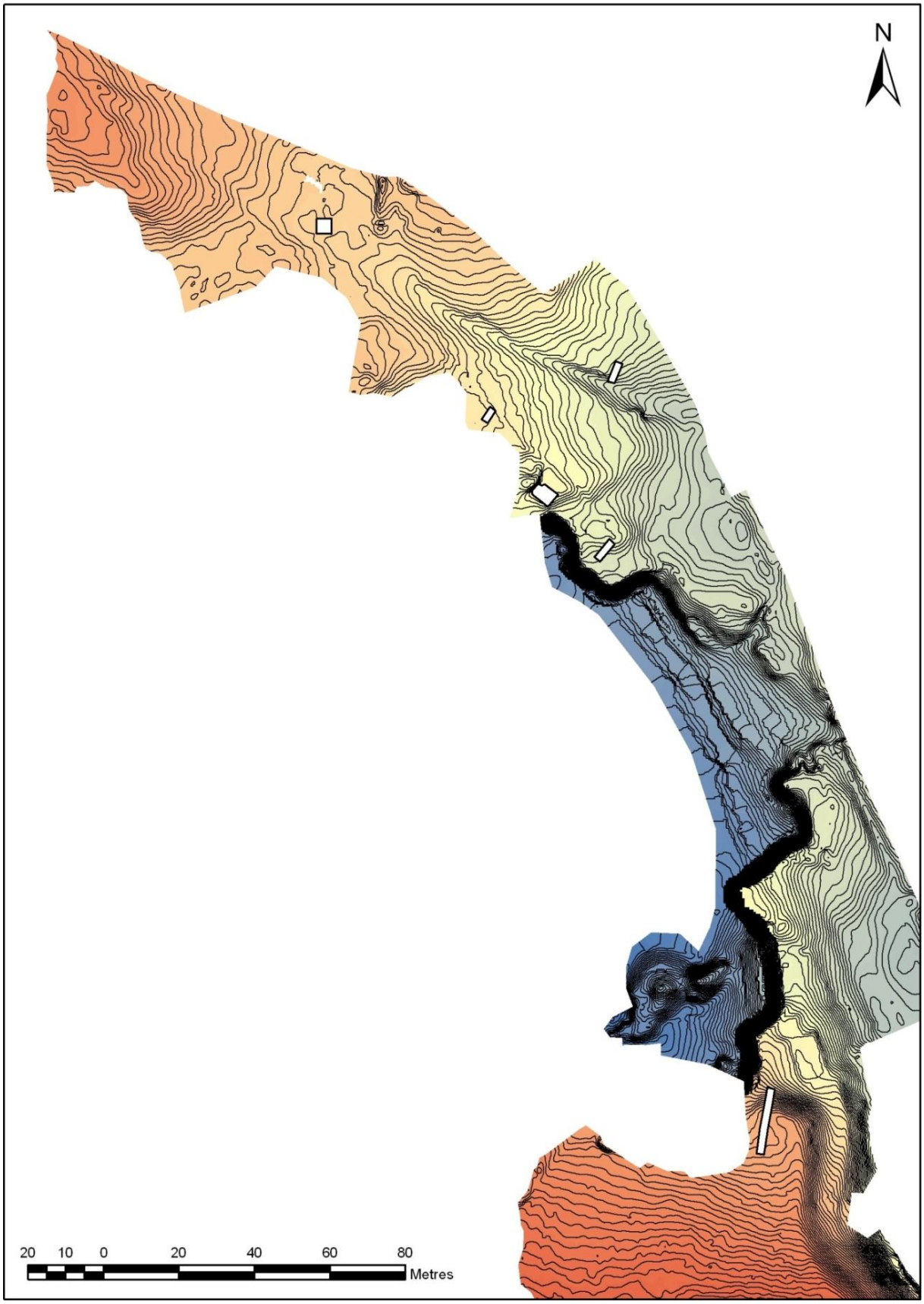


Figure 7: Topographic map of the northern part of the site; contours at 20cm intervals; the six evaluation trenches are shown (gradation from blue to red indicates increase in relative altitude).

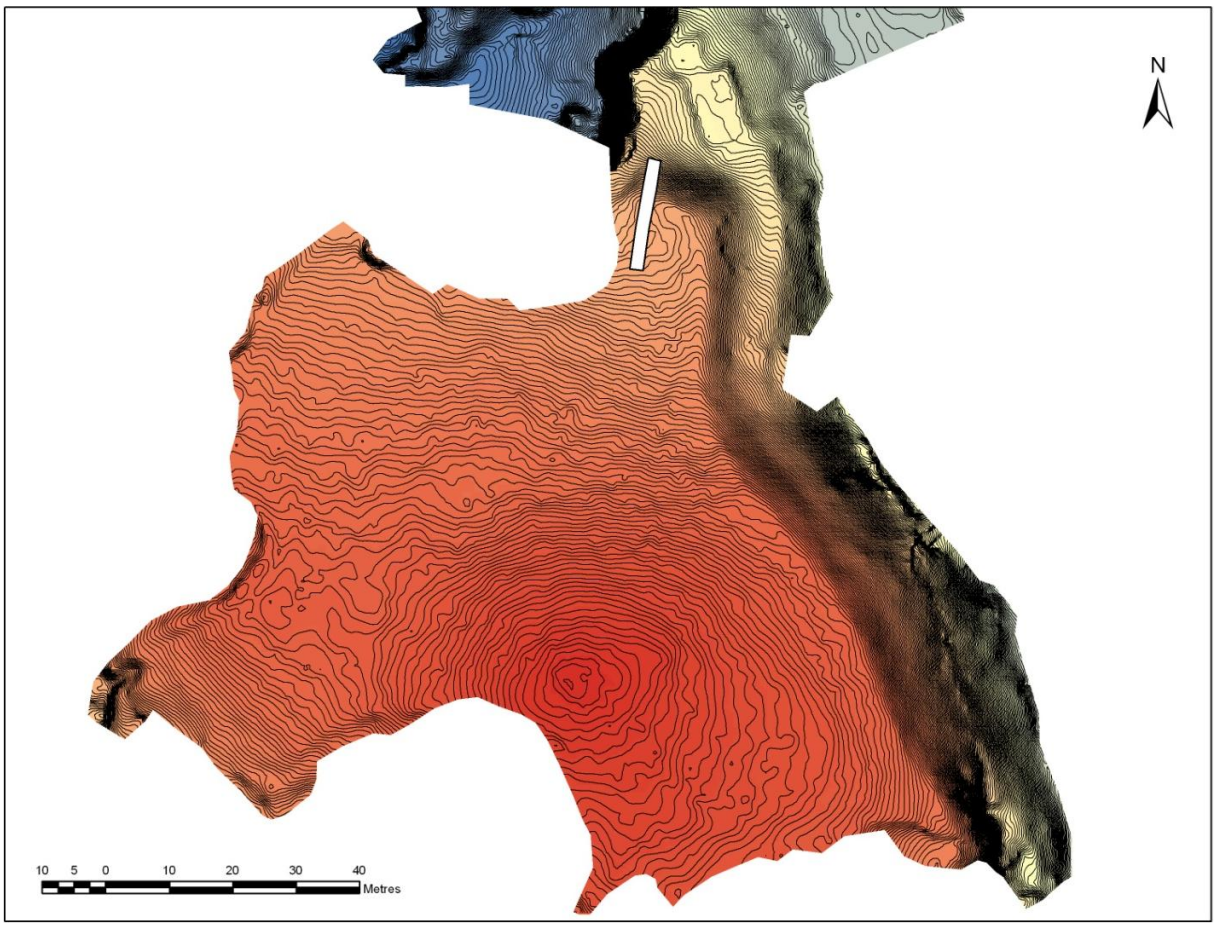


Figure 8: Topographic survey of the promontory fort; contours at 10cm intervals. The location of Trench 6 is shown, and the ramparts and golf tee are clearly visible (top) (gradation from blue to red indicates increase in relative altitude.

2.0 Desk-based Assessment

2.1. Introduction

The Historic Environment Record has evidence for activity at Gunwalloe from the Mesolithic to the present day. Mesolithic and Neolithic flint scatters have been discovered in the area, and there are Bronze Age barrows on the cliffs either side of the coves. The Iron Age period is represented by the possible promontory fort and possible enclosures as crop marks in the fields behind Gunwalloe. The medieval settlement noted since the beginning of the 20th century and documentary evidence which takes it into the Post-medieval period. The site even played a role in the history of leisure time pursuits in the early 1920/30' its fame as a Golf range put Cornwall on the sporting map, not to mention the growth of beach holidays on the golden sands and turquoise waters of its beaches. Gunwalloe has drawn people for Millennia resulting in an archaeological resource to equal the most influential in Britain.

2.1.1. Prehistoric

The earliest evidence for human activity in the area comes from a single flint blade of Mesolithic origin which was recovered after it had eroded out of the cliff face (HER 102094). There have also been Neolithic flint assemblages attributed to certain stretches of the coast.

The Bronze Age is represented by the relatively large number of barrows which survive along the coastal margin both north and south of the evaluation area as well as eastwards inland. Some of these are upstanding whilst others survive as cropmarks (HER, 51535). A Bronze Age Pigmy cup was also found in the dunes currently occupied by Mullion golf course (HER, MCO55835).

2.1.2. Iron Age

Continuity into the Iron Age is indicated by two site types, both within the evaluation area and outside. Firstly the Iron Age Cliff Castle 'Promontory fort' Scheduled monument (CO 781) (listed eh 1004265) (HER 28086). The Tithe Map of 1840 shows the fieldname 'The Castle' at Winnianton (Fig 21), which suggests the site of a cliff castle and an earlier estate map and lease record the existence of a "house called Choycastle adjoining Gunwalloe Church" (CRO RH/9/2/10/1, dated 1796). A univallate cliff castle is recorded at Winnianton in 1959 and is shown on the OS map of 1962. In 1969 the site is listed and records the extant remains of a cliff castle. The OS who visited the site in 1973 record the island site of a knoll-like promontory, traversed by a lynchet up to 7.0m high, set below the crest, and with a terrace of variable width at the base of the lynchet. Their conclusions were that, although superficially it appears to be man-made the feature is possibly of geological origin compounded with windblown sand and slip. The remains are visible on aerial photographs and were plotted as part of the NMP. Evaluation Trench 6 conclusively demonstrated the presence of a rampart.

There are a series of rectilinear and circular enclosures, located c.200m to the north of the evaluation site, reminiscent of a Late Iron Age/Romano-British rounds (HER 51536). Their identification has yet to be proven as they have only been recorded through aerial photography and were plotted as part of the NMP.

2.1.3. Post-Roman

Carbon dating from the bank of the promontory fort suggests the last phase of use as a defended enclosure were in the 4th -5th century AD. The abraded Oxfordshire Colour coated ware sherd could provide some artefactual evidence for this.

2.1.4. Medieval

The existence of an early medieval settlement at Gunwalloe (HER 28035 and HER28115), consisting of stone structures with associated middens and floor surfaces has been noted for over a 100 years. It was first identified in 1909 by W. Rogers, with sporadic subsequent investigations in 1929 by A Hogg; in 1947 by E. Jope and R. Threfall; in 1977 by Cornwall

Archaeological Unit; in 1985 and 1986 by C. Peters; more recently by I. Wood in 2008 and 2010 (see 2.3 below).

Both documentary and archaeological evidence have identified a potential settlement site dating from c.8th century at Gunwalloe. The earliest evidence relates to the recovery Grass Marked wares (dating from the 7th to 12th centuries) found both eroding from the cliff face and from excavations. The investigations dating from 1909 to 2010 have identified Grass-marked wares in association with middens and the remains of stone built structures. An AMS date from one of the middens eroding from the cliff has given a date of between the 9th to 10th centuries for these features (Wood 2010) (see 2.3). Previous excavation work has recovered extensive well preserved faunal remains in association with the middens. The previously limited excavations have also identified several possible phases of construction/occupation in relation to the stone structures recorded.

Documentary evidence identifies a manor of Winnianton as far back as the 11th century which is assumed to be in the local area. The Domesday Book lists Winnianton as a Royal Manor (one of the chief manors of Cornwall at the time) though makes no direct reference to a settlement (Williams and Martin, 2002). Later Court Roles for the Manors of Carminowe and Winnianton show the continuity of the site as a focus for activity right through the medieval and post medieval periods.

An ecclesiastical association at Winnianton may date back the 13th century or earlier. The documentary evidence in 1219 AD refers to the 'Eecclesia de Winiton' which may refer to the church at Gunwalloe (Gover, 1948, 548). A later documentary reference to a chapel of 'St Wynwola iuxta Carmynow' on the site is dated to 1433 AD which relates to the surviving fabric of the current church at Winnianton (Doble, 1940; Henderson, 1956, 192). There are also two Listed early medieval stone wheel-head crosses (1157997) within the churchyard (HER 105779 and HER 105780) and a reference in 1732 AD to a holy well which has been lost to coastal erosion (HER 107993) (Cummings, 1875, 182; Langdon, 1999, 67).

2.1.5. Post-Medieval

In the late 14th century the lands of Winnington passed from the Carminow family and into the ownership of the Arundells after which there are many references for its rental as agricultural land (Fox and Padel 2000, xvi). During the early 17th century there are several references to the lease of a farm at Winnianton. Though no structures have yet been identified from this period, the current farmhouse and associated farm buildings were constructed (c.1850).

2.1.6. Modern

The evaluation area was part of the golf course for Mullion golf club from 1906 until 1956. It was abandoned due to people walking on the course as a result of beach holidays and walking the coastal path becoming a popular pastime. The Mullion Golf Club started in1895 and saw the likes of A. A. Milne, Sir James Barrie, Sir Arthur Conan Doyle and most importantly Sir Alan Patrick Herbert who wrote a fictional satire about the Chasm hole or Hole no.12 which was sighted on top of the location of Trench 1 and over to the promontory fort. A concrete slab and wooden boarding were erected to protect the golfers, but it was renowned as the most difficult hole on the course.

2.2. South West Archaeological Research Framework (SWARF)

The scope and results of the evaluation have met 26 research aims in the SWARF document. However, since this was produced further aims have been set by English Heritage specifically environmental work for which Gunwalloe has carried out a pioneering suite of analysis.

The desk based assessment and research carried out as part of Dr Wood's thesis have met aim 2; a, b, e and f concerned with synthesis within and across periods, settlements and monument areas. Aim 4; b, e, f and g, concerned with encouraging wide involvement in

archaeological research and present modern accounts of the past to the public. Aim 4; e is of particular relevance as it states 'the early medieval period holds the key to the origins of the current nations of Great Britain' the evaluation significantly contributed to this aim. Aim 10, e and f, concerned addressing our lack of understanding of key transitional periods, such as the post-Roman and early medieval periods. Aim 16; f and h concerned with increasing the use and improving the targeting scientific dating, specifically the Late Bronze Age and Early medieval periods. Aim 17; a, c and d concerned with improving the quality and quantity of environmental data and our understanding of what it represents. Aim 18; d concerned with targeting specific soil and sediment contexts for environmental information, specifically soil micro-morphology.

Aim 19;c, concerned with improving our understanding of wild and domestic animals in the past, specifically the exploitation of wild animals in the early medieval period. Aim 21;a and b, concerned with improving our understanding of the environmental aspects of farming. Aim 23, a and b, are of particular relevance to the environmental work carried out at Gunwalloe towards improving our understanding of past climate and sea level changes together with their effects on peoples relationships with landscapes and the sea. Aim 26 concerned with investigating the changes in landscape and population at the end of the Roman Period, it states that early medieval environmental studies have the potential to provide evidence independent from historical accounts.

Research Aim 33 concerned with widening our understanding of the origins of villages has been compressively addressed for the first time in Cornwall as a result of the evaluation at Gunwalloe. Aim 44;a concerned with developing an understanding and identification of early medieval technologies, specifically continuing pottery production. Aim 52 concerned with using archaeological evidence to better understand identities, such as Cornish through time. Aim 55 concerned with improving our understanding of later Roman religion.

2.3. Previous archaeological investigations

There have been many investigations on the site since 1909, and the scale and aim of this work have generally been exploratory or rescue above Jangye-ryn cove. The layers of windblown sand have created a post-depositional environment conducive to good preservation, and thus artefacts such as bone and pottery survive well. The work carried out has only been published as brief notes or summaries of observations. Previous excavations have failed to obtain absolute dates for the site, although a charcoal sample recovered by Dr Imogen Wood from a midden exposed in the cliff in 2008 was dated. Prior to this the dating evidence relied on ceramic typology, and, to some extent, historical documents.

Evidence for a settlement here was first noted in 1909 by Rogers (1910, 240), who observed pottery, sea shells and animal bones appearing in the cliff face. On further investigation he suggested the pottery and material were similar to that of the settlement at Gwithian on the north coast of Cornwall (Rogers, 1910). He describes his discovery as being "close to the castle", by which it is assumed the univallate cliff castle known to have been a prominent earthwork at the time (Pool and Thomas, 1973).

The first archaeological investigation on the site was carried out by Hogg in 1929 (1930). He revealed and recorded a 70" or 1.7m section of the cliff-face which included stone walls, clay floors, hearths and midden material (Fig 9) (Hogg, 1930, 325). He ascertained that the remains extended inland some distance and that there were at least three 'levels' (Hogg, 1930, 325). The lowest level revealed walls constructed of rounded boulders with no bonding material and a hearth containing burnt pottery and large amounts of charcoal, with a general spread of bone and shells found within that structure (Hogg, 1930, 325).

The next layer was separated from the first by two feet of windblown sand containing thin clay floors and burnt layers that seem to respect the underlying location of the hearth. These walls were constructed of angular slabs of stone with bonded with clay, which he suggested were retaining walls for the blown sand (Hogg, 1930). This form of construction is also seen

in the 2010 excavation (see below). Hogg also suggested that the structures were made of wood as the walls he found appeared insubstantial and there was no evidence of stone having being robbed (1930).

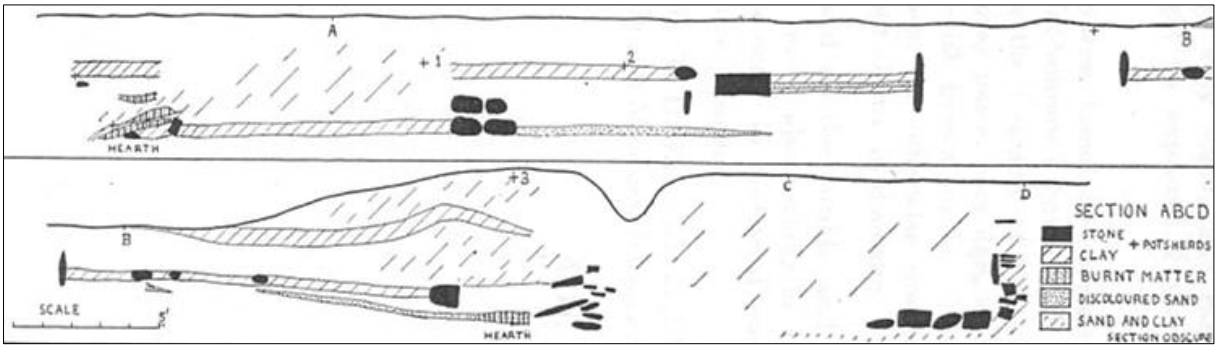


Figure 9: Hogg's section drawings from 1930, depicting stone walls and floor surfaces (from Hogg 1930, plate 10).

The highest level showed ephemeral traces of possible clay floors and large quantities of limpet shells, bones and pottery. The pottery sherds came from large hand-made flat-bottomed bowls with flat rims. Hogg commented that the bases had impressions of "grass, reeds and also sacking" (Hogg, 1930, 326). He concluded that the site was of a 'Dark Age' settlement, possibly a precursor to Domesday Manor of Winnianton (Hogg, 1930).

The first archaeological excavation on the site was carried out by Jope and Threfall in 1947 [at (Nat. Grid 10/659207)], who uncovered habitation levels, hearths and dry-stone walled structures between layers of windblown sand (1955-56, 136). They believed these structures were the remains of the Anglo-Saxon Royal Manor of Winnianton, and that further excavation would corroborate this (Jope and Threfall, 1955-56, 136). The references in Domesday book to the agricultural economy of the manor as being both pastoral and arable appeared to be supported by the discovery of sheep, ox, dog and bird bones, and also "a number of seed and grain impressions on the pottery" (Jope and Threfall, 1955-56, 136-137). They also reported a large amount of shellfish remains such as limpets. The pottery recovered was comparable in form to that of Mawgan Porth (Bruce-Mitford, 1997) and Hellesvean (Guthrie, 1954, 1960). They concluded that both the forms of the walls and pottery found were similar to those at Mawgan Porth, and thus dated to between AD 850 and 1050 (Bruce-Mitford, 1997).

In 1977, the construction of the National Trust car park for the beach at Church Cove (Johnson, 1978, 4), along with pottery frequently found in the process of digging new graves for the church (Peters, 1986), resulted in a renewed interest in the site. In both 1985 and 1986, Peters carried out fieldwork to extract environmental data for his BA and MA degrees in Archaeology, the results of which have not been published (Figs 10 and 11) (Peters, 1986, 1987, 1988, 4).

The archaeology recorded in the Trenches and pit section drawings shows a stratigraphic sequence containing: a dry-stone wall, an area of charcoal, shell, bone, Grass-marked pottery and a midden in the form of a long ditch, along with a small iron bell possibly late-Roman or early medieval in date (Fig 11) (Peters, 1986, 6). The mollusc *Cernuella virgata* was found in midden deposits, and as this species is thought to have been introduced during the Romano-British period it provides and *terminus post quem* for this feature (Peters, 1987, 69).

The environmental evidence from the molluscs collected in Trench GIa suggested "a succession from possible plough-soil to rapid sand accumulation at the level of the archaeology to the present day stable dune pasture" (Peters, 1988, 26). The results from GIII suggest a sequence from marshland to a drier swamp followed by a sparsely vegetated swamp and finally desiccated marshland, after which there was a period of recovery

culminating in the currently rejuvenated marshland (Peters, 1988, 26). This suggested to Peters that “overgrazing and human settlement may have caused the second phase of sand accumulation”. He therefore concluded that the location of the settlement had been selected due to its infertility in an effort to avoid using more productive land (1988, 26). He suggests that the ‘Dark Age’ settlement may have shifted to the current location of Winnianton Farm to avoid the encroaching sand-dunes (Peters, 1988, 26).

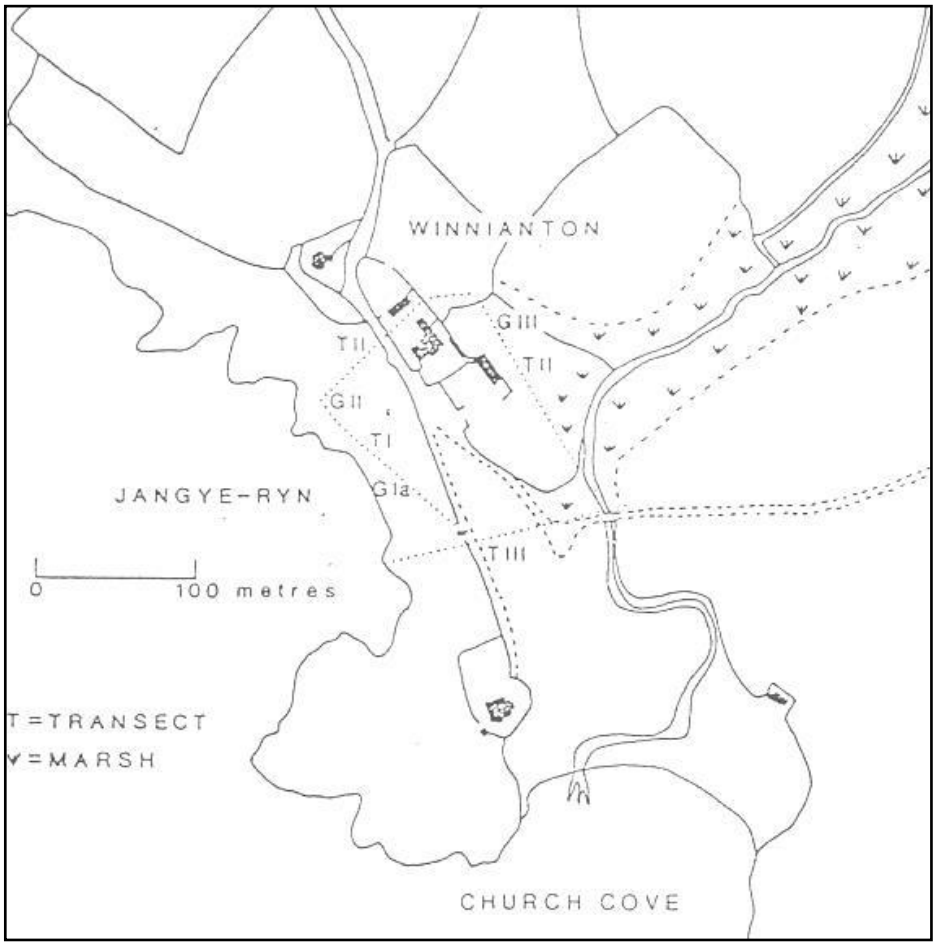


Figure 10: Peters’ map plotting the locations of transects to retrieve molluscs and pollen (Peters 1987, Fig 3).

The environmental analysis carried out by Peters has suggested to him a subsistence strategy in action at the site during its occupation (1987). Analysis of the bones in the midden deposits confirm that cattle, sheep, horses, pigs and domestic fowl were being consumed along with limpets and the bones of fish commonly found in shallow coastal waters (Peters, 1987, 7). The organic material recovered included cultivated barley and wheat, along with wild foods such as blackberries and hazelnuts (Peters, 1987, 77). A sherd of pottery from the midden had a cloth impression on its base, further suggesting a well-established settlement involved in a range of domestic activities.

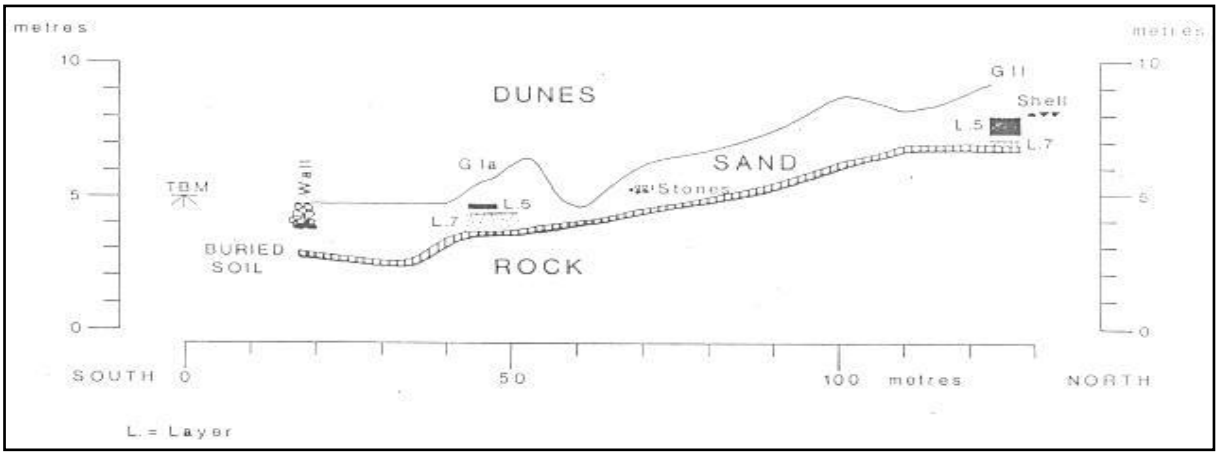


Figure 11: Peters' section drawing of Transect 1 showing occupation layers and stone walls (Peters 1987, Fig 4).

The most recent investigations on the site have been undertaken by the author as part of her PhD thesis. Rescue recording began in February 2008 when a midden was revealed in the cliff face above Jangye-ryn cove containing Grass-marked Ware, charcoal, bone, shell and burnt stone (Fig 12). A piece of gorse charcoal was dated to 856-996 (GRA-39254). This feature has since been lost to erosion.

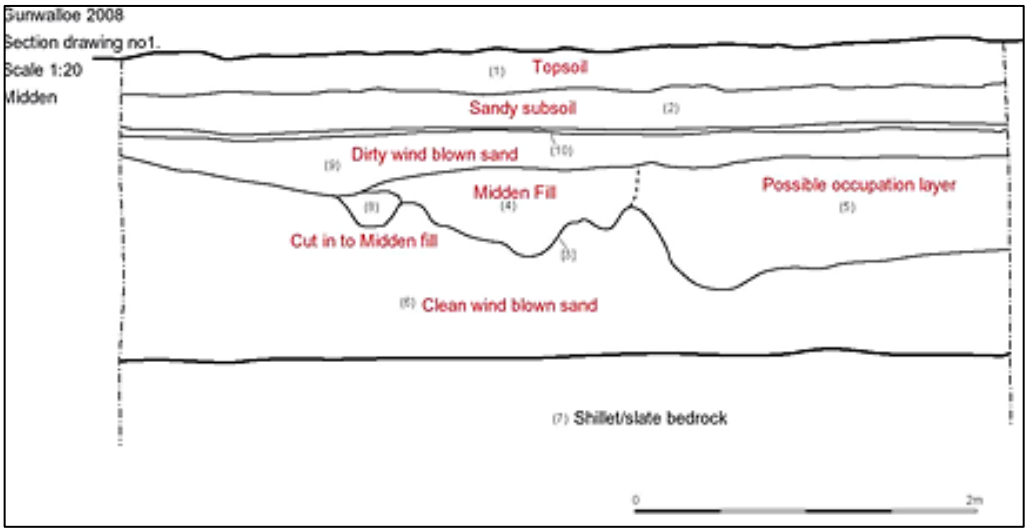


Figure 12: Section drawing of Midden in Cliff 2008 (Author's illustration).0033

In 2010 further rescue work was carried out to record archaeology eroding in the field adjacent to the road caused by the transit of tractors and the subsequent ruts. With the help of a group of local volunteers it revealed a midden, a possible hearth, clay-floor surfaces, pits filled with charcoal, occupation layers and a section of a clay-bonded revetted stone wall very similar to previous excavations. The midden produced sherds of Grass-marked cooking pots, dishes and Bar-lug cauldrons, along with evidence of a very varied diet including limpets, mussels, cockles, winkles, crab, fish, chickens, sheep, pigs and cows. This informed the Trench location of Trench 2 in 2011.

In 2012 excavations, not part of the National Trust project, were carried out in the graveyard of the current church. This revealed evidence of 13th-14th century occupation in the area. A midden produced a very different range of animal and fish bones to that of the early medieval faunal assemblages, such as oysters and sturgeon and fish in general. There were also numerous pieces of metal work and well-made hard fired pottery vessels which have not been identified elsewhere in Cornwall to date. It is possible this represents the presence of an ecclesiastical residence for the minister of Gunwalloe in this period, which documentary records refer to in the area.

2.4. Historic records

The first reference to the Lizard Peninsula is given by Ptolemy AD 125-150, who calls it the *Promontorium Dumnonium* or the 'promontory of Dumnonii' (Orme, 2010, 1). The origin of the peninsula's current name is 'lys+ardh' meaning 'court at a high place' (Padel, 1985, 278). The Anglo-Saxon charters referring to the Lizard peninsula focus on a small group of estates in or near St Keverne, recounted in three documents dating to the late 10th century, granting land from the King to Bishops and landowners outside Cornwall (Sawyer, 1968). There are no references to the lands on the western side of the Lizard until the Domesday Book. The majority of the manors are on the eastern side of the peninsula, with the Royal manor of Winnenton covering the land to the west whose size is indicated by its significantly larger taxable value (Roffe, 2000). The Domesday entry for the Hundred of Winnenton lists 36½ hides saying:

"Thence the King has of his geld 36s. for 6 hides. And the King and his Barons have in demesne 12 and a half hides. Of these the King 7 hides in demesne (dominio), and St Achabran [St Keverne] 1 hide and St Constantine half a hide and Bishop of Exeter 4 hides. Besides this demesne (excepto isto dominio) the men of the Count have 15 hides which, according to the testimony of the English, have never rendered geld. And for 3 hides of Harold's land, which B[alduin] the Sheriff holds (servant) under the King's hand, the King has not had geld" (Salzmann, 1924, 62).

The place-name Gunwalloe is commonly associated with the Saint Winwaloe as is the entire parish of Landewednack (John 2001, 78). The later name of the Domesday manor Winnianton would logically assume a similar provenance. The place-name of Winnianton is open to interpretation the author suggests that the *Winnian* element refers to saint St Winwaloe and the ton or *tun* refers to the Old English place-name element for a settlement or estate. This would suggest that the manors name originated in the post-Norman conquest period. This interpretation of the place-name has been questioned by Padel, who suggests it refers to the nearby headland called Pedngwinian meaning 'the headland of Gwinian', which later becomes the Winnianton or 'the tun of Gwinian' (Padel *pers. comm.*). Whilst he does not think the St. Winwaloe had any influence on the place-name, one has to ask why the headland was named 'Gwinian'? There was a St. Gwinian thought of as separate from St Winwaloe, but both originate from Brittany and it is possible that Gwinian is a pet name for Winwaloe (Padel *pers. comm*.).

There are other examples of Saints names and tun elements such as Launceston, originally 'lan-son' '*meaning church site of St Stephens'* to which the ton 'tun' was added later to make 'church site of St Stephen estate/manor' (Padel 1988, 107).

It is possible that Winnianton was, like the manor of Connerton, a 10th century creation of the Anglo-Saxon lords perhaps for administrative reasons as both Manors give their names to the early Hundreds (Fig 13). Padel has suggested that Winnianton perhaps administratively replaced Helston the Hen-lys or 'old court' founded earlier by the church (Padel *pers. comm.*). Archaeological evidence has confirmed a settlement existed prior to the Domesday Manor and the modern parish boundary of Gunwalloe strongly suggest it was carved out of the previous parish of Cury (Fig 13).

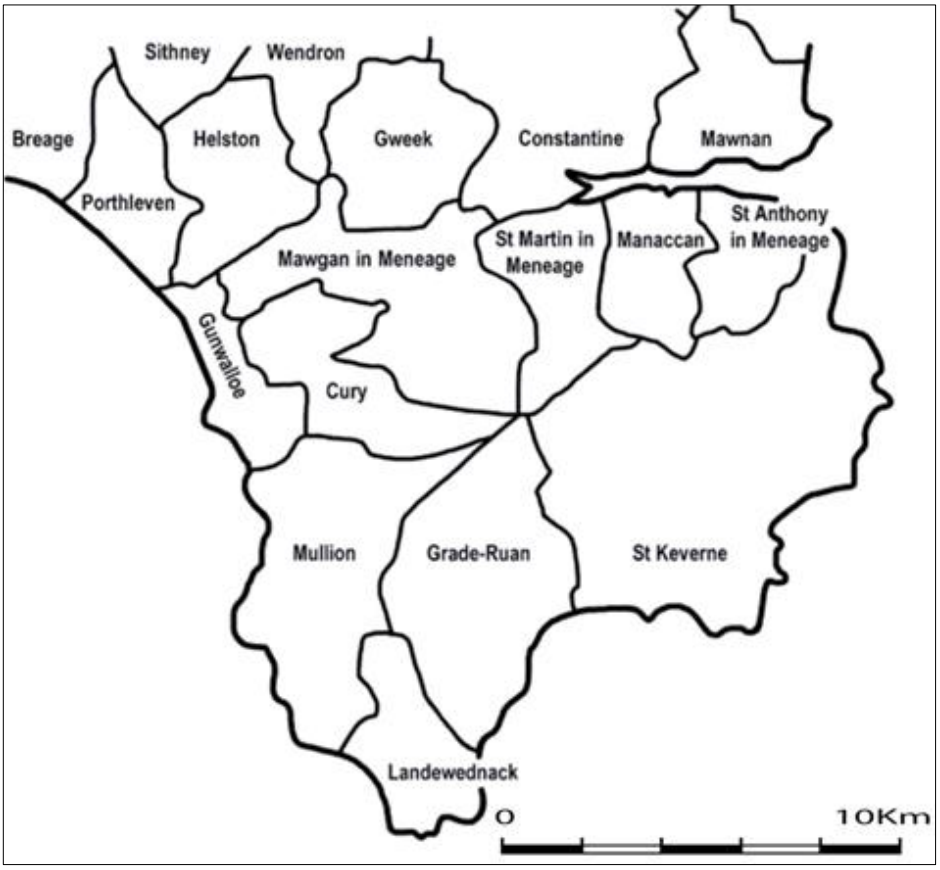


Figure 13: Showing the palimpsest of land ownership on the Lizard Peninsula (Author's illustration).

The nature of administration and settlement in Cornwall prior to Domesday Book is poorly understood. It is assumed that the post-Roman Dumnonian Hundreds still existed after the Norman Conquest (Preston-Jones and Rose, 1986). The Hundreds of Penwith and Winianton/Kerrier were held by the King, whilst Pydar and Powder were given by the King to Robert the Count of Mortain (Fig 14) (Pearce, 2004, 254-255). In 1086, 277 out of the 350 manors recorded in Domesday were owned by Robert the Count of Mortain, who had an important lordship centre at Launceston Castle (Preston-Jones and Rose, 1986). It is thought that the royal administrative centres for the Kings' Hundreds were at the manors of Winnianton (Kerrier) and Connerton (Penwith) (Pearce, 2004, 255).

There are few documentary records relating to the area of the evaluation at Gunwalloe. Apart from the Domesday Book most references relate to the church established in the 13th century. Records describe the chapel of 'St Wynwola iuxta Carmynow' on the site in AD 1433 (Doble, 1940; Henderson, 1956, 192), then 'chapel of Sanctus Wynwolaus' in 1332 (Padel 1988, 92) with an earlier reference to the 'Eecclesia de Winiton' in AD 1219 (Gover, 1948, 548) although it is uncertain if this early reference refers to Gunwalloe. The excavations in the graveyard in 2012 support a 13th century date for occupation in that area and the sturgeon suggests a high status presence most likely ecclesiastical.

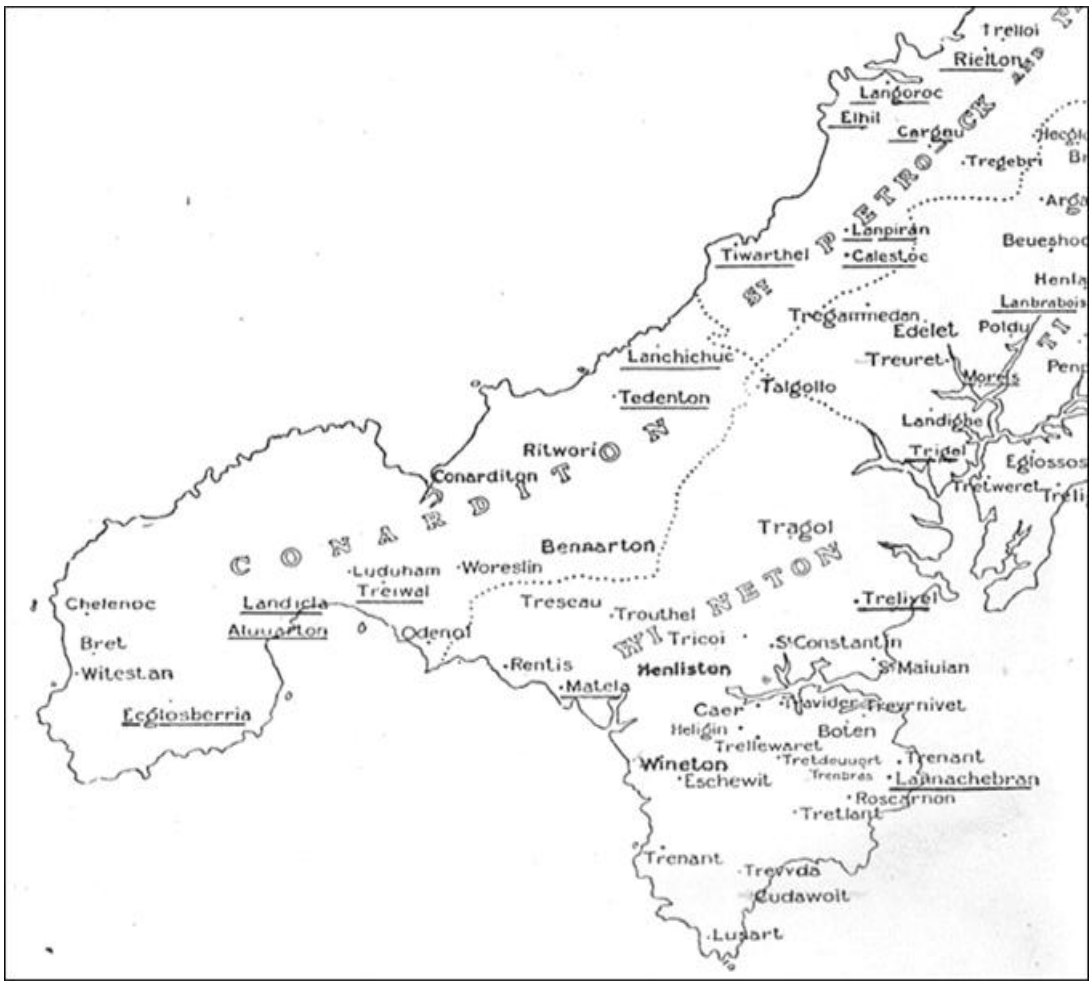


Figure 14: Showing the location of manors listed in Domesday within the Hundred of *Wineton* on the Lizard Peninsula; manors of ecclesiastical tenants are underlined (After Salzmann 1924, map 1).

2.5. Historic maps

The historic map evidence reveals little about the area of the evaluation, although it does demonstrate the prominence of the bank on the promontory fort in earlier periods (see Figs 15-24 below).


Figure 15: Extract from a 1540 map of the south coast (British Library).

Figure 16: John Norden's 1610 map, showing the churches at 'Wynnyton' and 'St Keverne'.

Figure 17: Joel Gascoyne's map of the Lizard Peninsula in 1699 (After Ravenhill & Padel 1991, map 1A).

The maps above show the continuity in settlement locations respecting the constraints of the topography such as Goonhilly Downs. The settlement of St Keverne is prominent as are the numerous churches. Note that by 1699 Wynnyton is called Gunwalloe (Figs 16 and 17).

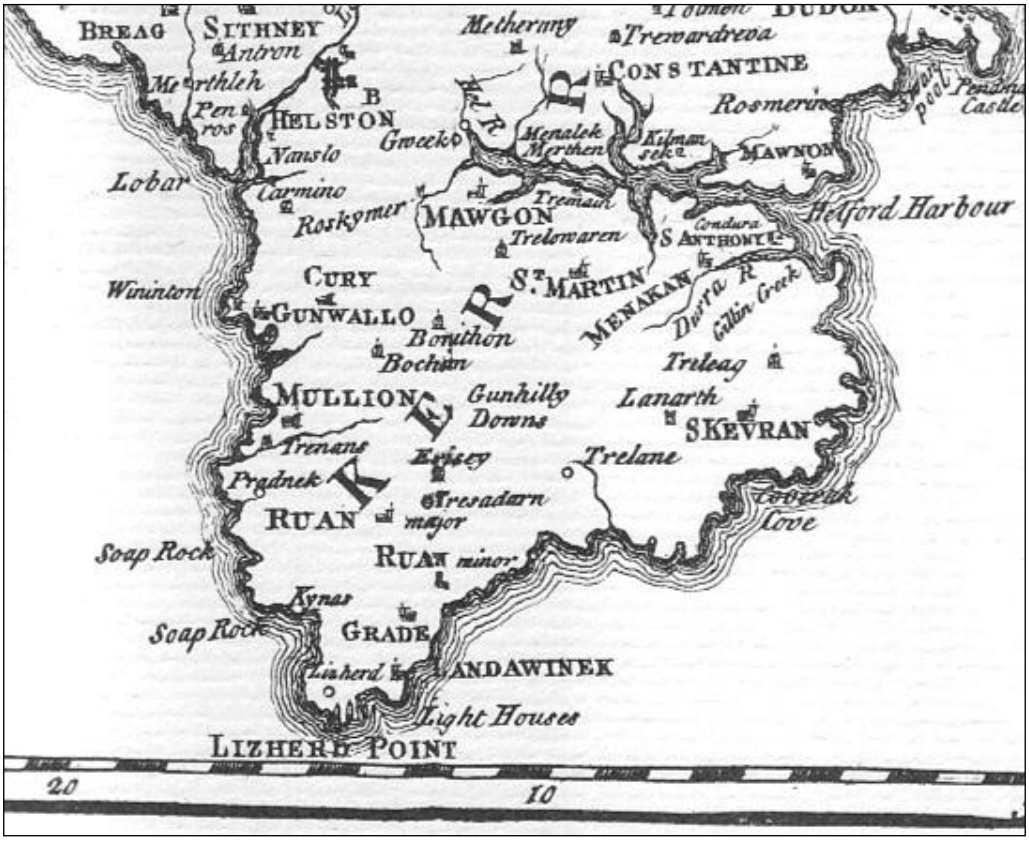


Figure 18: Borlase map of the Lizard Peninsula 1754 (After Borlase 1872, map 1).


Figure 19: Penrose Estate map; the promontory is listed as 'Choy Castle' and designated at agricultural land to be let (County Record Office).

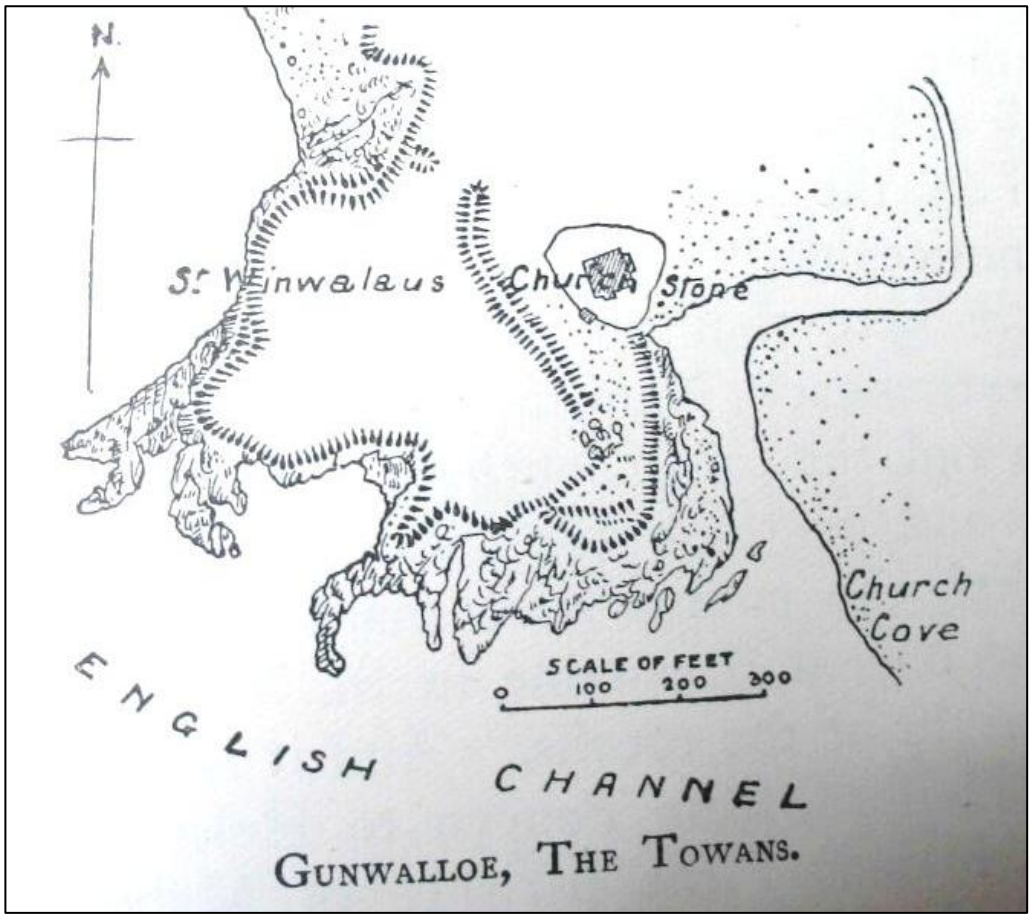


Figure 20: Hutchin's 1824 map of the promontory fort (After Hutchins 1827, plate 5).

Figure 21: Extract from the Ordnance Survey surveyor's draft map of the area, 1811 (British Library).

Figure 22: Tithe Map 1840, listing the promontory as 'The Castle' rented as agricultural land (CRO).

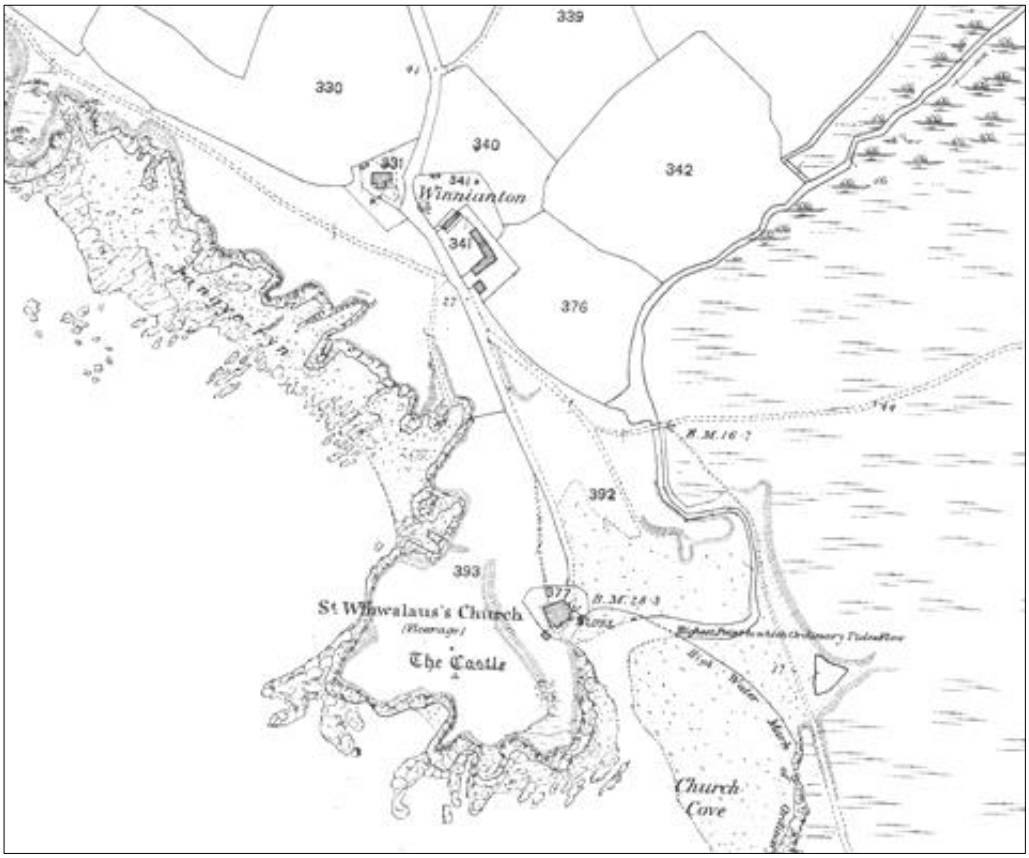


Figure 23: 1880 OS map 1:2.500 scale, showing the cliff castle earthworks and surrounding features (Historic Environment Service OS)

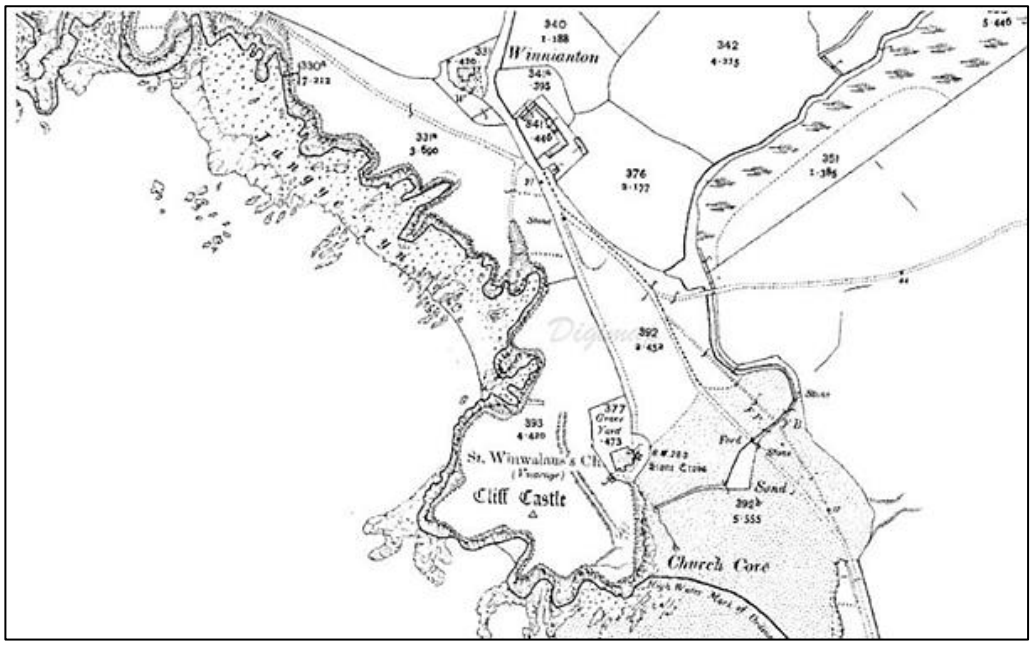


Figure 24: 1907 OS map 1:2,500 (CRO).

3.0 Review of results from evaluation,

3.1. Nature of archaeological processes at Gunwalloe

The majority of Trenches in this evaluation were located in sand dunes, which is a dynamic and challenging archaeological environment. It is important to note that excavation of sand dune sites presents new challenges and requires more innovative recording and interpretation. The idea that depth of deposits represents time in this context is erroneous, as a metre of sand can be deposited overnight and it could take a year to form a 0.03m stabilisation layer. It presents stratigraphic problems as deposits can form at any angle, not necessarily horizontal. The underlying form of the bedrock is also uncertain as the depth of deposits above it varies across the site.

These factors make associations between deposits in different Trenches impossible to establish. Therefore, the interpretation of phasing is based on a Trench basis and broadened out when carbon dates suggests a direct temporal link. These challenges have guided the methodology employed at Gunwalloe with the aim of recording and creating an archive that will endure irrespective of the current interpretation and excavation methods. The innovative approach to recording involved the 3D recording of all *in situ* finds and layers as the excavation progressed, providing a comprehensive record of primary data. Each item in the faunal and ceramic assemblages has a small find number which is listed in the Excel catalogue and also a digitised list for the entire site which also includes stone objects. This data can be viewed as a 3D model to aid future analysis on these assemblages and stratigraphic interpretation (data and Appendix via Oasis and ADS).

Excavation in sandy sites does have its bonuses, as the calcareous depositional environment aids bone preservation. All spoil was sieved with a 0.005m and 0.01m mesh, which significantly increased the faunal assemblage and in particular the presence of fine fish bones, which were virtually invisible during excavation. Although not in a sandy context all spoil from Trench 6 was also sieved for consistency in finds recovery. The finds retrieved in this process could not be to be 3D recorded.

3.2. Trench 1

Trench 1 (NGR 165907.9 20757.6) was positioned to investigate the clay-bonded stone wall discovered in 2010. It was the most challenging Trench to excavate, the most stratigraphically complex and produced the most finds (Figs 25 and 26). The Trench measured 4×6m and was orientated north-west to south-east; it was excavated to a maximum depth of 3.0m below ground level. Detailed context descriptions can be found in Appendix 1. This Trench revealed a rectangular stone structure with a central hearth and at least two phases of occupation. This overlay a series of pits, some of which were filled with midden material rich in pottery, bone and other remains, and others were filled with darker, more humic sands. These pits cut into the top of a shallow ditch, which in turn cut earlier deposits, including a substantial north-south ditch; this ditch cut through a thick (1.0m) deposit of windblown sand into the underlying bedrock.

3.2.1. Earliest Levels

The earliest deposit in the Trench was a stiff brown clay, probably the original land surface prior to the formation of the dunes.

The earliest deposit was a stiff brown clay (1068) which lay directly on top of the natural bedrock and contained snail shells (*Cernuella virgata*) and charcoal (*Quercus*). The charcoal was dated to 2190-1980 cal BC (Beta-322803), indicating an Early Bronze Age date. The snail species is, however, considered to have been introduced during the Romano-British period (see 4.5). Peters also encountered this species in 1986 (see 2.3). The contradiction remains unresolved.

This deposit is sealed by a thick layer of windblown sand (1079) (1069) and (1070), which suggests that (1068) represents the remnant of an original land surface prior to its inundation by sand and the formation of the dunes. These layers and the natural shillet are cut by a linear ditch [1067] *c*.1.80m wide and *c*.1.0m deep with sloping sides and concave base, orientated north-south. Its function is unclear, as a ditch cut through loose sand to such a depth would not have been stable for very long, which is perhaps why there was only a single fill (1066) of sterile windblown sand.

A pit [1071] was then cut through the upper fill of ditch [1067]; this was filled with sand containing frequent small shillet fragments. Subsequently, a shallow deposit developed across the northern half of the Trench, initially a thin band (0.06m) of clean yellow windblown sand (1042) but which quickly developed into a thicker (0.15m) layer of grey, dirty sand (1043). This was, in turn, cut by a wide, shallow pit [1056/1076] that largely lay outside the Trench to the north-west; the fills of this feature cut by a shallow, narrow flat-bottomed ditch [1060] *c*.0.5m wide by up to 0.3m deep; this feature was orientated north-east to south-west. Ditch [1060] contained a series of charcoal-rich deposits (1062) and (1061); these contained charred cereal grains, burnt bone and Gabbroic Grass-marked pottery. Charcoal from (1061) was dated to cal AD 890-1020 (Beta-322802), and it is possible this ditch is, in fact, the foundation Trench for an earlier wall. The uppermost fills of this feature (1057) contained frequent animal bone, with a high proportion of sheep/goat and the greatest number of blue mussels of any feature (see 4.2.1). It also produced the most complete example of a Bar-lug vessel; the sherd size was generally quite large, and levels of abrasion were low, all of which suggests its contained midden material (see 4.1). This was cut by another pit [1053] in the north-eastern corner of the Trench; this measured *c*.0.5m across and *c*.0.4m deep, but extended beyond the area of excavation. The quantity of finds, particularly of animal bone, within the fills (1044), (1063) and (1064), suggest it was also contained midden material. At the southern end of the Trench a small pit [1032] 0.6m diameter and 0.25m deep was cut into (1043); it contained six shallow fills, most of which contained charcoal. A very small pit [1037], 0.3m in diameter and only 0.05m deep, was excavated in the north-west corner of the Trench; the fill (1035) produced bone and charcoal fragments.

3.2.2. Rectangular Sunken Structure

This Trench was positioned to investigate a stone wall discovered in 2010; this proved to belong to a sunken-featured rectangular structure with internally-rendered clay-bonded walls and central hearth. The various pit fills and layers described above were cut by a foundation Trench [1046] for the wall of the structure {1012}.The cut [1046] sloped steeply down to the base of the wall and varied in width between 0.30m and 0.20m.

3.2.3. Walls

The walls were partially exposed on three sides of a structure orientated north-west to south-east; the south-eastern end of the building extending beyond extent of excavation, so the exact length of the structure remains unknown. However, assuming the length was at least double the width of the structure, and that the hearth was fairly central, the internal measurements of the building were probably 3×6m.

One exposed section of wall {1012} was 1.90m long and orientated north-west to south-east, the second section was 1.85m long and orientated north-east to south-west; the two sections met at a rough right angle. The wall was between 0.3-0.4m high and between 0.1-0.2m wide, with stones of an average size 0.15×0.06m. The stones were sub-rounded and rounded slate stones bonded with a stiff yellowish-brown clay (1025), and both could be found on the beach and in the cliffs below. The interior of the walls were rendered with clay (1024) to an average thickness of 0.02m; this formed a concave lip where it met the surface of the floor. The western wall {1013} was also clay-bonded (1023) and orientated north-west to south-east. It was 0.55m high, of which a section 1.70m long was visible protruding from the north-eastern section. It is assumed to form part of the same structure as {1012}, as they conform to a common orientation and define a fairly clear rectangular space containing a central hearth. However, the form of this wall was very different to {1012}: stones were longer, thinner and more angular, with an average size of 0.25×0.10×0.20m, and laid in a herringbone pattern of which three courses were visible. There was no internal clay render, suggesting the pattern was designed to be seen, and the clay bonding (1023) for the wall was acquired from the same source as (1025). A carbon date of cal AD 880-990 (Beta-322800) was acquired from the clay bonding (1023).This date is considerably earlier than the date of the hearth (see below), which appears to be contemporary with the walls. However, it is possible this charcoal is residual, and derived from an earlier charcoal-rich feature. All of the walls were retained and left *in situ*.

3.2.4. Floor

The base of the structure featured two successive floor surfaces: floor (1033) was directly associated with the hearth and overlay [1037], [1032] and [1053] described above; this was, in turn, overlain by floor (1017). Both floor deposits which were surprisingly thin, on average *c*.0.02-0.04m thick. They were very compacted surfaces composed of sand mixed with organic matter with inclusions of burnt bone and small abraded sherds of pottery. A single large discrete deposit of pottery on this layer contained sherds from three or more cooking vessels

It is somewhat surprising that the floors of this structure were *not* made of clay, as frequently seen elsewhere on the site in Trenches 2, 3 and 5; it can only be assumed that some other material covered the floor to prevent erosion through daily action. The phytolith analysis identified evidence for reeds and cereal grasses on the floor, so perhaps the floor was strewn with plant material to protect the surface (see 4.3 below).

3.2.5. Hearth

The hearth (1034) was surprisingly insubstantial, being a shallow circular concave depression 0.7m in diameter and 0.07m deep. The base of this feature (1040) had been subject to intense or prolonged heating, which had left the sand a reddish-purple colour. The fill of the hearth (1034) was composed of a dark brownish-black humic soil with a greasy texture and frequent small pieces of charcoal and splinters of burnt bone. A piece of Gorse charcoal from the hearth was dated to cal AD 1030-1210 (Beta-322801). Micromorphological analysis has identified at least two phases of burning in the hearth deposits (see 4.4). Pears

concluded that the hearth was cleaned out regularly and the material presumably deposited in the middens (see 4.4). The results of this analysis indicate that the carbon date acquired from the hearth probably dates to just before the structure was abandoned (see 4.7). A discreet deposit of pottery broken *in situ* overlaid (1017), and perhaps represents a final act prior to the abandonment of the structure (see 4.1).

The last floor surface (1017) and hearth (1034) were covered in a fine skin of clay (1026), presumably from the clay render weathering from the walls; this would suggest the walls were exposed to the elements. Overlying this were two layers of slumped or tumbled of clayey material (1022) (1029). This was sealed by a natural accumulation of clean windblown sand (1021). Into the top of (1021) were two sub-circular areas of burnt material (1019) and (1020). Above these was a spread of tumbled stones (1014) angled from north to south, and the orientation of these stones suggests they were falling inwards, most likely from the walls of the house. A layer of loose light brownish-yellow sand (1015) sealed all the deposits below to a depth of between 0.30-0.45 meters, indicating the complete abandonment of the structure.

3.2.6. Abandonment and upper levels

The abandonment of the structure was followed by the steady accumulation of sand and a series of failed stabilisation layers. The layers above represent natural accumulations of sand – layers (1011), (1009), (1007), (1005) and (1003) – and stabilisation layers – (1010), (1008), (1006) and (1004). The ground surface prior to excavation appeared to form a rectangular platform that was initially thought to be an indicator of the underlying structure. However, removal of the topsoil and first metre of windblown sand demonstrated that this platform had been constructed in the 20th century to make a golf tee, probably dating to the 1920-30's.

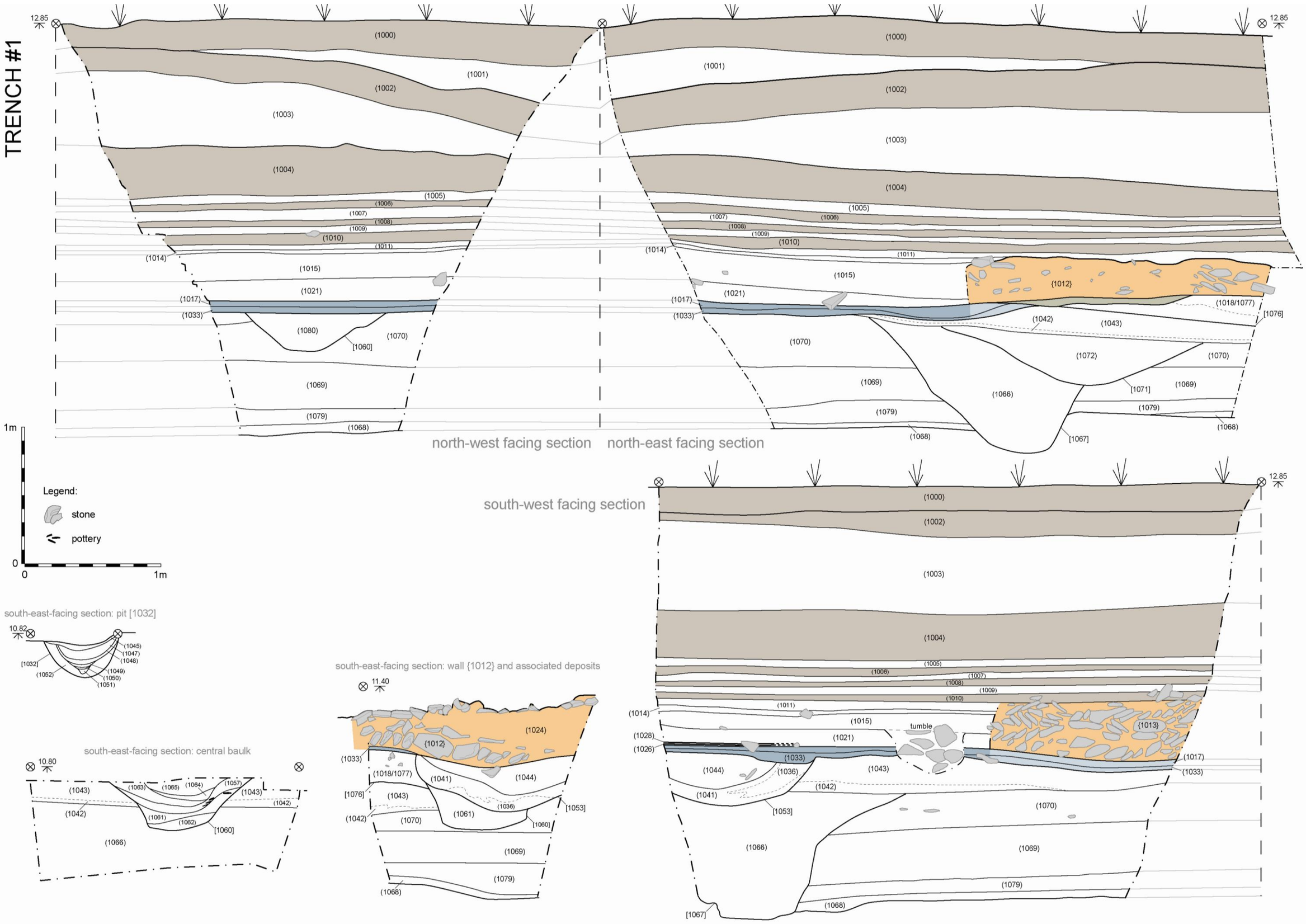


Figure 25: Trench 1 sections.

TRENCH #1

excavation level #1

{1013}
11.18
(1014)
11.15
(1010)
11.24
11.21
{1012}
2010 season test pit

excavation level #2

11.20
{1013}
(1014)
11.18
(1019)
{1012}

excavation level #3

N

10.76
10.69
{1013}
10.69
10.76
10.69
10.75
(1010)
10.81
10.78
10.88
10.91
11.06
11.17
11.21
{1012}
10.81
10.80

excavation level #4

(1039)
(1017)
[1037]
(1035)
11.21

excavation level #5

(1070)
[1032]
10.49
[1060]
(1043)
(1043)
central baulk
[1053]
(1043)

excavation level #6

9.92
nat.
10.01
9.99
(1068)
9.80
[1067]
9.85
nat.
9.97
10.10

Legend:
stone
pottery
heated-affected

0
2m

Figure 26: Trench 1 plans.

3.3. Trench 2

Trench 2 (NGR 165926.8 20783.3) was positioned to establish the nature and extent of clay surfaces and areas of burning within stratified deposits identified during rescue recording in 2010. The Trench measured 2×6m and was orientated north-east to south-west; it was excavated to a maximum depth of 1.70m below ground level (Fig 27). The north-western end of the Trench was heavily disturbed by a modern water pipe, and was only excavated down to a depth of 0.85m. Unless otherwise stated, the description below relates to the south-western end. Detailed context descriptions can be found in Appendix 2.

3.3.1. Earliest levels

The earliest deposit overlying the natural shillet bedrock was a stiff mid-brown clay (2027) 0.20m thick, similar to the deposit at the base of the sequence in Trench 1(1068) that was dated to the Early Bronze Age period. The mollusc analysis demonstrates that *Cernuella virgata* is present in (2027), as at the base of Trench 1, although the Trench 2 deposits contain a slightly higher number of catholic and shade-loving species (see 4.5). Layer (2027) and the bedrock below was cut by three roughly-circular post-holes [2032], [2030] and [2028]. The fill of one of these postholes (2029) contained charcoal identified as uniformly Oak (Quercus) (see 4.6), and this produced a C14 date of Cal AD 730-740 (Beta-322805).

The postholes were sealed by two successive layers of sand: layer (2023) 0.10m thick and layer (2034) 0.11m thick. Cut into (2034) were possible plough marks [2025]; these appeared in negative relief as darker, more humic sandy soils that were ploughed into the lighter material beneath (2034). These are potentially of great importance as they are similar to the ploughmarks uncovered at the Bronze Age site of Gwithian (Nowakowski 2007).

This activity was sealed beneath four episodes of sand inundation and stabilisation: layers (2026), (2022), (2035) and (2015). A midden (2021) was deposited above (2015); this contained limpet shell, abraded pottery (4.1) and a few animal bones (4.2.1). This midden was itself sealed by more layers of largely sterile sand (2004) (2008), although some contained occasional shells or pottery (2013) (2014). The mollusc analysis suggests Trench 2 was not subject to windblown sand; the presence of snails in these layers indicates they must have accumulated relatively slowly in order to give the snails the opportunity to enter the deposits (see 4.5). That would suggest this area was rather more sheltered, perhaps because it was further downslope and away from the cliff edge.

Cut into layer (2004) was a small sub-circular hearth [2009] 0.50m in diameter. Its fill (2003) contained abundant charcoal fragments, mainly comprised of Oak (*Quercus*) and one charred cereal grain (see 4.6). Charcoal from (2003) was dated to cal AD 880-990 (Beta-322804) and contained no finds apart from two fragments of animal bone. This feature is probably contemporary with the hearths recorded in this area in 2010, which were associated with clay surfaces.

This hearth was overlain by a series of fairly recent deposits related to the car park shown on earlier cartographic and photographic sources in use before the creation of the NT car park in 1977. This included a compact layer of locally-sourced stone and clay that had been laid down as hard standing (2001). This sealed and protected the layers below from much of the erosion associated with the movement of dairy cattle in and out of the field.

TRENCH #2

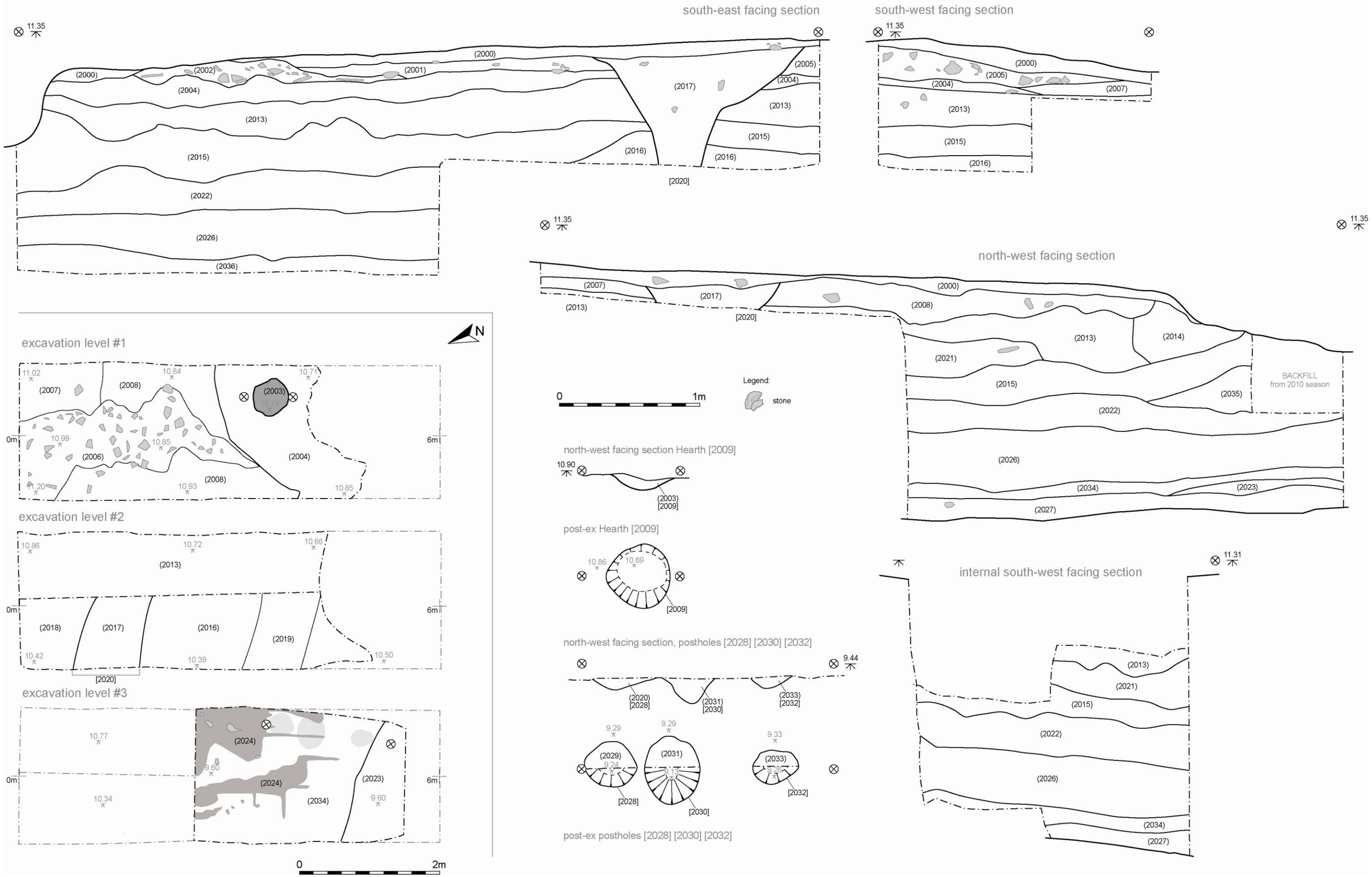


Figure 27: Trench 2 plans and sections.

3.4. Trench 3

Trench 3 (NGR 165849.5 20822.1) was located to investigate an area of limpet shells visible on the surface where the topsoil had been eroded. The Trench measured 4×4m and was excavated to a depth of 1.40m below the ground level (Fig 28). Detailed context descriptions can be found in Appendix 3. This Trench revealed a complex series of features representing several phases of use. This included a compacted clay surface, a shell midden containing three clear episodes of activity and several intercutting pits. This Trench was excavated to bedrock in the north-western corner (1.10m below ground level). Unlike Trenches 1 and 2, there was no stiff mid-brown clay deposit at the base of this sequence, making it more comparable to Trench 5. Trenches 3 and 5 are located further up the posited shallow valley, indicating a different pre-dune land environment and surface. The samples from this Trench contained very few snails, which is taken to indicate regular disturbance and thus suggestive of a dynamic post-depositional environment (see 4.5).

3.4.1. Earliest Levels

The layer of olive sand (3037) lay immediately above the natural bedrock. It surface of (3037) sloped from the north-east and south-west into a wide shallow trough orientated north-west to south east; the base of this trough contained two narrow parallel grooves [3038]. They grooves were 0.10-0.20m wide, 1.7m long and set 0.50m apart. Their nature and origin are unclear, although they might be wheel ruts and they must predate the 11th century. The grooves were overlain with firm dark olive sand (3036), which was overlain by a substantial deposit of sterile loose wind-blown sand (3008/3017/3032).

Above, or possibly within, layer (3008/3017/3003) was an extensive shell midden (3007). It is unclear whether this sequence of shells and sand was deposited in a cut, or was simply deposited in the lee of a shifting sand dune. It contained three clear loose layers of primarily limpet shell and fish bones separated by lenses of yellow windblown sand. The shell layers contained frequent small limpet shells (average size *c*.20-30mm diameter) and the occasional mussel and cockle shells. Mussels and cockles are currently very rare on the intertidal rocks of the modern beach of Jangye-ryn (see 4.5). There were many fish bones, mainly consisting of Wrasse, Hake and one unidentified species; the majority of the bones were from the head and tail with some dorsal elements (see 4.2.1) The midden also contained rare abraded sherds of pottery; these appear to have been residual, indicating this midden had a different function (see 4.1). Unlike the other excavated middens, this example did not feature a dark, rich organic matrix, indicating a specific activity that generated a specific by-product was taking place. The layers of windblown sand could represent periods when this activity was not practiced, possibly indicating a seasonal event. The mollusc evidence shows the surrounding area was open country at the time (see 4.5); the presence of Gorse charcoal in these layers would suggest firewood was being brought in from further afield (see 4.6). A piece of charcoal from (3007) was dated to Cal AD 1050-1080 (Beta-322806), making this feature part of the 11th century phase on site.

The shell midden was overlain in the north-eastern corner of the Trench by a series of deposits that sealed a number of small pits [3041] [3039] and a probable post-hole [3046]. These were sealed by a compact clay surface (3003/3004/3019) that sloped gently to the north-east. A shallow concave gully [3040] ran around the edge of this surface; this was *c*.0.2m wide and only 0.08m deep, but hinted at structure. The southern part of the Trench contained a series of shallow pits, most of which had humic fills and some of which contained common to abundant limpet shell; all were fairly shallow and concave in profile [3015], [3030] and [3041]. These features appear to be the latest features in the Trench; this part of the Trench had also been subject to rabbit burrowing. The topsoil was very thin or non-existent across the whole Trench; this, together with the exposure of an 11th century shell midden, strongly suggests it has been heavily truncated over time by the transit of tractors and cattle. It is currently used for the storage of animal manure.

TRENCH #3

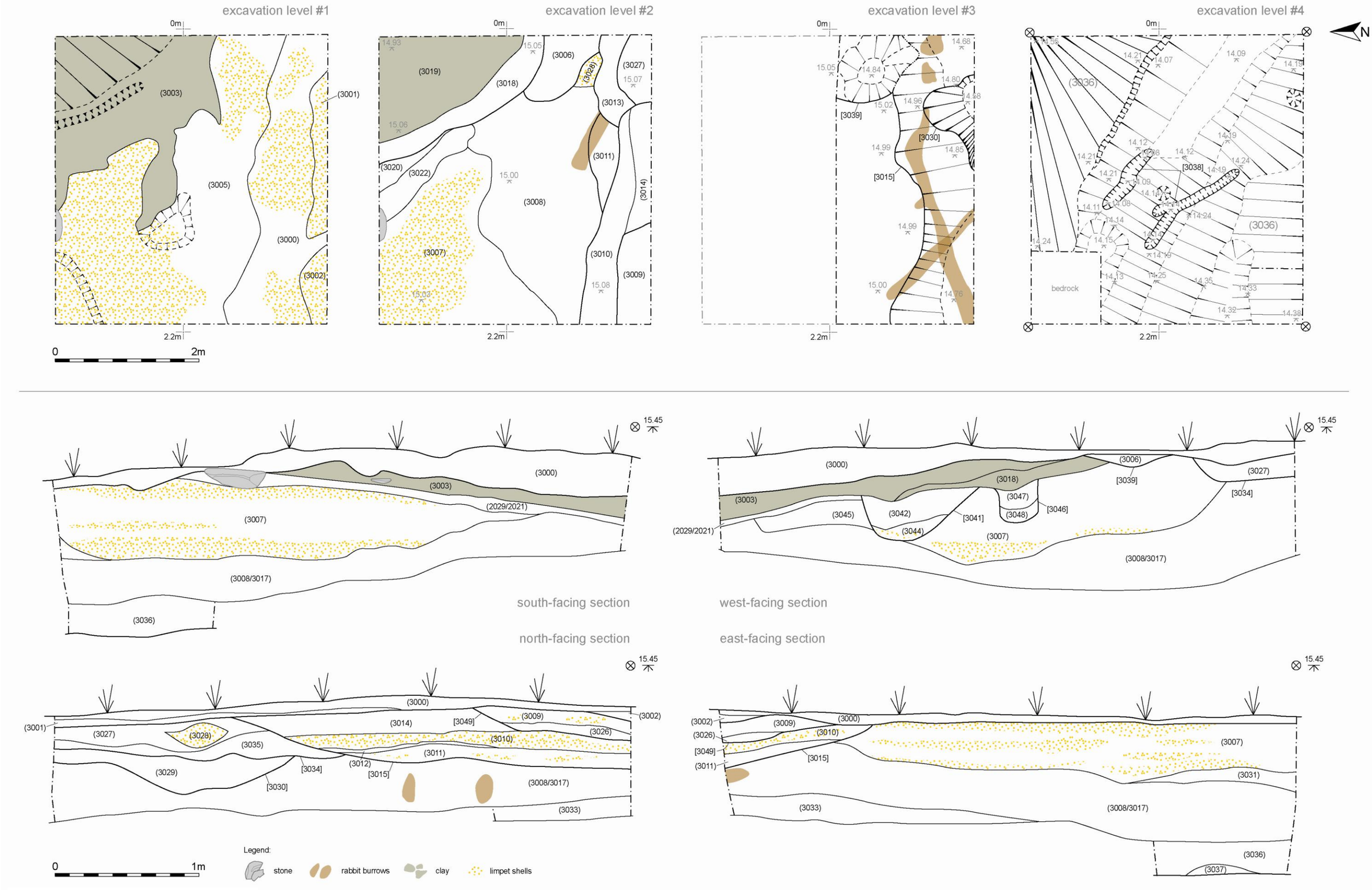


Figure 28: Trench 3 plans and sections.

3.5. Trench 4

Trench 4 (NGR 165923.8 20735.9) was located to investigate the nature and extent of the archaeological features observed eroding from the cliff. The Trench measured 2×6m and was orientated north-east to south-west; it was excavated to a depth of 1.80m below ground level (Fig 29). The ground surface sloped down towards the southern seaward end of the Trench, presumably as a result of erosion caused by strong costal winds. Detailed context descriptions can be found in Appendix 4. The most complex stratigraphy, and the bulk of the finds, were to be found at the north-eastern end of the Trench. Here a series of clay surfaces were found sealing midden material, partly contained within a steep-sided ditch orientated east-west.

3.5.1. Earliest Levels

The earliest deposit encountered was a layer of windblown sand (4010) that contained occasional charcoal flecks. Sampling recovered very few snails in this deposit, indicating it had accumulated relatively rapidly and was associated with an open environment. Charcoal analysis identified some Gorse and Oak, as well as a charred grain; the gorse was dated to Cal AD 780-900 (Beta-322807), making it contemporary with the later phase in Trench 2.

This sand was sealed by a fairly compact layer of greyish-brown sandy clay (4009) containing charcoal and some abraded pottery, indicative of an occupation horizon. If so, it was short-lived as it was buried beneath a second thick (1.0m) layer of windblown sand (4017). It is probable this sand formed part of a dune, behind which a series of midden deposits and clay surfaces were laid down.

Cutting through this thick layer of windblown sand was a steep-sided linear ditch [4014] orientated east-west. It was *c*.1.2m wide at the top and up to 0.7m deep, with steep sides dropping to a concave base. Analysis of the distribution of artefacts within this Trench indicates most came from the fill of this feature (4006), implying it had been backfilled with midden waste, or else functioned as a midden. It is possible this ditch, together with the ditch identified in Trench 1 [1067], defined two sides of a contemporary enclosure.

The main features of the Trench were the four successive clay surfaces (4028) (4016) (4013) and (4003); these were separated by layers of midden material (4004) and humic sand (4012), (4026) and (4027). The thickness of the clay surfaces varied, and they appear to have sloped quite sharply to the east, perhaps mirroring the topography of the dune. That might suggest they were never intended to form level platforms and were instead laid down in order to bury and seal the midden. Clay surface (4013) was dated to Cal AD 1020-1050 (Beta-322808).

It is clear that Trench 4 just clipped the edge of these clay surfaces, strongly suggesting the main area of activity lay to the north-east. The mollusc evidence suggests this was an open country phase, with only a very few shade species present in layer (4004). The clay surfaces produced very few finds, apart from (4003) which had many 29 pottery sherd one of which was decorated and several animal bones. The surfaces are in stark contrast, to the midden layer (4004) which contained substantial amounts of Grass-marked Bar-lug pottery with heavy external sooting and animal bone. The size of the sherds (ave. 40-60g each) and lack of abrasion indicates this was their primary area of deposition (see 4.1).

The upper parts of this sequence appeared very weathered (4025), and this was sealed by an accumulation of humic sand (4001) with the modern turf (4000) above.

TRENCH #4

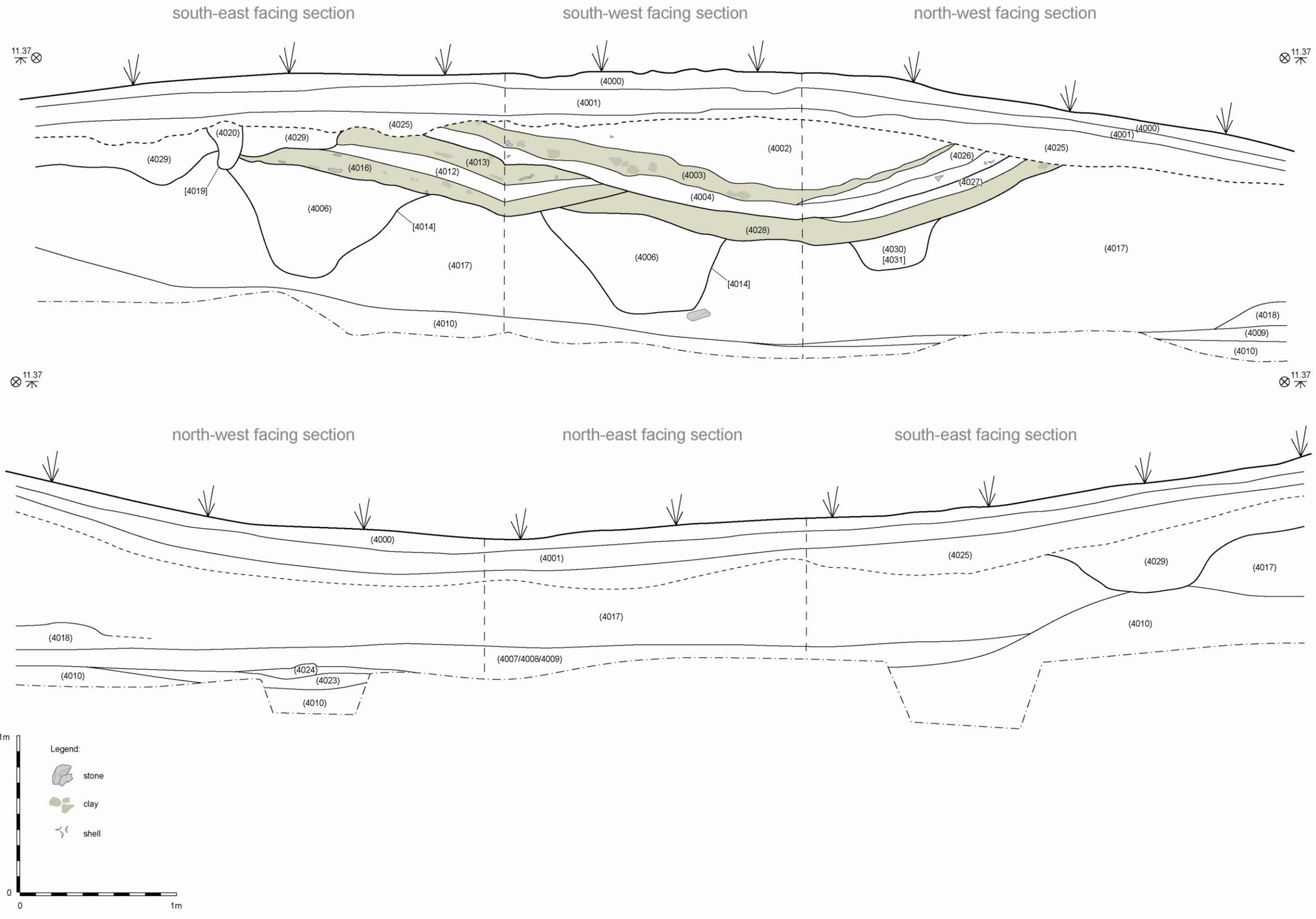


Figure 29: Trench 4 sections.

3.6. Trench 5

Trench 5 (NGR 165893.4 20772.5) was located to investigate the nature and extent of the archaeological features observed eroding from the cliff, specifically the shell midden observed in 2008. The Trench measured 2×4m and was orientated north-east to south-west; it was excavated to a depth of 2.25m below ground level (Fig 30). Detailed context descriptions can be found in Appendix 5.

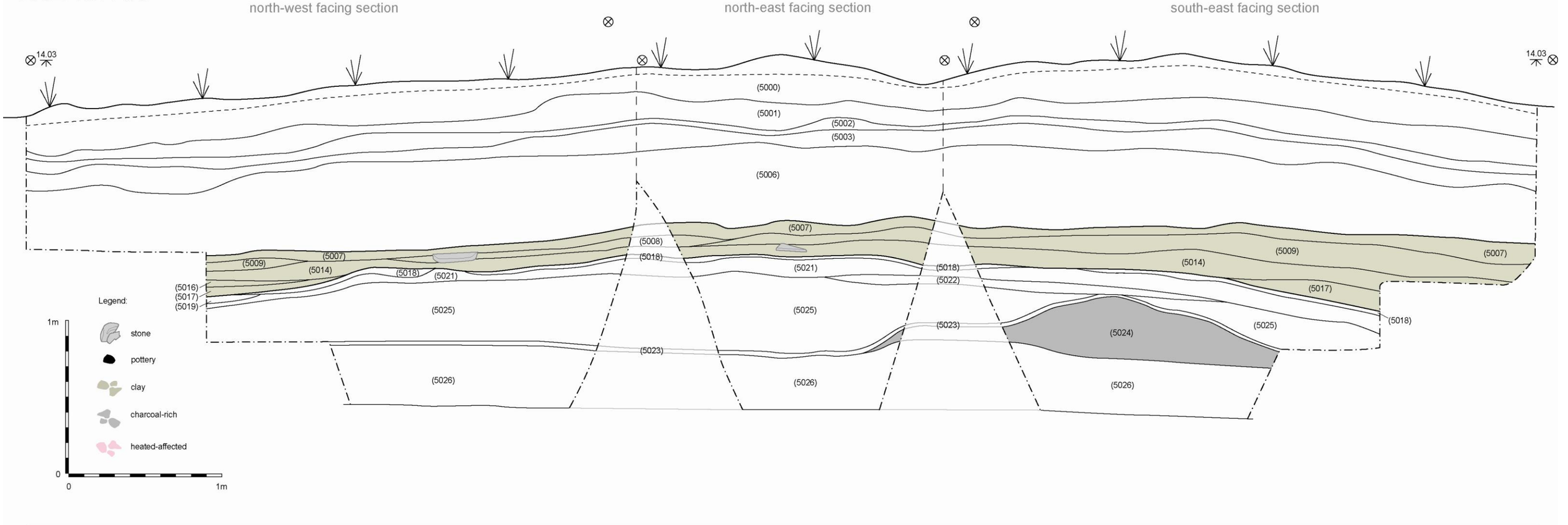
3.6.1. Earliest Levels

The base of the Trench was reached *c*.2.25m below ground level; at this level a thin layer of weathered clay overlying the shillet bedrock was encountered. Overlying this was a thick (0.35m) deposit of windblown sand, partially overlain by a deep but irregular deposit of dark humic sand (5024) containing frequent small pieces of slag, pottery, large bone fragments, charcoal fragments, burnt clay and patches of heat-affected sand. Charcoal from this deposit was dated to cal AD 890-1020 (Beta-322809). This deposit appeared to form a discrete dump of material; the range of animal bones present, representing many different species, ages and body parts (including skull fragments), is suggestive of a domestic midden (see 4.2.1); the general absence of molluscs would indicate a dynamic environment (see 4.5).

This dump of material was sealed by a second thick (0.3m) layer of soft light brown sand; this was found to contain bone and pottery, making it unlikely it was a windblown deposit. This material was sealed by a series of clay surfaces (5007) (5009) (5014) (5017) and (5019); unlike the surfaces observed in Trenches 3 and 4, these formed horizontal levels, and presumably did constitute successive working surfaces. Clay surface (5007) produced a small amount of slag, and slag became more frequent with depth. Grass-marked pottery and animal bone were also recovered from these levels. In general the animal bones represent medium sized animals such as sheep with few cattle bones (see 4.2.1). The pottery assemblages for these levels produced the highest quantity of any other in the Trench (4.1). The mollusc analysis demonstrates this phase saw a distinct lack of snails compared to the levels directly above up until the modern soils (4.5).

These clay surfaces were sealed by a thick deposit of windblown sand with stabilisation surfaces *c*.1.0m thick. These layers contained old rabbit burrows, and thus 20th century material was encountered in some of these layers.

TRENCH #5



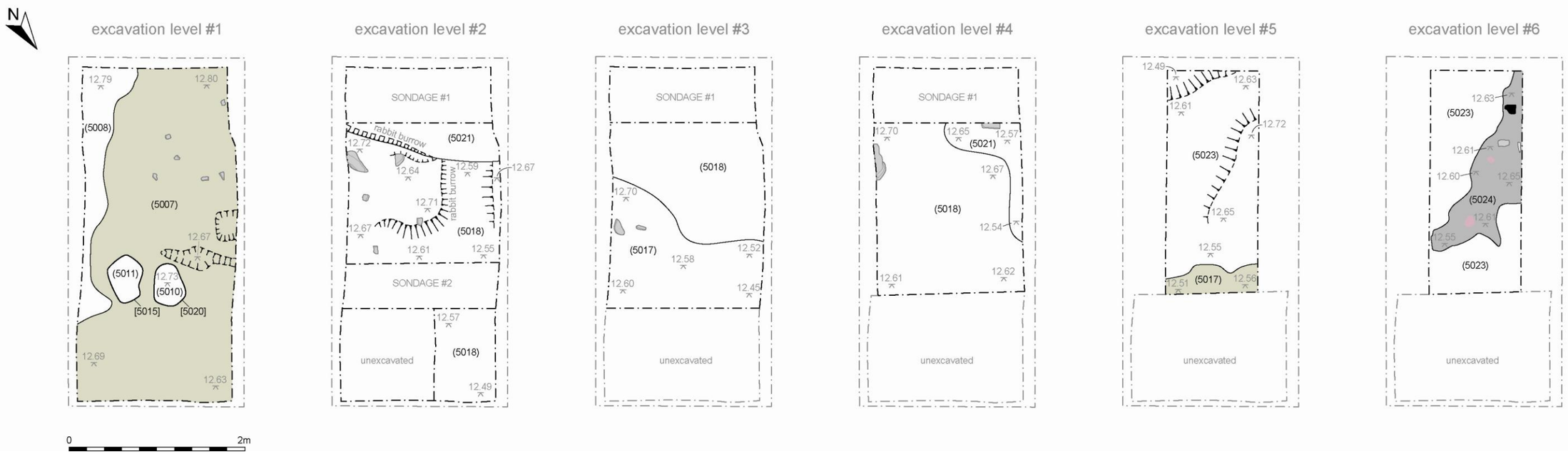


Figure 30: Trench 5 plans and sections.

3.7. Trench 6

Trench 6 was located to investigate the nature, construction and date of the prominent earthwork generally considered to be the rampart of a promontory fort (NGR 165966.7 20585.3). The Trench measured 2×18m and was orientated north-east to south-west; this Trench was located in order to sample part of the interior, the rampart and its associated ditch (Figs 33 and 34). The stratigraphic sequence proved to be unexpectedly deep and unexpectedly complex, further complicated by the fact that the front of the rampart had been torn off in the 1920s to form a golf tee; as a result, the only part of the rampart could be sampled, and the ditch was not located. Only the lower 5.5m of the Trench could be excavated to bedrock within the time available.

3.7.1. The Cist Burial

A stone-lined cist was located beneath the Iron Age rampart, which based on its profile in section may have cut into the top of an earlier barrow (6015) and (6039). The deposits associated with the build of the cist {6044} produced a small copper alloy object, possibly a fragment of a pin, together with abraded cremated bone perhaps from an earlier cremation. The cist {6044} may have truncated an earlier burial {6053} that lay mainly beneath the baulk (Fig 31). The cist {6044} was constructed of local slate, with a heavy a sub-circular slab at its base; the north-eastern side and lid were presumably lost when the rampart was truncated in *c*.1896. The cist was fitted within a sub-rectangular cut [6016] into a relatively sterile layer (6015). The heat-affected and spalled appearance of the slate sides and the evidence for intense burning indicate cremation took place within and around the cist or a bonfire once it was sealed. The base of the cist was not heat-affected, suggesting it was protected by its contents. The lower fill of the cist (6017) contained charcoal, cremated bone and the fragment of a copper alloy object currently unidentifiable due to its small size. The cist was sealed by three deposits (6049) (6035) and (6013) composed of firm reddish-brown stony sandy-silts that contained few finds (Fig 32). These layers appear to have formed a low mound over the Cist, indicating it was visible as a burial.

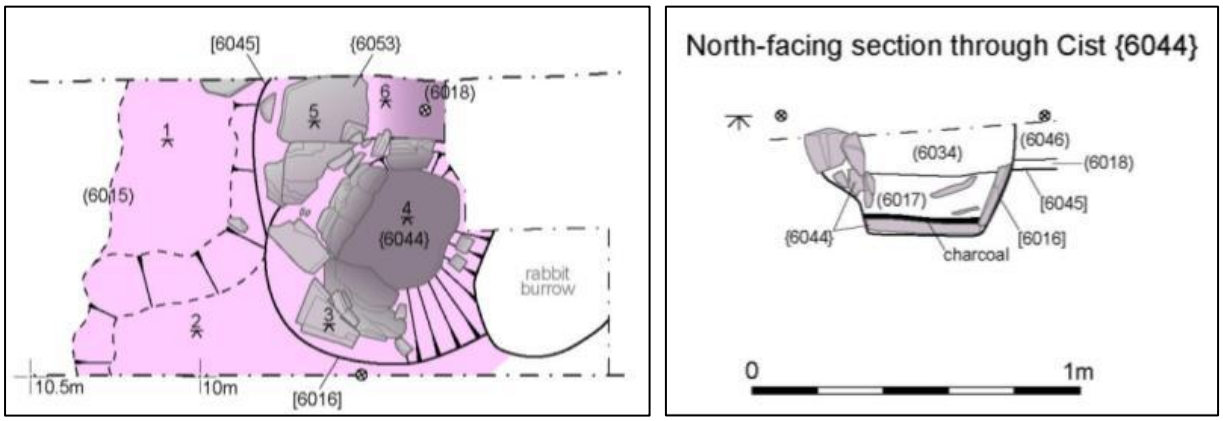


Figure 31: Cist {6044} in plan and section (illustration: Bryn Morris).

The cremated bone has been identified as human (see 4.2.2), and has been dated to 1200-1100 Cal BC (SUERC-44516), a date in the later Middle Bronze Age and the latest Bronze Age cist excavated in Cornwall. This apparent *in situ* cremation is without parallel in Cornwall and possibly the South West. A comparison can be made with Trevelgue Head near Newquay, where a cist was observed in 1939 eroding out of the cliff beneath Ramparts 5 and 6; Croft Andrews stated it was associated with Middle Bronze Age pottery, although it exact location is unknown and it cannot be independently dated (Nowakowski and Quinnell 2011, 131). The known barrows on Trevelgue Head are located on the highest and most prominent positions, and are dated to the 2210-1620 BC (Nowakowski and Quinnell 2011, 138).

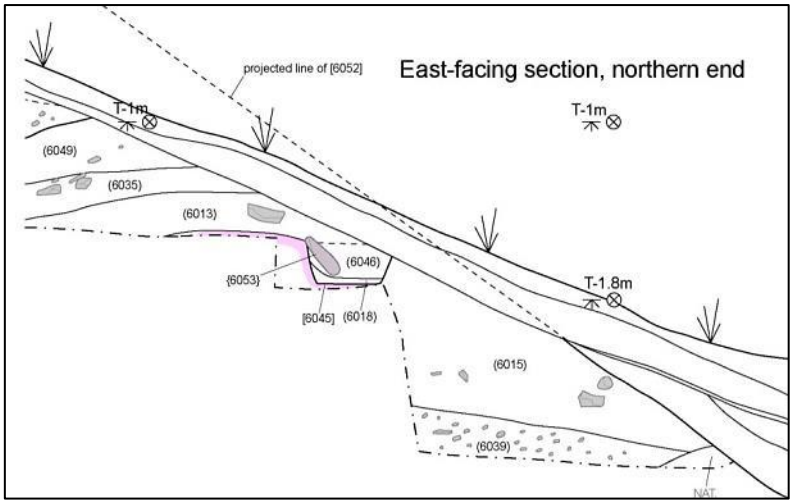


Figure 32: Section through barrow covering cist {6044}, showing cist {6053} (Illustration Bryn Morris).

3.7.2. Midden

Abutting the low mound were two layers: a humic sandy loam (6043) containing worked antler, crab, and bones from pig, red deer, roe deer and sheep, along with decorated pottery and charcoal (Fig 33). This appears to be a primary deposition suggestive of a midden. The layer above (6036) contained frequent angular stone, and the animal bone was much more fragmented; this layer could also be considered part of a midden. The antler from (6043) showed signs of working and bore cut marks; it was dated to 900-800 Cal BC (SUERC-44517), within the Late Bronze Age. The pottery from both layers is characteristic of Late Bronze Age Plain Ware. The accumulated material would indicate settlement activity on the promontory, and the purposeful deposition of midden material.

3.7.3. The Bank

The substantial bank was comprised of multiple layers, potentially representing several phases of construction, but subsequent truncation making interpretation problematical. The estimated height above the natural bedrock is 1.40-1.50m, but its original height and width prior to truncation is difficult to estimate. It is possible that the construction of the Iron Age bank utilised an earlier Middle Bronze Age burial mound. A cross-section view of the bank in the cliff section below suggests there was a ditch 6.0m wide and 3.0m deep at the foot of the bank, which would have produced a considerable amount of construction material.

3.7.4. The interior

A sondage was excavated to a depth of 0.90m below ground level in the north-western corner of the Trench; this exposed a curving stone feature {6042} (Fig 33). The average size of the beach stones used was 0.30×0.15×0.15m: not substantial enough to form a wall foundation, and probably associated with a gully or ephemeral boundary. Within and abutting {6042} was a deposit of dark slightly clayey sandy silt 0.40m thick (6032) containing animal bone, abraded EIA/LBA pottery, and a fragment of shale bracelet.

This deposit was sealed by (6041), a compact clay surface containing sub-angular stones and three large slate flagstones up to *c*.0.60m across. These stones may have formed a linear walkway orientated north-to-south and parallel to the rampart. A fourth flagstone was visible in the south-east facing section, suggesting it continued to the west. Such a walkway may have been laid down due to heavy usage consistent with an entrance to the west of the Trench. Surface (6041) appeared to be associated with a shallow cut [6050] into the back of the rampart.

Surface (6041) was sealed by layer (6011), a deposit of greyish-brown sandy silt that incorporated a spread of burnt stone (6030). Layer (6011) was 0.30m thick and contained frequent pieces of shillet, occasional animal bone, charcoal fragments along with rare pieces of burnt clay, abraded Bronze Age, Iron Age and Romano-British pottery and a sherd of very abraded 3rd-4th century AD Oxfordshire colour-coated ware. Charcoal from this layer was dated to 350-450 Cal AD (SUERC-44518), suggesting a Roman to post-Roman phase for the promontory fort. This layer contained a spread of tumbled stones (6030), which presumably once formed a crude rampart wall, and which collapsed inwards from the bank. The stones were between 0.10m and 0.20m in size and were reddened from extreme heat. Frequent pieces of heartwood charcoal were encountered within the stony matrix, together with 10 probable sling stones suggesting a defensive element, perhaps associated with the destruction of the defences. The character of this deposit, together with the burnt stone (6030), would suggest the site was abandoned following the fire.

Layer (6011) was, in turn, sealed by a compact stony layer (6010) up to 0.20m thick. It appeared to sit within a shallow cut [6051] made into the back of the rampart. The silty matrix of this layer contained Bronze Age, Iron Age and late Romano-British pottery, charcoal and animal bone, strongly suggesting it was washed down against the bank and then trampled over a long period.

The sequence was covered by layers of clayey-silt (6009) and (6008), with topsoil and turf on top (6000). The relatively abrupt change from archaeological deposits to topsoil is perhaps the result of agricultural activity or possibly coastal erosion.

3.7.5. The base of the slope

At the base of the slope the edge of a large cut feature was encountered. Feature [6031] was orientated roughly east-west and sloped diagonally up the slope; it was steep-sided and contained a simple stone wall {6028} made up of large 0.50m diameter rounded and sub-rounded stones from the beach. These may have been intended as a revetment wall, possibly predating the Iron Age phase of the enclosure, but no dating evidence was encountered.

Above this feature a series of sterile thin stony (6027) (6025) (6023) (6022) and silty (6029) (6026) (6024) (6005) layers had accumulated (total thickness *c*.0.55m) (Figs 32 and 33). These appear to represent discrete erosion events that occurred after the golf tee was constructed and before the bank re-stabilised. The handle from a Middle Bronze Age Trevisker vessel was found redeposited in (6023), which would suggest the site had been used for burials prior to the creation of the cist.

TRENCH #6

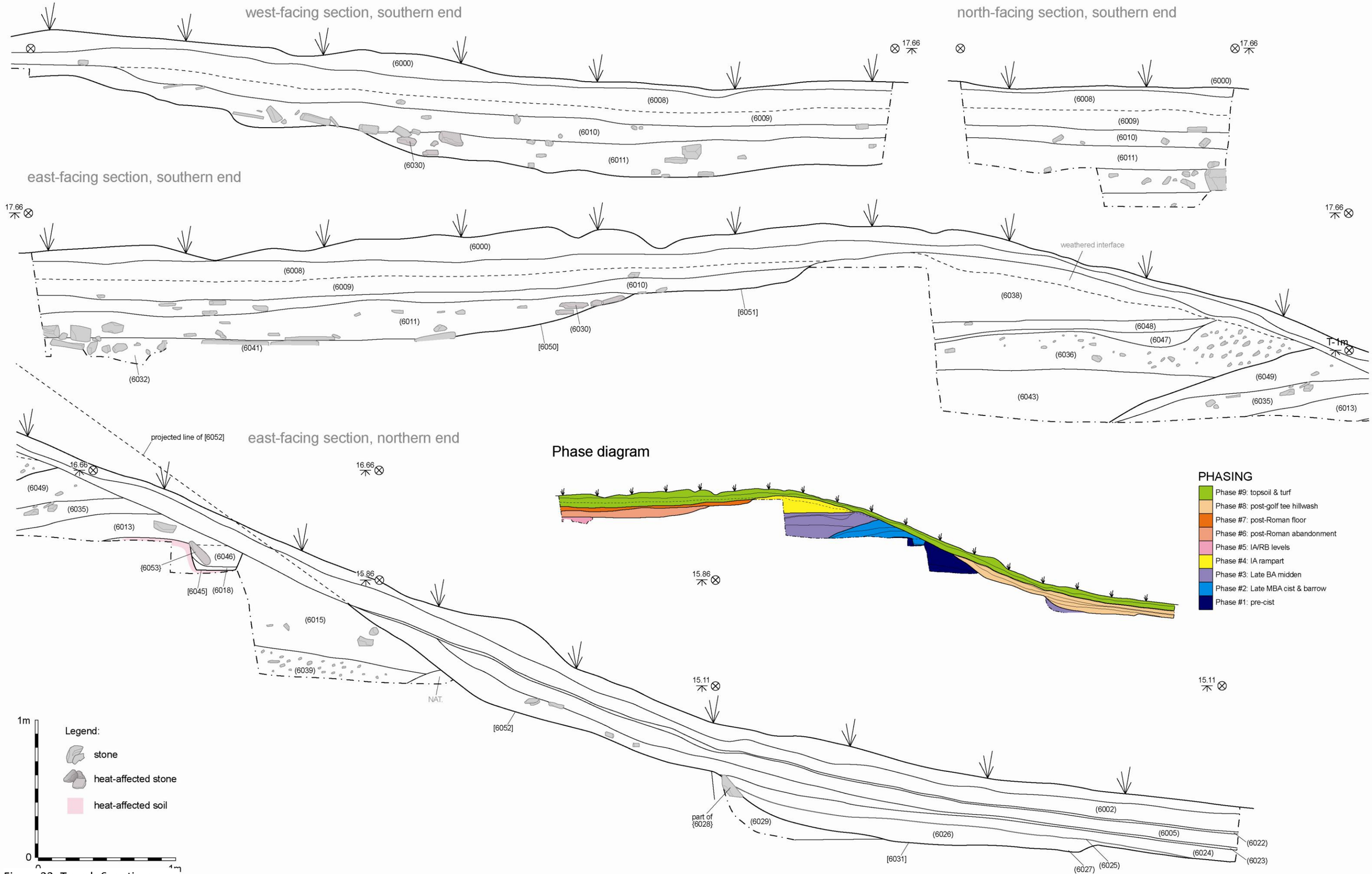
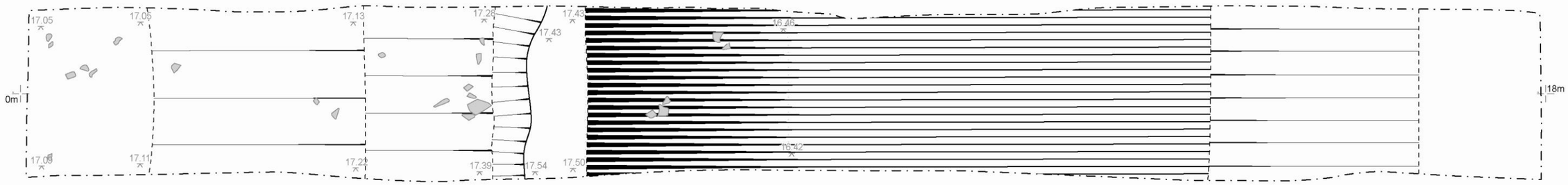


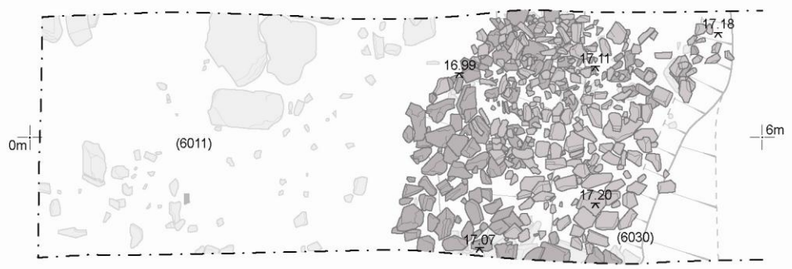
Figure 33: Trench 6 sections.

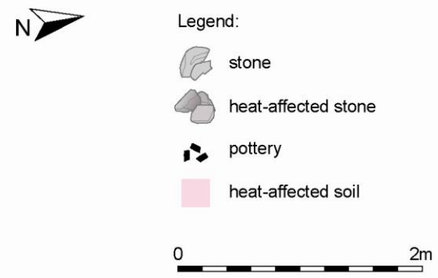
TRENCH #6

Level at (6010)

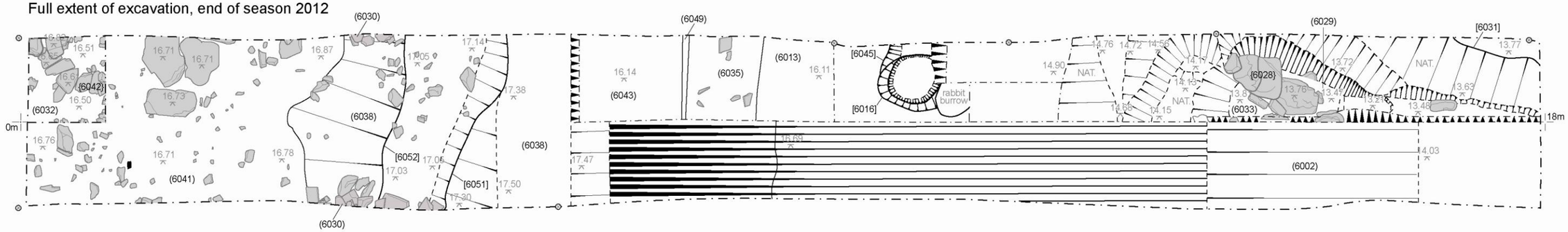


Stony tumble (6030), partial excavation of layer (6011)

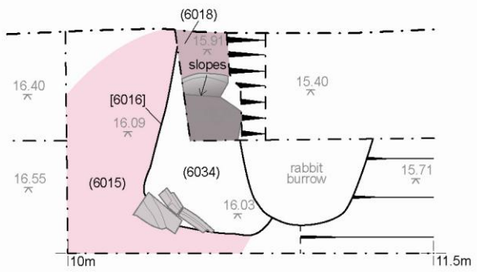


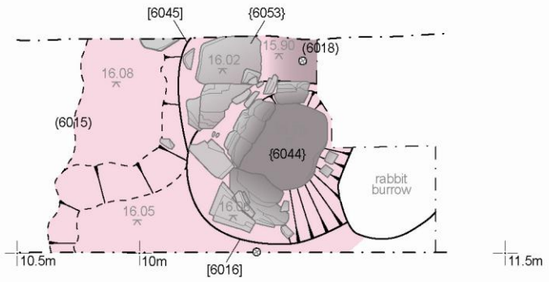


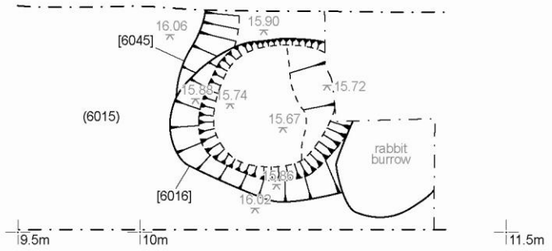
Full extent of excavation, end of season 2012



Excavation of Cist {6044} and {5053}







North-facing section through Cist {6044}

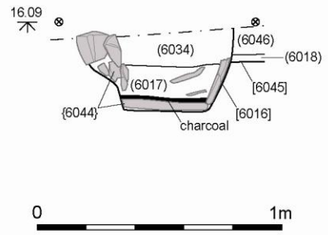


Figure 34: Trench 6 plans.

4.0 Summary of the Specialist Reports

4.1. ***Pottery*** *by Dr Imogen Wood*

The majority of the pottery recovered during the excavation at Gunwalloe is early medieval in date and belongs to the Grass-marked Ware tradition, with 2107 sherds (16.894kg) recovered from Trenches 1-5. This quantity of material, recovered from secure stratified contexts allows valid statistical analyses of form and abrasion across the different depositional contexts and phases to take place. The analyses discussed below make a valuable contribution to our understanding of Grass-marked Wares in this period.

The rest of the assemblage comes from Trench 6 on the promontory which produced pottery dating from the Middle and Late Bronze Age (33 sherds, 395g), Iron Age (19 sherds, 344g) and Romano-British period (19 sherds, 341g); some post-medieval sherds were also recovered. This assemblage complements a unique stratigraphic sequence, and provides a clear overview of occupation over time. Unfortunately, apart from the Bronze Age pottery within the midden, the most of the material comes from secondary depositional contexts that had accumulated behind the rampart bank.

Detailed quantification, contextual information and fabric descriptions can be found in site archive available on line Oasis.

Trench	count	Weight
1	406	4149
2	463	4828
3	611	2498
4	432	4215
5	195	1204
6	96	1107
Total	2203	18,001g

Table 1: Pottery quantification by Trench

4.1.1. Abrasion

The abrasion of sherds is a valuable indicator of the pre and post-depositional environment enabling comments on the mode and context of deposition. They have been graded following the scheme devised by Sorenson in (1996) from 1 to 3. Grade 1 is low abrasion; 'fresh breaks, unaltered surface, sharp edges' ; Grade 2 is medium abrasion; 'absence of fresh breaks but sharp corners and edges still present'; Grade 3 is high abrasion 'rounded corners and edges, outline of sherd is rounded with some surface erosion'. Comments on the abrasion are referred to by Trench.

Abrasion varies throughout the assemblage, the least abraded group are Late Bronze Age sherds found in midden (6036) some of which have fingernail pinched decoration. The BA pottery in general has low abrasion. The Iron Age pottery is medium abrasion and the Romano-British pottery has high abrasion. There are many occasions of sherds from different periods appearing in the same context in the Iron Age and Romano-British levels suggesting the pottery from these deposits is derived from many sources which may have washed up against the bank over time. Surprisingly, not one sherd of Grass-marked ware was found suggesting no occupation or presence on the promontory in the early medieval period.

4.1.2. Bronze Age

The Late Bronze Age pottery is decorated with fingertip decoration on its girth (Figs 35). It is similar in form to sherds from Higher Besore, Truro which date to the Late Bronze Age Plain Ware pottery tradition 1010-840 Cal BC (Wk-21209) and structure 4 920-800 Cal BC (Wk-21206) (Gossip forthcoming). There are similar sherds at Trevelgue Head promontories fort which are re-deposited in later Iron Age features (Nowakowski and Quinnell 2011). However, the presence of decoration is unique to Gunwalloe, as no other examples can be found for Cornwall in this period. A single decorated handle fragment from a Bronze Age vessel was found at the base of the slope below the bank, possibly re-deposited (Fig 35). It may have related to the earlier funerary phase of the promontory fort and disturbed during the truncation of the bank in the early 20th c.

4.1.3. Iron Age and Romano-British

It is difficult to present any conclusive comments on these phases of pottery as they derive from the same context and are generally abraded. Early and Middle Iron Age pottery was identified which draws general parallels with the Trevelgue Head assemblage. There are eleven possible Early Iron Age sherds in a gabbroic fabric which based on their form could date from between 6th -4th centuries BC. There are 2 Middle Iron Age sherds identified by their distinctive decoration, one with incised curvilinear intersecting arcs broadly dating to the 4th-1st century BC (Nowakowski and Quinnell 2011). A further 12 sherds in a local hornblende fabric, were broadly assigned to the Iron Age period due to their form.

The Romano-British pottery is typical of this period with only 16 sherds exhibiting a range of fine and coarse jars with oxidised exteriors. A single Cordoned Ware type C Trethurgy type 12 sherd, has a notched decoration on the rim with a possible springing to what may be an upright pierced lug (Fig 35). This form used from the Late Iron Age until the c 300 AD. There is evidence of reuse of sherds, one body sherd appears to have been partially shaped into a circle with a hole bored into it, the function of which is uncertain. Fabric analysis demonstrated a Gabbroic admixture fabric dominated the assemblage, with some finer vessel made in local clays. The late Romano-British sherd of Oxfordshire colour coasted ware was highly abraded, having lost its slip coating. It represents the foot-ring base of a bowl which would have been a very prestigious serving vessel (see discussion). In comparison to assemblages on other promontory forts in Cornwall it is surprising no imported pottery was found.

4.1.4. Early Medieval

The pottery from the early medieval Trenches 1-5 is the first dated sequence of Grass-marked Wares in Cornwall. The analysis of rim diameters and ratios of vessel elements have provided an important insight into the development of Grass-marked Wares over time. It must be noted that comparison over 5 Trenches with no stratigraphic links and pottery deposition in very different contexts such as a domestic house, midden's and clay surfaces, may not be entirely representative of pottery trends over this time period. It can only be suggested based on the associated carbon dates and generally patterns that have emerged through analysis.

Firstly, analysis has demonstrated that in early phases Gabbroic clay F8 was more commonly used and that smaller rim diameters were typical in this fabric. Secondly, in later phases larger rim diameters dominate in a variety of non-Gabbroic fabrics. The presence and absence of platters in specific contexts is interesting and the instances of non-Grass-marked bases. Analysis of form elements and rim diameters has shown a specific signature in assemblages where platters are present. Platters seem to leave a distinctive signature in the assemblage, as their larger diameter and low wall result in mainly base and rim sherds, which are evident in T3 but not T1.

4.1.5. Diagnostic elements of Cauldrons

The form of lugs from Bar-lug cauldrons are varied with ribbon, D-shaped and ones with rectangular and circular bar profiles. The length and height of the ribbon bars can differ, but depth is uniformly 1.5-1.6mm, this must have been a defining characteristic of its performance, although a ribbon bar from (1044) was 3.5mm thick.

4.1.6. Bars

The bars (Fig 36) appear to be wider in earlier phases between 4.3-4.5mm and shorter in later phases between 2.8-3.8mm but mainly 3.8mm. One unstratified bar in (3000) T3 differed greatly from the norm being 4.5mm wide suggesting it is from an early phase.
The length of bars (internal bar before springing) differs with no relation to period ranging between 5.6- 7.5mm. The depth is generally between 1.4-1.6mm for ribbon bars with rectangular and D-shaped being between 1.7-1.8mm.

4.1.7. Rims

There are a total of 73 rim sherds belonging to 16 different rim forms found across the five Trenches. The stratigraphic dating does not provide adequate dating evidence to identify any possible development over time. However, it is possible to say that upright flat rims are the most common type found in all Trenches and generally have a rim diameter of between 18-28cm. This is followed by upright bevelled rims 24-34cm, flanged 24-26, upright with clay lip 26cm, everted 30-36cm, the remaining rim forms vary.

Catalogue of illustrated sherds (see figs. 35-6)

A. Late Bronze Age Plain Ware, fingertip decorated T6 (6036);
B. Fingertip decoration of later phase Late Bronze Age Plain Ware T6 (6036)
C. Handle of Trevisker style vessel re-deposited at base of bank, T6 (6023),
D. Possible Oxfordshire Colour-coated ware, view of interior of base with riling marks, external surface was highly abraded T6 (6011).
E. Vessel with notched decoration illustrated without possible springing T6 (6011)
F. Complete profile of platter from T2 (2013).
G. Bracken or fern impression on exterior of possible platter T2 (2013).
H. Complete profile of cup, bar and wall from T1 (1057)
I. Chaff impressions on base of vessel T1 (1017)
J. Cereal Chaff impressions, showing large husks T5 (5024),
K. Cereal chaff impressions on base of vessel T5 (5024),
L. Grass impressions on base of vessel T4 (4004),
M. Decorated cup of Bar-lug cauldron with incised cross T2 (2013)
N. Decorated, incised diagonal line on upper right with two incised lines from upper right side T4 (4006)
O. Decorated fine vessel with incised lattice T2 (2013),
P. Decorated sherd incised vertical line T3 (3007),
Q. Profile of platter with post firing hole bored into wall of vessel T4 (4015)
R. Earliest phase, strap bar of Bar-lug cauldron T2 (2014)
S. 11th century rod bar of Bar-lug cauldron T4 (4002)
T. D-shaped bar of Bar-lug cauldron T4 (4001)
U. D-shape bar of Bar-lug cauldron T1 (1033)
V. Early phase, Strap bar of Bar-lug cauldron T1 (1033)
W. Early phase, strap bar of Bar-lug cauldron T1 (1018)

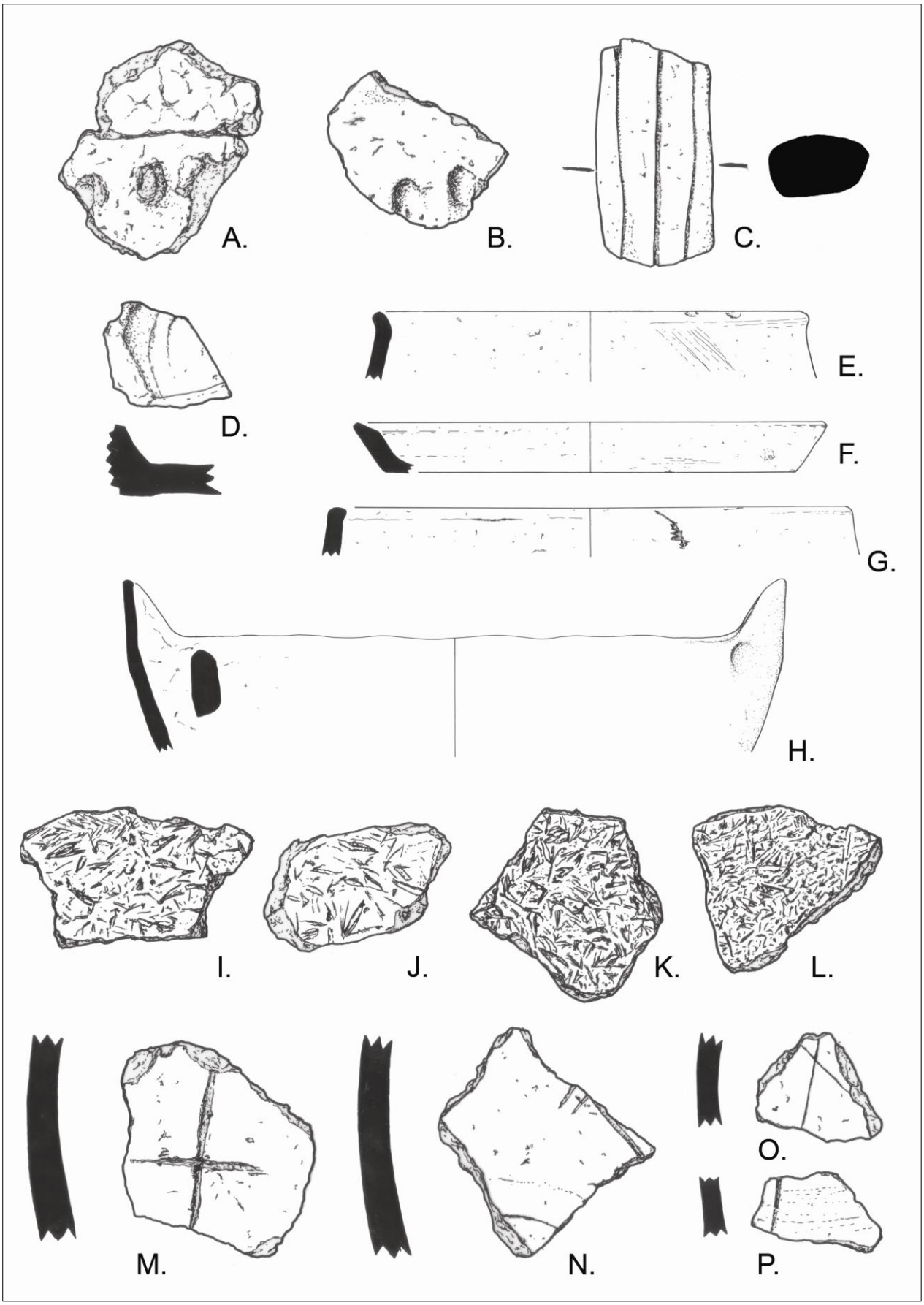


Figure 35 Prehistoric A,B,C, Romano-British D - E, Early Medieval forms F-P all illustrations 1:2 except profile 1:4 E, F, G, H and 1:1 I and P (Tom Hooper)

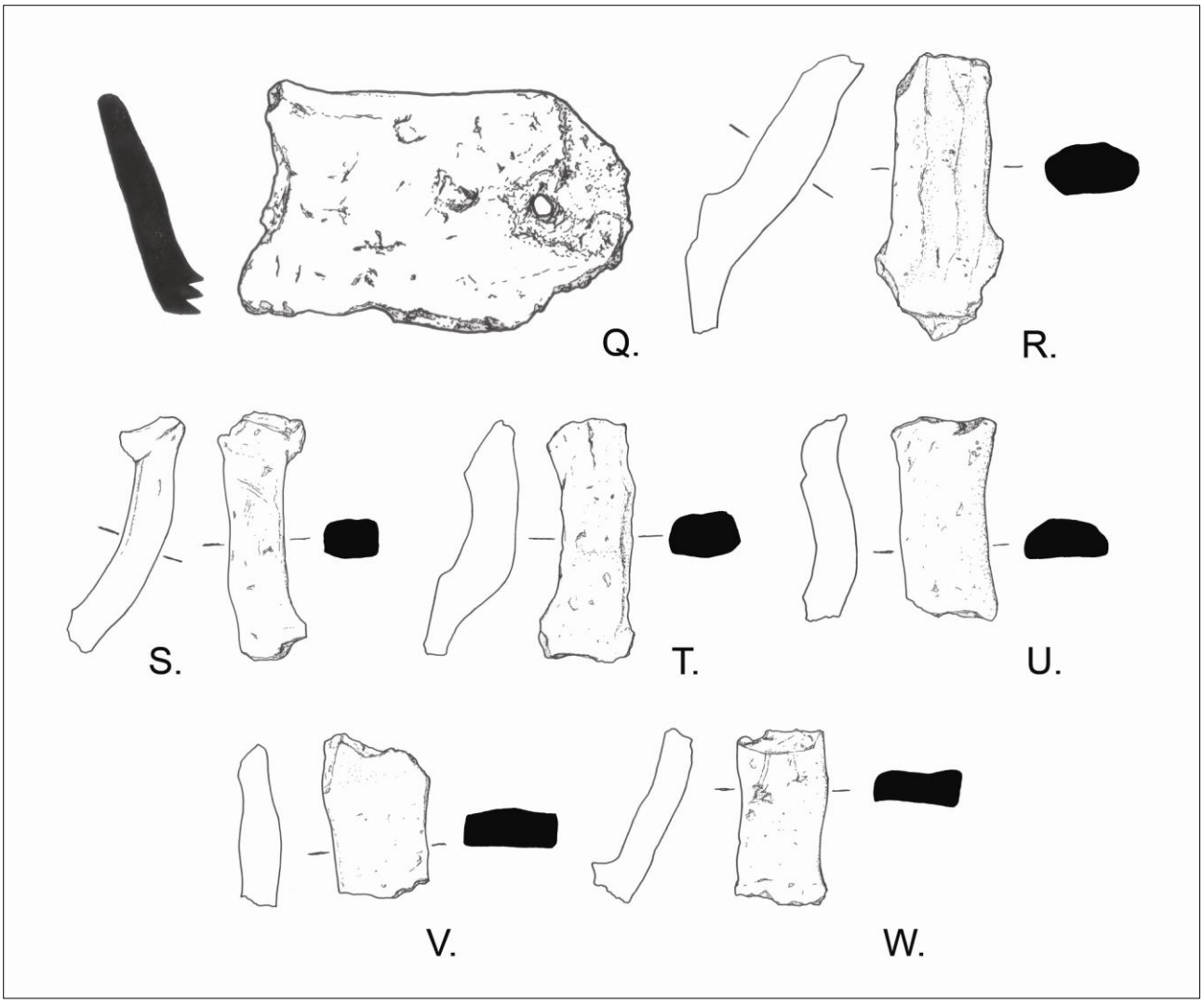


Figure 36.Early medieval pottery R-W are at scale 1:4 except Q. which is 1:2 (Tom Hoooper)

4.1.8. Results of Early Medieval Pottery Analysis by Trench

Trench 1 (T1)

The composition of the assemblage from T1 is unique in comparison to other Trenches, and may suggest the only true example of a domestic assemblage of this period in Cornwall. The overall level of abrasion is very low only the three topmost contexts of windblown sand had Grade 2-3 abrasion, the pottery in the middens and associated with the house were generally Grade 1. This suggests that the pottery was in its primary area of deposition. Rims prior to the house construction, mainly in midden deposits, are generally 0.20-0.26m, during the occupation of the house (1017) rims were 0.26-0.36 m and (1033) 0.30m, with the closing deposit vessel rim 0.36m (Fig 38). The ratio of base, rim, basal angle and lug sherds demonstrates the relatively even distribution for the presence of cooking pots and cauldrons (Fig 38). Unusually, no Grass-marked platters were identified which is confirmed by the low base ratio and generally small rim diameters. Ribbon bars for Bar-lug cauldrons do not vary over time, from the midden deposits prior to the house construction up until the floor surface of the house. There were several basal sherds with chaff impressions (Fig 35).

The results of the fabric analysis demonstrate that locally sourced F1 and F2 fabrics dominate the occupation of the house {1012}, the midden (1057) and wall {1013} foundations it was cut into [1046]. Interestingly, the Gabbroic F8 only appears in the earlier phases of the Trench also representing the smallest rim diameter of 0.20m. This suggests

that Gabbroic clay was favoured in earlier periods as it was in the Prehistoric and Romano-British phase of the promontory fort. The pottery sherds suggestive of a closing deposit above the house were actually the lower half and bases of three different vessels deposited together and not one smashed as initially thought.

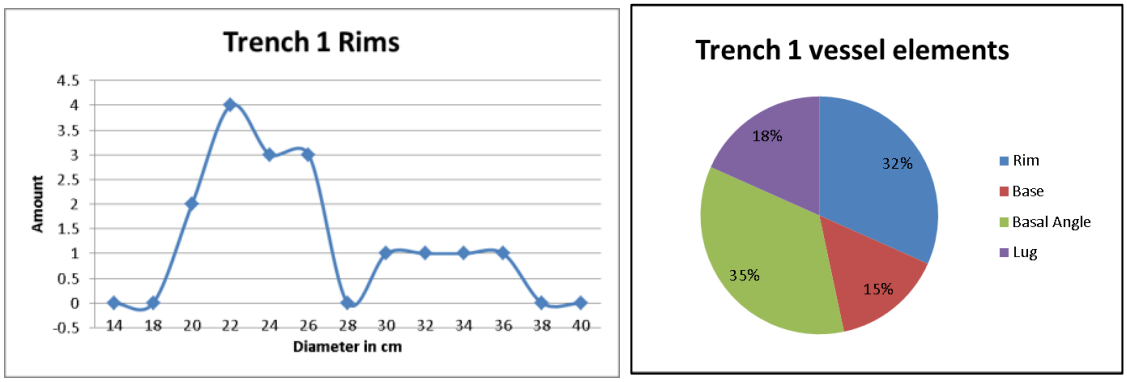


Figure 37 (left) Trench 1 rim diameter by quantity; (right) Trench 1 ratio of vessel form elements suggesting a very even distribution

Trench 2 (T2)

This assemblage is suggestive of an earlier period of occupation than the other Trenches, which is supported by the carbon dates. The levels of ceramic abrasion are generally between Grade 1-2 suggesting little post depositional movement, there is only Grade 1 in (1013) and very little Grade 3. The pottery from T2 is nearly all Gabbroic F8, which is consistent with the fabrics dated to this period in Trench 1. The rim diameters appear to highlight three main sizes in the mid 20's, 0.30m and 0.36m (Graph 3). There are a lot of platter bases (Graph 4) with two complete profiles (Fig 36), one of which has the impression of a fern or bracken on the exterior (Fig 35).

This Trench has the widest ribbon bars which could suggest a stylistic trait of this period, the function of which is unclear. The presence of three decorated sherds within this assemblage may also have some significance referring to its earlier phase in the settlement. The decorated sherds have incised horizontal and vertical lines made prior to firing (Figs 35). It is difficult to estimate a particular motif although it does suggest a geometric rather than curvilinear style. The sherd with a deeply incised cross is of great significance as the only other parallel is an undated example from Trelissick (see discussion 5.5.5.). An unidentifiable powdery white internal residue and charring is present on several basal angle sherds. This assemblage has a great diversity in the nature of impressions on the base. There are several examples of what appears to be cereal chaff (as seen in Trenches 1 and 5), varying sizes of grasses and the impressions of other unidentifiable organic material. One example had un-chopped grass running in only one direction.

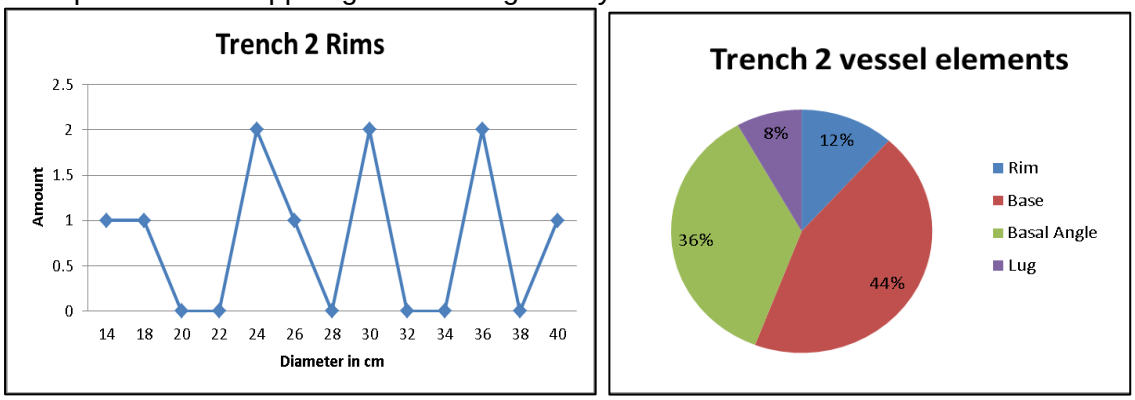


Figure 38 (left) Rim diameters showing peaks at 24, 30 and 36cm, (right) Ratio of vessel form elements showing high numbers of bases

Trench 3 (T3)
This Trench has the most significant ceramic abrasion generally Grade 2 followed by Grade 3 and with a few at Grade 1. This is entirely consistent with a dynamic midden or processing area where pottery was finding its way into deposits. The fabric analysis suggests that in the earliest phase F1 was the dominant fabric found in layers of windblown sand. The limpet/fish midden above (3007) has a mix of all fabrics equally, perhaps representing the accumulation of sherds from many phases of the settlement. In general the features above (3007) have an equal mix of all Fabrics but mainly F5, F6 and Gabbro F8. Interestingly, the Gabbroic F8 was mainly found in very fine, oxidised vessels with non-Grass-marked bases with a wall width of 4-5mm, unfortunately the sherds were too small and abraded to extrapolate the form. There is one decorated sherd with and incised line from the fish/shell midden context on a fine vessel (Fig 35).

The assemblage was generally composed of finer vessels only a few coarse vessels were present. Analysis of form elements strongly suggests Grass-marked platters are dominant form of vessel in T3 (Fig 40). It has the highest amount of base sherd than any other Trench, but oddly few rims and basal angle sherds. Rim diameters are generally higher with bevelled rims being the most common followed by everted rims (Fig 40).

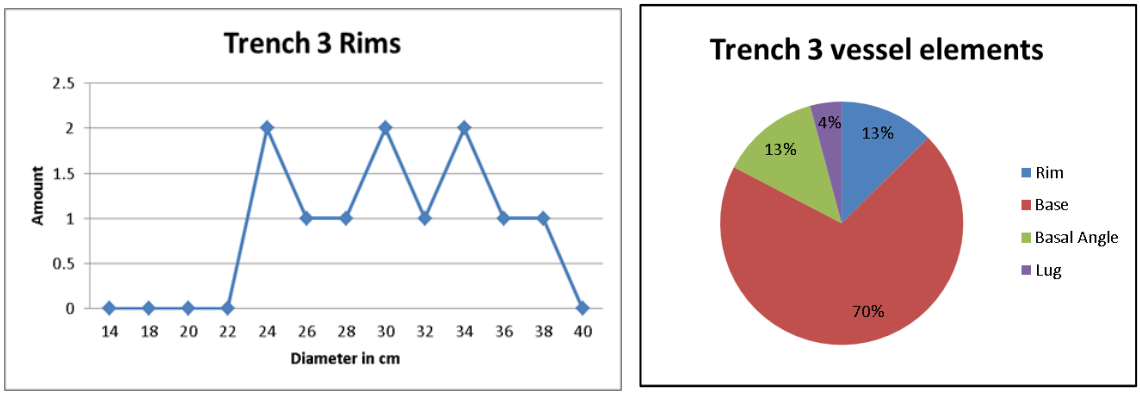


Figure 39 (left) Showing generally high rim diameters in comparison to the rest of the early medieval assemblage, (right) Ratio of vessel form elemets showing high number of platters.

Trench 4 (T4)
There is a great diversity of forms within the Grass-marked Ware range in this Trench, with a large number of rim sherds and Grass-marked bases (Fig 35). The ceramic abrasion is generally Grade 2 followed by Grade 1 with some at Grade 3. As in T1 Gabbroic F8 dominates the earlier phases which after (4003) move towards most Fabric groups F1, F3 and F4. Interestingly, the (4004) and (4006) midden assemblages show the greatest diversity in fabric groups, but Gabbroic F8 still dominates at 52%-61%.

The two decorated sherds bring the site total to five which is the most known in any assemblage to date in Cornwall. The decoration is once again incised horizontal and diagonal lines on the external surface (Fig 35). There are two complete bars with springing attached. A unique sherd with a full platter profile and post-firing hole bored into the wall is the only example of possible rivet repair or secondary use of a sherd (Fig 36). The majority of the assemblage came from middens the largest of which was (4004) and (4006), which produced large sherds with highly sooted exteriors and some internal charred residue.

Many of the sherds are co-joining suggesting that large proportions of vessels were deposited and crushed in situ. The size and condition of sherds in the middens suggest a higher rate of ceramic consumption and deposition than seen in other Trenches or periods. In addition, a wide range of fabrics present could also represent a need to source materials

further afield or more than one pottery producer. The widest range of rim diameters suggests the most diverse range of forms used at any one time (Fig 41), the ratio of vessel form elements and numerous examples suggest platters are present (Fig 41), which may relate to differing eating practices.

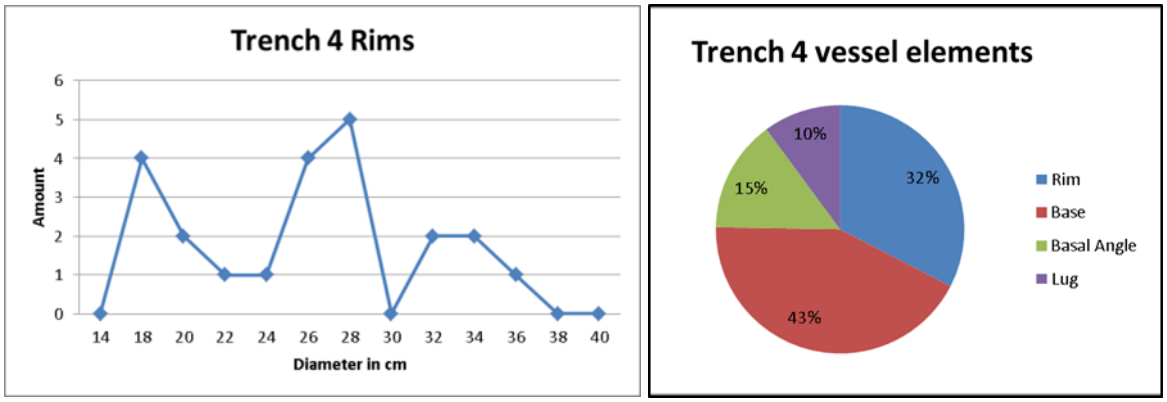


Figure 40 (left) Showing the widest range of rim diameters,(right) Ratio of vessel form elements support presence of platters

Trench 5 (T5)

This Trench has the smallest pottery assemblage due to it deriving from one feature. The fabrics are equally dominated by Gabbroic F8, F7 and F1 in all phases, and in the dated midden (5024). Abrasion is generally high which reflects their windblown dirty sand layers contexts presenting Grade 2-3 abrasion. However, the pottery in the main feature, midden (5024), has relatively low abrasion levels mainly Grade 1. This deposit was dated to 9th-11th c AD and contained platters, cooking pots and a bar from a cauldron uniquely circular in profile (5021). Rim diameters were only possible on three sherds as most were too small to be recorded thus producing little information (Fig 42). The form ratio shows a high proportion of bases, perhaps due to the use of platters (Fig 42). There were a couple of examples of the fine non-Grass-marked Gabbroic F8 vessels noted in T3. In general bases were Grass-marked although two had cereal chaff impressions (Figs 35).

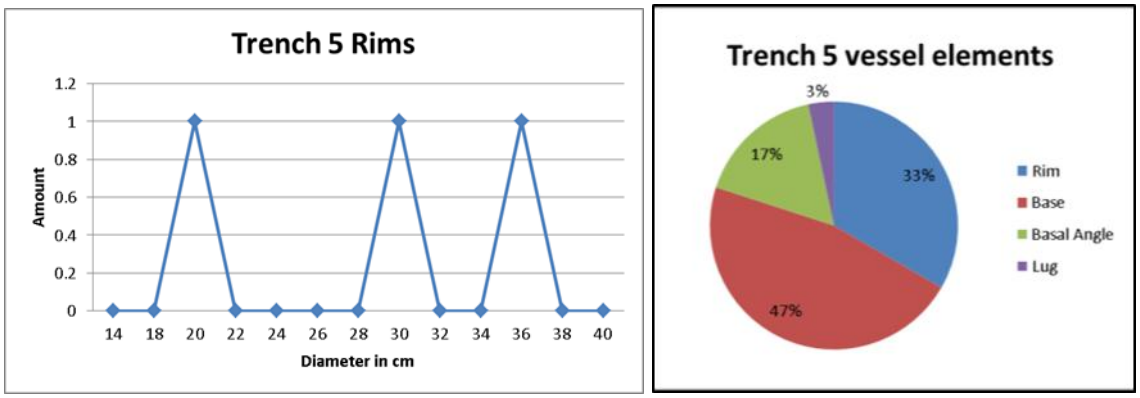


Figure 41 (left) Only three rim diameters could be measured due to small size, (right) Ratio of vessel form elements showing high proportion of bases.

4.1.9. Post-medieval pottery

The post-medieval pottery is typical of its period in Cornwall, with a predominately muscovite mica rich fabrics suggesting Lostwithiel Ware dating to the 15th-16th century. There are some 18th-19th century non-micaceous green glazed wares and modern white refined earthen wares. Considering the distance of the promontory from settlement of this period, the pottery most likely travelled in manure which supports the results of Geophysiscal anomalies identifying possible ploughing marks.

4.1.10. Conclusion

The pottery assemblage from Gunwalloe represents many different phases of Cornwall's past. The early medieval assemblage offers the first dated sequence of pottery from the 8th-13th centuries in Cornwall, finally establishing the dating of Grass-marked ware beyond the 7th century AD. The context of the promontory fort assemblage makes it of regional significance, as so few promontory forts have been excavated thus contributing to our knowledge of occupation on these sites. The Prehistoric and Romano-British assemblage from T6 could suggests continuous occupation on the promontory from the Middle Bronze Age to the later-Romano-British period which is supported by the radio carbon dates. The decoration of the Late Bronze Age Plain Ware pottery is unparalleled in Cornwall

The early medieval assemblage of Grass-marked wares is of national significance as it the most dated sequence of its type, which provides a much-needed time frame for this static pottery style. The previous lack of dates for this ware led to the general assumption it dated from the 7th-10th centuries AD and that the 11th-12th c examples at Launceston Castle and Truro were chance outliers or re-deposited. It is now possible to assert that this pottery was being produced and consumed from the 8th into the 12th century and possibly later. The increasing vessel size and deposition in the 11th century suggests its production reached its peak in this period at Gunwalloe suggesting it was integral to the transitional Conquest period. Analysis of the forms and diameters has provided the first evidence that there are changes in this ware over time. The increase in vessel size in the 11th century perhaps suggests the availability of more food, inferring a more successful farming or trading economy. The unique group of decorated sherds dating to the 9th-10th century suggests adornment became important in this period and that the use of the cross motif on the exterior of the lug was a social statement, perhaps of their adherence to a new Christian faith. The changes in clay sourcing from Gabbroic to more local clays in later phases also suggests a growing independence or insular society as time goes on. The ramifications of these findings are explored further in the discussion.

4.1.11. Fabric analysis

There are 7 fabric groups identified, some were common across most trench assemblages whilst others were more period specific. The macroscopic fabric analysis was carried out using a binocular microscope at a magnification of x10 to x40.

The Bronze Age pottery was predominately a Gabbroic fabric which is typical of Cornwall. The Iron Age pottery is a mixture of a Hornblende rich fabric which is a coarser version of the early medieval F2 Fabric. The Romano-British period sees an equal usage of Gabbroic and F2 clays.

Provenance

Fabrics can be grouped by the derived minerals from Siltstone, Gabbro and Hornblende Schist. The Siltstone and mudstone Fabrics 4 and 6 are most likely derived from clays or temper added from the Devonian Formation which underlies the site. This would suggest an immediately local source. The Hornblende rich Fabrics 2 and 3 may have derived from the Hornblende/Mica Schist outcrop at Cury Cross Lanes. A stream issues from Tregaddra Farm locally known as the Tithet, on the Hornblende Schist which later crosses the Mica Schist outcrop, this is the source of the river locally known as the Cober which issues onto the beach at Church cove Gunwalloe. The route of this river locally known as the valley of the Tithet, would have been the most direct route to access Goonhilly Downs, across which the source of Gabbroic clay can be found near St Keverne.

The (rock) Gabbro Fabric 5 and possibly Fabric 7 appears to have crushed rock temper which could be surprisingly locally derive from the microgabbro outcrop at Cury and not the larger Gabbroic outcrop near St.Keverne. Interestingly, the Bronze Age and Iron Age

Gabbroic fabrics are entirely consistent with the typically used Gabbroic fabric for these periods from the St Keverne area. The Prehistoric and Romano-British gabbroic Fabric is commonly found in Cornwall see Taylor (2011) and Wood (2011) for description, for this publication it will referred to as Fabric 8. Fabric 8 is also found in the earliest level of Trench 1. Fabric 1 could have derived from a source which encompassed the siltstone/mudstones from the Devonian geology and the Microgabbro outcrop mostly likely from a riverine clay. The location of which could equally be sourced from the river clays leading back from Church cove or Poldu Cove.

Further thin-section analysis is needed to fully identify the mineral inclusions for each of the fabric groups with an additional programme of clay sampling to establish source locations.

Fabric 1 (coarse many inclusions)
Moderately hard, harsh texture, variable oxidised and reduced but generally mid reddish brown. Poorly sorted although fairly sorted examples are present. Type example SF 1 (1017) T1.
Temper 30-40%
-Quartzite, white,(sometimes red stained) scatter, sub-rounded to rounded (waternworn), 7-2mm
-Feldspar, off white, scatter, sub-rounded, 1mm>
-Limonite, orange to black, scatter, soft, sub-rounded, 1mm
-Siltstone, red/buff, sparse, rounded, 6mm
- Quartz, translucent/opaque, sparse, sub-angular, >1mm
-Rock Amphibole, sparse, light green/grey fibrous texture, soft, sub-angular 2.5mm
-Rock, lamella, alternate black and white/pink (red), sparse, sub-angular, 6mm
Matrix, smooth silty clay

Fabric 2 (muscovite fine mica)
Moderately hard, buff grey colour, occasional reduced core. Very poorly sorted. Type example SF851 (1017) T1.
Temper 35-40%
-Muscovite, abundant, cleavage flakes, less than 1mm, derived from micaceous siltstone.
-Rock, black (hornblende) and white (feldspar), stripy /lamella formation, scatter, angular, 6-2mm
-Hornblende, black glossy, scatter, cleavage obtuse, sub-angular, 5-1mm
-Feldspar, off white, scatter, sub-angular, 2mm
Matrix, smooth micaceous clay.

Fabric 3 (large mica flakes)
Moderately hard, buff brown-black colour, reduced throughout, fair sorting. Type example SF417 (4002) T4.
Temper 35%
-Muscovite, common, cleavage flakes, 1mm and >1mm in matrix
-Quartz, translucent/ opaque, scatter, sub-rounded, >1mm
-Feldspar, off white, scatter, sub-angular, 1mm
-FE, magnetic, glossy black, scatter, rounded, >1mm
-Rock, black and white appearance, sparse, feldspar+quartz+amphibole, sub-angular, 2.5mm
-Amphibole, black, sparse, single cleavage, sub-angular, 3mm
Matrix, sandy clay with muscovite

Fabric 4 (few inclusions)
Moderately hard, buff reddish yellow colour, oxidised exterior and interior with buff brown reduced core, fair sorting, very fine clay with rock temper. Type example SF305 (4002) T4.
Temper 10%
-Feldspar, off white/yellow, common, sub-angular, >1mm all very small and part of matrix
-Siltstone, red, rare, well-rounded, 5mm
-Rock, black, rare, angular, 2mm
Matrix, fine smooth clay

Fabric 5 (rock gabbro)
Moderately hard, oxidised pink/red throughout, very poorly sorted. Interior surface often coarse with large protruding rock fragments, with a smoothed exterior surface. Type example SF816 (3017) T3.
Temper 50%
-Rock (gabbro), black and white, abundant, lots of feldspar, no cleavage, angular, 4-1mm
-Feldspar, off white, common, sub-angular, 1mm>, abundant in matrix
-Amphibole, dark grey/green, scatter, two cleavages, lath formation, 3mm
-Quartz, opaque, sometimes red stained, scatter, sub-angular, 4-1mm
-Magnetite, black glossy, rare, well-rounded, 1mm
Matrix, smooth silty clay feldspar rich

Fabric 6 (sandy)
Hard, harsh surface texture, reduced throughout, fair sorting. Type example SF11 (3000) T3.
Temper 70%
-Quartz, translucent/opaque, abundant, sub-angular to sub-rounded, 0.5mm, (rare 2mm)
-Limonite, black glossy, common, well-rounded, 0.5>mm
-Feldspar, off white/yellow, common, sub-angular, 0.5mm
-Slate, grey/silver, rare, sub-rounded, 1.5mm
Matrix, sandy quartz rich clay (river sand)

Fabric 7 (Biotite mica rich)
Moderately hard, oxidised throughout, harsh surface texture, poorly sorted. Rare examples in assemblage. Type example SF328 (5007) T5.
Temper 25%
-Biotite, black, common, cleavage flakes, 2-1mm>
-Feldspar, off white, scatter, sub-rounded, 2-1mm>
-Quartz, opaque, scatter, rounded, 1mm
-Amphibole, black/grey, scatter, shiny appearance, sub-rounded, 2-1mm>
-Rock, Quartz+feldspar+Biotite, rare, angular, 4mm
Matrix, sandy clay (could be gabbro with rock added as Biotite and rock very fresh.

4.2. Bone

4.2.1. Mammal, Fish and Invertebrate Assemblage By Dr Wendy Howard

(Full report in Appendix 8)
A total of 3165 animal bones and fragments were examined from the six Trenches, which yielded varying numbers of remains. Of the bones, 876 (28%) could be identified to both element and species due to the condition of the recovered bones; though a further 988 (31%) could be broadly identified as bird, fish or large-, medium- or small-sized mammal, but lacked features that would unequivocally identify them to species. The assemblage is comparable to those previously excavated by Peters (1986) and Jope and Threfall (1995-56), although no definitive identification or report on these faunal assemblages was forthcoming.

Condition
The condition of the bone assemblage is fairly fragmented across the site, though the bone condition varied between Trenches and contexts, some bones were in a reasonable condition others were in a poorer state. A number exhibited evidence of weathering with flaking of the surface layers or longitudinal splitting, while others were abraded with loss of surface or edge definition, or porous and crumbly. While some weathering would have occurred if the bones were left uncovered for a while when deposited, the depositional environment would have caused other degradation, with some erosion within sandy soils due to its acidic nature.

Butchery
Evidence of butchery was identifiable on many bones, in the form of cut-marks and chop-marks (Fig 43). Specific butchery practices were noted, such as on two cattle phalanges which had cut-marks parallel to the proximal (upper) articular surface suggest disarticulation

using a blade to separate the feet from the legs (Fig 44). The practice of extracting marrow seem to have been wide spread in Trenches 1-5, the evidence of which is seen in the helical fractures ('spiral round the bone long axis') with the resultant fracture edges being smooth. Research has shown that these result from bones being broken while fresh (Outram 2002), suggesting there was deliberate breakage to access the internal fat-rich marrow in the central bone cavity.

Figure 42 (left): Butchery marks on rib bone (Wendy Howard Appendix).
Figure 43 (right): Cut marks on Phalanx (Wendy Howard Appendix).

Gnawing marks

Evidence of gnawing was identified on many bones, indicated by the irregularly-edged bone and tooth-marks particularly on juvenile animals. The size of the tooth pits and gnawing marks suggest small carnivores such as cat, dog or foxes (Fig 45) and also rodents (Fig 46). Canid and rodent bones recovered from midden deposits support their presence across most phases of the early medieval settlement. The presence, and level, of gnawing also suggests that many discarded bones were not immediately buried, but deposited where they could easily be accessed by predators.

Figure 44 (left): Gnawing tooth marks from dog or fox (Wendy Howard Appendix 8)
Figure 45 (right): Gnawing tooth marks made by rodents (Wendy Howard Appendix 8).

Mammal

Fauna

The assemblage represents mainly domesticates including cattle, horse, sheep/goat, pig and dog and some wild species including roe and red deer, hare, rabbit, vole and bird.

Equids

A small number of equid bones were recovered from Trenches 1, 4 and 6. The two near-complete elements allowed an estimation of the animals' withers heights. Trench 4 produced a height of 14.2 hands high (136.27 cm) which would be slightly larger (four to six inches taller) than modern Exmoor or Dartmoor ponies. The Trench 6 example was smaller with an estimated withers height of 12.3 hands high (128.65 cm) which is slightly shorter than an Exmoor or Dartmoor pony.

Cattle

Cattle bones were identified in most Trenches, a species estimate for an example in Trench 4 suggests a breed similar in stature to medieval 'A' cattle from Hamwic, comparable to modern Dexter. Bone evidence from sites such as Mawgan Porth (10th century) indicates that during the 8th to 10th centuries Cornish cattle were short-horned and small in stature, like Iron Age cattle. They were seemingly smaller than cattle in other parts of the country, though elsewhere cattle sizes later reduced during the 11th to 13th centuries to a 107cm average withers height (Armitage 1982). There were not enough identifiable bones to calculate mortality or sex profiles of these animals, making any comment on their use in a specific subsistence strategy problematic.

Pig

Pig bones were present many from younger animals. Medieval pigs were leggier than modern breeds, though wild boar, which was larger and more robust than domestic breeds, may have been hunted.

Sheep

Sheep and/or goat seemed to have been smaller in size compared to most modern breeds, based on the bone size and robustness. Some horned sheep/goats were kept, as indicated by the small horncore fragments found several early medieval Trenches. Many of the identified ovicaprid remains were individual teeth, which based on tooth ware suggest younger animals aged approximately 2 to 12 months.

Carnivores

A single small dog mandible and hind-leg bones from a dog aged under 10 months was found in Trench 2. A single cat canine tooth was found in Trench 3.

Small mammals

Two European Hare (*Lepus europaeus*) were found in Trenches 2 and 3, and a European rabbit (*Oryctolagus cuniculus*) in Trenches 1, 2, 3 and 5 although maybe intrusive as rabbits were relatively uncommon in England in the early medieval period. A hedgehog (*Erinaceus europaeus)* mandible and ulna were present in Trench 2. Several small rodent bones were found of which the only identifiable examples was a Vole (*Microtus agrestis*) in a Trench 1 midden.

Birds

Considering the proximity to an estuary and the sea very few bird bones were identified in the faunal assemblage, sseveral bones were present but due their condition the species could not be established. Domestic Fowl (*Gallus gallus*) was identified in Trenches 1 and 2 which were slightly smaller than modern breeds. Trench 3 produced Two Herring Gull (*Larus* sp.) bones with evidence of cut-marks or deliberate fracturing suggesting butchery and a Snipe (*Gallinago gallinago*) bone with no butchery. Some small passerine (perching birds) were present in Trench 2 and 3 and a possible wild (Brent) goose from Trench 3.

Fish bones

Despite the sieving only 196 fish bones, 99 of which were from Trench 3 associated with a midden, and none from Trench 6. This suggests that in general the inhabitants of the early medieval settlement made surprisingly little use of the marine resources.

Ballan Wrasse (*Labrus bergylta*) was the most common species found in Trenches 1, 2, 3 and 4. They are commonly found in shallower inshore waters often found in pools near the shore or among weed covered rocks, especially in areas with rocky shorelines. Bones recovered included jaw elements, including premaxilla, articular, dentary, and parts of the dorsal fin, which indicate that the fish were transported whole to the site rather than filleted

elsewhere. This may have been one of the few fish they could catch from the land without the use of a boat.

Twenty Hake (*Merluccius merluccius*) bones were identified with many more possible examples, sixteen of which were from Trench 3 and only four in early phases of Trench 1, all of which were from the head and tail. This species is particularly known for its utilisation in mediaeval south-west Britain, most locally comparable with Launceston Castle (see discussion below).

There are two examples of European plaice (*Pleuronectes platessa*) from Trenches 1 and 4 and a couple more may also have derived from this fish. Pollack (*Pollachius pollachius*) was also present in Trench 1 and a single Atlantic Halibut (*Hippoglossus hippoglossus*) bone from Trench 3 was identified.

Amphibians
Several Anurid bones were recovered from Trenches 1 and 3, which mainly derived from frog (*Rana temporaria*), though one probable toad (*Bufo* sp) bone was present.

Arthropods
Crab (*Canc*er *Pagourous)* shell was identified in Trenches 1, 2, 3 and 6 generally from midden deposits, although some fragments may be lobster. As with many of the other marine resources they could have been found close inshore or in rock pools, with larger specimens perhaps caught in deeper water.

There were also invertebrates and marine molluscs which are discussed in the full report in Appendix 8.

Ante-mortem changes

Pathology
Minor pathological changes were noted on several bones, including bone remodelling on a domestic fowl humerus, pronounced entheses (muscle attachment sites) on pony bones, and increased bone growth on two cattle phalanges.

Discussion
The faunal assemblage suggests the inhabitants of Gunwalloe enjoyed a varied diet, utilising both domestic and wild mammals, as well as birds, fish and shellfish. There is evidence that cattle, perhaps pig, and sheep/goat were being reared. The presence of low meat-utility elements like teeth, skull fragments, vertebrae, and carpal bones in the settlement middens suggests that butchery was carried out on-site, rather than relying on buying ready-butchered meat joints, perhaps from local markets. Although the aged and sex of some animals could be estimated, the limited number of elements and level of bone fragmentation precluded any herd mortality profiles to determine the economy practised. Indications of age-related practices had to rely upon individual data from bone fusion or tooth eruption and wear. The presence of elements from young sheep and cattle suggests they were bred and raised on-site, and may represent deliberate culling of young stock (especially males) if animals to support a milking economy. However, the fusion stage of cattle metapodia suggests some were less than 2-3 years of age at death, which would be a prime age for slaughtering beef cattle. While females could be culled at this age, it is more likely that they would be kept for breeding or used for milking, if this was practised.

There were also bones from older cattle and ovicaprids, animals at least over 4-6 years old, though no extremely worn teeth were present, so it is not possible to establish whether much older animals were kept. While some mature animals would be required as breeding stock, other older animals could have been used for milk and/or wool, with cattle also potentially

kept for traction. Some minimal pathology present on several of the phalanges could support this, though could have occurred naturally with the animals moving over rough terrain. Similarly, the pony could have been used for traction or riding.

The age range (including piglets) and presence of male and female pigs makes it difficult to determine whether they were domestic or wild stock. The size generally suggests they were domesticates, though one large boar's tooth indicates a mature and quite large animal. It is possible that it was kept for breeding, or that hunting for wild boars was practiced.

The presence of a few domestic fowl (*Gallus gallus*) bones suggests that these were also kept, possibly providing eggs, meat, and feathers. Other commensal species include dog, with gnawing seen on many bones and a couple of puppy bones present; dogs could have been used for hunting or herding. A single cat tooth was found which presumably came from a domestic cat, rather than a wildcat.

A small quantity of wild resources were utilised including roe and red deer and possibly some wild pig. The majority of wild game consisted of marine and seashore species, including fish and shellfish. Fish like ballan wrasse could have been caught off the rocky shoreline, though other deeper water species found are more likely to have necessitated the use of a boat; it is also possible that the farming inhabitants traded with local fishermen. A number of estuarine and sea bird bones were identified suggesting, either opportunistic finds or a more systematic exploitation of wild species through hunting.

It is noticeable that a significant amount of bone fragmentation is present, and while some may have been caused by being deposited onto exposed surfaces some appears to have resulted from deliberate fragmentation. This represents the practice of breaking long marrow-bearing bones to extract marrow from the cavity, as opposed to grease extraction would involve boiling fragmented cancellous bone ends. The marrow may have been eaten because of dietary preference or as a source of fat, but could have been eaten out of necessity to extract the maximum caloric value from the bones in a subsistence economy where all available resources were needed.

Conclusion
Comparison between the remains from the early medieval Trenches 1-5 and prehistoric Trench 6 suggests that there was temporal variation in the use of different specie over time, either using domestic species, wild game, or a combination of the two. In terms of farmed species, given the range of bones from different aged cattle it is likely that some animals were kept for meat, while others were potentially kept for milk and/or wool. Unfortunately, it is not possible to be more precise about the type of economy practised.

While the diverse range of species found suggests that the inhabitants of Gunwalloe were 'living off the fat of the land', the level of bone fragmentation suggests they were extracting every ounce of nourishment they could from all available resources. This is surprising considering the proximity of the settlement to the sea, grassland, and local marshes, not to mention the farmed livestock. It could suggest that the early medieval inhabitants had not become complacent and may have been aware of harder times in the past or possibly in the future due to either socio-economic or climatic factors.

4.2.2. Human Cremated bone by Joanna Higgins (Full report in Appendix 9)

Analysis on the Cremated bone from cist in Trench 6

Context (6017) (sample 853)
This context comprised a quantity of white, calcined bone, with a small number of greyish black fragments. The presence of fully calcined bone is indicative of an efficient cremation

process. Much of the calcined bone has a yellowish-brown appearance, but this appears to be surface soil staining, and a number of fragments had very hard soil concretions adhered to the bone surface. The bone was highly fragmented, but all bone fragments were generally well preserved and sharp-edged with no evidence of pre-depositional erosion.

The total weight of the cremated bone from this context (94g) was considerably less than the average expected for an adult 'whole body' cremation (1525.7g), but just within the range (57-3000g) for an undisturbed burial of a single cremated adult from an archaeological context (McKinley, 1997; 2000).

Results
A total of 24.2% (22.8g) of the deposit comprised identifiable fragments. No regions of the skeleton were duplicated, and no fragments diagnostic of juvenile or infant remains were present, suggesting the burial represented a single adult individual. Identifiable fragments from various regions of the skeleton (skull, axial, upper limb, lower limb) were represented suggesting the deposit represented the 'whole body' cremation of a single adult individual.

No sexually dimorphic elements or age indicators were present. However the presence of fragments of permanent teeth, and the fusion of the distal epiphysis of a hand phalange and of the proximal metacarpal epiphysis indicate an individual aged over 18 years. The presence of a fragment of unworn tooth enamel crown may suggest a young/younger adult.

4.3. ***Phytolith Analysis*** *by Dr Jenny Watling*
(Full report in Appendix 10)

This is the first time that phytoliths have been used for archaeological or palaeoecological analysis in Cornwall. Although hindered by the lack of a British phytolith reference collection or contemporary comparative material, this study has produced very good evidence for cereal consumption in early medieval Gunwalloe and highlighted the potential of using phytolith analysis on similar archaeological sites in Britain.

4.3.1. Results

Analysis from the samples in the 9th -10th century midden in Trench 1 identified phytoliths from woody species and grasses offering evidence of an open scrub environment characterised by a mixture of grasses and shrub species. It also reflected the cereal phytoliths identified in the hearth of the house.

The hearth samples contained abundant quantities of diagnostic phytoliths providing evidence of the Tritacea tribe of Pooideae grasses which include cereals such as wheat (*Triticum* sp.), barley (*Hordeum* sp.), oats (*Avena* sp.) and rye (*Secale* sp.). The concentration of these phytolith types in the hearth samples is very strong evidence that grain was being processed or consumed inside the building. The most common domesticates in early medieval England were bread wheat (*Triticum aestivum*), barley (*Hordeum vulgare*), oats (*Avena sativa*) and rye (*Secale cereale*) (Moffett 2011).

Bilobate phytoliths were also present in noticeable quantities (up to 14%) in the hearth samples. They are of particular interest because, along with cross-shaped phytoliths, they characterise the grass subfamily Panicoideae grasses are not native to Britain, but do include a variety of millets that produce these phytolith types (Lu et al 2009). Common (*Panicum miliaceum*) and foxtail (*Setaria italica*) millets are hardy, drought-tolerant cereals that grow well in poor soils, and evidence of their domestication in Europe is found since the Bronze Age (Zohary 2000). It would not be unreasonable to suggest that millet was also grown and consumed by the inhabitants of Gunwalloe. An alternative explanation would be

that the bilobate and cross forms originate from wild native species of Stipeae grasses (also containing millets), which belong to the Pooideae subfamily but produce lobate phytoliths. There are however very few Stipeae grasses native to Britain. Millet was a staple of 10th-11th century polish diets, with documentary references to it being used to make ale and isotope evidence in human and animal's collagen (Reitsema *et al.* 2010). It was the most common crop in medieval Europe and a staple of peasant life.

The discovery of *Phragmites* (Chloridoideae) reed phytolithis in the hearth testifies to its presence within the building, perhaps as a building material. *Phragmites* has a significant presence on the lizard peninsula today, and historically (French 1983).

4.3.2. Summary

Phytolith analysis of seven archaeological samples from Winnianton Farm, Gunwalloe, has provided evidence of the following:

a) Cereals in cultural deposits inside and outside the building, evidenced by phytoliths from the inflorescence bracts of the Tritacea tribe of Pooideae grasses (wheat, barley, oats, rye).
b) The possibility of millet consumption, implicated by the presence of phytoliths characteristic of the Panicoid or Stipeae subfamilies that are either not native to the UK or very rare.
c) *Phragmites* reeds inside the house which may have been used as a construction material.
d) A relatively open but low silica-producing environment consisting of grasses and woody taxa (dates are needed to place these phytolith assemblages in a timeframe)

*4.4. **Soil Micro-morphology and Geochemistry Analysis** by Dr. Ben Pears*
(Full report in Appendix 11)

A programme of soil micromorphology was conducted upon a range of deposits and horizons to compliment the range of other palaeoenvironmental analyses carried out including soil geochemistry, land molluscs and phytoliths. In total three bulk soil samples were taken in 75x45mm Kubiena tins from the field and from the monolith tins extracted for complimentary soil geochemistry analysis. Analysis took the form of the coarse rock and mineral components, coarse and fine organics, pedofeatures, microstructure, fabric arrangement, groundmass and relative soil distribution and descriptions of the three slides produced.

4.4.1. Slide - GW-1

Slide 1 was located beneath the internal west wall of the house in Trench 1 and two distinctive horizons were identified from the micromorphological analysis. The upper horizon (Wall-1) was a distinctive fine grained silty clay material, beneath which the fine grained clay material was a more distinctive sandy horizon (Wall-2).

Wall-1

The overall structure of the deposit was irregularly laminar and in places lenticular and appeared to have been heavily compacted either deliberately or through the weight of the wall above (Fig 47). The deposit contained some organic material including amorphous brown and orange particles and trace evidence of amorphous black inclusions. These may have entered the deposit accidentally during the construction phase of the building or during the extraction and mixing of the material before being deliberately used to bond the building stones together.

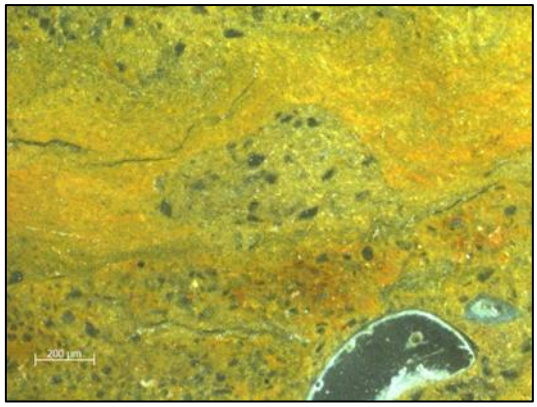


Figure 46: Wall-1 Compacted microstructure (opl) (Ben Pears Appendix 11, plate 4)

Wall-2

The horizon did contain some evidence of human activity including larger and more numerous charcoal particles, lignified plant remains, and traces of ash, however, these may derive from Wall 1 horizon. Indeed the presence of burnt minerals and organics and dusty coatings (Fig 48) suggests that there had been a distinctive amount of post burial movement between the two horizons possibly as a result of the walls construction.

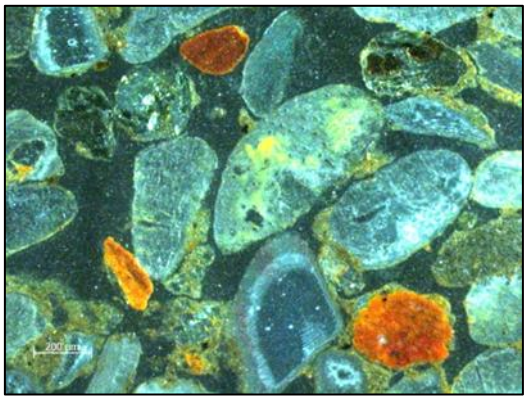


Figure 47: Burnt Organics and dusty coatings (opl) (Ben Pears Appendix 11, Plate 12).

4.4.2. Slide – GW-2

Slide 2 was located within a layer of organic rich horizons on the internal western edge of the building and was taken in order to try and determine the morphology and origins of these horizons. Two layers 1.4 and upper 1.3 contained no distinctive charcoal inclusions but did have frequent inclusions of black, brown and orange amorphous inclusions (Fig 49) suggesting large quantities of organics may have existed but have subsequently been broken down by post burial activity. This suggests that these deposits represent dumped clearance material possibly deriving from a domestic fire.

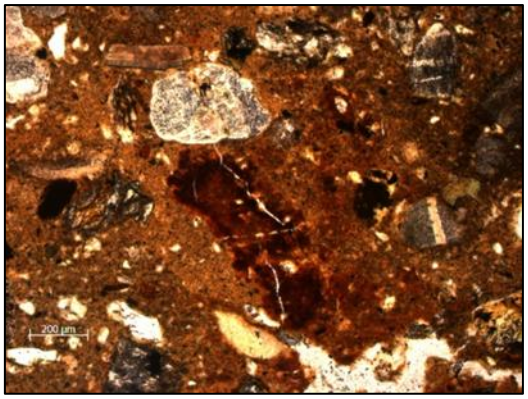


Figure 48: Degraded organics in 1.4 (ppl) (Ben Pears Appendix 11, plate 18).

More conclusive evidence of the dumping of domestic waste was determined from the lower 1.3 horizon which had a much darker brown and orange colour, significantly larger and more numerous charcoal fragments, and dusty ash void fills associated with silt and clay infills. Even this layer appeared to have a great deal of reworking as subtle excremental pedofeatures were present which had not been seen in the surrounding horizons. The basal layer (1.2) contained very little microstructure or organic evidence and the occurrence of some small charcoal fragments and dusty coatings (Fig 50) must surely be a result of post burial mixing. This layer therefore must represent the base of the organic dump of material which might have derived naturally or as an initial dump prior to the household waste being added.

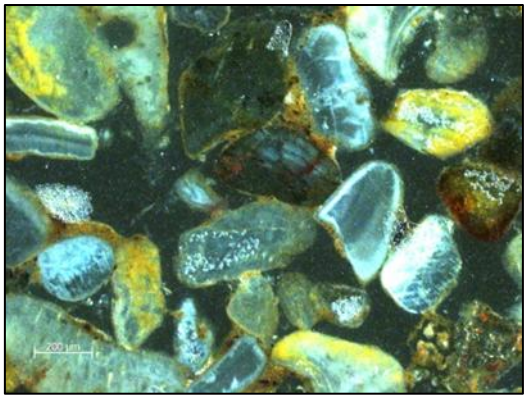


Figure 49: Dusty coatings in 1.2 (opl) (Ben Pears Appendix 11, plate 24)

4.4.3. Slide – GW-3

Slide 3 was located in the centre of the building and micromorphological analysis was conducted in order to try and determine the form and function of a potential hearth feature. Variations in microstructures and organic inclusions highlighted the greatest variations between the horizons. Horizons 3.2 contained a microstructure with a range of colours including dark brown and dark orange deposits (Fig 51) with fragments of charcoal alongside numerous amorphous black, brown, and orange inclusions and distinctive ashy material (Fig 52). The evidence present strongly suggests at least two periods of burning has taken place possibly in a central hearth in the building and the presence of large quantities of calcine shell (Fig 53) and might indicate residues from the cooking of shell fish or possibly the preparation of lime mortar.

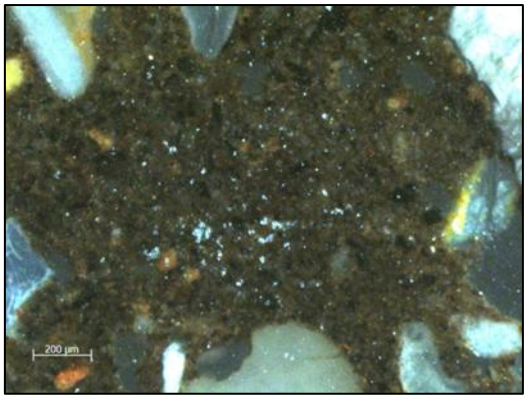


Figure 50: Microstructure of horizon 3.2 (opl) (Ben Pears Appendix 11, plate 29).

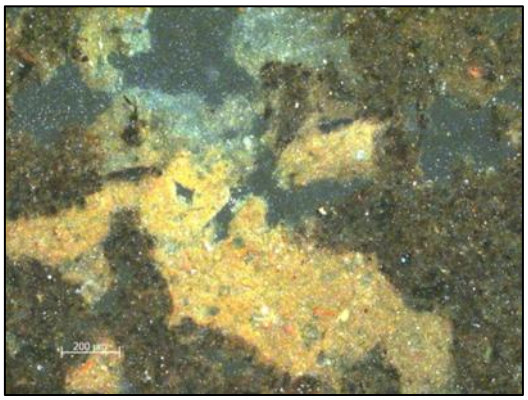


Figure 51: silt and clay ashy infills in 3.2 (ppl) (Ben Pears Appendix 11, plate 33).

Figure 52: Calcine shell in 3.2. (xpl) (Ben Pears Appendix 11, plate 35).

4.4.4. Summary

The micromorphological analysis of the three slides taken from inside the building at Winnianton Farm, Gunwalloe have suggested that the construction phase was distinctly more complex than originally thought. The use of the local fine grained silty clay appears to have been used not only as a bonding agent, but also a foundation material within a largely loose sandy landscape. The micromorphology has highlighted large amounts of deposited and reworked carbonised horizons from domestic fires and hearths. It appears that the cleaning of these features occurred frequently and the waste material was placed in middens before being re-deposited upon adjacent garden and farmland areas as a source of manure. Overwhelmingly, the micromorphological evidence has shown that the central feature

sampled was most likely an in-situ heath or fire but significant post burial reworking has broken down large amounts of macro-evidence but at the microscopic scale distinctive evidence of the burning of wood is present possibly for cooking and eating shell fish and a variety of organic produce.

4.4.5. Soil Geochemistry results

The geochemical analyses of a series of sediments from within the building at Gunwalloe have extended our understanding of the history of the site. The considerably increased loss on ignition, Total Phosphate, and magnetic susceptibility results from horizon 3.2 suggest that this layer was formed as a result of direct human activity possibly a floor layer or a hearth area, and more evidence of the form of this horizon will be gleaned from the micromorphological analysis. In many of the others layers, especially 3.3 and 1.3 and the archaeological horizons [149] from the 2010 analysis (Pears 2010), there is not always a distinctive increase in all three analyses reflecting individual characteristics of the deposits and from high level of disturbance, possibly from cleaning. Frequent cleaning may have also been necessary because of the increased deposition of windblown sand. The further geochemical work has revealed a complex series of in-situ and redeposited organic deposits associated most likely with a domestic home. The sediments analysed in monolith 1 appear from their form and chemistry to be a dump of domestic waste similar to the occupation horizons analysed in 2010 however the organic horizons from monolith 3 suggest that this is an in-situ floor or hearth.

4.4.6. Summary of the palaeoenvironmental analysis

By Dr Pears, B.R. and Dr Watling, J.G.

The palaeoenvironmental and geoarchaeological analyses conducted at Gunwalloe has produced a number of key results which enable a better understanding of the form and function of the building and the surrounding landscape. Structurally speaking, geochemical results from the 2010 season of excavation illustrated that the locally occurring distinctive fine grained silty clay was used to bond together the sub-angular schist fragments. Micromorphological analysis has subsequently shown that compacted silty clay was also used in the foundations of the wall in order to stabilise the structure within a loose sandy environment. The presence of *Phragmites* (Chloridoideae) from within the building also suggests that reeds were present in the local environment and used to cover the floor or possibly as a roofing material. Overall the architectural and archaeological evidence uncovered from the building therefore illustrates a great understanding of practical and stylistic prowess seen in only a handful of other sites, of similar age in Cornwall.

Specialist analyses was also conducted within the building during the 2011 season upon a number of highly organic horizons thought to be floor layers, hearths or dumps of domestic material. Geochemical analyses showed that overall many of the horizons contained increased loss on ignition, total Phosphate, and magnetic susceptibility highlighting clear evidence of a long period of human occupation. However, the micromorphological evidence also showed that significant mixing was also occurring removing large quantities of softer organic inclusions, ash and charcoal material from the horizons. Palaeoenvironmental and geoarchaeological analyses from two particular horizons (1.3 and 3.2) are of particular interest and revealed the most about the function of the building. In horizon 1.3 the geochemical analysis illustrated a further increase of loss on ignition, total Phosphate, and magnetic susceptibility and this was complimented by the micromorphology which showed a fine grained microstructure dominated by degraded organics and ashy infills.

The phytolith evidence included a mixture of wheat and/or other Triticae cereals, grasses deriving from processing or the surrounding environment. Both the macro- and microscopic evidence from these horizons suggests that this material derived from the clearance of

domestic areas including a hearth and dumped in a midden feature presumably prior to being used as a fertiliser on adjacent farmland.

Conclusive evidence derived from horizon 3.2 of a hearth or location of a fire within the building was established. This layer contained a hugely enhanced geochemistry especially loss on ignition, total Phosphate, and magnetic susceptibility as well as a distinctive particle size characteristic. The micromorphological evidence also clearly illustrates an area of carbonisation as there were distinctive inclusions of charcoal, large amorphous organics, ash and burnt inclusions (including clay; possibly deriving from a hearth base). The micromorphological evidence also illustrated that there may have been the preparation and cooking of shell fish, and phytoliths present within the deposit suggested that wheat (*Triticum* sp.), barley (*Hordeum* sp.), oats (*Avena* sp.) and rye (*Secale* sp.) were highly likely to have been processed or consumed within the building. More importantly the phytolith evidence, from the horizon, also included a variety of millets including common (*Panicum miliaceum*) and foxtail (*Setaria italica*) which are not native to Britain and may derive from the complex trade relationship between Cornwall and mainland Europe so clearly illustrated in the ceramic record of the seventh to tenth centuries AD.

The palaeoenvironmental and geoarchaeological evidence collected and analysed from Gunwalloe revealed just a snap-shot of the history of the building and the wider environment however, it is clear that there was an extensive and intensive period of occupation including the cultivation, processing and consumption of a variety of crops including millets possibly deriving from the strong trade links with Europe. Most importantly however, the interdisciplinarity of the work has indicated enormous potential for future collaborations at Gunwalloe in order to determine more about the site and the surrounding landscape.

4.5. ***Mollusc Analysis*** *by Dr Tom Walker*
(Full report in Appendix 12)

Molluscs are generally well preserved in the calcareous sediments of coastal wind-blown sands and can provide a useful insight into the environmental conditions prevailing during build up of those sediments. The alkaline nature of the wind-blown sand means that pollen is normally poorly preserved and molluscs provide an alternative method of study.

Approximately 4kg of material was obtained for each of the 5 samples within the mollusc columns. Stratigraphic boundaries were respected when taking the samples, with larger contexts being subdivided. Trench 6 was not included due to its non-calcareous soils.
All mollusc diagrams displaying the proportions of certain molluscs over time are to be found in the Appendix 11 with the full report.

4.5.1. Results

Trench 1
A column consisting of 14 samples was collected from the exposed south-facing face outside the wall down to the old ground surface.

The basal layer of sediment lying on the natural is very poor in molluscs (LMZ 1). This deposit represents the initial accumulation of wind-blown sand, and has a high proportion of clay/silt (50%) and low carbonate content (13%) consistent with the clay rich underlying geology. Above this there is a stabilization layer rich in molluscs (LMZ 2), with a mixture of shade, catholic and open country species containing a greater proportion of shade species than at any other level (*Lauria cylindracea, Vitrea crystallina, Aegopinella nitidula*). This indicates that there was scrub or woodland in the near vicinity, or at the very least long rank vegetation in which these species could live. However, the presence of large numbers of *Vallonia excentrica* implies that open country predominates. Good numbers of *Cernuella*

virgata are present. This species is believed to have been in introduction into Britain during the Romano-British period (Kerney 1999: 181). There are several reports of it in earlier Cornish Iron Age deposits (Bullen 1902) and possibly in Neolithic levels (Woodward 1908; Kennard 1923) but Evans (1972: 179) considers these ages unsatisfactory. On the molluscan evidence the lowest levels at Gunwalloe would seem to date from the Romano-British period or later. The lowest dated level in Trench 1 is 2190-1980 cal BC which is inconsistent with the molluscan data, and bioturbation would seem the most likely explanation.

There is then more sand accumulation (222-238cm, LMZ 3) with charcoal in the upper part. Shade shells almost disappear. Another Romano-British shell, *Cornu aspersum*, makes its first appearance, albeit with a single shell. This species was probably introduced to Britain by the Romans (Evans 1972: 175; Kerney 1999: 205) suggesting that this horizon dates from the Romano-British period. The layer is contiguous with a dark coloured pit visible on the inside of the building, pre-dating the construction of the wall. The mollusc column at this level contains numerous bone fragments and several limpet shells strongly suggesting a midden deposit. Above this is a deposit of very clean sand with almost no shells (LMZ 4) although there are several *Cornu aspersum*, supporting a Romano-British or Early Medieval date. This sand may have been deliberately placed as revetment against the wall foundation or could derive from naturally blown sand.

The sand deposits against the wall (164-211cm) contain almost entirely open country molluscan taxa, with only a few shade and catholic species (LMZ 5). This assemblage, being in a midden, may not, however, reflect the wider landscape. There are a few limpet shells in these layers. A single species, *Ashfordia granulata*, accounts for 60% of the non-marine molluscs. This is a mollusc favouring moist environments, entirely consistent with it being in a midden. This shell, when fully grown, measures about 7-8mm in diameter and has 5½-6 whorls. A very large proportion (50-70%) of the shells in these layers are only around 0.5mm in width and with less than one full whorl; these are hatchlings which died very young. Why they died young is unclear; perhaps the population exceeded available food resources or, being within midden material, were buried by new deposits. The eggs of *Ashfordia* are laid in the late autumn with hatching in early spring (Taylor 1916-1917: 73). One possible interpretation is that the hatchlings were unable to survive winter storms impacting on the west side of the Lizard peninsula.

The deposits above the level of the top of the wall are completely different (LMZ 6). The immediately superficial layer (157-164cm) has a moderate number of shells and particle size analysis shows nearly 10% of clay/silt, but above this, up to 125cm, the clay/silt proportion falls markedly, and there are very few shells, all of which are open country taxa, and there is low diversity. This is likely to be a period of environmental instability, with stormy weather bringing in and removing wind-blown sand on a regular basis. Some stability then returns, with the deposits above 125cm showing intermittent stabilization layers with good numbers of molluscs (LMZ 7) and a higher proportion of clay/silt, reflected in the colour changes in the different layers. *Pupilla muscorum*, an early colonizer of newly stable ground, temporarily increases number. Almost all the molluscs are open country species suggesting that there was little shade cover, the vegetation consisting of low plants. The turf layer (LMZ 8) seems to be the most stable with a much greater number and higher diversity of molluscs, with longer grass providing sufficient shade for species such as *Lauria cylindracea*, *Aegopinella nitidula* and *Oxychilus alliarius* to survive.

Trench 2
A column consisting of 14 samples was taken from the east-facing wall of the Trench from the modern ground surface to the old ground surface.

This Trench is further from the cliff edge than Trenches 1, 4 and 5, and which is reflected in the mollusc assemblages. 3,634 non-marine shells were present in the column, with open country species predominating, although there are a few shade and catholic species at most levels.

Cernuella virgata is present in basal levels, as in Trench 1, consistent with a Romano-British date, although bioturbation may be a factor. The slightly higher proportion of shade and catholic species at the base of LMZ 2 suggests the presence vegetation providing good shade in the near vicinity, probably with woodland or scrub in the near vicinity during the early period. The ground remained relatively stable, with little in the way of rapid sand accumulation, although the dip in numbers at 95-109cm may be equivalent to the much thicker shell-poor deposits in Trench 1 above the wall.

The main differences between LMZ 2 and LMZ 3 is the partial replacement of *Cernuella virgata* by *Cochlicella acuta* in the upper zone, although the reason for this change is unclear. It is difficult to correlate these zones with those in Trench 1. There is clearly no zone which is largely devoid of shells (equivalent to LMZ 5 in Trench 1), and it may be that the wind-blown sands did not reach this far inland. The horizon at 30-45cm contains limpets, charcoal and bones, and could indicate some midden deposition at this time

The turf layer seen in the other Trenches is absent from Trench 2, consistent with this field having been used as a car park in recent times, and the turf either stripped or sufficiently disturbed, so precluding a wide variety of mollusc life, despite there being adequate proportions of clay/silt (up to 20%).

Trench 3
A column consisting of nine samples were taken from the south-facing wall close to the north west corner of the Trench as it passed through the largest area of midden as well the old ground surface.

The mollusc assemblage in this Trench is entirely consistent with a midden. There are very few land shells at any level (102 in total), suggesting that the ground has been disturbed throughout the period of deposition. Interestingly, limpets are very scarce in the lower half of the site (LMZ 1) which rather precludes this area being utilised as a shell midden during the early period of accumulation. Particle size analysis shows that the lower half of LMZ1 has a greater portion of clay/silt (12%) than the upper half (3%), consistent with a darker layer visible in the Trench section, but there is no molluscan evidence that this is a stabilization layer.

There is an abrupt increase in limpets above 67cm, also clearly seen in the visual appearance of the section. This lowest level of this horizon probably equates to the Early Medieval settlement, with use of this site as a shell midden dump. The radiocarbon date of context (3007) ranges from cal AD 1050-1250, implying continued use of the shell midden after the likely abandonment of the building in Trench 1.

The marine shells are nearly all limpets, with only very occasional fragments of mussels and cockles (this was also evident during the excavation of the whole Trench, when very few marine shells other than limpets were seen). Mussels are very rare on the intertidal rocks of the modern beach of Jangye-ryn below the excavation site, and no dead cockles were seen on the sands during a visit in 2011. It would seem that there was an absence of edible shells other than limpets in earlier times, as at present.

The upper part of the Trench (0-40cm, LMZ 1) also contains good numbers of limpets, and with higher numbers of land shells, implying slower build up of the wind-blown sands, but with the area still being used as a limpet midden. There is no molluscan evidence of any

proper turf development at this site, perhaps because farming use has stripped off some of the topsoil, or the use of the field as a manure dump (as during recent times) has been practiced for a long period.

Trench 4
A column consisting of 15 samples was taken from the north-facing wall from the turf to the base of the excavation at 176cm, this Trench did not reach the old ground surface.

There was a total of 3,804 non-marine shells in this column. Shade and catholic species are present at all levels, but open country taxa again predominate. The lowest layers of this Trench (which does not reach down to the natural) have relatively few shells, almost all open country (LMZ 1), although the presence of *Cernuella virgata* is again present in good numbers. LMZ 2/3 probably correspond to LMZ 6/7 in Trench 1, although the reduction in number of shells in the lower half is not as marked as the equivalent zone in Trench 1. The deposit from 114-140cm is from the fill of a pit, but its molluscan fauna is little different from the levels above it.

The uppermost layers in this Trench contain high numbers of molluscs (LMZ 4), especially at 19-30cm with *Vallonia excentrica* and *Cochlicella acuta* each accounting for 40% of the total assemblage. The very high numbers of *V. excentrica* strongly suggests short grazed grassland. It may be that this layer corresponds to the time when the golf course first utilized this area as a tee, resulting in the grass being regularly mown.

Of interest is the presence of freshwater species at several levels; these taxa (*Galba truncatula*, *Anisus leucostoma* and *Pisidium personatum*) are all regarded as marsh species, being moderately amphibious and able to withstand some degree of drying. This Trench is the closest of those excavated to the valley where there is considerable marshland, and it is probable that these shells were either wind-blown from the marsh, or were carried to the area of the Trench by birds or other animals.

Trench 5
A column consisting of 21 samples was obtained from a column in the east-facing wall, with an additional sample from the old ground surface.

A total of 6938 shells were obtained from 15 contexts. As in the other Trenches the assemblages contain predominantly open country taxa. The presence of *Cernualla virgata* in the lowest layers again raises the question of either significant bioturbation or initial sand deposition during the Romano-British period.There is a reduction in diversity at 160-198cm which corresponds to an occupation horizon containing considerable charcoal and other burnt material in the deposits (radiocarbon date: cal AD 890-1020), but no limpets. This suggests that this was not a midden, but more probably some other form of occupation horizon. *Cornu aspersum*, another Romano-British introduction, in the upper part of this zone and in the next higher level also implies a post-Iron Age deposition.

The slightly higher number of molluscs above these occupation layers with high diversity indicates some degree of constancy in the accumulation of sand, with sufficient time for the fauna to adapt between deposition episodes. This is followed by more stable conditions (86-112cm, LMZ 4) almost certainly corresponding to the deposits at the level of the building in Trench 1. It is relevant that the 106-112cm level contained considerable quantities of slag suggesting some industrial use in the area, contemporary with the occupation of the Trench 1 building.

There is no horizon corresponding directly to the shell-poor deposit in Trench 1 but there is relative reduction in LMZ 5 (73-86cm). Although only a short distance from Trench 1 it

seems that the area round Trench 5 was somewhat more protected against the massive sand accumulations found in the slightly lower lying Trench 1 site.

Above this there are again relatively stable conditions, with constant accumulations of sand, but slowly enough to permit a good molluscan fauna throughout (LMZ 6). The turf (LMZ 7) contains an assemblage very similar to Trenches 1 and 4, with the uppermost portion containing some shade species consistent with the rather rank grass that is currently growing in this area.

4.5.2. Summary

Mollusc analysis indicates that the environment in the area of the Gunwalloe settlement was predominantly open country since the wind-blown sand commenced accumulating. The very lowest levels in each Trench contain few shells with virtually no shade species, entirely consistent with early accumulation of wind-blown sands.

Dating of the earliest sand accumulation using molluscs is somewhat at variance with the carbon dating as the presence of large numbers of *Cernuella virgata*, a mollusc considered to be a Romano-British and not Early Bronze Age as dating in Trench 1 indicates. There is either more disturbance of these early sand deposits than is evident from the stratigraphy, or, if current theories about the introduction of this mollusc into Britain are correct, then a date during or after the Romano-British period for the first sand deposits must be accepted. The radiocarbon dates for Trenches 2 and 5 support an early medieval date suggesting that it is only in Trench 1 that there is an inconsistency. The lowest dated level in this latter Trench is 2190-1980 cal BC making bioturbation likely.

The initial sand deposition was short-lived, as a rich molluscan fauna is present in the overlying layers suggesting a slow rate of accumulation and with good stabilization of the sand. Taxa requiring shade are present in the early sands of Trenches 1 and 2, indicating that there was woodland or scrub in the immediate vicinity. Shade species are absent low in Trench 5, making it probable that the wood/scrub area was to the east of the site, towards the valley north of Church Cove, and which did not extend as far west at Trench 5. The cliff edge was probably many hundreds of metres distant during prehistoric times and the environs would have been somewhat more protected from winter gales than in later centuries. It is during this time that there is the first evidence of occupation. The disappearance of shade molluscs suggests that there was clearance of the shade-providing cover, but whether this was due to intervention by humans or to altered environmental conditions cannot be determined.

Whatever the cause, there was a period of instability before the next known phase of occupation during the early medieval period, by which time some degree of stability had returned. The accumulations immediately outside the west wall of the building exposed in Trench 1 consist of blown sand and midden material containing considerable quantities of charcoal and bone. There is a single lens of very clean sand almost devoid of molluscs just below the base of the wall, perhaps placed as packing against the footings of the wall. The presence of *Cornu aspersum* in this layer suggests a Romano-British or Early Medieval date for this deposit. The deposits abutting the wall itself contain large numbers of molluscs, with limpet shells ,charcoal and mammal and fish bones, all consistent with midden material. The equivalent deposit in Trench 5 is probably at 106-112cm where numerous fragments of slag were found but no limpets or other indications of a midden. An occupation horizon is probable but which is soon covered by slow accumulations of blown sand, slow enough to allow good mollusc populations to survive, although with limited diversity.

One of the important questions that needs an answer is why the settlement was abandoned? There is certainly rapid accumulation of wind-blown sand in the levels above the top of the

wall in Trench 1, and which is seen less clearly in Trenches 2, 4 and 5. The change to these inclement conditions seems to have been abrupt. The height of shell-poor sand is much greater in Trench 1 than elsewhere, and it may be that this happened to be the site where wind currents deposited sand in greater quantity, making the immediate area uninhabitable. There were some short episodes of relative stabilization during this period with time for the formation of thin buried soils, but these are fairly insubstantial.

4.6. ***Charcoal Species Identification*** *by Dana Chalinor*
(Full report in Appendix 12)

4.6.1. Introduction
Sixty-five samples from the 2011 excavations at the early medieval site of Gunwalloe were submitted for assessment. The material comprised charcoal which had been hand-recovered in the field and charcoal resulting from the flotation of soil samples. The aim of the assessment was to examine preservation and taxonomic diversity in order to establish potential for further work.

4.6.2. Results
Forty-five samples produced identifiable charcoal, from which seven taxonomic groupings were provisionally identified;

- *Acer* (maple) type; there are several diffuse-porous taxa with a similar anatomical distribution, (including *Betula*), which require distinguishing at high magnification.
- *Alnus/Corylus* (alder/hazel); it is likely that hazel is well represented (particularly given the quantity of nutshell in the samples) but it may be that both taxa are present – examination at high magnification will allow the two genera to be distinguished.
- Maloideae (hawthorn group) type; there are several taxa which could be included in this group, although Maloideae is the most common.
- *Prunus* (blackthorn/cherry) type; this needs further examination, both for identification at species level and also to distinguish from taxa such as *Sambucus* (elder).
- *Quercus* sp. (oak); this identification is secure.
- Salicaceae (willow) type; this has some cross-over with the Betulaceae and *Acer* and requires full identification.
- *Ulex/Cytisus* (gorse/broom); it is not possible to distinguish anatomically between these genera but the identification is secure to this level.

4.6.3. Implications
The most frequent taxa recorded in the assessment are *Quercus* (oak), *Alnus/Corylus* (alder/hazel) and *Ulex/Cytisus* (gorse/broom). This is not unusual for charcoal assemblages in this region, particularly of post-Bronze Age date and it is likely that further examination of these samples will confirm that these taxa are both the most frequent and the most abundant. The unusual nature of the house type found at Gunwalloe, combined with the relative paucity of published charcoal reports for the early Medieval period in this region, gives some regional importance to this charcoal record.

The charcoal assemblages reflect both the availability of taxa in the surrounding environment and the deliberate selection of wood for use as fuel. To understand the detail of selection and exploitation requires a fuller and confirmed taxonomic list. It will be necessary to confirm whether hazel is dominant (as suspected) and whether alder is also represented, as these trees prefer different habitats. The diversity of many of the assemblages offers the opportunity to extend the species list, and also to examine any context-related variation. The samples related to postholes [2028] and [2030] were the only assemblages (of reasonable size) to be dominated by a single taxon; oak. This may suggest that they reflect construction activities rather than domestic waste, or perhaps relate to the earlier phasing of these samples. In any case, no additional work is required on these samples, but they provide useful comparative data.

4.7. AMS Dating Results

Laboratory number	Context	Material	Calibrated date 95% probability	Conventional radio carbon age BP	Period
BETA – 322803	(1068) Base of the dune	Charcoal Quercus	Cal BC 2190-1980 Cal BC 2190–2180 Cal BC 2140-2010	3680 +/- 30	EBA
SUERC-44516	(6017) Cist	Burnt Human Bone	Cal BC 1200-1100 Cal BC 1213-1017	2919+/- 27	MBA
SUERC-44517	(6043) Midden	Antler	Cal BC 900-800	2709+/- 29	MBA
SUERC-44518	(6011) Deposit butting interior of bank of fort	Charcoal Quercus	Cal AD 350-450 Cal AD 481-534	1636+/- 27	RB
BETA - 322805	(2029) Post hole	Charcoal Quercus	Cal AD 730- 740 Cal AD 770-900 Cal AD 920-940	1190 +/- 30	EM
BETA– 322807	(4010) Lowest wind blow sand layer	Charcoal Ulex/Cytisus	Cal AD 780- 900 Cal AD 910-970	1160 +/- 30	EM
BETA – 322804	(2003) Fill of hearth	Charcoal Quercus	Cal AD 880- 990	1120 +/- 30	EM
BETA – 322800	(1023) Clay bonding of wall {1012}	Charcoal Prunus	Cal AD 880-990	1110 +/- 30	EM
BETA – 322802	(1061) Lower fill of ditch [1060]	Charcoal Ulex/Cytisus	Cal AD 890-1020	1090 +/- 30	EM
BETA– 322809	(5024) midden	Charcoal Alnus/Corylus	Cal AD 890 - 1020	1100 +/- 30	EM
BETA - 322808	(4013) Clay surface	Charcoal Ulex/Cytisus	Cal AD 1020-1050 Cal AD 1080-1130 Cal AD 1130-1150	980 +/- 30	EM
BETA – 322801	(1034) Hearth fill	Charcoal Ulex/Cytisus	Cal AD 1030 -1210	910 +/- 30	EM
BETA– 322806	(3007) shell midden	Charcoal Ulex/Cytisus	Cal AD1050- 1080 Cal AD 1130-1130 Cal AD 1150-1230 Cal AD 1230-1240 Cal AD 1250-1250	860 +/- 30	EM

Table 2: Radio Carbon dates calibrated with OXcal V4.1.7 and accompanying data (SUERC and BETA).

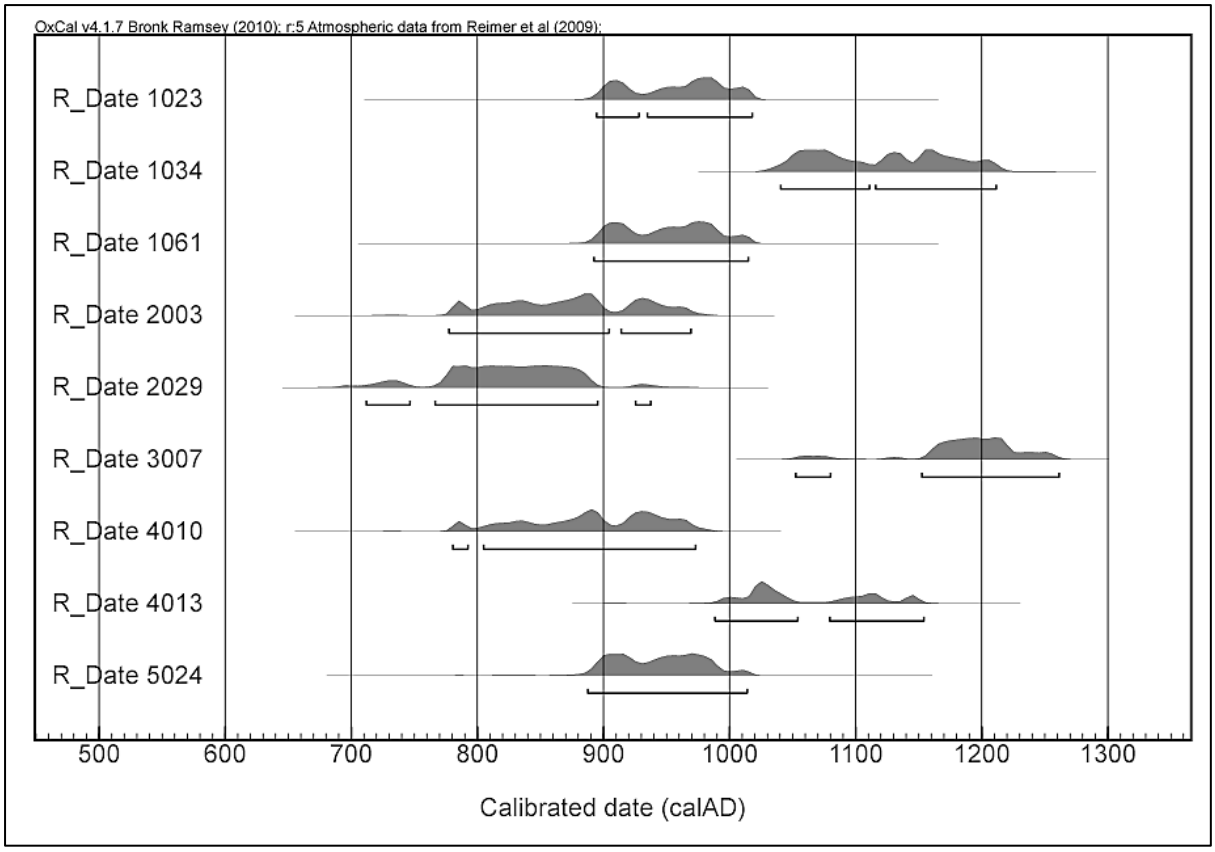


Table 3: Ox-cal early medieval dates

5.0 Discussion

5.1. Early Bronze Age

The Early Bronze Age period witnessed the most significant environmental change in this area in the formation of the sand dunes above Dollar Cove. Until now the date of this inundation was unknown, but carbon dating from oak charcoal at base of Trench 1 from a buried soil layer revealed a date of 2190-1980 cal BC (Beta–322803). Whether the charcoal was there due to human occupation in the area is uncertain. This offers a significant contribution to paleoenvironmental evidence of the area and Cornwall as a whole. Previous pollen analysis by French suggested that Gunwalloe in the Mesolithic had a lake similar to Loe Pool and that species suggest a marsh environment with evidence of deciduous woodland composed of oak, alder, ash, elm and holly (French 1996). His sequence is unfortunately not dated but it is suggested a woodland clearance episode occurred in the late prehistoric period, after which grasses, herbaceous pasture and some cereals suggest an arable landscape with some woodland (Straker 2011, 69). Mollusc analysis supports this with a mixture of shade, catholic and predominantly open country species containing a greater proportion of shade species than at any other level (see 4.5). Charcoal identification from the early medieval phase of Gunwalloe suggests very little change in species from this prehistoric period (4.6).

5.2. Middle and Late Bronze Age

The Bronze Age period is well represented in Trench 6 with Middle/Late Bronze Age funerary activity and Late Bronze Age occupation in the area. The earliest evidence is a Bronze Age handle sherd found in deposits at the base of the bank associated with the 1920's truncation (Fig 35). It is possible this vessel originated under the bank perhaps associated with an earlier burial. Burial and ceremonial activity in Middle Bronze Age Cornwall, and beyond, appears to shift from prominent isolated large barrows to smaller barrow mounds near settlements (Jones and Quinnell 2011). The unexpected discovery of a stone lined cist underneath the Iron Age promontory fort defences, has added a deeper significance to this monument and its function. It contained cremated Human remains (see 4.2.2) and a fragment of a copper alloy object, which although very small, has been tentatively identified as a 'Picardy' dress pin with cup-headed or dished, expanded terminal - dating from c.1400-1250 BC (Anna Tyacke pers. comm.). The area around the cist had been exposed to intense *in situ* burning on the interior and exterior surfaces prior to it being sealed, the base of the cist was not heat affected suggesting it was already filled with material prior to burning or that a bonfire was lit on top afterwards (Fig 54). This represents a previously unknown burial practice for this period and indeed the Iron Age. Traditionally, the human remains are cremated elsewhere and a small proportion is deposited in a cist or vessel. This new example could suggest a different burial practice.

There is possible evidence for additional cist's, indicated by another square cut similar to that of the cist along the same contour suggesting contemporary satellite or earlier burials. The fragment of another copper alloy object a similar size to the one in the cist was found and could also be part of a pin which was found in the build of the cist along with abraded cremated bone suggesting it was cut through by earlier burials. It is clear that the cist excavated was sealed by a mound of material perhaps forming a low barrow mound. The cist represents the latest example 1200-1100 cal BC of this burial form in Cornwall and may support a case for continuity in burial traditions possibly into the Late Bronze Age. The closest in date is a cist with inhumation at Constantine Island 1320-1110 cal BC which was built over an earlier barrow and associated with midden material (Jones and Quinnell 2011, 221). The Gunwalloe Cist was sealed with midden material dating to the Late Bronze Age 900-800 cal BC supporting an association with settlement in the area. Round Barrows often appear in coastal locations, including barrow cemeteries such as St. Merryn at Trevose

Head and Cataclews at Harlyn Bay, however, Jones (2009-10, 69) points out this may be due to a bias in preservation as the survival of monuments inland is affected by later agricultural and settlement activity. There are round barrows on the headlands either side of the promontory at Gunwalloe and inland including the discovery of a Pygmy cup in the dunes of Mullion Golf club (Hartgroves and Harris 1985). Another possible indicator of Bronze Age settlement at Gunwalloe is the slate stamp tool found in unstratified deposits in Trench 2 (Fig 55). A comparable stone object from Gwithian exists which could suggest a Bronze Age date (Charles Thomas *pers. comm*.).

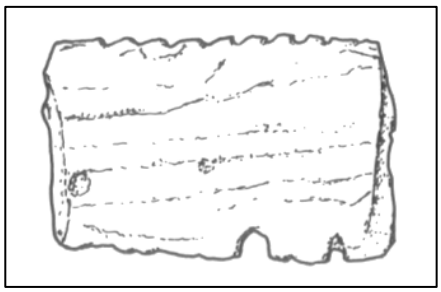


Figure 53: (left) Cist post-ex showing heat affected slates but not the base (Photograph Bryn Morris).

Figure 54: (right) Slate used as stamp for pottery decoration possibly Beaker in date from Trench 2 (2004) 1:1 (Tom Hooper).

The discovery of the cist has significantly contributed to the on-going discussion as to whether cist burials ceased in the Middle Bronze Age and were reintroduced due to external influence in the Iron Age period or as this example may suggest continued. It could be suggested that a move to coastal locations in the Middle Bronze Age period and their possible assimilation or alteration by Early Iron Age occupation and cist cemeteries in the construction of promontory forts could go towards explaining this ambiguous transitional period of burial traditions. Jones suggests that the distribution of Iron Age cist burials and promontory forts is not coincidental (Jones pers. comm.), and perhaps there was some continuity from the Later Bronze Age. Todd (1987) considered the coastal distribution of Iron Age cist burial monuments in the south-west and Brittany as representing a link between the dead and the sea. Cist burial's in Brittany also see a break in the mid-Late Bronze Age when hoards and the ritual deposition of Bronze Age objects in water appear to dominate social display. Interestingly, all forms of burial practice diverge from the south-west when they re-emerge in the Late Iron Age, apart from cist burials which demonstrate similarities and possible maritime connections (Henderson 2007).

The Late Bronze Age phase on the promontory is marked by a significant depth of midden material butting the upper slope of the cist earthwork containing well preserved animal bone (Fig 56), pottery and antler, presumably associated with settlement nearby. One of the antler fragments has cut marks and another shows signs of wear on the end of its tine which has been dated to 900-800 cal BC. This is a rare find in context as previous examples in Cornwall have generally been antler picks used for digging/mining and recovered through 19th century tin streaming works, making their context and date unknown (Penhallurick 1986). The pieces of antler at Gunwalloe are generally large and in their natural state with

no tines removed, it is reasonable to assume that as they were deposited in the midden they had performed their function and were not utilised for making antler tools. This suggests they were readily available to be discarded so easily, possibly as a by-product of butchery, as red and roe deer bones are also found in the midden. The animal bone assemblage is relatively large for the volume excavated with 145 fragments which is dominated by pig bones of male, female and juvenile, probably from wild pigs but one large male tooth is comparable with larger domesticated breeds (4.2.1). Pig is generally common in Bronze Age assemblages.

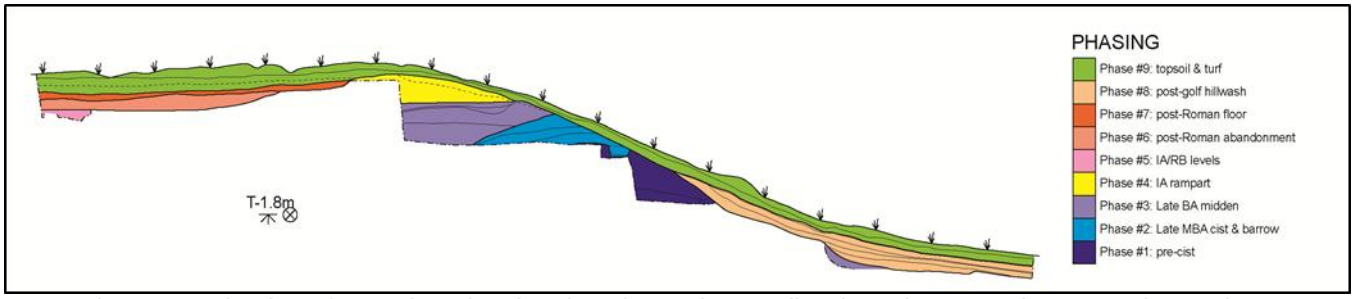


Figure 55: Phasing of Trench 6 showing the Cist cut into earlier deposits, mound construction and midden deposit butting it (Illustration Bryn Morris).

The pottery is typical of the Late Bronze Age Plain Ware pottery tradition similar to that found at Higher Besore, Truro and Trevelgue Head, Newquay (see 4.1). The lack of abrasion suggests the pottery was dumped directly onto the midden and not transported. The deposition of midden material against the upper side of the barrow would have altered the visual impact of the monument possibly obscuring it entirely or may have enhanced it but was lost in the levelling of the area prior to rampart construction. It is unfortunate that the truncation has deprived us of seeing the lower side of the monument and if the midden continued. Essentially the barrow and midden formed a revetment which perhaps intentionally levelled the area, possibly for the construction of future enclosure.

Midden deposits have a particular significance during the Late Bronze Age/ Early Iron Age transition in southern England, which have become a phenomenon typified by consumption on a literally monumental scale creating 'midden sites' (Waddington and Sharples 2011). They are static features not utilised for agriculture and thought to represent possibly seasonal meeting places used for specialist production, trade, significant gatherings and the feasting all of which created a sense of place in the landscape. They are often located on hilltops or hillslopes with far reaching views at the junctures of different environments and close to water sources and route ways (Waddington and Sharples 2011, 58). Only a small proportion of the midden at Gunwalloe was excavated yet the density of bone and pottery and depth of deposit and location are suggestive of this practice. The peak period for these 'midden sites' is focused around the 8th century cal BC, which is a period when decoration begins to feature in Wessex on late plain ware pottery possibly representing their use as prominent serving vessels in feasting (Waddington and Sharples 2011, 58).

There may be more coastal midden sites in the south west peninsula, such as Mount Batten (Cunliffe 1988) and Gwithian (Nowakowski *et al* 2007), but the lack of precise dating makes it difficult to confirm this. The dating and the context of the midden at Gunwalloe makes this a strong candidate for a structured midden deposit, especially as it obscures an earlier funerary monument, strongly suggesting it was a socially significant place in the Late Bronze Age landscape.

5.3. The Iron Age promontory fort

There are around 66 promontory forts or cliff castles around the coast of Cornwall which is the largest number of any county in Britain. Gunwalloe and Crane Castle are the only ones

to have been excavated in recent years and to a modern standard. Trevelgue Head is the most extensively excavated but limited to the techniques of 1939, although recently comprehensively surveyed, written up and AMS dating acquired (Nowakowski and Quinnell 2011). The only other sites excavated and dated by pottery are; Maen Castle, Sennen (Crofts 1948;1954-5), Gurnard's Head, Zennor (Gordon 1941), the Giant's Castle on St. Marys Island (Ashbee 1974), the Rumps St.Minver (Brooks 1964; 1974), Penhale Point, Perranzabuloe (Smith 1984,180) of which only Maen Castle has no settlement evidence. There a three basic forms, univallate, multivallate and complex multivallate, Gunwalloe is problematic as the defences presumably utilised the natural rise in ground level suggesting it was reveted. However, the truncation of the outer bank makes this difficult to establish. There is evidence in the cliff section that a significant ditch lies several meters from the base of the current slope, which is around 6.0m wide and 3.0m deep, if confirmed this would make Gunwalloe a univallate promontory fort. A topographic survey of the promontory revealed the remains of a possible bank on the north-north-west side suggesting the bank or an internal division existed in this area. The entrance of the enclosure is recorded on early maps as being on the north-western side which has since been lost to coastal erosion.

Promontory forts show great diversity in form and complex histories which are clearly not hillforts located on the coast as suggested in the past. This diversity may reflect their varied function as no single use for these sites can be ascribed. They have been suggested as defended settlements, seasonal settlements, meeting places, coastal watch posts, centres for religious practices, trading centres or even a place to coral cows and sheep in times of trouble. Often the beaches or coves on either side may have enabled boats to be drawn up encouraging trade with peoples from across the sea, but not all have suitable mooring places. Gunwalloe could certainly be considered defendable, with evidence of rampart construction and a later Romano-British phase of stone tumble, suggesting it may have had a stone face or cap. The stone tumble had been burnt leaving it red and around ten sling stones were found between and underneath them. Sling stones have been found on other Promontory forts, there were around 72 at Penhale point in a pit within a house (Smith 1984, 180) and behind the inner most rampart at The Rumps (Brooks 1974, 46). Over 2000 similar sized sling stones were excavated in Trevelgue Head in various contexts. They were a defensive weapon in use from the Iron Age and well in to the Romano-British (Nowakowski and Quinnell 2011, 261).

Their relationships to inland settlements remains unclear, the forts with associated field systems suggest they farmed their own land, whilst others must have relied on produce being brought to site or pastoral economies. The natural topography of the promontory at Gunwalloe would make directly associated field systems unfeasible.

The continuous occupation or use for promontories from the mid to late Bronze Age into the Iron Age in Cornwall is generally considered typical. The presence of barrows within Iron Age promontory forts can be seen on many sites such as Trevelgue Head and Mount Batten. The promontory of Mount Batten at Plymouth had no earthworks but may have had continuous occupation from the late Bronze Age to Middle Iron age represented by Bronze implements, ingots, metal waste material and plain ware pottery (Cunliffe1988). The Iron Age phase had a wealth of high status metal objects some of which were imported demonstrating links with the continent. Despite the lack of structures a substantial midden deposit and a series of superimposed well-worn metalling layers were identified, the phasing of which started in the late Bronze Age 800-600/550 BC followed by an early to middle Iron Age activity (Cunliffe 1988, 101). Iron Age antler was found on site with evidence of cutting and working suggesting its use as a raw material for producing antler items.

Trevelgue Head also has a Bronze Age phase with two Early Bronze Age barrows suggesting a ceremonial centre, evidence of a Middle Bronze Age field system and unstratified Late Bronze Age plain ware and lithics which suggests continued activity

(Nowakowski and Quinnell 2011). Nowakowski and Quinnell (2011) suggest the most substantial and prominent bank (Rampart 7) had an earlier mid Bronze Age phase represented by a low earth bank at its base, although not dated, and may represent the early enclosure of the headland. Unlike the others, Rampart 7 appears to follow escarpments on the headland and is aligned to the terraced field system (Nowakowski and Quinnell 2011). Instead of using the substantial amount of shillet debris from the digging of the ditch, rampart 7 was almost entirely constructed of midden material rich in metal production debris. The deposition of midden material against the ramparts seems to have had some significance to its occupants. Unlike Gunwalloe, the defences were a series of bank and ditches on a relatively level ground surface.

The occupation at Trevelgue Head multivallate promontory fort is generally Iron Age from the 8th century Cal BC till the final 1st century AD Romano-British period but occupation was not continuous there being a break in the Late Iron Age (Nowakowski and Quinnell 2011, 56). Most excavated features date to the Middle Iron Age including ramparts, a circular house, middens and iron furnaces. Iron smelting and extraction seems to have been a key activity from the beginning suggesting it economic base. The collection of south west decorated ware pottery is the largest in Cornwall displaying a full range of decorative forms and functions. An imported glass bead suggests long distance trade and spindle whorls in the house infer textile production.

The natural form of the promontory at Gunwalloe with a narrow neck which opens onto a ground surface formed of accumulated sand would have made the construction and preservation of directly associated field system and other features problematic. The construction of the church and its enclosure may obscure any possible underlying features at the base of the slope to the south. Although the geophysical survey at the base of the bank does show some possible features their nature is uncertain. The lack of associated features make it difficult to suggest the relationship the promontory fort may have had with its surrounding landscape.

The faunal evidence (see 4.2.1) shows a dominance of cattle which could suggest a more pastoral than agricultural economy which might not require enclosed fields. This differs from the possibly comparative assemblage at The Rumps promontory fort, on the North coast of Cornwall, where ovicaprids dominated the assemblage making up 68%, pig 18% domesticated breed not wild boar mostly over 24months old, cattle 14% domesticated type, one Roe deer bone was found, three bird bones and rather oddly the pelvis of a beaver (Chaplin and Coy 1964, 31-34). They considered The Rumps economy to be pastoral for the production of wool and textiles as indicated by spindle whorls found in the houses (Chaplin and Coy 1964, 34). No spindle whorls were found at Gunwalloe and only a few sheep bones (see 4.2.1), although this may be due to the type of deposits encountered, as at both Trevelgue and The Rumps spindle whorls were only found in houses contexts, not middens. The animal bone assemblage is closely paralleled with Trevelgue Head which Hammon (2011, 305) suggests demonstrated a typical range of species for the period with no specific husbandry regime, suggesting animals were brought to the promontory for slaughter and consumption when needed. Some bones were broken for their marrow and there was limited evidence for sea food limited to shellfish and a single spine of a ray (Hammon 2011, 300).

Mount Batten also observes a shift from mainly sheep and pig in the Late Bronze Age, to primarily cattle and pig in the Iron Age, which Cunliffe (1988, 102) suggests presents a greater emphasis on meat consumption, differing from inland Iron Age settlements and perhaps concerned with preserving meat for broader trading networks. Like Gunwalloe there is also evidence of Equids at Trevelgue and Mount Batten whose pathology suggests transportation rather than traction. Wild animals such as deer were often exploited, except for Trevelgue, although other wild animals were consumed. Marine resources on all sites appear to be limited, although, this could be due to preservation issues. It should be noted

that unlike The Rumps, Mount Batten and Trevelgue Head the bone assemblage at Gunwalloe came from accumulated deposits behind the bank and not midden deposits. This makes their validity as an over view of Iron Age consumption problematic, especially as Romano-British pottery was also found in these deposits (see 3.6.1).

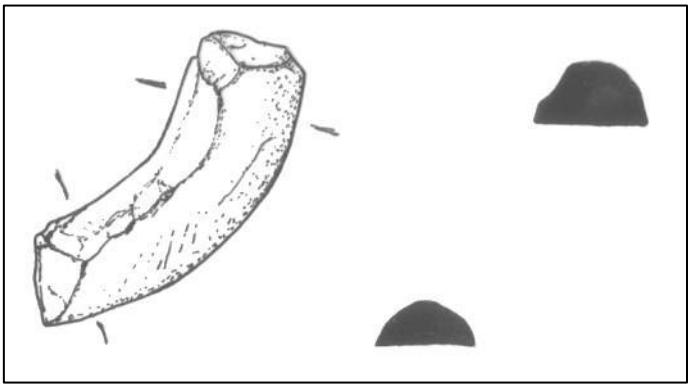


Figure 56: Shale bracelet fragment 1:1 (Tom Hooper).

The pottery assemblage strongly suggests that the deposits excavated behind the bank accumulated over a long period with phases of stabilisation through sustained trampling creating metaled surfaces. The abrasion and mix of Bronze Age, Early and Middle Iron Age and Romano-British pottery forms offers little interpretive scope apart from suggesting continuous occupation and constant reworking or erosion of internal features. The fragment of a shale bracelet suggests trade Dorset as its source is the famous Kimmerage shale (Fig 57). Kimmerage shale bracelets were produced from the Late Bronze Age but were most popular in the Roman-British period. The Gunwalloe fragment is not decorated and not smoothed to a rounded surface, it could suggest it was a 'rough-out' being finished on site, as at Mount Batten (Cunliffe 1988). The mixed nature of the context could place it in any period, but it is most likely associated with the Iron Age phase.

The Romano-British phase of the promontory fort is indistinct from the Iron Age as the pottery shares the same contexts. An abraded foot-ring base sherd of an Oxfordshire colour-coated ware bowl was found suggesting a late Roman date of 4th century AD. Bowl forms in this ware have been found at Trethurgy Round dating to around the 375-400 AD, other examples are from Trevelgue Head, Gwithian, Porthmeor and Tintagel (Quinnell 2004, 104). Interestingly, a similar sherd in an unknown fabric was found at Crane Castle (Gossip *pers. comm*.). It is possible to say that there was Romano-British habitation nearby. Most excavated promontory forts in Cornwall have a Roman phase indicated by pottery or imported wares, but none have produced Oxfordshire colour-coated ware.

5.4. Late Roman

The Late Roman period represents the last archaeological phase excavated in 2012 only identified through an carbon date to between 350-450 AD and associated with the burnt stone tumble and sling stones. It could be suggested that this represents a dramatic end to the occupation of the promontory fort with its defences being burnt down amongst a hail of sling stones. Occupation of promontory forts in this period is rare. There are no other dated examples of occupation in this period making Gunwalloe unique in this respect. Trevelgue Head has a 5th century amphora handle suggesting some activity in this period and St. Michael's Mount also has amphora sherds (Nowakowski and Quinnell 2011, 56). Tintagel also has 5th-6th century imported pottery but has never been considered a promontory fort. No Gwithian style vessels were found, which are commonly associated with the transition into the early medieval period in Cornwall. Gunwalloe appears to pick up where the site at Gwithian finishes in the 7th century AD.

5.5. Early Medieval

The early medieval phase of Gunwalloe stretches from the 8th to the 11th century AD with some activity in the 13th century. The combination of previous work (see 2.3) and excavated evidence from 2011/12 provides evidence for occupation stretching over 370 metres up the coast from the church and up to 100 metres inland, with around 70 metres known to have been lost to the sea through erosion (Fig 58). This is a long-lived rural settlement and early Christian community that went on to become an important Royal hundredral manorial. It is the largest of this type known in Devon and Cornwall and the only one to have been excavated which makes it of national significance.

Leading authorities on this period of Cornwall confirm that the size of the settlement and association with the church make Gunwalloe an important settlement (Herring 2011, 269), which has the potential to answer many long sought questions of this period. The site has the most carbon dates of any site of this period in Cornwall and the pioneering suite of environmental analysis has made a national contribution to our understanding of this period.

Figure 57: The area of the early medieval settlement circled in black (H.E.S. Cornwall County Council).

Previous investigations by Hogg (1910), Jope and Threfall (1955-56) and Peters (1986) identified elements of structures, hearths, clay floors and middens, but only in section. The excavation in plan of a house in Trench 1 (3.1.1) is perhaps the most significant discovery with the hearth dating to Cal AD 1030-1210. There is evidence of an earlier house foundation on a similar orientation dating to Cal AD 890-1020 which suggests continuous occupation of this area. The excavations have revealed unusually full information about construction methods of such a house and demonstrate both practicality and aesthetic considerations in everyday life. Gunwalloe is the first site to reveal the construction methods for a structure of this period in Cornwall, providing invaluable new evidence towards an understanding of settlement of this era.

The rectangular house interior was 3.0m wide and 6.0-7.0m long orientated north-west south-east. The construction method involved first digging a slightly larger level rectangular platform than required, through earlier occupation and midden deposits. Stone and yellow clay from the beach below were sourced and used to build clay bonded walls with one internal flat face. Soil micro-morphological analysis has shown that the clay was also used to stabilise the foundation of the wall on top of the loose sand (4.4). The north and west walls were internally rendered with clay, whilst the east wall was constructed of slightly larger stones formed into a herring bone pattern and was not internally rendered. Presumably the clay render provided protection from seeping ground water which would be a significant concern for a sunken house, also it may have been aesthetically pleasing and reflected light. It appears that spoil from digging the platform was built up against the outside of the wall to support it. This process mirrors closely the methods of Cornish hedge construction which sometimes include herring bone styles (Menneer 2007). The lack of internal clay render on the east wall and its decorative façade suggests it was not backed by spoil and may have held the entrance which would also have been the side most protected from the wind. The clay bonded walls may have formed foundations for a turf wall above upon which a pitched roof could be laid on the original ground surface above. The lack of postholes strongly suggests that the roof would have been supported by the walls or ground surface and did not require internal supports. The reconstruction drawing below gives an idea of what it may have looked like (Fig 59).

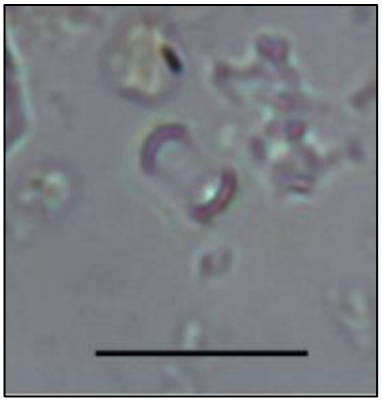
Figure 58: Reconstruction drawing of house excavated in Trench 1 (Illustration Bryn Morris).

The construction methods used in the house are the same observed by Hogg in 1929 suggesting a local tradition, however, Jope and Threfall and Peters only found dry stone walled structures. Hogg (1930) thought the clay bonded walls must be for retaining sand as they could not support a roof.

Further excavation is needed to fully expose the east wall and possible entrance as well as any working surfaces outside. The internal floor of the house was compacted sand with no evidence of internal divisions or furniture, the only internal feature being the circular central hearth only indicated by an area of intense burning dated to cal AD 1030 -1210. Pioneering phytolith analysis on deposits from the central hearth provided a unique insight into the

house and possible activities within it (see report 4.3). The results demonstrated that stalks or leaves of cereals and water reeds were burnt in the hearth (Fig 60). This strongly suggests cereals were processed inside the house and that reeds may have been used as thatch or floor litter (4.3). Charred cereal grains from the compacted floor surface also support this (see report 4.6). Analysis of the charcoal in the hearth suggest Oak, Alder/Hazel and Willow were utilised as fuel indicating both mature woodlands and wetlands were exploited (4.6).

The results from the soil micromorphology of the hearth found only two episodes of burning suggesting it was regularly cleaned out, this is supported by similar analysis of midden deposits which found ash was commonly deposited (Fig 61) (see 4.4).



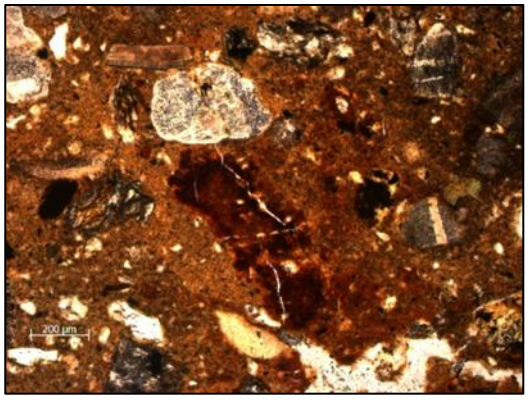


Figure 59 (left): Phytoliths from Water reeds (Phragmites) from hearth deposit photomicrograph (Jenny Watling).
Figure 60 (right): Soil micro-morphology slide showing ash in midden deposits outside the house (Dr Ben Pears).

Few traces of everyday life apart from pottery were found associated with the house as if it had been cleaned prior to abandonment. Whilst material culture in this period is typically scarce, it seems odd not to have found a single metal item, piece of non-ceramic domestic equipment or adornment. This could suggest either limited means to acquire them or that they were well cared for and taken away prior to abandonment. Interestingly, the lower body and bases of three Bar-lug cauldrons were deposited in pieces in a pile in the north-eastern corner of the house. Considering the immaculate state of the floor this suggests a purposeful deposit associated with the abandonment process.

The abandonment of the house was very thorough (see 3.1.4.), evidence suggests that the house roof may have been removed, which over a period of time resulted in the clay render washing and slumping off the walls onto the floor. This was then sealed with a layer of windblown sand which inundated the interior to some depth in one episode.

5.5.1. Sunken floored buildings in Cornwall

Although not commonly acknowledged sunken floored buildings are a feature of Cornwall from the 7th century and into the 11th AD. Gwithian has the earliest example of a post-Roman sunken house along with several phases of construction spanning the *c* 5th-8th centuries AD (Nowakowski *et al* 2007), (Nowakowski 2007). All nine structures were in a row aligned east-west, most have evidence of metal, leather and bone working, the recycling of imported pottery or other crafts and are all considered seasonal industrial workshops. The structures were sub-square or sub-rectangular in shape cut into earlier windblown sand or construction layers, most were joined to additional cells or post-built structures. The hollows or 'sunken' features were up to 0.9m deep, and turf and soil was packed into the sides of the hollow, then revetted by stone and, in some cases was stone capped (Nowakowski 2007, 39). The stone walls are thought to have been laid in a Trench and postholes suggest additional

support and some structures had an open side (Nowakowski 2007). The size of the structures is smaller than Gunwalloe from 2.44m in diameter up to 1.83m wide and 2.44m long with central stone lined hearths and other features cut into the floor (Nowakowski 2007). Locally produced Gwithian Style and Grass-marked pottery along with imported African Red Slipware and Amphora from the Mediterranean and also E-ware from France are associated with the structures. After abandonment they were covered with shell middens and rubble.

Sunken floored structures have also been identified in the early levels of the medieval settlement at Crane Godrevy set in shallow hollows, not far from post-Roman site at Gwithian (Sturgess and Lawson Jones 2006). House Y was 5.1m long and 2.5m wide; House X was incomplete but was 2.5m wide. Finds of Sandy Lane style pottery in House X suggest a 12th century date (Thomas 1969). Just to the west, a third structure of similar width took the form of a stone-revetted hollow built over the in filled ditch of the Romano-British round. This was associated with both Grass-marked and Sandy Lane style pottery (Sturgess and Lawson-Jones 2006, 16; fig 2; Nowakowski 2007, 53-4) which would suggest a 9th to12th century date.

A structure at Stencoose is another possible example of a sunken-floored building located in the corner of an enclosure has been dated early medieval period (Wk-5548) AD 434-762 (Jones 2000-1, 53). Situated on a valley slope it was partly cut into the bedrock to form a level area which was raised by a stone wall on the lower side (Jones 2000-1). Remains of stone walls suggest a size 5.80m long and 5.60m wide open ended U-shaped structure with an internal dimension of about 4.0m by 4.0m. It must be noted that it was a gentle slope in from the entrance that created a slightly sunken floor (Jones 2000-1, 53). There were no internal features or associated deposits and it has been interpreted as a seasonal transhumance hut or agricultural outbuilding (Jones 2000-1).

Launceston Castle has evidence for eight sunken floored buildings dating to phase 1 c1068-1075 (relative date) the earliest phase of the Castle (Saunders *et al* 2006). These are more similar in size to the Gunwalloe house ranging in size 6m long 3.3m wide oval (SB014), 6.4m long 2.7m wide rectangular (SB011), 8.2m long 2.4m wide rectangular (SB002) (Saunders *et al* 2006, 94-95). They were cut into bedrock uniformly 0.60m with little evidence of walls only a 'dwarf wall of hard yellow clay' (SB003) and had occasional internal and external postholes (Fig 62) (Saunders *et al* 2006, 94). The floors were often compacted ash or clay lined and there was even an example of a suspended wooden floor. The hearth was laid on either the floor or clay surface and not always central or singular. These structures had several phases of occupation with a diverse range of finds from Grass-marked Bar-lug vessels, to keys, knifes, a horse shoe, horse shoe nails, a gilded bronze finger ring, whet stone, animal bones and teeth, a spindle whorl, lead sheet, padlock fragments and a fragment of glass claw beaker (AD 7th-8th c) (Saunders *et al* 2006, 94-97). This assemblage demonstrates what material culture was in circulation and emphasises the paucity of non-ceramic finds at Gunwalloe conspicuous in their absence from all features excavated, strongly suggesting it was at the lower end of the social scale compared to the early occupants of Launceston Castle. However, it is possible that further excavation at Gunwalloe could reveal a broader range of material culture.

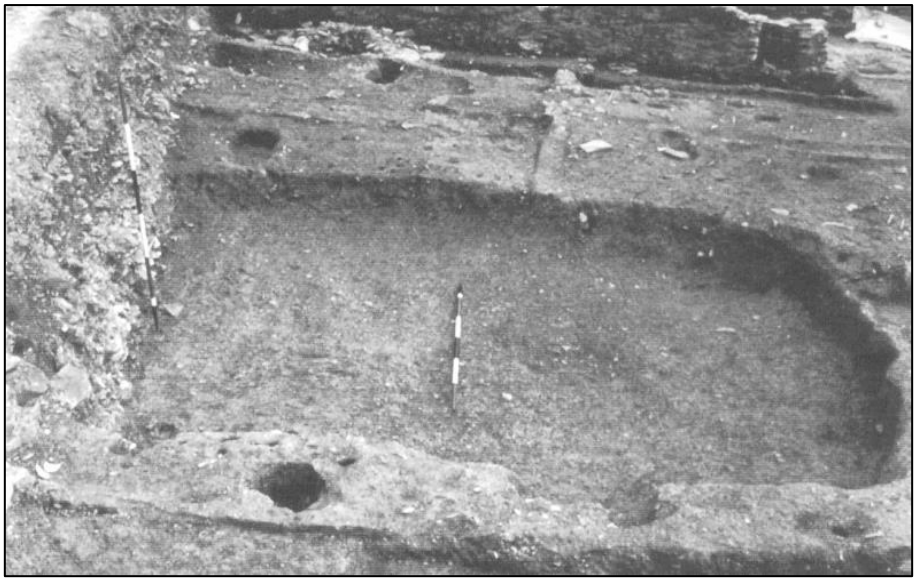


Figure 61: Launceston sunken floored structure (Sanders 2006), fig 5.35).

The most recently excavated and substantial sunken structure which has some parallels in construction with the house at Gunwalloe was found near Lanteglos just above the Fowey Estuary. It was cut 0.30m into the natural bedrock and revetted with a stone wall bonded with clay with a slate floor (Fig 63) (Taylor 2012). The sub-rectangular hollow was 4.7m long by 2.9m wide, the width of the wall was 0.32m wide suggesting an internal dimension of 4.0m long by 2.30m wide (Taylor 2012, 17). The floor had been levelled with a layer of quartz stones and limpet shells, upon which the slate floor was laid. There were no post holes directly associated with the structure and sherds Somerset Chert tempered ware possibly dating to the 9th-11th century. Unfortunately, there are currently no carbon dates for the structure and there is no characteristic Grass-marked pottery. Interestingly, the structure is 200 meters from the isolated church of St. Wyllow, dedicated to the hermit St.Willow, similar to Gunwalloe's proximity to St.Winwaloe's church.

Figure 62: Structure near Lanteglos with clay bonded stone walls (Taylor 2012, fig 8).

These non-sand dune examples of sunken featured buildings demonstrate that this house form was not restricted to sandy sites like Gwithian and Gunwalloe. However, Launceston lacks absolute dating evidence as does Lanteglos. These five examples represent three

different social/economic contexts; Gwithian is a seasonal industrial site, Stencoose a seasonal transhumance hut, whilst Launceston is clearly a high status settlement. Gunwalloe may be unique in representing the first lower class rural settlement in the region offering the first opportunity to view everyday life in this period. The carbon dating of Gwithian and Gunwalloe suggests a date range for this house form from the 7th -12th century, but it is not the only house form for this period in Cornwall.

5.5.2. Other types of contemporary buildings

A sub-rectangular post built structure at Tremough dating to 1020-1190AD (SUERC-35698) was 6.0m in length 4.0m wide making it unique in Cornwall for this period (Gossip 2011). There are un-abraded Bar-lug Grass-marked vessels in pits and postholes and the deposition of a complete Gwithian style vessel in a post-hole perhaps suggests a structured closing deposit (Gossip 2011). There is no evidence of internal features or a hearth.

The settlement at Mawgan Porth on the north coast of Cornwall is considered to be the most extensively excavated 10th-11th century settlement in Cornwall (Bruce-Mitford, 1997). It is comparable in date and artefact ceramic assemblage, but the houses are not sunken. It consists of three rectangular stone walled courtyard-houses built onto bedrock dated by a Saxon coin to AD 990-995 (Bruce-Mitford, 1997, 87). It is thought to have been abandoned in the 11th century due to the encroachment of the sand dunes (Bruce-Mitford, 1997, 88).
Preston-Jones and Rose (2003, 53) suggest it represents a typical later medieval longhouse with ancillary buildings. It is important to note that longhouses are associated with smaller buildings which are rather similar in scale to the Gunwalloe house, e.g. Room 6 is 5.5m by 3.0m internally, with a hearth. The house at Gunwalloe may be part of a courtyard structure the rest of which is yet to be uncovered.

Grass-marked platters and cooking pots may suggest an 11th or 12th century date for initial occupation at Old Lanyon, Madron, where the excavators have interpreted lines of stakeholes as turf walled buildings predating the stone walled medieval longhouses (Beresford, 1994; Minter, 1965). Similar stakeholes have been excavated at the medieval settlements of Tresmorn on the north coast from the 10th-14th century (Beresford, 1971, 57), but these sites have not produced Grass-marked wares or any other evidence for an early date. These sites were excavated in the 1950s or early 1960s, therefore, some doubt may be cast on the excavation practices employed, and they all lack radiocarbon dates. This makes the contemporaneity of these structures problematic and may suggest they represent a later form of settlement more related to post-conquest traditions.

5.5.3. New perspective

The house at Gunwalloe is certainly unique, but reflects elements of structures at Gwithian and Launceston Castle which suggests a regional house type that evolved over time. It is most similar to Launceston Castle which is thought to be closer in date but is sited on sand dunes and has revetted walls similar to Gwithian. It could be suggested that it falls both chronologically and typologically between the two and that it represents a regional house tradition adopted after the abandonment of Romano-British round enclosures in the 6th century. The benefit of sunken featured structures is that, unlike post-built houses, they would preserve archaeological deposits well similar to sunken Middle Bronze Ageround houses (Peter Rose *pers. comm*.). Rose suggests that the reason there is little archaeological evidence for 7th to 11th century settlements is either that, sunken featured houses are not that common or, probably more likely, that most 7th to 11th century settlements continued in use as medieval and later settlements. The preservation of Gunwalloe and Gwithian is then due to impracticality of settling on sand dunes beyond the 12th century. This perhaps contradicts Peters (1988) earlier idea that they chose the dunes for settlement at Gunwalloe to release more arable land. Rose suggests that on the basis of place-name evidence and historic landscape character assessment, early medieval

settlement in Cornwall can be seen as widespread and general, apart from the uplands areas (Rose *pers comm.*).

5.5.4. Everyday life at Gunwalloe

It is clear that this community had a continual battle with the sand, their attempts to level out underlying sloping surfaces of accumulated sand suggests a sustained effort to create working areas that were both solid and flat. Trench's 2, 3, 4 and 5 certainly demonstrate this practice over many different phases. The clay from the beach may have been utilised to provide areas on which to work, unfortunately apart from slag inclusions in a clay surface in Trench 5, no evidence of the nature of the activities was identified.

It must be stressed that the human occupation layers exposed refer to activity in the general area not in that exact location, the slag fragments in clay surface in Trench 5 were small enough to have been blown or travelled there and the dump of darker material with animal bone suggests a mix of some occupation debris. However, this presents the possibility that iron production occurred near within the settlement which would have been vital to its independence and status. However, the complete absence of metal finds makes this difficult to support.

5.5.5. Pottery

The most common artefact for this period is pottery, which in contrast to the rest of Britain in this period is unique as production generally declined in the 5th-6th century or ceased altogether in some regions such as Devon. The Grass-marked wares are unique to Cornwall produced from the 7th-12th century AD, so called due to the impression of chopped grass on the base and lower body. There are a limited range of forms comprising of, Bar-lug cauldrons, cooking pots, platters and dog dish bowls, which marks a dramatic change in eating habits, turning away from the individual dining and serving sets common in the Roman period, towards more communal eating (Thorpe and Wood 2011, 276). This change is seen elsewhere in England at this time falling into the 'stew pot' tradition (Hagen 2006), perhaps suggesting Cornwall was conforming or adapting to new cultural or environmental external forces.

The fabric analysis demonstrates that pottery fabrics from Gunwalloe changed over time with Gabbroic clay from the St Keverne area of the Lizard Peninsula in the earlier phases; to more locally derived clays in later phases (see 4.1). This reflects general trends identified in the Author's PhD for pottery production on the Lizard and Cornwall as a whole, which represents a shift from regional ceramic traditions in the 8th century towards more independent expressions of identity (Wood 2011).

An analysis of abrasion has suggested that pottery in domestic middens was surprisingly well preserved, suggesting that although movement occurred within the midden after deposition, its soft matrix limited erosion on sherds. This is in stark contrast to the non-domestic fish midden in Trench 3, where sherds were significantly abraded, presumably due to their deposition elsewhere and transportation to their final destination.

The increase in rim diameters mirrors the change in fabrics perhaps suggesting larger cooking pots and platters were required (see 4.1). The increase in vessel size corresponds to increase in midden deposition and changes in the faunal assemblage in the 10th-11th century (see below). Handles on the Bar-lug cauldrons also become more D-shaped or circular in profile as opposed to the wider ribbon handles seen in the early phase on Trench 2.

The increasing capacity of cauldrons and deposits of midden material perhaps indicate an increase in food consumption and deposition in the 11th century at Gunwalloe. The size and lack of abrasion on sherds deposited in midden (4004) in Trench 4, suggests pots were

more casually discarded and easily replaced demonstrating increased pottery consumption and production. The vessels had a higher degree of external sooting which is the result of a cooler vessel surface temperature consistent with holding liquids which were perhaps left suspended for long periods over a fire.

There are a considerably higher proportion of platters in Trench 3, most of which were finer in a Gabbroic fabric and not Grass-marked on the base. The size and abrasion suggests they have travelled some distance, non-the-less it does suggest a certain trend in the 11th century not seen in any other contexts at Gunwalloe. It may be part of the Sandy Lane ceramic tradition seen from the 11th-13th century which has a similar fine oxidised Gabbroic fabric, although platters have not been associated with this ware in the past.

The presence of decoration in Grass-marked Wares is rare, Gunwalloe seems to have more than any other site to date with three examples from Trench 2 and two from Trench 4. A complete cup of a Bar-lug cauldron from T2 had an incised cross decoration (Fig 64) and two body sherds, with one with incised diagonal lines, and the other an obtuse incised cross/lattice were all found in the same context. There are no dates for this context but a hearth above dates to the 9th-10th century. The two sherds in T4 had incised diagonal and horizontal lines on one sherd and only diagonal on the other roughly dating to the 10th century. This suggests a new trend that emerged around the 9th-10th century. The only other example of decoration on Grass-marked ware in Cornwall is a scatter of sherds in a ditch at Trelissick one of which has a cross on the cup of a Bar-lug cauldron but is not dated (Fig 65) (Taylor and Thorpe 2008). Also at Waterford in southern Ireland at a Hiberno-Norse settlement there was a decorated cup sherd was found dating to 11th century (Fig 66) (Gahan and McCutcheon, 1997).

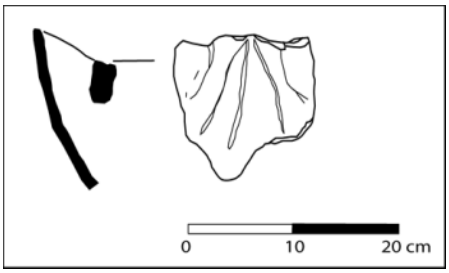


Figure 63 (left): Gunwalloe, incised cross on cup of cauldron (Author's photo).
Figure 64 (middle): Trelissick, incised cross on cup of cauldron (Author's photo).
Figure 65 (right): Waterford, Ireland, decorated cup of cauldron (After Gahan and McCutcheon 1997, Fig 11.1).

The cup of a Bar-lug cauldron is the most prominent part of the pot as it hung over the fire in the centre of the house, as body sherds are often heavily sooted making any decoration difficult to see. It could be suggested that the chosen motif of a cross refers to Christian iconography, which is very apt in a period when Christianity had been adopted across Cornwall. Gunwalloe has the most decorated sherds of any Grass-marked assemblage providing a new insight into this traditionally plain ware.

Grass-marked ware is not always marked by grass, a number of sherds have impression of other organic material, such as chaff and bracken in Trench 2. In general it would seem that a great diversity of other organic material was being used at Gunwalloe to stop the vessel from adhering to surfaces when unfired. The identification of cereal chaff provides unique

proof of wheat or barley being processed on site and that pottery was being made around the time it would have been winnowed, possibly autumn (Fig 67).

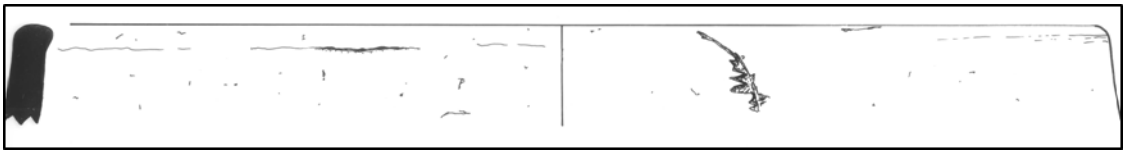


Figure 66: Impression of Bracken or fern on vessel from Trench 2 1:2 (Tom Hooper).

The pottery from Gunwalloe has provided a unique insight into the everyday life of its occupants over a period of 400 years. The Bar-lug cauldron hanging over the central hearth would have been a symbol of home for over 500 years in Cornwall. It gathered people to it at meal times and perhaps the cross represented a blessing for the home giving protection or luck to those who ate from it. At Gunwalloe its gradually increasing vessel capacity could represent a growing community in the 11th century. The impressions of chaff and bracken or fern suggest pottery production in the autumn which may be the first evidence for seasonal production. Further analysis on the internal charred residues is needed to complete this picture and find out what was for dinner.

5.5.6. Household Middens

The domestic middens are a regular feature of early medieval occupation at Gunwalloe, which is typical of this period in Britain. They are generally assumed to be modes of storage for refuse prior to its use as fertiliser on fields at part of the agricultural year. There is a wealth of archaeological and documentary evidence for the treatment, value and laws associated with medieval middens in urban contexts in Britain but very few for rural sites (Jones 2011). The presumably rural character of Gunwalloe makes the faunal and environmental evidence of great significance to studies of rural life in this period. Middens have great potential for understanding the communities that created them, at Flixborough in Lincolnshire, middens from the 7th -10th century AD demonstrated the change in settlement character from farm, to monastery and lastly elite estate centre (Dobney *et al* 2007). The relatively small bone assemblage at Gunwalloe cannot compare to that of Flixborough, but it is the largest early medieval assemblage recovered with modern excavation techniques and dating in Cornwall.

5.5.7. The midden context

The midden context has received detailed analysis in order to establish the nature and function of middens within this community and their role in the settlement as a whole. The soil micro-morphology analysis on Horizons 1.1 to 1.5 from a midden in Trench 1, found excrement, large quantities of organics, dusty ash void fills and charcoal, which Pears says supports its function as a domestic midden (4.4). The soil Geochemistry results suggest heavy post burial mixing in the midden context (4.4). This pioneering analysis has expanded our knowledge of midden composition beyond the readily identifiable bones and pottery, which would have otherwise been lost through excavation. It has established that organic matter, faeces and ash were part of the midden composition and that it was a dynamic environment subject to post-depositional mixing.

The agents responsible for mixing these deposits may not necessarily have been human, there is faunal evidence for dogs, cats and amphibians and rodents at Gunwalloe (see 4.2.1). This combined with the dog and rodent gnawing of bones strongly suggests they were open middens. The presence of frog, toad and vole bones could suggest it was also an active habitat, unless of course they were the result of a meal. The idea of an open refuse heaps close to houses is not an appealing one, however, most food was generally boiled in Bar-lug cauldrons, the larger bones had their marrow extracted, and dogs finished off

anything left, suggesting there was little left to rot down. Middens in medieval life were important features of any settlement representing wealth and status.

5.5.8. Sealed middens

In some cases clay from the beach was used to seal middens, as in Trench 4 (3.4), suggesting exposed refuse was not always preferable or seemingly utilised for agriculture, as the midden material under the clay was not extracted at a later date.

The sequence of midden creation, deposition and sealing of middens with clay in Trench 4 strongly suggests a long term feature of its contemporary settlement. It is most likely that the first two middens sealed with clay filled in a natural sandy hollow in the lee of a dune. Later a greater quantity of material exemplified by the size of sherds and bones necessitated the cutting of a new midden suggesting after the 11th century domestic disposal substantially increased. This midden material (4004) contained cattle, horse, sheep and no fish whereas earlier middens had medium sized mammals (such as sheep), wrasse and plaice. The 11th century move to large mammals is also reflected in Trench 5 (5024) and Trench 1 floor level (1033). It is possible that the increase in midden material in the 11th century represents a larger population or more conspicuous consumption of specific resources. It could be suggested that this is associated with the foundation of the manor of Winnianton nearby. The increase in large mammal and sheep consumed could represent different eating habits in this period.

5.5.9. Specialised midden

The shell and fish midden (3007) in Trench 3 represents unique non-domestic deposition activity associated with the settlement. This midden was the direct result of a specific activity and not the disposal of domestic refuse. The three phases of deposition suggest the possibly seasonal processing of mainly limpets and fish, and the highest number of wild birds on site. The limpets could have been harvested as bait to catch fish, but the quantities recorded from the midden of around 156kg of limpet shells make this a significant endeavour. The size of limpets was generally small maximum 0.03m offering very little meat. Research has shown that small limpets live in deeper water and not the higher intertidal zone which larger limpets naturally dominate (Hobday 1995). This would mean that the limpets at Gunwalloe were specifically harvested at very low tides (perhaps a spring tide), ignoring the easily accessible larger limpets.

Their use as fishing bait has always been in question as fishermen state they produce very little scent in the water to attract fish and they would only appeal to Wrasse which are the only fish to eat limpets. However, some fishermen harvest specifically small limpets and store them in salt to toughen them up so that when soft bait like crab or razorfish is put between them on a hook it doesn't fall off when cast into the water. This seems a logical reason for the abundance of small limpets in a midden also containing discarded fish bones and crab shell which may have been the latter of which may have been the true bait. It also makes the useful distinction for future reference that middens for bait would contain small limpets whilst large limpet shells indicate human consumption.

This strongly suggests that a seasonal fishing event took place, the results of which could be the Hake, Atlantic Cod and Wrasse. Wrasse is easily caught from the shore with limpets, but Cod and Hake would require a boat. Seasonality in fishing can be vital as species like cod migrate northwards making the spring the best time to fish off the Cornish coast, however, Hake stays in deep cold waters all year round. It would seem that considerable preparation and effort went into fishing Hake in particular. Hake is the most common fish bone in the midden with only head and tail bones identifiable, Hake head and tail bones are also found in a midden prior to the house construction in Trench 1 and in the tumble after its abandonment.

5.5.10. Fish and social status

Hake is known as a popular fish in the medieval period, which is entirely consistent with the 11th date of this feature. Considering the vast array of fish species available, the preference for Hake suggests the occupants of Gunwalloe were aware and partaking of culinary fashions of the era. Hake dominated the fish assemblage at Launceston Castle, out of 31 species it represented 11% of the total, Wrasse was also found in very small quantities (Smith 2006, 453). The consumption of fish at the castle is associated with its aristocratic use after which there was a significant decline, replaced by mammals. There was a deficit in the bones between the head and neck which is consistent their removal on the coast before being brought to market which would be entirely consistent with either being brought to site whole or more likely smoked (Smith 2006, 453).

Hake is found in Southampton in a preserved form in large quantities specifically the Anglo-Norman phase AD 1066-1250. There are documentary sources in the later medieval period of it being brought in from Brittany and the southwest (Hardy *et al* 2011). They are often an indicator of Norman occupation in settlements, generally in a smoked or salted form.

The practice of smoking fish in this period required the removal of bones between the neck and head to allow a pole through for suspension. Smoked fish was seen as lower class than fresh fish which had to be brought in from the coast rapidly (Smith 2006, 453). It has been suggested that fisher/farmers would supplement their income by catching fish to sell in Norman markets because they were a high status popular fish and would get a good price.
The fish bones from the midden in Trench 3 suggest the head and tail were removed and the rest of the fish was eaten within the settlement, as generally fresh fish were exported whole to market to keep them fresh.

Although the fish bone assemblage only totals 196, it does offer some insights into aspect of their diet, subsistence and possible social status. Interestingly, despite roughly contemporary occupation of the house in Trench 1 only Pollack and Wrasse bones were identified, this suggests they were not consuming the Hake and Cod being processed in Trench 3. Hake is found in the middens below the house and in the tumble after its abandonment. The presence of Pollack and Wrasse head and tail bones in the floor of the house suggests they were processed in there and not at the midden in Trench 3, this could suggest they were caught by an individual fishing off the rocks and brought home. If we accept that Hake was a high status fish and that it was being consumed within the settlement, its absence from the house could suggest it occupants were of a lower status catching shoreline fish and excluded from the consumption of high status fish by more elite members of the community. This suggests a stratified community, with elite members willing to patronise fishermen to go out in a boat and catch fish becoming of their rank in society.

5.5.11. Settlement over time

The carbon dates from the features excavated clearly show that the area was settled for around 400 years from the 8th to 12th century, during which the 11th century seems to have been the most diverse and active period. There appears to be a distinction between three main periods identified through the range of features and faunal assemblage.

<u>Phase 1 farmers and hunters</u>

Trench 2 has the earliest date AD 730 to 740 from postholes cut into the bedrock through what could be agricultural land. Trench 2 is the furthest away from the sea and near the area where currently the sand dunes meet fertile soils at the base of a shallow valley. The possible plough marks in a sandy soil layer only 0.30m above the original land surface could represent a field system associated with settlement on the dunes. Walker's mollusc analysis suggests sand in this area has been transported through erosion and not windblown accumulations and that woodland and scrub were in the near vicinity (see 4.5). Its distance from the sea in a more sheltered position and shallow sand must have made this ideal for

agriculture. However, this does not seem to have remained agricultural land as subsequent layers contain midden material and hearths which are dated to the 9th-10th century. This suggests the settlement may have expanded further inland in this period, perhaps because of population increase or the erosion of the cliffs.

The pottery in this phase has distinctive wider straps on the Bar-lug cauldrons compared to other Trenches supporting a different era. The faunal assemblage for this period have produced the highest number of wild animals (deer, hare and hedgehog) suggesting a great reliance on hunting (see 4.2.1). It also has a high proportion of cattle some of which have been used for traction and calves were butchered presumably to encourage milk production. This suggests a very different subsistence strategy in the earliest phase of the settlement.

Phase 2 A growing Christian community
Trench 4 has an 8th-9th century phase associated with open country molluscs and gorse and oak charcoal suggesting a slightly different environment. The faunal assemblage differs from Trench 2 having predominantly medium sized mammals and fish. It is difficult to say this represents a similar subsistence strategy.

The early 9th-10th century features in Trench 1 are represented by middens and the foundation for an earlier house platform. There are few cattle bones with mainly medium sized mammals and fish making it similar to the Trench 4 faunal assemblage.

The cross on the pottery in this period serves as a reminder that this was a Christian community which may have been established in the 8th century, as elsewhere in Cornwall.

Phase 3 The hundredral manor and new appetites
This phase represents the peak in its occupation as suggested by the increasing volume and contents of middens, larger cooking vessels, fishing for high status fish and other subtle changes as described above.

It is difficult to say whether this was the result of the foundation of the Royal Manor at Winnianton, as it may have only existed on paper or been a location where people gathered to pay taxes. It is difficult to say what form a 'Manor' took in Cornwall as few exist for comparison. The evidence from the evaluation and previous work suggests a sprawling complex settlement and administrative head of a huge estate covering most of the Lizard peninsula, and beyond including all the sub-manors under its hundred.

One would assume that it would be a series of structures with high status range of material culture similar to that of Launceston Castle.

The evidence for this period could suggest there was social stratification in the settlement perhaps represented by the consumption of Hake by some but not others.

5.5.12. The lost village of Winnianton
The question of why people chose to settle on these exposed dunes for seven generations and then abandoned the area never to return has always been a mystery. The excavations and survey at Gunwalloe have after over a 100 years of speculation finally revealed some answers. It is clear that the site was occupied from the 8th century and that there are three main phases which suggest a growing community that boomed in the 11th century. Mollusc analysis from layers above the house suggest open country and few periods of stabilisation, suggesting a dynamic phase of the dunes possibly due to storms (4.5).The reason why this prosperous community and possible Manor site was abandoned may be due to them losing their battle with the sand and the draw of the growing urban centres in Cornwall founded by Norman settlers, such as Helston. There are documentary references to settlements on the north coast of Cornwall being buried overnight in great sand storms and people having to

leave their homes. John Norden in the 16th century said "*Gwythian - 'a parish standing near St Ives Baye, muche annoyde with the sea sande, which flyeth at lowe water with the winde out the choked haven into the Lande, swallowing up muche of the lande of the inhabitants, to their great impoverishment"* (Nordon 1728). The loe Bar not far up the coast from Gunwalloe is historically reputed to have formed in the 12th-13th century.

The formation of open fields and enclosure in the 12th-13th centuries has suggested to many a growing pressure on the land after the Norman Conquest and as a result of increasing population (Preston-Jones and Rose 1986). The founded urban centers such as Helston, were growing and had prosperous markets. Post-conquest Cornwall had drawn away from the independent hamlets thought to dominate since prehistory, society became more stratified and landownership more important opening up new opportunities for social improvement. This new way of life may have enticed people away from their battle with the sand at Gunwalloe. The question over presence or location of the 'Manor of Winnianton' has not been answered by these investigations. It may be that it was lost to the sea many years ago, or lies off the dunes, there is a field with a circular boundary that overlooks the beach, the river entrance, the promontory and the early medieval settlement.
Perhaps further geophysical or GPR survey combined with a comprehensive documentary historical review would help solve this mystery.

6.0 Conclusions

The story of Gunwalloe starts in prehistory and takes us into the landscape and world we know today. Its investigation has been full of surprises and presented many unique features previously unseen in Cornwall. The discussion above has highlighted the evidence drawn from many disciplines within archaeology that has come together to form a narrative of life through the ages at Gunwalloe.

It starts with the dunes sweeping in at the beginning of the Bronze Age period changing the landscape forever. This landscape drew Bronze Age peoples to bury their dead on the promontory for several generations and later cover them with middens created from feasting and settlement nearby. The Iron Age peoples utilised the promontory to defended themselves behind the great bank which utilised the burial mound for this purpose or perhaps to uniquely connect them to their ancestors. This promontory settlement endured through the Romano-British period and on into the post-Roman era. The defences were burnt and people may have abandoned the site, although it is possible another reason drew them back to Gunwalloe.

A Celtic Christian presence at Gunwalloe may have in later years fostered a new community that settled in the sand to farm and fish. The settlement in the sand grew as people nested their homes into the dunes sheltered against the sea, and living off the cultivated and wild resources. Its abandonment demonstrates the changing nature of society in Cornwall in the 12th-13th centuries.

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9.0 Archive contents summary

Archive is digitally available on Oasis and ADS

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Archaeological project record form

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- Appendix 7: Pottery Report- Dr Imogen Wood
- Appendix 8: Bone Report – Dr Wendy Howard
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