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Early medieval enclosure at Glanfred, near Llandre, Ceredigion

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Geophysical survey and small-scale trial excavations were carried out on a small parchmark enclosure at Glanfred, near Llandre, Ceredigion in 2013. Geophysical survey revealed sections of the enclosure ditch that had not been previously visible from aerial photography, a number of possible entrances and two concentrations of internal anomalies. Excavation targeted a section of the inner of two ditches on the eastern side of the enclosure and an anomaly within the enclosure. An in situ *iron slag deposit was discovered with an associated context dated between the late seventh and ninth century AD, whilst charred oats discovered in one of the lower deposits within the ditch was dated between the mid-fifth to sixth centuries AD. The results provide a rare insight into early medieval use of enclosures during the post-Roman and early medieval period, not only in north-west Ceredigion but more generally in Wales.*

INTRODUCTION

The triangular or pear-shaped enclosure, on Glanfred Farm[7] near Llandre, in the community of Genau'r Glyn, Ceredigion (centred on SN 63384 87870; Fig. 1) was first discovered from the air as a parchmark by J. K. S. St Joseph of Cambridge University in 1975 (St Joseph 1975)[8] and subsequently by Chris Musson and Toby Driver of the Royal Commission in respectively 1995 (Fig. 2) and 1999 (Driver 2013, 24; Murphy *et al*. 2006). It measures approximately 99m by 65m across and lies on a natural promontory at 48m above Ordnance Datum. The parchmark appears to indicate two ditches enclosing its south-eastern end and a single ditch nearest the promontory's more precipitous north-western edge. The aerial photograph, and field observation during periods of drought, also suggests that a number of possible pits may be located within the enclosure, as well as ditches or tracks near the southern end of the enclosure. The promontory, on which the site is located, overlooks the wooded valley of the river Leri on its northern side and a tributary stream, running down from Glanfred Farm, on its southern limit. The south-eastern edge of the promontory leads onto level pasture fields intersected by Lon Glanfred before climbing gently up towards the modern A487 less than a kilometre to the east.

In 2013, Archaeology Wales were commissioned by Trisgell Ltd to monitor the geophysical survey and limited excavation of Glanfred enclosure, Llandre, Ceredigion, as part of a Welsh-language television series *Olion: Palu am Hanes* focusing on archaeology, broadcast in 2014 on S4C. Enclosing ditches forming part of the enclosure could be seen on aerial photographs during periods of parching although no raised earthworks are visible within the field. The enclosure is univallate at the western, northern and southern edge end but bivallate at the south-eastern end, where the enclosure is more easily accessible due to the more level ground. A gradiometer survey was carried out on the 12–13 August 2013 and revealed the presence of ditches where the cropmarks were less clear. Excavation took place between 10–13 September 2013. The finds and archive associated with the excavation will be deposited with Ceredigion Museum, Aberystwyth.

The site is located on a natural promontory at 48m above Ordnance Datum, 3 kilometres east of Borth and Cardigan Bay and 160m to the north-east of Glanfred Farm, 1.1 kilometres to the north-east of Llandre (formerly the ecclesiastical parish of Llanfihangel Genau'r-glyn), Ceredigion (Fig. 1). The enclosure as seen on the aerial photographs taken by the Royal Commission is univallate at the western, northern and southern edge end but bivallate at the south-eastern end, where the enclosure is accessible to more level ground. The promontory has a near precipitous slope to the west, and sloping land to the north and east. The river Leri is located 170m north of the enclosure's northern limit and a caravan park is located in the river's bend at the base of the slope. The bedrock geology comprises Silurian Borth Mudstone underlying glaciofluvial sand and gravel deposits of which the upper deposits can be described as freely draining and slightly acidic.[9] The field is currently used as pasture for sheep and other livestock.

The field containing the enclosure is named Caer Odyn (*cae'r odyn*, 'kiln field') in Cynull Mawr township on the Llanfihangel Genau'r-glyn parish tithe map of 1847. It is possible that the field name refers to a lost post-medieval limekiln or the nearby Forge Mill, a cloth-making establishment converted from an older iron forge. The name of Glanfred Farm, evidently derived from the elements *glan* 'bank' and the proper name *Ffraid* (Brigid), is probably named after the brook that runs to the river Leri from the spring near the farm (Baring-Gould and Fisher 1907, 286, n. 3). There is a local tradition that an early wooden church dedicated to St Ffraid at Glanfred was abandoned, mid-construction, in favour of another, dedicated to St Michael (Mihangel), at Llandre nearby (Enoch 2002, 172). The farm was, incidentally, the ancestral home of Bridget Pryse, mother of the antiquary Edward Lhuyd (Lloyd and Jenkins 1959, 565).

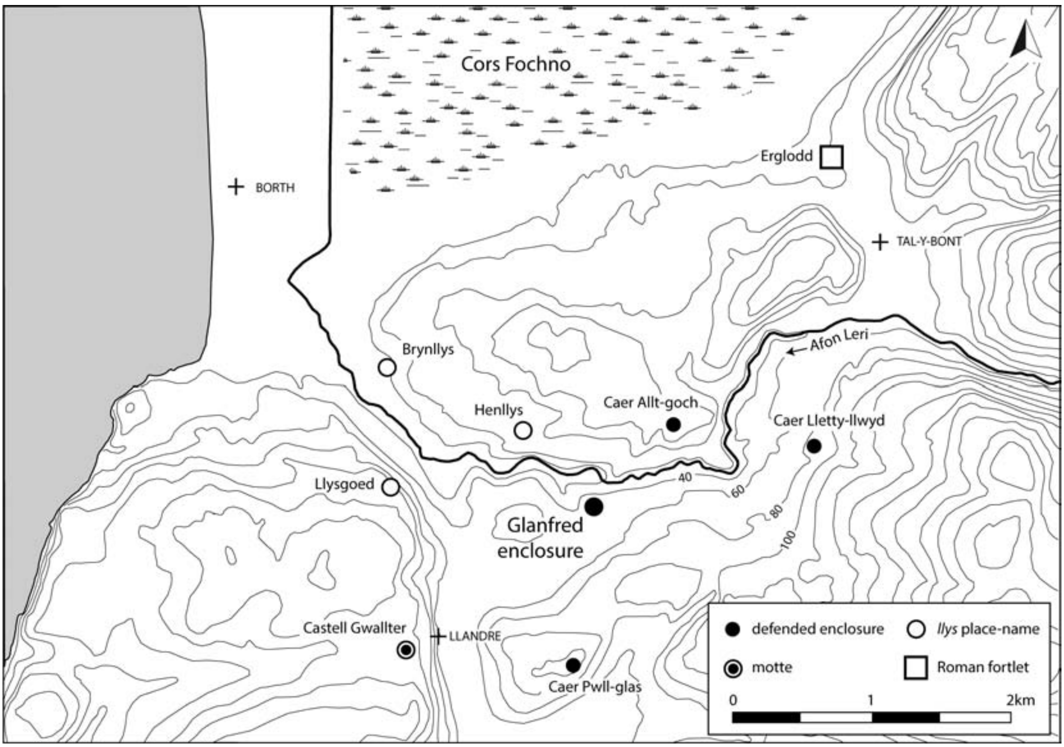

Fig. 1. Location (contours at 20m intervals).

Fig. 2. Aerial photograph of Glanfred enclosure cropmark in 1995, viewed from north-northwest.

A number of other enclosure sites — described as belonging to the 'Leri Basin small enclosure group' (Driver 2013, 52) — are known in the area, which include Caer Allt-goch[10] 1.25 kilometres to the north-east, Caer Lletty-llwyd[11] 1.6 kilometres to the east-northeast, and Caer Pwll-glas[12] 1.1 kilometres to the south-southeast (see also Driver 2016, fig. 4.4).

GEOPHYSICAL SURVEY

By Daryl Williams and Sam Williams

The aim of the survey was to confirm the cropmarks seen from the air. This being the case its primary objective was to elucidate the area to the south-east where the cropmarks are least clear. Any possible identifiable entrance and ditch terminals in this area would be particularly significant ahead of small-scale excavation. The secondary objective was a survey of the interior in an attempt to identify any internal features such as drip gullies, pits or demarcation ditches.

Methodology

Responses to geoarchaeological surveys over mudstones and drift glaciofluvial sand and gravel deposits are known to be variable between sites and dependent on many local factors but Historic England (2008, 15–16) recommend magnetometer survey as the most suitable technique in the first instance. A Geoscan FM36 Fluxgate Gradiometer was used to carry out this geophysical survey with the aim of identifying any anomalies of potential archaeological significance. Whereas variations in magnetic susceptibility of soils occur naturally, this equipment attempts to detect those resulting from human activity. It is particularly useful in detecting ditches and other silted up features as topsoil is generally more magnetic than bedrock. Conversely masonry is less magnetic than topsoil. It is also sensitive to the presence of hearths and areas that have been in contact with heat due to the process of thermoremanence (Clark 1996, 64–70).

This method was particularly suitable in this case due to the limited time scale in which to conduct the survey, of approximately two days, and the fact that the grids could be walked at rapid pace. The site was divided into 20m square grid squares and surveyed with a traverse interval of 1m and sample interval of 0.5m giving 800 readings per grid.

The survey area was surrounded by a barbed wire fence which affected the survey towards its very south eastern and south western extremities. The tip of the southern corner of the survey area was also crossed by overhead power cables. The remainder of the survey area was under pasture and largely free of obstructions. It is recognised that on such geology signals from smaller features greater than 1m deep are likely to be too weak to be detected (Historic England 2008, 16). This and the fact that the banks and ditches had been ploughed out or deliberately removed/in-filled suggests that only macro archaeological features are likely to be detectable and even if sub-surface micro archaeological features remain they may have been invisible to the survey.

Results

The most obvious anomaly, on the plot of the geophysical survey results is a pear-shaped ditched enclosure (Fig. 3a–b). This has a relatively straight western side, orientated approximately north-west to south-east, which is approximately 70m in length and 2–4m in width. At its south-eastern end the anomaly diverges as it curves in an arc to the north. The innermost anomaly here is approximately 90m in length, before the two once again merge, with the outer approximately 105m. Both measure approximately 3–6m in width. The area enclosed between the anomalies is approximately 8m at it its widest point and tapers to a point at either end. The anomaly progresses to the north-northwest, as a single entity once more, for approximately 40m before turning to the west for a further approximate 30m at approximately 3–5m in width to complete the circuit.

The location, shape and dimensions of this anomaly strongly suggest that it represents the former position of the perimeter bank and ditch of a promontory hillfort of the type commonly found during the Iron Age within the region and indeed throughout Britain. What is less common is the fact that these appear to run up to approximately 10m down the very steep slope to the south-west before running up the slope and forming the bivallate south eastern side (Fig. 3). To the north-eastern side they appear to run along the interface between an inner shallow slope and a much steeper slope to the valley below.

A much weaker linear anomaly, approximately 2m in width, runs parallel and approximately 6–8m distant from the first from for approximately 50m along its western side. This continues around the apex and for approximately 20m parallel to the north- eastern side. It may continue for approximately 10–12m, after a gap of approximately 15m, but the signature to this side is very weak and so this cannot be stated with any certainty (Fig. 3). Due to the weak nature of the anomaly it is also not possible to state unequivocally if it terminates at the points indicated or becomes too weak to be detected.

This anomaly can be seen to run along the top of the level area of the promontory before it slopes away sharply to the south west and more gradually to the north before becoming a steeper slope. This may therefore indicate the position of a further inner bank and ditch, running along the top of the slope, which has also been ploughed out or deliberately removed or infilled. Whether these were contemporary with the larger outer defences or possibly represent a different phase can only be ascertained through excavation.

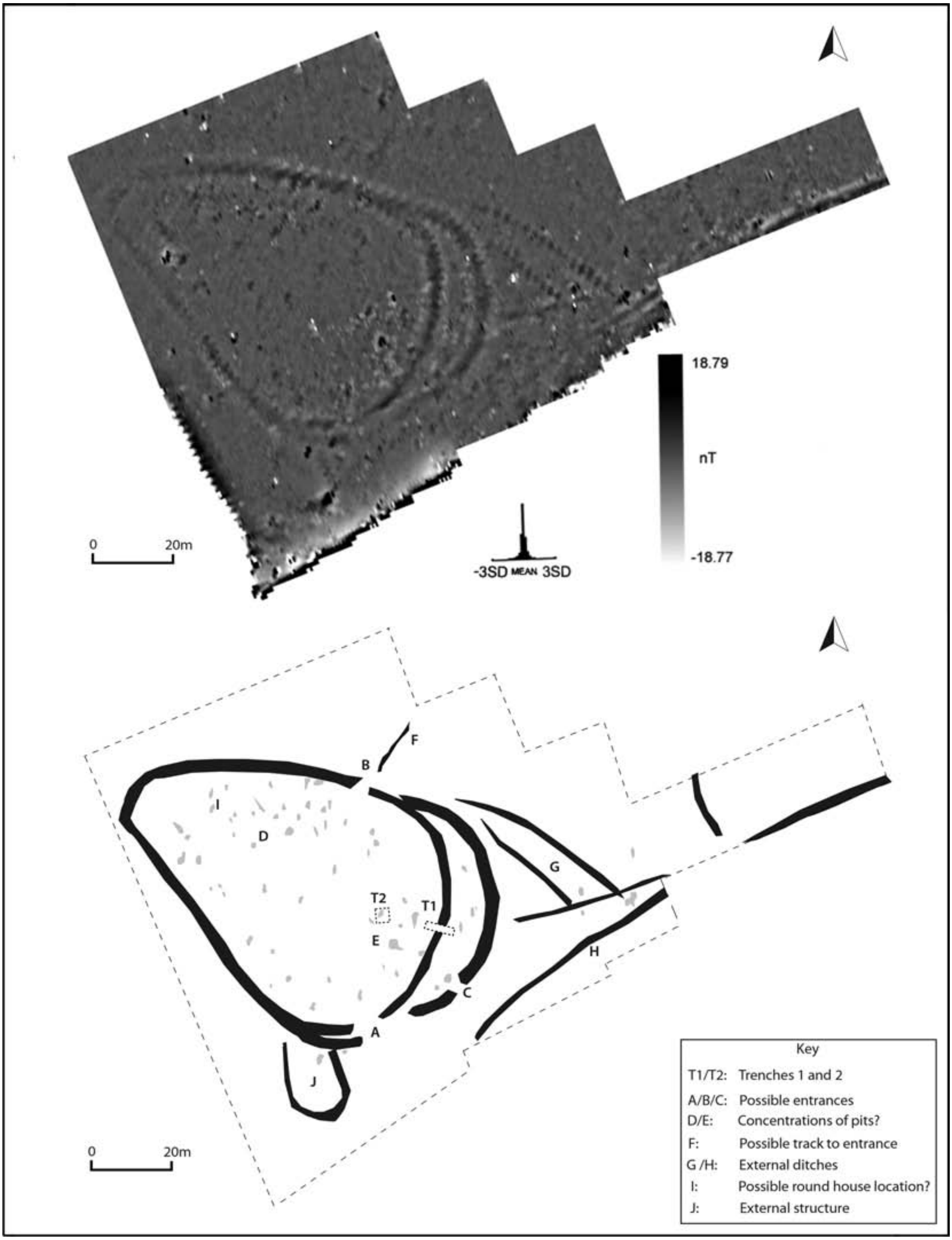

Fig. 3. ***Top*** Geophysical survey greyscale plot.
Bottom Interpretation of geophysical survey and trench locations.

Three possible entrances through the outer defences present themselves (Fig. 3). The first is a gap in the northern side, just west of the merger of the ramparts (Fig, 3b, B). This appears to have clearly defined ends and to be approximately 2–3m in width. Further credence to the hypothesis that this is an entrance is given by the existence of an area approximately 5m^2 directly to the interior which shows very little ‘noise’ compared to the area immediately surrounding it suggesting an area clear of obstructions. In addition a weak linear anomaly leads away from the possible eastern terminus at right-angles (Fig. 3, F). This is therefore possibly a rear entrance for easy access to the river below.

The second entrance is a possible gap of approximately 2m in the outer defences at the approximate mid-point of the south eastern side (Fig. 3, C). This is the least convincing of the three possible entrances and has no corresponding gap in the inner defences. Nevertheless, it is possible that an entrance existed here forcing attackers to travel between the inner and outer defences, below defenders on the bank above, to an entrance in the inner defences further to the west.

The third possible entrance lies approximately 6m from the top of the western slope in the south western corner of the hillfort (Fig. 3, A). Unfortunately, the geophysical anomalies are weakest in this area but a possible gap approximately 4–5m in the inner line of the defences and a gap of indeterminate size in the outer suggest this may have once been the main entrance. If so, it was possibly protected by a feature found immediately to the west (Fig. 3, J). This rectilinear feature abuts the defences around the south-western top of the hill. It is formed of a linear anomaly that runs at right-angles to the possible entrance, across the level ground, for approximately 10m. It then turns to the west for approximately 15m down a short slope and along the line of the bottom of the hill. It then turns at right-angles for approximately 10m up the slope to the outer defences. At the opposing south-eastern corner two linear anomalies, measuring approximately 30 and 45m in length respectively and 2m in width, extend south easterly from the perimeter defences. These possibly represent the former presence of further banks and ditches whose purpose may have been to protect the entrance from the level ground to the east.

Further supporting evidence for an entrance to this side comes from the surrounding topography. A very deep and relatively wide depression cuts across the south western corner of the field below the hillfort before turning as it enters the next field and emerging onto the level ground broadly opposite the proposed main entrance. It is not known if this feature is natural although visual inspection suggests some form of human agency and this may possibly have been a formal approach way to the entrance. Unfortunately it was not possible to gain access to the next field to investigate this further.

A further, curving, linear anomaly can be identified to the south-east of the survey area (Fig. 3, H). This may have a corresponding anomaly approximately 22m away. The curving nature of the anomalies suggests that this may be a circular enclosure but unfortunately the anomaly is very weak and therefore it is not possible to state unequivocally that this anomaly is an archaeological feature. In addition both continue outside of the survey area to the north and are cut by a linear anomaly to the south. This anomaly runs parallel to the field boundary for approximately 120m before being lost in what is most likely interference from the metal gate into the next field. As the anomaly turns towards this gate, albeit at an oblique angle, it cannot be ruled out that this anomaly is caused from modern traffic through the gate and along the field boundary. This also aligns, however, with the cutting/depression alluded to earlier and therefore an ancient origin, possibly as a trackway, cannot be ruled out. The possibility that this is the return side of the circular platform witnessed in the next field also cannot be ruled out without further investigation.

Only one possible internal structure was detected and consisted of a circular anomaly approximately 10m in diameter found at the edge of the level ground to the north-west overlooking the river valley below (Fig. 3, I). If this is indicative of a possible roundhouse this would represent the drip gulley around the structure whose dimensions would have been slightly smaller.

Two other areas of note lie within the interior (Fig. 3, D and E). These areas are significantly noisier than the remainder of the interior and are interpreted as possibly being concentrations of pits.

EXCAVATION

Trench 1

Trench 1 was 10.5m long and 2m wide and was located over a section of inner ditch on the eastern edge of the enclosure (Figs 4–5). Topsoil (1000) was a dark brown clayey sand that was 0.4–0.5m deep. Underlying this on the western and eastern end of the trench was a brown clayey sand and gravel with frequent pea grits and poorly sorted stones (1001) up to 0.2m deep where observed. The ditch (1002) was 1.3m deep from the base of the natural (1.8m from topsoil surface) with steeply cut sides. Basal layer 1014, up to 0.43m thick, was a loose reddish-brown sandy gravel, interpreted as redeposited natural that had slumped down the eastern edge of the ditch. Layer 1013, up to 0.6m thick, was a loose very stony strong brown sandy silt was found on the western side of the ditch base and also interpreted as bank slump of redeposited material from the bank. Both these deposits contained fragments of cattle teeth, most of which were burnt (see report by Richard Madgwick below). Overlying both these deposits was a 0.4m thick V-shaped layer of dark greyish-brown clay silt (1012) ditch fill which included charred domestic food waste from a hearth or oven containing barley, oats and hazelnut fragments (see report by Wendy Carruthers below). An oat grain has provided an AMS radiocarbon date of 1563±32 BP (UBA-30455) which calibrates to cal. AD 420–560 at 95% confidence.[13] This layer was party sealed by layer 1011, up to 0.4m thick, composed of soft friable brown silty-clay with poorly sorted stones, and partly by layer 1006, up to 0.3m thick, composed of dark greyish-brown friable and soft silty clay. The upper fill was composed of two layers, 1011 and 1003, a greyish-brown sandy clayey silt up to 0.4m thick. A fragment of a corroded iron blade[15] was found within layer 1003 and an unidentified sherd of pottery[16] was found in layer 1006.

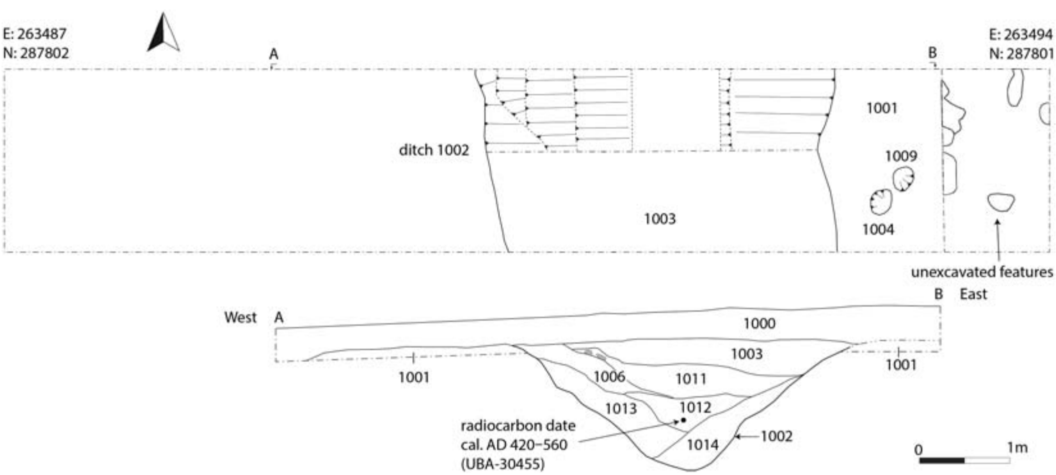

Fig. 4. Trench 1: plan and section.

Fig. 5. Trench 1: ditch section. Scales 1m and 2m.

Two adjacent postholes (1004 and 1009) were discovered on the outer (eastern) side of the inner ditch and several other unexcavated features were also identified further from the ditch (Fig. 4). Oval posthole 1004, 0.4m from the edge of the inner ditch, was 0.26m diameter and 0.13m deep. It contained a single fill of compact dark grey-brown clay with occasional small stones and moderate flecks of charcoal. The contents was sampled and found to contain charred animal feed or bedding material (see report by Wendy Carruthers below). A shallower posthole, 1009, lay approximately 0.2m to the north-west. This was 0.25m in diameter and 0.08m deep and filled with a light brown clayey silt with small rounded stones and occasional charcoal flecks. The similarity and proximity of these features make it likely that they served the same purpose or were associated with the same structure. Superficial examination of the upper deposits located on the western side of ditch 1002 suggested that a bank, now destroyed, had possibly been located in this area, although time constraints prevented further work in this area.

Trench 2

Trench 2 was located within the southern concentration of geophysical anomalies within the enclosure and specifically located over a clear anomaly near the south-eastern inner enclosure ditch (Fig. 6). The upper turf and topsoil horizon comprising approximately 0.5m of mid brown silt with occasional small stones (2000) gave way to a moderately compact mid orange-brown silty clay subsoil (2001) with linear patches of pea grit and amorphous dark-brown and mid-brown soil patches. A 1m-long plough-mark was observed running north to south on the eastern side of the trench. A, shallow, irregular L-shaped feature (2002), 2m by 1.6m across, was identified towards the northern side of the trench, with a U-shaped profile, 0.13–0.2m deep. The fill (2003) was a dark brown/black sandy-silt with charcoal inclusions, stones, furnace lining fragments and iron slag. A conventional radiocarbon date obtained from unidentified charcoal associated with this deposit was dated to 1221±37 BP (UBA-24080), which calibrates to cal. AD 690–890 at 95% confidence. A further elongated amorphous feature (2012), 1.65m by 0.8m across, lay at the eastern end of the trench. This has a shallow profile 0.25m deep with a flat base and contained similar fill (2005) to the L-shaped feature, including furnace lining and slag. Analysis of the residues from the features within Trench 2 by Tim Young (see report below) suggests that they may represent mixed iron smelting and ironworking waste possibly associate with a highly degraded furnace and a dump or workshop floor.

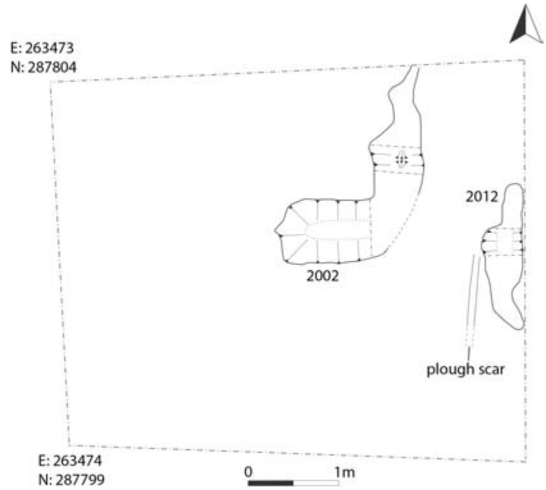

Fig. 6. Trench 2: plan of features associated with evidence of ironworking.

FAUNAL REMAINS
By Richard Madgwick

A small quantity of extremely friable enamel fragments were assessed at the Osteoarchaeology Laboratory of Cardiff Osteoarchaeology Research Group. This brief statement summarises the nature of the remains and their condition.

Trench 1, context 1013

A total 38 enamel fragments were recovered from this context. All are likely to be cattle, although for some small fragments red deer cannot be entirely excluded. The vast majority of specimens were very small (<20mm) and were too friable to assess the number of whole teeth present with confidence, but it is clear that at least two molars and one premolar are present. The enamel fragments are also too small to assign a side and therefore it is unclear how many jaws are represented. All specimens are consistent with being from the mandible, rather than the maxilla. The few samples with observable occlusal surfaces show almost no wear. Therefore the remains are likely to be from a young individual (juvenile or sub-adult). The majority of the fragments (33) were burnt, being either charred or calcined and this process has certainly contributed to the preservation of the assemblage. Only five fragments were unburnt.

Trench 1 context 1014

Remains from context 1014 were very similar to those recovered from context 1013. Thirty-three fragments of enamel were recovered but only three were greater than 20mm in length. One specimen is identifiable, a lower cattle molar. The precise position in the jaw and the side cannot be determined. None of the specimens can be assessed for dental attrition and all are consistent with being from cattle. As the majority are very small fragments it is possible that they all derive from the same tooth. All enamel fragments show evidence of burning (either charring or calcination).

CHARRED PLANT REMAINS
By Wendy J. Carruthers

Two soil samples were processed and analysed for plant macrofossils, both from contexts in Trench 1. Each soil sample was processed using standard methods of bucket floatation. Flots were poured off through a 250 micron mesh with floatation for each sample being repeated until no more charred material was seen to float. Once this point had been reached the residue in the bottom of the bucket was washed through a 1mm sieve until all of the silt had been removed. Flots and residues were slowly air-dried and the volumes were measured. The flots were sorted under an Olympus SZX7 stereoscopic microscope. Large charcoal fragments and plant macrofossils were extracted. The residues were coarse sieved to remove large stones (>10mm). It was clear that quite a large number of charcoal fragments had failed to float, as is commonly found in the silty, acidic soils in Wales. This is due to silt and mineral impregnation of the charred material. In some cases a second floatation of the dry residues is effective, but delicate charred remains can be damaged by re-wetting. Because only two relatively small samples were involved, it was considered cost effective to sort the >3mm fraction of residue by eye and then rapidly scan the remaining fine residue under the microscope. This process brought about the recovery of frequent large charcoal fragments as well as a few fragments of hazelnut shell from each of the two samples, so it was considered to be worthwhile. No other environmental remains or artefacts were recovered from the flots or residues. It is likely that the soils were too acidic for bone or mollusc preservation.

Results

The results of the analysis are presented in Table 1. Nomenclature follows Stace (2010) with the cereal taxonomy following Zohary and Hopf (2000). Habitat information in the table and text is taken from Stace (2010) and a range of other plant ecology publications including Hill *et al.* (1999).

Both of the flots contained some modern fine rootlets and several uncharred, modern seeds (mostly Chenopodiaceae). Because Chenopodiaceae seeds are black and hardcoated and so are difficult to tell apart from charred seeds, each seed was broken open to determine whether it was charred. Fresh embryos were seen in some seeds and in no cases were charred embryos found. Contamination by these types of seeds is common and this is not problematic unless different phases of occupation overlie each other, making it possible that charred archaeological material could be moved through the soil profile by soil flora and fauna. This was not thought to be the case here.

Silt and possibly mineral impregnation had clearly affected the efficiency of floatation on this site, as seen from the frequent charcoal fragments found in the residues following the first floatation. However, no charred seeds/fruits were recovered from the residues following microscopic sorting apart from hazelnut shell fragments. The failure of hazelnut shell fragments to float using standard methods of processing is known to be a problem as it is a much denser type of material. For this reason it is always necessary to sort residues for the recovery of nutshell. Charred plant remains were surprisingly frequent in both samples, particularly in the case of sample 14 from the small pit/scoop 1004 where only 3 litres of soil were processed. The concentrations were 2.6 charred fragments per litre for ditch fill 1012 and 23 for 1004. This is relatively high for rural samples, although of course occasionally rich samples are found in rural features such as corn-dryers.

Secondary fill 1012 of enclosure ditch 1002

This sample came from a secondary fill towards the bottom of the ditch from the eastern side of the enclosure. The principal cereals represented were oats (*Avena* sp.) and hulled six-row barley (*Hordeum vulgare*), though a single grain of free-threshing wheat (*Triticum aestivum/turgidum*) was also present.

Table 1: Charred plant remains from Glanfred enclosure

sample	8	14
context	1012	1005
feature	enclosure ditch 1002	pit 1004
soil sample volume (litres)	35	3
frags per litre of soil processed	2.6	23
ratio of grain:chaff:weed seeds	18:01:01	01:01:02
total flot volume (ml)	320	120
charcoal (>3mm) volume (ml)	100	50
Cereal grains		
Triticum aestivum/turgidum (free-threshing wheat grain)	1	–
Hordeum vulgare L. (hulled six-row barley, twisted lateral grain)	4	–
Hordeum sp. (hulled barley, straight grain)	4	–
Hordeum sp. (poorly preserved barley grain)	10	–
Avena sp. (cultivated/wild oat grain)	24*	2
Avena sp./*Bromus* sp./Poaceae (oat/brome/large grass caryopsis)	7	13
Indeterminate cereal grain	22	–
Cereal chaff		
Hordeum vulgare L. (hulled six-row barley rachis fragment)	4	–
Avena sp. (cultivated/wild oat awn fragment))	+++	+
cereal-sized culm nodes	–	10
cereal-sized culm bases	–	6
Weeds and wild plants		
cf. *Prunus spinosa* L. (sloe stone fragment) HSW	1	–
Rubus sect. *Glandulosus* (bramble seed) DHSW	1	–
Corylus avellana L. (hazelnut shell fragments) HSW	8	7
Polygonum aviculare L. (knotgrass achene) CD	–	2
Rumex sp. (dock achene) CDG	1	20
Rumex sp. (dock achene with remnants of fruit) CDG	5	–
Rumex acetosella L. (sheep's sorrel achene) EoGCas	–	cf. 1
Stellaria media (L.) Vill. (common chickweed seed) Cno	1	–
Spergula arvensis L. (corn spurrey seed) Cas	–	1
Anthemis/Achillea/Matricaria sp. (chamomile/ yarrow/mayweed achene embryo) CDG	–	1
Sambucus nigra L. (elder seed) DHSW	–	1
Poaceae (small seeded grass caryopsis) CDG	2	–
Total	90	69

Key: * = radiocarbon dated; + = occasional; +++ = frequent
Habitats: C = cultivated; D = disturbed; E = heath; G = grassland; H = hedgerow; S = scrub; W = woods
Soils: a = acidic soils; o = open; n = nutrient-rich; s = sandy

Apart from oat awn fragments no oat chaff was recovered to determine whether cultivated oats (*Avena sativa* or *strigosa*), or wild oat (*A. fatua*) were present, but since oats were the dominant cereal in the ditch fill (at least 24 oats compared with 19 barley grains) cultivation of this cereal as a crop is most likely. Other possible gathered foods represented were possible sloe (cf. *Prunus spinosa*), bramble (*Rubus* sect. *Glandulosus*) and hazelnuts (*Corylus avellana*). A few common weeds of cultivation (dock (*Rumex* sp.), common chickweed (*Stellaria media*) and small-seeded grasses (Poaceae) were the only other charred plant remains present.

The overall character of the assemblage is a deposit of charred domestic waste containing food debris, perhaps having been cleared out from a hearth or oven. The presence of a few barley rachis fragments and hazelnut shell fragments suggests that in addition to food remains accidentally dropped into a fire during food preparation, some waste products had probably been deliberately thrown into the fire or used as tinder.

The ratio of cereal grains to chaff fragments to weed seeds was 18:1:1, demonstrating that most of the remains were food items. Fruit and nut remains are not included in this ratio, so the ten fragments of sloe, bramble and hazelnut shell fragments increase the bias towards burnt food remains.

The combination of primarily oats and barley (possibly the mixed crop, 'dredge') with a single grain of free-threshing wheat is characteristic of early and later medieval deposits rather than prehistoric ones, particularly as no evidence of hulled wheats was recovered. For this reason three oat grains of the form typically found in cultivated oat, *Avena sativa* (long, plump grains, with visible hairs and slightly wider towards the base) were submitted for radiocarbon dating. The date returned was cal. AD 420–560 (UBA-30455; 1563±32 BP) at 95% confidence, demonstrating that the assemblage was deposited in the early post-Roman period.

Fill 1005 of pit 1004

This sample from small pit 1004 produced an assemblage that was richer in waste materials and so may represent charred animal fodder or bedding rather than human food waste. The only cereal represented was oat (*Avena* sp.; two grains), although some of the poorer, eroded grains could only be identified to oat/brome/large-seeded grass (*Avena/Bromus/*Poaceae sp.). Because the oat species could not be confirmed due to the absence of chaff it is possible that the grains represent wild oats, but perhaps less likely due to the fact that they were concentrated in this feature. The other components of the assemblage consisted of relatively frequent straw-sized nodes and straw-sized culm bases, in addition to frequent weed seeds. The ratio of grain to chaff to weed seeds was 1:1:2, demonstrating that the material represented a different type of waste to that in sample 8, predominantly straw (or hay) and weed seeds. Straw is rarely preserved in large quantities by charring, as it is very combustible and usually burns away to fine ash in the presence of oxygen.

The sixteen fragments of straw or a robust grass therefore are probably all that survived from a much larger quantity that was burnt. The weed seeds consisted mainly of dock (*Rumex* sp.; 25 achenes), some of which still retained fragments of the fruit (valves and pedicel). This, and the survival of straw fragments, suggest that delicate material preserved under reducing conditions in a fire had been rapidly buried in the feature or possibly burnt *in situ*. Other, less frequent taxa were knotgrass (*Polygonum aviculare*), grasses (Poaceae), corn spurrey (*Spergula arvensis*) and a small-seeded indeterminate member of the Asteraceae family such as stinking chamomile or yarrow (embryo only preserved). As a whole, the remains may have been derived from burnt hay and oats being used for animal fodder, or the waste from processing oats. Corn spurrey grows as an arable weed on acidic soils and docks are commonly found growing as crop weeds or on waste ground, grasslands and meadows. The presence of 7 hazelnut shell fragments and an elder seed indicate that small amounts of other types of burnt domestic waste were also present.

Discussion of the charred plant remains

The dating of the deposit of oats and barley in the enclosure ditch to the early post-Roman period is of particular interest as the fill was fairly low within the ditch rather than being a later scoop in the top of what was thought to be an Iron Age enclosure ditch. It fits in with the archaeobotanical information in several ways; firstly the earliest confirmed cultivated oats (identifiable to species level due to the presence of floret bases) known to the author came from an Early to Middle Iron Age context at Asheldham Camp (Murphy 1991), though no direct dating was carried out on this material. Oats are sparse and never dominant in the Iron Age so it is generally considered that they were primarily present as crop weeds at this time. Secondly, dredge is typical of the medieval period, particularly in Wales, where it is well-suited to the infertile soils. Hulled wheats were dominant in the Iron Age across the British Isles but none were present in this deposit. In Wales, where oats and barley have been found on Iron Age sites, hulled wheats have also been recorded, for example at the Iron Age/Romano-British farmstead at Bryn Eryr, Anglesey (Caseldine 1990, 75). At this site emmer and spelt were dominant but one late context contained hulled barley and oats with a small amount of free-threshing wheat. This type of assemblage is fairly frequently found in Iron Age and Romano-British deposits in Wales with the occurrence of hulled wheats decreasing through time (Astrid Caseldine pers. comm.). However, the complete absence of hulled wheat remains is not common. It would be interesting to radiocarbon date the late deposit of barley and oats from Bryn Eryr. Thirdly, free-threshing wheat has not been confirmed to have been a crop plant in the British Isles until the Roman period so even a single grain within the assemblage indicated that the deposit was unlikely to be Iron Age in date.

Along the Milford Haven pipeline comparable assemblages were recovered from a Late Iron Age/ Early Romano British site (Site 508). Samples from a ditch produced frequent oats (with cultivated oat confirmed; *Avena sativa*) with barley and just a trace of hulled wheat. A feature cut into the top of the ditch also produced this type of assemblage and was radiocarbon dated to cal. AD 690–900. None of the barley or oat grains radiocarbon dated returned a Late Iron Age/Early Romano-British date from other parts of the site, though an oat (presumably wild oat) was dated to the Bronze Age (Giorgi and Carruthers, forthcoming).

A second trench 8m to the west-southwest of Trench 1 contained an irregular inverted L-shaped spread of dark brown soil with charcoal inclusions. A radiocarbon date obtained from charcoal associated with this deposit was dated to cal. AD 690–890 (1221±37 BP; UBA-24080), at 95% confidence. The date from sample 8 is much earlier than this activity, demonstrating that there was settlement in the area over a number of different periods.

The small posthole 1004 located on the outer side of enclosure ditch 1002 produced only a small amount of crop information to assist in dating the feature. Only two oat grains (*Avena* sp.) were confirmed but it is likely at least some of the thirteen indeterminate elongated grains were also oats. The likelihood, therefore, is that this feature was also post-Roman in date, but this remains uncertain. It is interesting that relatively delicate charred plant material survived in this feature, perhaps indicating *in situ* burning, or the careful deposition of deliberately burnt plant material.

ARCHAEOMETALLURGICAL RESIDUES

By Tim P. Young

Small assemblages of archaeometallurgical residues were recovered from the fills of two shallow features identified in Trench 2: the fill (2003) of the L-shaped feature 2002, and the fill (2005) of feature 2012. Context 2003 produced 4.54kg and context 2005 produced 105g of residues. The assemblage was visually inspected as part of an informal assessment (see full archive report in Young 2016). Following the assessment, two samples were selected for further laboratory analysis. The selected samples were slabbed on a diamond saw and subsamples were crushed for preparation of a whole-sample chemical analysis. Bulk chemical analysis was undertaken using two techniques. The major elements (Si, Al, Fe, Mn, Mg, Ca, Na, K, Ti, and P) were determined by X-Ray Fluorescence using a fused bead on the Wavelength-Dispersive X-Ray Fluorescence (WD-XRF) system in the Department of Geology, Leicester University (this also generated analyses for S, V, Cr, Sr, Zr, Ba, Ni, Cu, Zn, Pb and Hf). Whole-specimen chemical analysis for thirty- six minor and trace elements (Sc, V, Cr, Co, Ni, Cu, Zn, Ga, Rb, Sr, Y, Zr, Nb, Mo, Sn, Cs, Ba, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Hf, Ta, Pb, Th, U) were undertaken using a sample in solution on the ThermoScientific ICAP-Qc quadrupole ICP mass spectrometer (ICP-MS) in the Department of Geology, Leicester University (this also generates lower quality results for Fe, Mn, Ti, P that are used mainly for QA purposes). The raw results of the chemical analyses are presented in full in the archive appendix. Adjustment has assumed all iron was originally present as FeO and all manganese as MnO. The assistance of Dr Tom Knott (XRF) and Dr Tiffany Barry (ICP-MS) is gratefully acknowledged.

Iron smelting macro-residues

The macroscopic smelting residues were divided into several classes (Table 2).

Flow slags with smooth surfaces

These flow slags show upper surfaces with smooth, dark surfaces and a shiny lustre (124 pieces; 1950g). In this, they resemble tapped slags (i.e. slags which had been tapped so that they had flowed out of the furnace before cooling). Flow slags in non-tapping furnaces (i.e. those furnaces in which all the slags cooled within the furnace) may also show free surfaces, so this is not a firm discriminating factor. The smooth flow slags did not show any superficial reddening (which forms in tapped slags because of the superficial oxidation of the slag producing a thin layer of haematite), but this is not always a clear discriminant, because some high-manganese tapped slags also may not show much reddening. These flow slags were mainly either in individual elongate flow lobes/tubes, or in small amalgamations. There were only a few pieces in which the individual prills were more numerous. None of these amounted to a substantial block and they were mostly just a single layer of flow lobes in thickness.

Flow slags with gravelly surfaces

These flow slags showed dull surfaces with abundant fine gravel inclusions (12 pieces; 330g). Some of these were in well-formed flow lobes, but others were in the form of elongate, rod-like, bodies. Slag rods are probably most commonly formed by slag entering holes pushed below the furnace charge by a tool (typically an iron rod). Such rods would be more likely to be formed in a slag-tapping furnace, during management of the tapping process. They could theoretically be generated during use of a rod to clear the hot slag from a non-tapping furnace too, but this is much less likely.

Hearth/furnace lining

The assemblage included 19 fragments (254g of furnace/hearth lining from 2003 and 3 pieces (10g) from 2005. The fragments were generally small and undiagnostic. No pieces showed evidence for the air supply.

Smithing hearth cake/furnace bottom

The assemblage contained a single large block (380g) that appears to be part of the margin of a plano-convex slag cake. The piece shows signs of having been deformed when hot and is difficult to orientate with certainty. It shows a small area of what is probably a smooth top, adjacent to an inclined, gravelly

Table 2. Summary catalogue of metallurgial residues from Glanfred enclosure

Context	Weight (g)	No.	Notes
2003	1950	124	Flow slag with smooth surfaces with bright lustre; mostly fragments of isolated prills, but also includes amalgamated flows with multiple narrow prills, some forming in a V-shaped trough – and thus resembling tap slags, except having dark surfaces and only one prill layer in thickness; some pieces show some gravel embedded in base
	330	12	Flow slags with much embedded gravel and dull, rough, surfaces; many of these prills are rod-like
	254	19	Vitrified hearth/furnace lining
	380	1	Fragment containing curved side of a slag bowl; difficult to orientate, probably hot-deformed; shows irregular gravelly basal contact and a small area of probable upper surface that is smooth; might be either a basal smelting slag or a deformed smithing hearth cake
	54	1	Small fragment of burr
	70	1	Dimpled tool mould, fractured from a larger slag cake
	100	1	Dense fragment of either burr or smithing hearth cake
	664	20	Broken slag fragments with some indications of flow, but not apparently flow slags
	252	6	Amorphous fragments/lumps of slag with rusty surfaces, probably contained metallic iron
	18	3	Very thin rusty sheets of iron oxide; probably contractionary, but just possibly after iron metal
	468	40	Indeterminate small slag fragments
	84	7	Natural stone fragments
2005	95	6	Blebby porous and slightly lobate iron slag; some almost of sufficiently low-density to be termed fuel ash slag
	10	3	Vitrified hearth/furnace lining

side. Two other dense slag fragments (54g and 100g) were probably burr fragments (the zone of interaction between the hot slag and hearth/furnace wall just below the air inlet). One of these (a 100g fragment) might alternatively be a fragment of a smithing hearth cake.

Indeterminate slag

In addition to the above pieces (all from 2003 except where indicated), there were (from 2003) 20 pieces (664g) of slag fragments showing some signs of flow. These were all indeterminate in origin, but might potentially include fragments of flow slag accumulations (but lacking characteristic surfaces) and fragments of furnace bottoms. There were also 6 pieces or lumps of slag that were particularly 'rusty', suggesting that they might have contained metallic iron. Again, an origin as furnace slags (or furnace bottom) might be likely, but not evidenced by the morphology of the pieces. There were three fragments (18g) of thin, rusty sheet-like material, possibly fragments of ferruginous weathering crusts, but an origin from the weathering of a thin iron sheet is also possible. Finally there were 40 pieces (468g) of iron slag fragments there were entirely indeterminate. Context 2005 produced 6 pieces of indeterminate slag, all low density, some in moderately large flow lobes and some possibly brecciated and perhaps related to the 'sinter' facies reported from the base of some non-tapping furnaces (e.g. Young 2008). These slags were mostly highly vesicular, pale below a dark surface, and coated in ashy deposits.

Iron smithing micro-residues

As no samples were available for the investigation of microresidues, all sediment removed during the washing of the macroscopic samples was collected and wet-sieved at 63µm, before magnetic separation. For the material from context 2003, the washings were rich, not only in slag debris, but in flake hammerscale (Young 2011). This hammerscale was in small fragments of thin flakes. The washings from context 2005 did not produce any hammerscale, despite being rich in slag debris and charcoal. These washings were extremely rich in very fine grained black material, probably secondary manganese oxides.

Chemical composition of residues

Bulk major element composition

The adjusted major elemental compositions of the analysed residues are provided in the archive report (Young 2016, tables 2 and 3). The major element composition of these two samples may conveniently be considered within the system SiO_2-Al_2O_3-FeO (Schairer and Yagi 1952, fig. 6) because these three oxides together comprise a very high proportion of the total. The low concentrations of all the other 'major' elements is noteworthy. The analyses both plot close to the fayalite-hercynite divide and these analyses are remarkably similar when recast on an iron-free basis.

Trace elements

The contents of most trace elements in the slags are relatively low. The rare earth elements (REE) show almost flat upper crust-normalised profiles (normalisation after Taylor and McLennan 1981).

Interpretation

The morphology of the slags suggests either that they formed in the basal pit/chamber of a non-tapping furnace, or that some of the slags were tapped in low volumes. The presence of gravel within some of the slags is in accordance with the very loose substrate into which the features were dug (as presumably were the features in which the slags originated).

Context 2003 contained both iron smelting macroresidues and smithing microresidues (hammerscale). Such deposits may develop on workshop floors, as well as accumulate in adjacent negative features. Many of the contexts at Cefn Graianog (Young 2015) contained mixed assemblages of this type. Context 2005, although only having a tiny amount of matrix available for examination, did not contain hammerscale. The slags from this context were indeterminate, but with a higher probability of presenting material *in situ* in metallurgical feature because of the ashy nature of both matrix and slag; the lack of hammerscale would argue for any such primary feature being from smelting (as would, circumstantially, the elongate nature of the feature, which is of an appropriate size for the highly truncated remains of an early slag tapping furnace).

The limited amount of data available for the assemblage means that a full interpretation of the chemical composition in terms of furnace mass balance is not possible. Nonetheless, the data may be compared with analyses of flow slags/tapped slags from other sites.

Chemical analytical data are available for several sites in Wales that have produced analyses interpreted as indicating the smelting of bog iron ores. These sites include Brownslade (Young 2010a), South Hook (Young 2010b), Steynton (ore only) (Young 2014) and Johnston in Pembrokeshire (Young 2014), Llandefaeolog in Powys (Young 2014) and Llwyn Du in Gwynedd (Charlton *et al.* 2010). As well as being from geographically distinct areas, these sites also lie on differing bedrock geology (although it must be borne in mind that the ore did not necessarily derive from a locality with the same geology): *Precambrian* – Johnston; *Cambrian-Ordovician* – Llwyn Du; *Silurian* – Glanfred; *Silurian-Devonian* ('Old Red Sandstone') – South Hook, Steynton, Landefalelog; *Carboniferous* – Brownslade.

The data indicate that the medieval smelting of bog iron ores developed on Cambrian-Ordovician bedrock in Gwynedd was markedly different from that of the earlier smelting of ores from areas of Precambrian and Old Red Sandstone geology in central and west Wales. The major change in technology over this period complicates the interpretation (as does the different analytical technique that was applied to the Llwyn Du material, potentially providing less accurate values). However, the geological setting is interpreted as being one of the major controls in the differences. The geological setting would influence both the furnace construction materials and the nature of the ore. Of the major elements, only manganese and phosphorus are likely to be dominantly influenced by the ore, where the other major elements are likely to be most influenced most by the composition of the furnace.

The Glanfred slags plot as marginal to the Llwyn Du slags on plots showing comparative analyses (Young 2016, fig. 3), including those featuring manganese and phosphorus. They are of higher phosphorus content than the majority of the Llwyn Du ores but contain significantly less phosphorus, than any of the more southern examples. The manganese content of the Glanfred slags is somewhat low compared with the typical content observed in the examples, but within their range of compositions. The Glanfred slags are also intermediate between the Llwyn Du and South Hook slags in terms of the Mn:Ba ratio, but on this metric the Llandefaelog samples are differentiated from the Pembrokeshire samples, with much lower MnO/Ba driven by elevated levels of barium.

Comparison of the REE profiles is complicated by the poorly understood relative influence of the host sediment and the iron mineralisation on the REE. It currently seems likely that the REE profile is more strongly influenced by the host sediment. The profile for the Glanfred slags is very flat and low (with just a very slight downwards inclination of the LREE), probably reflecting the influence of a fine-grained (mudrock; shale/slate) host sediment on the ore (and probably also on the furnace ceramic). A similar flat, low profile, was observed for samples from the Llandefaelog slags (they also show an apparent positive europium anomaly, but this may be a poorly corrected spectral overlap with BaO+. In contrast the data from Pembrokeshire area show profiles with variable elevation of the MREE, reduced LREE and a negative cerium anomaly, reflecting a more complex host sediment, probably with a strong influence from the volcanic rocks of the Skomer Volcanic Group, and possibly also the influence of a coarser-grained host sediment.

Summary of metallurgical residues

The analysis presented above suggests that the samples are bloomery smelting slags from the smelting of a bog iron ore, with a chemical composition quite similar to that of smelting slags (from Llwyn Du) from the smelting of the bog iron ores developed over mudrock bedrock on the eastern side of the Harlech Dome. There are, however, far too few examples of comparative material to produce any real predictive modelling of the characteristics of the source.

The presumed source for the Llwyn Du smelting operation are the upland blanket bogs of the Crawcwellt area (Crew 2009). It is likely that the ores smelted at Glanfred were also from an upland bog. One surviving area of peat lies approximately 1 kilometre west of Glanfred and there were probably other areas of impeded drainage before farmland improvement. It is also possible that there were iron ores associated with the margins of Cors Fochno which lies about 3 kilometres to the north (Fig. 1). Although there are no descriptions of iron enrichment in the lowland raised bogs of Wales known to the author, raised bogs do appear, however, to have provided a major resource of iron ore in early times in Ireland. The resource need not have even been in a true bog; deposits that may be termed bog iron ores also form where groundwater leaks (and oxidises) from an area with impeded drainage, in which reducing conditions have allowed the accumulation of iron in the groundwater from weathering of the bedrock.

The technology of the iron smelting is still uncertain. Clarification of this would be highly desirable as the early medieval period shows a complex variation of approaches to iron smelting with both time and geographical location.

DISCUSSION

The geophysical survey confirmed the location and dimensions of the outer eastern enclosing ditch that was not as clearly defined in the 1995 aerial photograph. Three possible breaks in the ditch also hint at possible entrances with two located on the bivallate south-eastern side and another through the northern univallate edge of the enclosure. Two concentrations of anomalies appear to be located on the northern edge and south-eastern side of the enclosure. Some of these anomalies may have been amongst the parch-marks that appear on the 1995 aerial photograph taken by the Royal Commission (Fig. 2).

The excavation targeted a section of the inner ditch and an anomaly located on the south-eastern side of the interior of the main enclosure. The interior ditch was found to be 1.5m deep and 4m wide although the inner western bank, now ploughed out, would have made its overall height deeper. Fifth- to sixth-century deposits located towards the base of the ditch included charred domestic food waste, comprising charred oats, barley and hazelnuts. It was noted that the deposit did not contain hulled wheat, common in Iron Age and Roman Britain, but did contain one grain of free-threshing wheat, more common in the early medieval period. Burnt teeth fragments of cattle were discovered in the edge slump deposits on both sides of the ditch. The teeth fragments are from the extremities rather than the prime meat bones of the cattle and probably represent burnt waste material thrown in the ditch or on the bank. The presence of cattle conforms to the type of livestock known to have been present during this period in such sites as Dinas Powys (Alcock 1987, 33; Gilchrist 1988), although neither sheep nor pig remains were present in the very small ditch sample at Glanfred. A number of postholes were located on the eastern side of the ditch although the trench was not large enough to discern a structural pattern. The fill of one of these postholes contained a mixed fill of burnt straw, oats, hazel nut shells and weed seeds, which could be interpreted as burnt animal fodder.

The anomaly located eight metres to the west of the inner ditch was not a pit, as anticipated, but mixed iron smelting waste with some hammerscale, possibly indicates a workshop floor. Adjacent to this, context 2005 may have been the highly degraded remains of a furnace. Charcoal sampled from deposit 2003 containing the slag is dated to between the late seventh and ninth century AD. Young's chemical analysis of the iron slag from Glanfred suggests that a local bog was the source of the smelting ore. Evidence of iron smelting from enclosures in this area is rare and consists of finds of undated slag from Pen Dinas, Odyn Fach, Pen Dinas Elerch and Hen Gaer (Driver 2013, 156). The discovery of early medieval iron slag from this area is currently unique. North Ceredigion does, however, have a long history of lead exploitation, beginning sometime during the Early Bronze Age (Timberlake 2003). A prehistoric and Roman lead smelting site and eleventh- to twelfth-century timber trackway at Llangynfelyn is 5.6 kilometres to the north-northeast of Glanfred, whilst the Roman fortlet at Erglodd is 3.3 kilometres to the north-east (Page *et al.* 2012; Poucher 2009). Broadly similar dating evidence to the date from the Glanfred ditch (cal. AD 420–560 at 95% confidence) also comes from a single radiocarbon date from the burials at Plas Gogerddan, under 4 kilometres to the south, where a burial was dated to cal. AD 345–604 at 95% confidence (Murphy 1992).[15]

The unexpected discovery of a post-Roman date for this site is in tune with Dark's (1994, 5) statement about the 'impossibility of pre-excavation site-recognition'. The notion of a regional predictive model for early medieval settlement sites has been discussed by Seaman (2010) and the variability of landscape, social and environmental factors appear to favour local rather than external considerations in terms of settlement choice (Seaman 2010, 12) Elsewhere, Seaman (2016) also highlights the heterogeneous range of early medieval sites in Wales in terms of locations, scale and morphology. Confusingly, in the Leri Basin even morphologically similar, triangular enclosures nearby at Caer Lletty-llwyd and Caer Allt-goch, may be built this way for entirely different topographic reasons to that at Glanfred (Driver 2013, 52).

It is quite possible that enclosed sites previously identified as Iron Age are either early medieval in origin or have phases of early medieval reoccupation (Edwards *et al.* 2016). With the exception of imported fifth- to seventh-century imported wares, the aceramic nature of the early medieval period presents difficulties in site identification and it is often only after radiocarbon dating that activity of this period is indicated. It remains a possibility that Glanfred is a reoccupied Iron Age enclosure and further dating evidence from ditch sections would be needed to clarify this point.

Any firm conclusions regarding the exact type and status of the site lacks supporting artefactual evidence. The recurrence of the Welsh place-name element to *llys* ('court') in this section of the Leri valley suggests, however, that it may have been associated with a commotal administrative centre (Fig. 1). Henllys[17] lies 0.6 kilometres to the north-west, Brynllys[18] 1.6 kilometres to the north-west, and Llysgoed[19] 1.4 kilometres to the west (Poucher 2009, 116). The location of Henllys was interpreted by Lloyd (1931, 202; 1937, 15) and subsequently Dodgshon (1994, 350) as the commotal *llys* or early medieval administrative focus of Genau'r Glyn. The dating evidence from this excavation, together with proximity of Glanfred to the putative caput at Henllys, suggests that they are possibly linked. It may be that the enclosure was reused or constructed in the immediate late or post-Roman period and continued to be in active use during the establishment of the undefended Henllys, across the river Leri. The location of St Michael's Church, Llandre and the presence of a twelfth-century motte and bailey known as Castell Gwallter may mirror the pattern seen in Gwynedd, where earthwork castles are interpreted as often indicators of a *maerdref* or bond settlement location (Longley 1997, 43). Intriguingly, the local tradition of a church dedicated to St Ffraid (Brigid) close to St Mihangel (Michael) is characteristic of similar pairings in other areas in Wales (Jones 2007, 196). Parishes with dedications to St Mihangel are typically upland, whilst St Brigid associations are often linked with water meadows, indicating 'complementary pastures' (Jones 2007, 196). The presence of an association in this area with St Brigid (Ffraid) also resonates with legendary references in a poem by Iorwerth Fynglwyd (fl. *c*. 1480–1527) to the Dyfi estuary — possibly near Ynys y Capel — as the landing place of St Brigid (Jones and Rowlands 1975, 95; Mehan 2012, 54–5). The name, in association with the dates from the Glanfred enclosure, warrants further exploration.

The evidence at present suggests an enclosure used for domestic and agricultural activity during the fifth to sixth centuries and industrial activity during the seventh to ninth centuries. Whether this occupation is continuous or punctuated cannot with the current body of evidence be stated with any degree of certainty, although the proximity of the place-names discussed above certainly indicates close association with an early medieval *llys* complex. Although the banks of the enclosure are no longer visible there is considerable scope for further work in the ditches, putative entrance-ways and further anomalies as identified by the geophysical survey (see above). Surviving posthole patterns have the potential to yield rare evidence of possible early medieval buildings, domestic or otherwise. Further work at this enigmatic site has the potential to provide an insight into this little understood period in Wales.

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NOTES

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7. Dyfed Archaeological Trust (DAT), Historic Environment Record (HER), Primary Record Number (PRN) 241. The place-name has also been documented as Glan-Ffraid, Glanfraid, Glanfraed and Glan-ffrwd.
8. Online catalogue of Cambridge Air Photos, University of Cambridge, available at <https://www.cambridgeairphotos.com>, photograph numbers BUB50, BUB51, BUB52.
9. Geological Survey, ‘Geology of Britain viewer’, available at <http://mapapps.bgs.ac.uk/geologyofbritain/home.html>.
10. DAT HER, PRN 2009.
11. DAT HER, PRN 2013.
12. DAT HER, PRN 2008.
13. Calibrated radiocarbon dates have been obtained using Calib Rev.7.0.0, with results rounded to the nearest 10 years.

14. SF3. Dr Lynn Bevan has provided the following description of the fragment: A much corroded iron knife blade (surviving length 75mm, maximum width 14mm, thickness 3–5mm. The blade was small in size and broken at the tang. Very little impression of the original size or style of the blade could be determined due to the presence of extensive corrosion products covering the entire surface of the artefact which had started to crumble into fragments. Therefore, while the object is certainly part of a knife it's dating cannot be determined.
15. SF 2. Dr Peter Webster has provided the following description of the sherd: Small sherd (16 × 15 × 5mm) in off-white with a thick grey core. The filler includes small flecks of mica and mixed grey and black grits. A black streak on the inside face is probably iron corrosion. The quantity and size of the filler makes it unlikely that this is a Roman or a post-medieval sherd. A medieval source seems most likely by a process of elimination.
16. 1580±60 BP (CAR-1045), calibrated using OxCal 4.3.
17. DAT HER, PRN 6178.
18. DAT HER, PRN 6179.
19. DAT HER, PRN 12444.

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