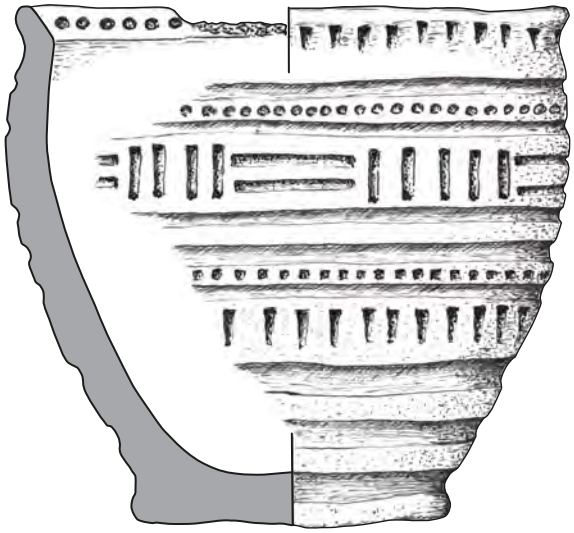
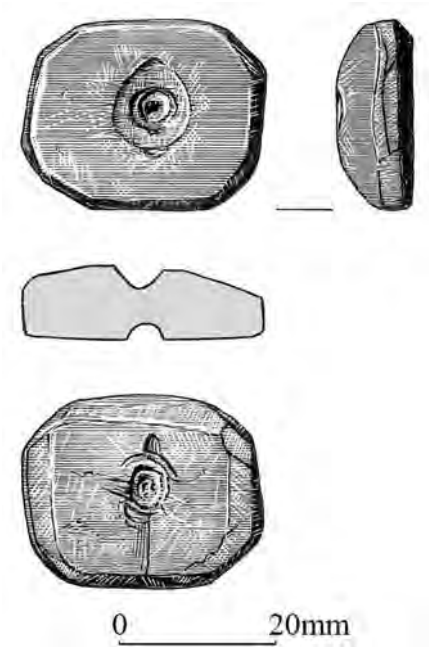
1512

Parc Cybi, Holyhead

Final Report on Excavations

Volume 3: Specialist Reports





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Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

Parc Cybi, Holyhead

Final Report on Excavations

Volume 3: Specialist Reports

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Cover images: Food Vessel from multiple cist barrow and unfinished cannel coal bead from near the Early Neolithic building

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PARC CYBI
VOLUME 3
SPECIALIST REPORTS

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Part I: Prehistoric Ceramics

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Part I.1.1. Prehistoric Pottery from Parc Cybi, Holyhead

Frances Lynch

See volume 2 figure 131 for general location of pottery
See part I.1.5 below for full catalogue

Early Neolithic Pottery

Rectangular Timber Building in Area H

Figs I.1.1.1 to I.1.1.3

About 1100 sherds were recovered from pits, postholes and hearths associated with a rectangular structure (almost certainly a tri-partite house) at the southern end of the site and directly west of the well-known megalithic tomb, Trefignath, which, when excavated in the 1970s, had revealed a few sherds and some slight evidence of settlement under its cairn (Smith and Lynch 1987). All these new finds, with one minor exception (1770)[1] are consistent with Early Neolithic 'Irish Sea Ware': undecorated fines wares normally vesicular without visible tempering, though very well crushed stone grit is occasionally present; both shouldered and unshouldered bowls being the normal form with a variety of light, out-turned rims.

Condition of the sherds

The vast majority of the finds are small sherds, fragments and crumbs, usually with abraded edges; the surfaces are often worn and in some cases badly eroded. Except in the cases of Hearth B and Postholes 50174 and 50166, only very small quantities of any one pot is present and most contexts contain a mixture of fabrics suggesting that several disparate pots are represented. Very few ancient joins are possible, though some now-shattered segments must have been quite large when they were incorporated into post-packing or fell into the hearth.

Despite the size of some segments such as 1700, 1422 or 1397 (Figs I.1.1.2 and 3) there is no suggestion that any pieces were deliberately placed into pits or postholes. The over-whelming impression is that this material is domestic debris accidentally incorporated into features. The same conclusion was reached in studying the pottery from the postholes of the Neolithic buildings at Llandygai 1 and 2 (Lynch and Musson 2001 and Lynch in Kenney 2008).

Contexts of the pottery

The pottery comes from a number of postholes and gullies which are judged to have supported the structure of the building, and from several large pits and hollows without obvious packing stones, some of which are on the lines of the putative walls and might be damaged postholes; others are within the enclosed space and others outside it, but close by. In the south-eastern corner of the building a 'floor deposit' was recognised which contained several sherds in a similar condition to those within the features.

There is only one instance of sherds from the same pot (1545/1559 (Figs I.1.1.3)) being found in two different features. These, the beam slot 50166 and a posthole 50174 cut into it, are inter-cut and material may have been displaced between them. Pieces of the same or very similar pots frequently come from separate find groups within the same feature suggesting a certain amount of movement (perhaps by mice) around the posts and pits.

Four hearths or fire pits were identified within the building; two (A (cut 50044) and D (cut 50145)) were within the western compartment but D appears to cut away an aisle posthole and part of an internal division and it is difficult to see how it would have been used when the building was intact. Hearth B (cut 50116) overlay, and was probably a recut of Hearth C (cut 50133) in the eastern compartment and these also cut structural elements at the eastern end of the building. The hearths, therefore, seem stratigraphically to post-date the use and demolition of the building. The hearths contained more sherds (Hearth A 24; Hearth D 76; Hearth C 96 and Hearth B 81) and some of them larger, than the other individual features but the mix of fabrics and shapes is similar. The difference is perhaps due to the probably less disturbed nature of the context into which they fell.

[1] The numbers without prefix or identifier are Find Numbers

Where there are stratigraphic relationships it is not possible to claim any significant difference in the nature of the pottery. The mix of fabrics and pot shapes is similar within all contexts.

Fabric Variation

Six variations of colour, density, hardness and preferred thickness can be recognised amongst the vesicular fabrics, notable for the angular voids created by the loss of an original tempering. Three varieties of gritted fabrics are present, all the grits or clasts being very minutely crushed. The gritted fabrics are all relatively rare in the collection.

Since so many of the sherds are worn and abraded it is difficult to say much about surface treatment. However two exceptional pieces should be mentioned. Find 1397 (Figs I.1.1.2), a large segment of a weakly shouldered bowl, shows a hint of rippling on the well smoothed out-turned rim. Such rippling has been observed on several Irish bowls, but it rare in Wales. Find 1700 (Figs I.1.1.3), a gently curved section perhaps from another weakly shouldered bowl, is unusually thick and has an exceptionally finely polished surface. Find 1397 was from a small pit or posthole and 1700 from animal disturbance, which does not explain why their surfaces were better protected than sherds from other features, but they could suggest that the quality of finish in other sherds might have been higher than it now appears. Generally the surfaces seem to have been fairly carefully smoothed, especially around the rim, and show signs of grass wiping in some cases.

The definitions below are the result of quick, macroscopic identification prior to selection of samples for full petrographic analysis. In fact all, both vesicular (V) and gritted (G), have been classified in the full analysis as Group 1, demonstrating that these variations reflect the history of a particular pot, not the basic manufacturing tradition of the community (Williams and Jenkins in Kenney 2008a and this volume Part I.2.1).

V 1 : hard dark vesicular fabric 6-10mm thick with well smoothed surfaces often grass-wiped (where surviving).
V 2 : very hard dark vesicular 5-7mm thick, sometimes with a paler outer surface.
V 3 : pink-beige vesicular with grey core, softer than V1 and 2 and generally thicker (8-10mm)
V 4 : brown/ grey vesicular with complex voids, normally 8-10mm thick.
V 5 : red outer/black inner surfaced vesicular = washed material from residues, probably same as V1 or V2.
V 6 : a soft yellow/beige vesicular (rare) (Not analysed)

G 1 : thin, compact dark fabric with some minutely crushed stone grit, sometimes only recognisable from an abrasive surface.
G 2 : a very hard, dark fabric with angular stone grit, more plentiful and harder than G1
G 3 : a hard yellowish fabric with quite a lot of stone grits; surfaces survive badly (rare). (Not analysed)

Group 1 in the analyses made by Dr David Jenkins and Dr John Llywelyn Williams over many years in most of the Early Neolithic assemblages from North Wales, is characterised as a 'clast-void' fabric described archaeologically as vesicular or 'corky'. The added tempering was crushed shell or vein calcite (and occasionally biogenic and organic material) which has largely burnt and subsequently leached out, leaving characteristic rhomboid voids.

This easily recognised fabric is remarkably uniform and widespread within the Early Neolithic of North Wales (and to a lesser extent southern Wales and Ireland) but it is a shared tradition of manufacture, rather than a matter of trade. In the case of the Parc Cybi and Trefignath pots local manufacture within Ynys Gybi can be demonstrated by occasional rock traces of Rhoscolyn serpentine and the use of a sandy clay with rounded quartz grains (Williams and Jenkins this volume Part I.2.1) In fact all the pottery, of Early, Middle and Late Neolithic and also Early Bronze Age date is very likely locally made.

Radiocarbon dates

Radio carbon dates were obtained for several contexts within the building in Area H and the relict soil in Area E. The building is dated between probably *3710–3665 cal BC* (*68% probability*) and *3645–3625 cal BC* (*68% probability*). Two dates from Area E (3710–3640 cal BC (SUERC-81347) and 3780–3650 cal BC (SUERC-81348) show that some, probably most, of the activity here could have been contemporary with the building, though dates also suggested activity of other periods. Occupation at both sites therefore probably occurred between 3,700 and 3,600 cal BC. This range is compatible with other houses in the region (Kenney 2008) and with other dates for this type of pottery.

Pot shape variation
All the pots are general purpose bowls in various sizes ranging from 120mm to 330mm in diameter. There are two main shapes: a shouldered bowl, normally with quite an open profile (e.g. 1394 (Fig I.1.1.1) but 1545/1559 (Fig I.1.1.3) is slightly closed, with a rim diameter less than the shoulder; and an unshouldered form, sometimes slightly bulbous (1420 (Fig I.1.1.3)) but more often conspicuously straight-sided (1454, 1387 and 1196 (Fig I.1.1.1)). There are some 12 shouldered bowls and 9 unshouldered ones distributed fairly evenly between pits, postholes and hearths. Two bowls with everted rims (1422 and 1665 (Fig I.1.1.2)) should perhaps be described as 'open bowls' since their curvature could not be called a shoulder in any true sense.

In fact few shoulders on the reconstructable pots are sharply defined. There are several sherds which suggest a concave neck but obvious shoulder sherds are rare, all of which suggests that the forms here have weak shoulders (Fig I.1.1.2), a point which was noted in the much smaller assemblage from Trefignath and is a typological distinction which has been used in the past (Lynch in Lynch and Smith 1987, 119-120) to suggest a slightly later date within the Early Neolithic. With many more radiocarbon dates available and larger assemblages emerging, such distinctions are now judged less significant. Some concave but straight necks, such as 1394, 1454.8 (Fig I.1.1.1) and 1892.2 from Area M (Fig I.1.1.5), may belong to globular amphorae-like jars such as those from Borras and Clynnog – a shape which seldom survives intact (CPAT unpublished and Roberts 2007).

Whereas shoulders are rare in this large assemblage, rims are quite common and show a considerable variety. It should also be noted that there is some variety around the circuit of the individual pot in some cases (e.g. 1387/1380/ 3078 (Fig I.1.1.1)). Only the very worn 4098/2045 (Fig I.1.1.1) is a truly pointed rim but 1394, 1422 and 1721 (Figs I.1.1.1 and 2) are classic simple everted rims, as is 1545/1559 (Fig I.1.1.3) but it is more clumsily formed. The majority of rims are more developed, hooked, rolled or pinched out, and several have been constructed by adding clay strips to create a flat-topped overhanging rim. These added coils have often separated (1189, 1586, 1544 etc (Fig I.1.1.3)). The wide flat rim on 1550/1625 (Fig I.1.1.3) (definitely from the same red pot and from the same feature) and the outward sloping hooked rim on 1664 (Fig I.1.1.2) are both unusual forms in the Welsh Early Neolithic and it is regrettable that nothing remains of the body of these pots. The outward sloping rim on 1454.8 (Fig I.1.1.1) is probably just a more extreme version of the pinched out rim seen on 1454.7 (Fig I.1.1.1). The makers of straight-sided bowls seem to have a slight preference for this kind of projecting rim which may make it easier to pick up a pot which does not have a concave neck.

The only sherd amongst these 1100 which is not obviously Early Neolithic is 1770 (Fig I.1.1.3). It is a hard slightly abrasive fabric with an outward sloping rim and possibly some impressed decoration. Such a rim might belong to a Peterborough (Mortlake) pot. It comes from a feature (50258) near the line of the northern wall of the building that might be a distrubed posthole but could even be a later disturbance.

Area E (Fig I.1.1.4)
Area E lies some 300m to the west of H, across a shallow valley. Some 550 sherds were found within an area of relict soil (Contexts 31025, 31001, 31024, 31110, 31123, 31201, 31374, 31527, 31524, and 31557) preserved in a hollow in the glacial gravels. No structural features were recognised in association with this soil but some post and stake holes were found cutting it. Some of these contained Beaker pottery. There were some pits which may be contemporary with the occupation; at least one, Pit 31595 (context 31596) contained a lot of sherds, probably from 7 different pots (5209, 5371, 5386, 5423), but only small quantities of each (Fig I.1.1.4).

Context 31025 Relict Soil
This is the major context for this area with 275 pottery find groups but there are only 132 sherds larger than 25x25mm in area, as against more than 396 scraps, fragments or crumbs, a ratio of 1:3 indicating that the material in this soil has been trampled, though not necessarily moved very far since some groups of finds are likely to belong to the same pot, though there are few joins on ancient breaks. The material from Context 31596, a pit containing 54 pieces of pot representing perhaps 7 vessels contained 16 sherds over 25x25mm and 33 scraps etc, a ratio of 1:2. Most edges were quite abraded, unlike sherds from the postholes in Area H. It is notable that, unlike Area H, none of the vessels can be reconstructed even on paper. Some find groups are noted as coming from the 'top' or 'bottom' of this soil layer. The range of shapes and fabrics from these sub-contexts does not suggest any significant variation between the two.

Fabric Variation
As in Area H there are variations in colour, density, hardness and preferred thickness in vesicular fabrics and there are broadly similar fabrics in which very well crushed stone grit can be seen. The only significant difference in the range of material between H and E is the presence in E of a poorly fired, red/black 'mealy'

fabric (Fabric 0) which is quite unlike anything in H. It had had a smooth matt surface which survives occasionally over the rim but has usually become badly eroded on the exterior; all the broken edges have crumbled.

The vesicular fabrics from E have been given separate numbers from those in H but it is unlikely that the differences will prove to be significant. Few sherds from area E were analysed, but they also all belong to Group 1 and the variations noted here are not significant, except for recognition.

V 7 : A hard compact grey vesicular with or without a beige surface (which might be a slip).
V 8 : A softer compact beige/grey vesicular. It varies from 7 mainly in the firing. Both vary in thickness from 05 - 12mm, the majority being 07-10mm thick.
V 9 : A very hard reddish brown vesicular with complex voids (and occasional grits) which tends to laminate or split vertically. It is normally 05-08mm thick.
G 4 : yellow soft surface with medium exposed grits on grey core (rare)
G 5 : A hard grey fabric with an abrasive surface and occasional small grits, otherwise similar to V 7 and 8.

In general the material from E is more compact and rather paler than in H where the vesicular wares are looser and more finely finished. Grass wiping, for instance, is not seen in E (though this might be due to the more eroded condition of many surfaces in E). The possibility of the use of an outer slip (pink-beige in colour) is more apparent in E, but would need to be checked by closer examination. Intense black sherds and red surfaces are seen in H, but not in E, except in Fabric 0. This could be a factor of firing (unfortunately Fabric 0 was not analysed)

Fabric 0 is unlike all the others, but it appears intermixed with the more conventional Early Neolithic material and everted pointed rims and concave neck sherds suggest that it was used for normal open shouldered bowls. It is found in the Relict Soils and in some of the pits.

Context 31024 (hollow). 1 sherd associated with a variety of other fabrics.
Context 31025 (main Relict Soil context) 21 sherds and fragments of which 4 are pointed rimsherds. It is associated with other fabrics in 6 find groups (890, 5155, 5221, 5239, 5247, 5257). It occurs 3 times in find groups noted as coming from the top of this soil, but is not found in any noted as deriving from the bottom.
Context 31110 (soil) 4 crumbs
Context 31374 silt below 31025 1 sherd
Context 31557 (soil) 2 crumbs
Pit 31509 1 crumb (only find from pit)
Pit 31595 (pit with 54 sherds) 3 rimsherds and 2 crumbs
Pit 31606 1 crumb
Pit 31609 2 crumbs

Pot shape variation
The shape of the pots can only be judged by the profile of the rims and the presence of concave neck sherds. As in Area H the number of recognisable shoulder sherds is very low and none are sharply defined. Consequently no typological difference can be seen between the two assemblages except that the average thickness of pot walls in E is very slightly greater and the firing temperatures lower.

Later pottery from Area E
The vast majority of the material from Area E is clearly Early Neolithic, but some sherds of Beaker ware were also recovered. Apart from 3 pieces of Beaker in the relict soil (5282, 5359 and 5069), these possibly later finds all came from discrete pits or stakeholes cut through the occupation soil. They are discussed in a later section, as is 952 a reddish upright rim in a fabric unlike any other in Area E. It came from an isolated pit oven, and is probably Middle Bronze Age.

Early Neolithic pottery from Area M (Fig I.1.1.5)
There is remarkably little residual Early Neolithic material from the site as a whole. There is none in Areas I and B3 down the slope from H, nor from the areas close to E. But there is a small concentration of such material in Area M which is some 150m north of E.

There are four contexts there which contained Early Neolithic sherds. In two instances (3049 from posthole 22118 and 4093 from posthole 40092) there is a single eroded sherd. In posthole 22118 it is associated with what look like fragments of Bronze Age pottery and may be judged residual (see Bronze Age pottery

commentary). 1411 from posthole 40088 is a genuine Early Neolithic sherd, in eroded condition, but this posthole also contained 4 pieces of probably the same pot with an Early Neolithic profile but not a typical fabric.

However 1892 from pit 40079 does contain several sherds from four Early Neolithic pots which are quite fresh and join on ancient breaks. They are identical in both shape and fabric to the material from H and E. One rim has a neatly drilled hole below it, drilled after firing, possibly from the inside. The fourth pot is represented by featureless sherds less obviously Early Neolithic but not obviously Bronze Age. There is nothing clearly later than Neolithic in this pit and the Neolithic material must have been quite fresh when it got into the pit.

The Early Neolithic Pottery from Parc Cybi in Context

The most obvious context for comparison is the assemblage from the megalithic tomb of Trefignath (Jenkins 1987 and Smith 1987, 10-33, 73-79) where 30 sherds and 34 crumbs of 8 undecorated pots were found under the cairn and 1 (E with 57 sherds) in the quarry, perhaps contemporary with the building of earlier parts of the tomb. Only E can be reconstructed with any confidence and it is a concave necked bowl with a simple rim and a weak shoulder, made from a Group 1 fabric (Fig I.1.2.1). Several of the others are made from this same vesicular fabric, while 5 others contain visible grit temper which is demonstrably of local origin. Though the quantity of sherds is quite high, they are all small and mostly featureless, a situation similar to that in Area E at Parc Cybi. There were also a large number of struck flakes of flint and chert, but the percentage (10%) of artefacts is small and most of those are points or scrapers.

The bulk of this pottery was judged to derive from domestic activity either pre-dating the tomb building or associated with it. There were no structural remains found which might have been associated with this domestic activity, but the later discovery of the large wooden building in Area H and the wider distribution of Early Neolithic activity in the vicinity (within Parc Cybi), show that burial monuments may lie quite close to the houses of the living; an unsurprising conclusion which it has seldom been possible to verify in the past, because the tombs are eternally present in our landscape – and the wooden houses are not.

This phase at Trefignath had one radiocarbon date of 3980-3690 cal BC (HAR-3932)[2] which suggests a broad contemporaneity to the building. The later phases of tomb use and closure are associated with mid-Neolithic Mortlake or Fengate pots (discussed in a later section) whose makers can be recognised digging pits and burying pottery within the area of Parc Cybi. A final phase of interest in the great monument is indicated by a later Iron Age date (410-60 cal BC (HAR 3933))[3] for a pit dug at its impressive final entrance. Again there is evidence for people living nearby at that time.

Tombs have been the context for much of the Early Neolithic pottery known from Wales up to the present century, but the finds have seldom been prolific. The major assemblage from the Portal Dolmen at Dyffryn Ardudwy, in fact provided the type site for the original definition of the 'Irish Sea ware' group (Powell 1973 and Lynch 1976). This provided the best examples of the elegant and sharply refined shouldered bowls with classic vesicular fabrics carefully finished and burnished. But the quantity was not large and it should be remembered that the pottery did not come from the chambers, but from the forecourts outside the entrances.

At Din Dryfol in Anglesey (Lynch in Smith and Lynch 1987) this area outside the final entrance had been badly disturbed in the Roman period, and later with the building of a road and the digging of exploratory pits around the entrance stone. A few small sherds from one or two shouldered bowls in vesicular fabric were found in the area of the putative Chamber 1, but perhaps belonging originally to deposits in front of the earlier Chamber 3. Fragments of the blade of a smashed and burnt axe were found in the same area. Din Dryfol is an interesting and puzzling tomb with a long history of development, not unlike that of Trefignath, and the pottery demonstrates that it belongs to the same cultural and chronological context as both Dyffryn and Trefignath.

All three of these tombs belong to the classic 'Stone Box' tradition of tombs (Lynch 1997) judged to be amongst the oldest in the Irish Sea area. The other two tombs in Anglesey which have produced pottery, Pant y Saer and Bryn yr Hen Bobl, are also closed stone boxes, but of rather idiosyncratic design. Pant y Saer, excavated in the 1930s (W.L.Scott 1933), contained several sherds from an unshouldered bowl with a rather heavy rim, made from a compact fabric containing a lot of limestone tempering. There is one shoulder sherd and one showing a

[2] Calibrated using OxCal 4.3. HAR-3932: 5050+/- 70
[3] Calibrated using OxCal 4.3. HAR 3933: 2210+/- 70

lug but the general impression of this small assemblage is that it is likely to be rather later than the Trefignath and Din Dryfol material.

The chamber at Bryn yr Hen Bobl, excavated at much the same date (Hemp 1935), had been badly disturbed and most of the finds came from under the cairn, from presumed settlement debris. The recollection of Colin Gresham, who took part in the excavation (Gresham 1985) is that there was undecorated pottery under the cairn and its strange 'terrace', suggesting a situation comparable to Trefignath. The undecorated pottery from Bryn yr Hen Bobl, being vesicular in texture and including several quite sharp shoulders, is closer to the classic Irish Sea Ware than that from Pant y Saer but there is no precise dating though the site is clearly an old one since Mesolithic flints come from the same horizon. Associated charcoal, animal bones and stone working debris confirm its identification as a settlement area, but the size of the excavation trenches would not have allowed the recognition of structures on the site and it was not until later that it was recognised as settlement debris (Piggott 1954, 180). Like Trefignath the mound retained an attraction, because a fair quantity of Middle Neolithic pottery of Mortlake type was found in other trenches opened to examine the back of the cairn and its edge. The context of this may have been the ubiquitous and unexplained Middle Neolithic pit digging, but interest clearly continued because a Bronze Age urn and cremation was placed at the end of the 'terrace'. Moreover early records speak of inhumation burials in the top of the cairn, which may be another instance of renewed interest during the Iron Age (Rowlands 2nd ed.1766, 215 and Lynch 1991, note p 284). Bryn yr Hen Bobl, therefore, like Trefignath, was a burial monument which remained at the centre of a settled population, whether continuous or intermittent.

More recently large scale 'strip and map' excavations have revealed the substantial wooden buildings which had previously been missing from the British Early Neolithic. The ridge to the east of Bangor, between the rivers Ogwen and Cegin, in the parish of Llandygai is the site of two of them standing some 500m apart, a separation akin to that of modern farms in the region. One was found in 1966 during excavation of the later Henge monuments (Houlder 1968 and Lynch and Musson 2001, 26-36) and the other in 2004, further south on the ridge at Parc Bryn Cegin (Kenney 2008, 14-33). Both are long rectangular buildings of much the same dimensions (about 12 x 6-7m) with 5 bays; the trusses supported by paired aisle posts down the centre, a plan seen at Lough Gur, one of the first Irish Neolithic houses recognised (O'Riordain 1954) and Ballyglass (O'Nuallain 1972) one of the best preserved, which proved very influential in interpreting the truncated remains at Llandygai I. Llandygai II was better preserved with evidence for internal divisions and some patches of burning on the floor. Llandygai I was more obviously tripartite in design with a clear central 'room' as in the much larger Continental examples but details of how the spaces were used had been lost because of extensive ploughing of the site. However the doubling of posts suggested that the main structure had been repaired during its lifetime and the intensity of burning revealed that it had eventually burnt down. The better preservation of the floor at Llandygai II revealed the possibility of heavy furniture and some internal partitions, and also details of the outer walls which seem to have had slighter posts than the central aisle posts. A fuller series of radiocarbon dates and the lack of evidence for post replacement suggested that it was occupied for perhaps 40-110 years (Kenney 2008, 26-7), although, if well-maintained, such an oak house could have stood for much longer – and several did so in the later mediaeval period.

Neither building produced a great many finds but what was found is consistent with that from other houses, in both pottery and stone working. All are small pieces, badly broken and often eroded, suggesting domestic rubbish which had lain on the floor, trodden in and perhaps swept to the walls and thus becoming incorporated into the softer fill of the postholes. Finds at both buildings were concentrated inside, with most coming from the postholes, but at Llandygai II there was early Neolithic pottery in an external pit with Graig Lwyd rock and broken axes. At neither site was there an extensive area of old ground surface surviving, like Area E at Parc Cybi, where a quantity of pottery and stone tools indicated Early Neolithic activity away from any recognisable structure.

The pottery is mainly classifiable by fabric and small pieces of rims and shoulders, since few good profiles survive. There are shouldered bowls and unshouldered bowls, notably the carefully buried segment, SF167 from Llandygai II, and the fabrics are closely comparable to Group 1 at Trefignath and Parc Cybi (Jenkins in unpublished GAT Report 674). Since it is exclusively associated with the postholes of a relatively short-lived building it can be confidently dated to 3700 – 3600 cal BC (Marshall and Kenney in Kenney 2008, 121-32). It is likely that necked globular pots like that from Borras, (Wrexham) existed in both Llandygai assemblages but were reconstructed as the more familiar open shouldered bowl (Lynch 2018).

The most recent discoveries of Neolithic rectangular wooden buildings have been made at Llanfaethlu on the north Anglesey coast only some 9 miles from Parc Cybi (Rees and Jones TAAS 2015-16 (prior to the discovery

of the 4th building)). Here there are three buildings set close together at the foot of a slope with a fourth some 25m away, closer to a small stream. Houses 1 and 2 are both clearly rectangular with the paired aisle posts seen at Parc Cybi and Llandygai. House 1 may be over 20m long and 7-8m wide with at least one internal wall. House 2 is shorter and slightly wider with internal compartments and perhaps an external verandah. Between the two there was an area of postholes much disturbed and confused by Middle Neolithic pits. This is interpreted as a third, smaller house 10m by 6m . The fourth house, found in the following year's excavation, seems to be three-sided with an external verandah. It is not clear whether the far end has been lost, or never existed. This should, perhaps, be interpreted as a non-domestic structure. The scant remains of a human burial lay close to it.

However all four buildings produced pottery of Early Neolithic 'Irish Sea' type and in the small quantities that might be expected, mainly from posthole fillings and quite a bit, residually, in the filling of the Middle Neolithic pits, presumably from surface scatters, such as the material from an undisturbed relict soil outside House 1. The closeness of houses 1-3 would suggest that they are not all contemporary, but there is no significant variation in the style of pottery used. The rims are mainly simple and neatly everted, but there are some that are definitely out-turned and thickened. The shoulders are weak, most just have an S curve but one or two have a defined change of direction. The upright neck with a globular body (Borras type) is probably present here, as at Parc Cybi. Another Borras type with a globular body and sharply out-turned rim may also be present. The only pot which can be fully reconstructed is a small cup, 100mm in diameter. There is another almost identical – perhaps the same pot since this comes from the fill of a Middle Neolithic pit).

The pottery from House 4 shares the same styles but there is a contrast in that the find groups often contain several sherds of the same pot and so more can be meaningfully reconstructed. The rims have the same range but the shoulders are slightly better defined and a slightly inward leaning profile can be reconstructed. The upright neck and assumed globular body, the small cup and the ubiquitous shouldered bowl are all present. The main contrast between House 4 and the others is that the pottery is better preserved, in that more of the individual pot is present. This may be a result of some difference of function and deposition.

Outside House 4 there was not only the human burial (date unknown at present) but a pit (77) which contained 142 Irish Sea Ware sherds, significantly more than any other pit but the majority are featureless. Typical concave necks, shoulders and neat everted rims are present. It recalls the pit outside the house at Parc Bryn Cegin, but all the sherds are relatively small and deliberation seems less apparent.

The Clynnog pottery is from a series of pits randomly distributed over the west-facing nose of a slight ridge about 250m from the present coast just north of the village which lies on the natural route between the Menai Straits and Cardigan Bay. This coast has eroded eastwards in the last few centuries and Neolithic tombs have been lost (Kelly 1974). The site looks suitable for settlement but no structures were recognised during excavation for road improvements on the A499 (Roberts 2007 and 2009)

Some fifty pits and eleven post or stakeholes and a few amorphous linear features were scattered over an area of 1625 square metres. There were two areas where pits were clustered tightly together and several were inter-cut (Pit Groups I and II). Both early and late Neolithic pottery was found on the site and for the most part the distributions of the various styles were distinct, and those few sherds found away from their main focus were featureless and undiagnostic.

Sherds of undecorated vesicular ware probably represent the scanty remains of 11 pots. One Pot (A) is an unusually large intact segment of an upright-necked bowl with a globular body, which confirms this unusual profile; but the others are all small pieces of traditional Irish Sea Ware (Lynch 1976) found intermixed with charcoal in 4 pits over an area of about 140 sq metres. The bulk of the material however (pottery and flint), came from the fill of Pit 37.04, one of 2 largish pits in Group I which cut a third (37.163) which contained no artefacts. Two radiocarbon dates (both c.3700-3650 cal BC) were obtained from this pit. Another pit (37.210) which contained a fragment of polished stone axe and sherds of an undecorated lugged pot (Pot X) which was difficult to parallel, produced two radiocarbon dates (also both c. 3700-3650 cal BC) which indicate an Early Neolithic context, a conclusion supported by the analysis of the fabric.

This early pottery at Clynnog comes from a line of widely scattered pits which contrasts with the tightly clustered pits containing Mortlake Ware, the paired pits with Grooved Ware and the fairly close-set pits with Beaker (a rare appearance of this material in North Welsh pits). Whatever the meaning of 'pit groups', I suspect that the burial of Early Neolithic pottery is incidental to normal domestic or agricultural activity (Anderson-Whymark and Thomas 2012). The excavation area at Clynnog was relatively narrow and it is probable that a

substantial building like those at Llandygai might be beneath the modern farmhouse.

Borras on the outskirts of Wrexham in north-east Wales is a very large gravel quarry which in prehistory was a rolling landscape of glacial clays with several kettle holes whose water-holding qualities made it attractive to man and animals over thousands of years (Grant 2015). The Neolithic component of the settlement there does not include any recognisable structures but there may have been ovens with hearths and there are certainly pits with pottery.

The earliest pottery there may be judged to be Ebbsfleet Ware a lightly decorated style thought to lie behind the development of the heavily decorated Middle Neolithic series of Impressed Wares (Piggott 1954). The relationship of this pottery to the Western Neolithic/ Carinated bowls/ Windmill Hill-Abingdon Bowls/ Irish Sea Ware series (Sheridan 1995) is fluid, perhaps because the geographical distributions have seldom overlapped. At Borras, a significant Marcher location, there are shouldered bowls and a necked bowl like that from Clynnog but the rim forms are more complex and the numbers that are lightly decorated is high. The seven dates from Borras for the Ebbsfleet pits are all, like the pottery, astonishingly consistent within a range of 3700-3370 cal BC. The Ebbsfleet Style has not been much studied in isolation and few radio carbon dates relate directly to it and these Borras dates must constitute the largest group so far (Ard and Darvill 2015).

The settlements in the north-west of Wales are slightly earlier than this Ebbsfleet occupation in the north-east and their cultural background, with simpler pottery shapes, lack of decoration and substantial buildings, looks much more Irish than the activity at Borras. But this Ebbsfleet link is indicative of how contacts to the east were developing in the mid-third millennium to bring westward a style of richly decorated pottery with little connection to middle Neolithic Irish styles and a way of living which no longer included the use of great wooden buildings.

Middle and Late Neolithic Pottery

The majority of the Middle and Late Neolithic pottery comes from pits situated on the slopes below Trefignath megalithic tomb and the Early Neolithic building in Area H, about 100-200m away from these earlier centres of activity. The Mortlake pits are at the bottom, probably close to the contemporary edge of the marsh (Area K) and those containing Fengate and Grooved Ware are a little bit higher up the slope to the east (Area J). There is also a pit with Grooved Ware across the valley in Area D3, in the vicinity of Area E.

Mortlake Pottery (Fig I.1.1.6)
The quantity of Mortlake pottery is not especially large and it is restricted to the 5 pits in Area K9, except for a few sherds from the eastern chamber of Trefignath tomb, probably associated with its closure (Smith and Lynch 1987).

Nine different pots may be recognised but only two, Pots A and F, can be reconstructed in any meaningful way (Fig I.1.1.6). Pot A is a classic Mortlake bowl and Pot F is the lower half of a similar bowl with a flattened base and carelessly scored lines. The upper part is not present.

The sherds come from 5 pits, one of which (80686) contained the bulk of the material (30 sherds, some pieces of base quite large, from fragmentary Pots A, B, and F). This was flanked by pit 80602 which contained 2 sherds from the rim of A; and by Pit 80594 which produced 11 sherds from Pots C, D and E. Beyond Pit 80594 was disturbed Pit 80788 in which there were 2 sherds of Pot E. These four pits form a line, all close together but there was one more pottery pit (80610) some 2.5m to the north which contained a single sherd of Pot F. Three of these 5 pits contained sherds of the recognisable pots from the main deposit, indicating that they were all active in some way at the same time. The other two pits are linked by Pot E. These pits also contained variable amounts of charcoal and fire-cracked stones and pebbles. In one case the filling is described as a 'dump of hearth material'. Another two large pits in the vicinity contained no pottery.

Comment on pit use and filling
All the Mortlake pits contained burnt stone and charcoal and one or two flint or chert flakes. The burnt material was a significant feature of the fills and was described as 'a dump of hearth material' in Pits 80686 and 80610. Pit 80686 also contained some bone, the only occasion this is mentioned. With the Fengate pits the situation was similar, but there is less mention of burnt stone. The Grooved Ware pit in Area J has quite a bit of flint, but no burnt stone. In Area D3 the main pottery pit (60093) contains a lot of charcoal and burnt stone and several

flints (2 worked) and a polishing stone. There is a hearth close by. It is notable that the pits which contain the most pottery also contain the most struck flint and stone flakes and possible hearth debris.

The idea that the presence of pottery, tool-making waste and the debris of fires (but not, it seems, food waste since bones are seldom found, even in alkaline sites) is due to the practical need to fill in a pit dug for an unknown purpose and not part of a quasi-religious ritual, is gaining ground. But it does raise questions about the management of waste around Middle and Late Neolithic settlements. These settlements already have significant problems, since any form of shelter seems to be lacking on most. In fact these pits are often the only guide to a domestic presence, as is the case at Parc Cybi.

One site where there are typical 'pot pits' and some reasonably convincing contemporary structures is Sewerby Cottage Farm near Bridlington, Yorkshire, where at least three episodes of settlement over about 500 years are recorded (Fenton-Thomas 2009). Over this time there are some quite substantial rectangular and, later, oval structures and some rubbish dumps at one end of the site; and at the other, some 20-30m away, there are distinct clusters of pits containing Ebbsfleet Ware, Mortlake Ware, and Grooved Ware. Whatever was going on in the pits it seems to be kept away from the living area, and there remain questions about whether or not the pottery in the filling is too unabraded to come from the much trampled dumps around the huts.

The linkages suggest that the pits at Parc Cybi, for whatever purpose they were dug, were filled in at the same time or that they were filled in from the same midden deposit, which has not been found in our case. This interpretation suggests that the pottery content should not be considered a deliberate 'offering'. This view is very strongly supported by a study of the 20 pits which contain Mortlake pottery at two recently excavated sites, at Llanfaethlu only some 9km away on the north coast of Anglesey (Rees and Jones 2016), and at Brookside, Denbigh (Rees and Jones 2017). However the pattern of deposition in the various chronologically distinct pit clusters at Parc Bryn Cegin near Bangor suggested more deliberation in the placing of pottery in the pits there (Lynch in Kenney 2008) and perhaps the obvious difference in quantity of pottery in Pit 80686 and the others might have some significance that we cannot fathom.

Mortlake Pottery comparisons

The nature of the Mortlake pottery from Parc Cybi is very typical of the style across the country, in the use of large pieces of quartz and other light coloured stone tempering in a predominantly pinkish clay matrix, in the rather careless impressed decoration in varied techniques, and in the shape of the bowls and their rims (Gibson 1995).

The single analysed sherd from this assemblage (5720 Pot A) unfortunately included an area without large grits, but the bulk of the material has got the characteristic large inclusions. The detailed analysis demonstrated that it, and the pots from the tomb and all the other Middle to Late Neolithic pots, were made from local "clays" and local stone fillers from within Ynys Gybi (see Williams and Jenkins, this volume Part I.2.1).

Impressed Wares were relatively rare in the archaeological record of North Wales until the advent of large developer funded excavations which uncovered the non-monumental pits in which it is usually found. Since 2000 (Lynch et al 2000) their distribution has considerably expanded and there are now several large assemblages from across the region.

In Anglesey the style has been known since 1935 when a small group of sherds was found found at the back of the cairn at Bryn yr Hen Bobl megalithic tomb (Hemp 1935, Gresham 1985, and Lynch 1991, 339), probably reflecting 'settlement' close to the tomb. The site at Llanfaethlu, like Parc Cybi, has an initial phase of Early Neolithic occupation with large wooden houses and the use of undecorated shouldered bowls in the tradition widespread in Britain and Ireland. This pottery appears in the context of 'domestic rubbish' for the most part. Then, like here, the next manifestation of settlement is the puzzling phenomenon of pit digging which is carried through into the Late Neolithic with Grooved Ware (Rees and Jones 2016). On the mainland, Parc Bryn Cegin near Bangor shows the same sequence, with an early Neolithic building and limited pottery finds and then a series of pit clusters containing Mortlake, then Fengate and finally Grooved Ware pottery (Kenney 2008). Further south on the mainland at Clynnog there is no building, but some Early Neolithic pottery in a pit and other pits containing some rather untypical Mortlake Ware, Fengate/Grooved Ware and some Beaker (Roberts 2007). This normally ubiquitous pottery is surprisingly rare in the context of pits, but there is Beaker from a pits at Hidre-faig Farm, Penmynydd (Davidson et al 2010, 10-12).

Further east at Brookhouse near Denbigh a small excavation produced evidence for 13 pits of which 7 were filled exclusively from a midden containing Mortlake pottery (Rees and Jones 2017). At Borras Quarry in

Wrexham a very large area excavation has demonstrated, like Parc Bryn Cegin, a shifting occupation with clusters of chronologically distinct pits which contain a lot of Ebbsfleet Ware, some Mortlake, some Grooved Ware, virtually no classic Beaker, but a lot of Domestic Beaker (Grant 2015). Sites around Fourcrosses near Welshpool have produced an Ebbsfleet pot with an early single burial (Warrilow, Owen and Britnell 1986) and some pits with rather fine small Mortlake bowls (Fourcrosses by-pass), similar to some at Borras. Dates obtained from several of these sites confirm a horizon of use from about 3300 – 3000 cal BC, in line with the picture from Britain as a whole (Ard and Darvill 2015). The dates from Parc Cybi itself come from Pit 80686 (3350-3100 cal BC (SUERC-81358) and 3350-3030 cal BC (SUERC-83287)) and from Pit 80594 (3350-3090 cal BC (SUERC-81359)).

Detailed comparisons can be made with local contemporary sites. It could be argued that those who were using/closing the tomb at Trefignath would have been part of the community living just down the hill at Parc Cybi, but in fact the pottery is not especially close. Trefignath B is the most standard Mortlake pot with a ridged rim decorated with twisted cord which is also found on the rounded body (Smith in Smith and Lynch 1987, 73-9). The rim shape is comparable to Pots C and perhaps D at Parc Cybi, but all the Parc Cybi pottery is decorated by fingernail impressions or broad incisions, there is no twisted cord. Trefignath A and C (I would judge that these rim sections are all from the same pot) have a lozenge-shaped rim carelessly decorated with whipped cord herring bone. Rims of this shape and the use of whipped cord are popular at Llanfaethlu but neither is seen at Parc Cybi. Trefignath G has an odd damaged rim with twisted cord on the top edge.

A flat base at Trefignath is thought to belong to A/C which has led to its designation as Fengate Ware of which the rim is not very typical. But it is worth noting that Pot F at Parc Cybi definitely has a flattened base – and so, less obviously, does the base 5714. A very straight-sided narrow pot (100mm diameter) from Carrog near Llanfechell, Anglesey in very typical Peterborough fabric with a date of 3340-3080 cal BC must also have had a flat base (Smith *et al* 2014); as does a small elongated pot (E) from Brookhouse, Denbigh (Rees and Jones 2017). This all points to the fact that we are dealing with a spectrum or continuum and typological distinctions are fluid.

The 4 rims at Parc Cybi are all relatively narrow and Pot A has a style of rim which is widespread, the lines of deep dots on a rounded rim profile is popular at many sites, including Bryn yr Hen Bobl (Lynch 1991 fig 28.13) and Borras (Grant 2015). What is perhaps surprising is that there are none of the ridged lozenge shaped rims which occur at Bryn yr Hen Bobl (Lynch 1991 Fig 28, 17) and are particularly popular and often most carefully made at Llanfaethlu (Rees and Jones 2016). Nor are there any of the sloping T-shaped rims which seem to be a feature of the Marches and South Wales (Gibson 1995). Though Peterborough styles are easily recognised around the country there are regional preferences, some of which may even be personal preferences of particular potters.

Fengate Ware (Fig I.1.1.7)

There are some 13 identifiable vessels which can be ascribed to the Fengate Style of the Peterborough or Impressed Ware series. Traditional typology and, to some extent, radiocarbon dating suggest that they are slightly later than the Mortlake pots and a bit earlier than Grooved Ware. All three styles are normally found in pits and are very seldom associated with domestic structures or burials. At Sewerby Cottage Farm it is interesting, but puzzling, that Fengate ware is only found in the rubbish dumps and not in any 'pot pit' (Fenton-Thomas 2009, 151).

The Fengate Ware is more widely distributed than the Mortlake or Grooved Ware. It occurs in one quite tight cluster of 8 pits covering an area of about 14 sq m in Area I, and in 5 more widely dispersed pits in Areas I and J. It has also been recorded in evaluation excavations by Wessex Archaeology in an area just to the east of the limits of Parc Cybi, some 100m below Trefignath tomb (Wessex Archaeology 2015) (Fig I.1.2.1) (see this volume part I.1.2).

Of the 8 pits (in a cluster of 9) in Area I which contain Fengate Ware and occasional worked stone, only Pit 21221 contained any significant quantity. There were 34 sherds and 53 fragments from 3 different pots (L, N and 1151) together with 2 residual sherds of Early Neolithic pottery (Fig I.1.1.7). Pit 25054 close by contained only 3 sherds, all from Pot L in Pit 21221; Pit 21219, also very close, held only 2 essentially featureless sherds and some crumbs. These three pits are part of a tight cluster and around them are 5 smaller pits which contained a few Fengate sherds but there are no linkages. Pits 18065 and 21210 each contained only 2 sherds from a single pot (G and K); Pit 18063 contained 13 sherds perhaps from 3 pots (including Pot M). The 2 sherds and 11 fragments of pottery in Pit 21212 may also represent 3 different pots, and the 2 sherds in Pit 21208 include a possible fragment of a flat base, but they cannot be assigned to any of the identified pots.

More than 50% of the pottery came from Pit 21221 and its neighbour 25054, and there were several linkages in their content. There were no linkages between the other pits, but it is notable that where there were only 2 sherds, they often came from the same pot.

Within the same Area I there are two other pits (21037 and 19075), some 30-50m apart from the cluster and from each other, which contain 3 Fengate sherds (Pot I and 1033). Some 100m further north in Area J there are two more pits just over 2m apart: 70173 which contained 4 sherds and 11 fragments from two very typical Fengate collared jars (Pots H and J); and 70181 with 1 featureless sherd and 12 fragments in a compatible fabric. Some 16m north from these pits is another (70202) with a featureless fragment of pottery which may be Fengate.

Fengate Pottery Comparisons

There are several very close similarities between the shape and decoration of the vessels from Parc Cybi and Parc Bryn Cegin, with 27 vessels probably the largest Fengate assemblage from Wales (Kenney 2008a and b). The jars at Parc Cybi are collared, most of them with a relatively narrow incurved collar and a bevelled rim with herring-bone decoration. The characteristic pits under the collar occur only in Pot J; in Pots G and L they are clearly not there. These jars would normally have a conical body coming down to a narrow base.

Pot I is larger and has a straight collar, looking very much more like an Early Bronze Age Collared Urn, but decorated sherds from the lower body suggest that it was fully decorated. In fact it is closely comparable to PGVI.A from Parc Bryn Cegin where the fingernail marks come right down to the base, which is very seldom the case with Collared Urns in Britain (Longworth 1984). Rather surprisingly the use of fingernail impressions is relatively rare at Parc Cybi. They occur on Pots J and L, but on A it is incision and on I the lines are created by a 'stab and drag' technique with a thin stick, though the body has fingernail marks on it. The inserted base of Pot L is unusual, and may have been a repair during manufacture.

The fabric of all these pots contains a lot of very conspicuous angular stone grit, some of it dolerite and sandstone. Analysis of 2 sherds demonstrated that, like all the other Neolithic pottery, these jars were made with local materials. The walls are quite thin and the grits protrude from the surface making them look rather rough. The colour is usually a darkish brown.

Parc Cybi and Parc Bryn Cegin both have pits containing the triple range of pottery styles : Mortlake, Fengate and Grooved Ware that are most frequently found through the Middle to Late Neolithic. Of the three, Fengate seems to be the rarest in Wales. For instance Borras in north east Wales has Ebbsfleet, Mortlake, Grooved Ware and Domestic Beaker but no Fengate. Nor does Llanfaethlu in Anglesey have typical Fengate, though there is much Mortlake and Grooved Ware. At Ogmore in Glamorgan all three styles are present, as they are at Walton, though the identifications are fluid and there is clearly not very much Fengate material (Gibson and Kinnes 1997 and Gibson 1999). At Clynnog, Gwynedd, there is a problem in distinguishing Grooved Ware and Fengate, as there is at Llanfaethlu where the appropriateness of modern typological classification may be in question. If it was a matter of distinguishing Mortlake and Fengate, this would be no problem since they clearly overlap in date, but there does currently remain a chronological separation between Fengate and Grooved Ware (Garwood 1999) and this is maintained by the Grooved Ware date for material here in Area D3 (see below).

Fengate Ware seldom appears in any context except Pit Groups, but there is a characteristic sherd from beneath the Late Neolithic enclosure bank at Castell Bryn Gwyn, Anglesey (Lynch 1991,101) and from a single pit within a probably unrelated enclosure at Brynderwen, Powys (Gibson and Musson 1990). In southern England it appeared notably in the filling of the West Kennet Long Barrow chambers (Piggott 1962) and in the ditches of Causewayed Camps such as Windmill Hill (Keiller 1965) alongside all the other Impressed Wares, collectively categorised as Secondary Neolithic by Stuart Piggott in 1954. The Fengate style was first distinguished by Isabel Smith in 1956 (Smith 1956, 106-16) but, though it is widespread across Britain, it has not received much exclusive discussion since then. It has been occurring frequently across the Midlands and in Yorkshire in recent years because, as in Wales, largescale commercial excavations have revealed the pits in which it is normally found. In Yorkshire it has been usefully studied by Terry Manby in the course of many specialist reports. His discussion of the material (Rudston, Mortlake, Fengate and Grooved Ware) from Sewerby Cottage Farm near Bridlington contains a useful résumé of the stylistic ranges, contexts and dates for the northern material (Manby in Fenton-Thomas 2009, 175-85). The Yorkshire Fengate material in particular is extremely close to the Welsh material, reinforcing the impression that there is a good deal of contact between north Wales and Yorkshire in the Later Neolithic and the Early Bronze Age.

Dates from the Fengate pits at Parc Bryn Cegin give a range of 3350-3020 cal BC for material from both Pit Groups V and VI. This is almost the same as the date range for Pit Group 1 with Mortlake pottery: 3360-3090 and 3330-2920 cal BC, but is earlier than the dates (2900-2670 and 2890-2670 cal BC) for Grooved Ware from Pit Group VIII at the same site. At Parc Cybi the dates for the pits in Area K with Mortlake pottery are 3350-3090 cal BC (SUERC-81359), 3350-3100 cal BC (SUERC-81358) and 3350-3030 cal BC (SUERC-83287); and for the pits in Area I with Fengate pottery the dates are 3330-3010 cal BC (SUERC-81342), 3270-2920 cal BC (SUERC-83275) and 3330-2930 cal BC (SUERC-83276), suggesting that there is very little chronological difference between these styles in this region. The date for Pit 60093 with Grooved Ware in area D3, however, is 2860-2570 cal BC which does confirm some genuine chronological difference.

However it is becoming apparent that Grooved Ware is present before 3000 cal BC in Scotland and dates from Yorkshire are in general earlier than in southern England (Manby in Fenton Smith 2009, 183) so the question of overlapping of all three major styles remains open.

Grooved Ware (Figs I.1.1.8 and 9)

Grooved Ware occurs in two groups of pits, in Area J and Area D3, and there are residual sherds from Area B2 with the stone roundhouses. One sherd has also been recognised at Trefignath tomb.

A single sherd identified as Grooved Ware, largely because of its use of grog as a temper (Jenkins 1987) and the presence of a single groove, came from the disturbed central chamber of Trefignath tomb (Fig I.1.2.1). Like the Mortlake material it demonstrates the continuing interest of the community in this ancestral monument (whether or not it was theirs) (Smith 1987, 76-8).

Analysis of the Grooved Ware from Parc Cybi shows a certain continuing vesicularity but also a rather greater use of grog as a temper (Group 1/2 Voids+ grog) which was not a significant element of the Mortlake and Fengate fabrics (See Williams and Jenkins, this volume Part I.2.1). In the 2 samples, 6381, 6394, it resulted in a rather soft, lightweight fabric which occurs at Capel Eithin, Parc Bryn Cegin and Bryn Celli Ddu and appears to be quite a distinctive feature of Grooved Ware in this region. Notwithstanding this distinction, the pottery was very likely made locally, like all the other ceramic material.

Grooved Ware from Area B

There is a single base sherd (sf 4070, Pot U) from a small bowl (designed like a Chinese rice bowl to be held in one hand) which, on the basis of the soft, lightweight fabric (described above) is considered to be Grooved Ware (Fig I.1.1.9). The lack of decoration (at the base at any rate) and the simple shape make typology fallible, but a broadly similar small jar from Clynnog (Roberts forthcoming) can be cited as a parallel. This comes from a charcoal patch between Roundhouses C and E. Sf 4316R, 6 fragments in a similar soft fabric from a charcoal-rich deposit in the first phase of Roundhouse C might also be Grooved Ware. An incurved rim (Pot V) from a stone surface in use with granaries linked to the roundhouse group is also probably a bit of residual Grooved Ware, since it is similar to sf 1651 (Pot X) from Area D3. It is strange that only Grooved Ware occurs residually in this much used area of the site, down by the edge of the marsh.

Grooved Ware from Area J (Fig I.1.1.8)

The Grooved Ware from this area of Middle-Late Neolithic activity comes from two inter-cut pits (70503 cutting 70529) and a possible posthole, 70480, some 3-4m to the east of them. The group is quite isolated from other humanly dug features

The material from Pit 70503 comes from a context (70502) in the upper fill and is almost certainly redeposited from the disturbed Pit 70529 but it also contains sherds which are very similar to those from posthole 70480. There is only one join on featureless sherds, but pieces of distinctive pots such as Pots O and Q (pit 70929) and R (postthole 70480) can be recognised in both pits. The mixing therefore predates the disturbance of Pit 70529.

The upper fill of Pit 70503 contains 31 sherds from perhaps 12 different pots, most of them differentiated by fabric and minor variants of decoration, because very little of each pot is present. In Pit 70529 there are 44 sherds from possibly 15 pots. These come from several contexts at the bottom and the sides, suggesting that sherds were widely dispersed in the original fillings. Again not much of any one pot survives except for Pot Q where there is quite a substantial piece of base made from several joining sherds and 5 other pieces from further up the jar.

Grooved Ware from Area D3 (Fig I.1.1.9)

The only other occurrence of Grooved Ware at Parc Cybi is in Area D3 some 500m away to the west. Here there are two pits only one of which contained any significant quantity of pottery. Pit 60162 contained 2 undecorated sherds; one is perhaps part of a base (110mm in diameter) and both have fabrics which suggest that they might belong with the Grooved Ware from Pit 60093 which is 2m SE of 60162.

Pit 60093 had three distinguishable fills but the mixture of pottery in them suggests that the differences had little significance. The pit contained 26 sherds and 25 fragments all in approximately the same fabric: hard, compact with well-crushed stone grits. The colours varied from a pink-beige to dark brown. Five pots could be identified but only one was present in any quantity and could be reconstructed on paper. The pit also contained burnt stone, charcoal, some flints and a polishing stone. It may be relevant that there was a hearth close by.

Pot W from Pit 60093 is a tub-like bowl halfway in size between Pot Q and Pot R from Area J, but with very different decoration. It is 200mm in diameter at the simple upright rim and 130mm at the missing base. The height is estimated at 145mm. It is decorated all over with neat vertical lines of sharply cut impressions. They are so uniform in size that they must be made with a stamp but some appear to be triple, like a tiny bird footprint, and others double. The fabric is compact, well-fired and smooth with well-crushed grits. The colour is pink/beige with a grey core.

Two other upright rims are present. One (Pot Y) is very hard with a diagonal slash across the top and a firm stab-mark on the outer surface. The other is also flat-topped with three rather carelessly drawn grooves on the outer surface (Pot Z) and is probably from a tub with a band of grooves around top as in Pot PGVIII B at Parc Bryn Cegin (Kenney 2008, Fig 15). Another grooved body sherd (1656) comes from lower down in the pit and is not part of the same tub because of difference of fabric and style of grooving.

Pot X is represented by a narrow segment of a rounded incurving rim with a band of decoration of horizontal grooves and oblique square-ended stab marks. This band seems to be 45mm deep and may end with a fringe of confused vertical lines. A sherd (Sf 4502R) with 3 grooves and confused stab marks, from lower down the pit, probably belongs to this pot; as does another undecorated sherd from the middle fill. Pot X was analysed (1651) and is slightly different in fabric from those from Area J, but does contain both grog and stone filler. This incurving profile is common in the Durrington Walls style, but usually on much heavier, coarser jars (Wainwright and Longworth 1971, Figs. 36-49). In Anglesey, notably at Llanfaethlu and at pits near Penmynydd (Davidson et al 2010, 12-17) this profile appears frequently, often with rather richly carved grooves and cordons embellished with nicks and complex stab marks. The impression gained is that these are rather finer bowls than the heavy southern jars and that this particular style may have been become more refined in North West Wales.

Grooved Ware Pottery Comparisons

The majority of the pots can be reconstructed as some kind of tub with a flat base, gently sloping sides and an upright rim with various forms of elaboration. Body sherds (Pots S and T) suggest that some of the larger pots had quite prominent cordons bordering bands of grooved or ribbed decoration. The small tub (Pot R) 70mm in diameter and probably 50mm high is the most complete, with a slightly thickened rim on the inside and three lines of sharply incised horizontal grooves topping a broad band of jagged filled triangles below. This is a classic Clacton-style pot typical of many found widely across Britain. In Anglesey, pottery recently found in pits near Bryn Celli Ddu (excavations in 2016 by the University of Central Lancashire) belongs to this style as does the pottery from Pit Group VIII from Parc Bryn Cegin, Bangor (Kenney 2008, Fig 15). The two analysed sherds (6381 and 6394 from Pits 70503 and 70529) respectively – see above) contain significant grog and are rather soft and lightweight, as are the pots from Parc Bryn Cegin and Bryn Celli Ddu. Both these sites can also provide parallels for Pot Q with its rather haphazard bands filled with sharp triangular stab marks. The scraps of angular grooved decoration from various pots (Fig MLN 3) belong to the same style though the curvilinear pieces are less common, but not unknown (eg at Durrington Walls itself (Wainwright and Longworth 1971)). The elaborately decorated rims (Pots ?Q and P) probably come from similar, but slightly larger tubs. It is possible that rim 6384 might belong to Pot Q. The internal ridging and the raised wavy cordons are found frequently, especially in Scotland (Sheridan 1999, Fig 12.6) and in the Woodlands style which is judged to be contemporary with Clacton (Garwood 1999, 158). The large more curvaceous jar, Pot O 705529 is a much bigger vessel with a very elaborate internally moulded rim (a distinctive feature of Grooved Ware) and a grooved and stabbed exterior. The wavy cordon inside the rim links it with Pot P even though the shape of the jar is not common in Grooved Ware.

Grooved Ware in North Wales

Grooved Ware has become more common in Wales since 2000 (Lynch et al 2000, 112-15 and gazetteer in Cleal and MacSween 1999) and in Anglesey alone there are now 6 significant assemblages : Parc Cybi, Llanfaethlu , Wylfa estate Evaluation 9, Penmynydd, Bryn Celli Ddu and Capel Eithin, as well as the single sherds from the tombs at Lligwy and Trefignath. These collections, most of them not yet published, differ in the styles of Grooved Ware preferred. The Clacton style with sharply incised bands and triangles on tub-shaped vessels occurs at Bryn Celli Ddu and amongst the Area J pits at Parc Cybi. At Capel Eithin the style was described at Woodlands (Longworth in White and Smith 1999, 76-77) and was characterised by bowls with multiple raised cordons in a very lightweight fabric. This style occurs again in the much larger and more varied assemblage at Llanfaethlu where it is associated with vases with incurved rims and deeply cut grooves and also with wavy 'pie crust' cordons, both of which are seen at Parc Cybi. The pits at Penmynydd produced bowls with incurved rims and gently waved cordons in a particularly richly embellished style which is also seen at Parc Cybi D3, Llanfaethlu and Wylfa. This may turn out to be a distinctive feature of the pottery from the island at this period.

Bronze Age Pottery

Beaker Pottery from Area E

The vast majority of the material from the relict soil in Area E is clearly Early Neolithic, but there is a very small amount of Beaker pottery, some 14-16 small sherds in all, from the vicinity of the hearths and from the relict soil (Fig I.1.1.10).

Five sherds of Beaker pottery (Finds 5052, 5282, 5286, 5359 and 5069) are recorded from the Relict soil itself and 6 others (Finds 851(5 sherds) and 976) come from features (a stakehole and a pit) cut into it. In 2004 fourteen finds of Beaker pottery were made within the area of an Evaluation Trench (6) in this same location. It has proved difficult to relate the plans precisely, but the pottery occurred in 2 scatters, both from the relict soil.

All the Beaker pottery occurs as small eroded sherds, from at least 7 different pots. It is probable that finds 2321/ 24/28 are from the same pot but no reconstruction is possible. Only one of these Area E Beaker finds (851) was analysed. The sherd proved to contain a mixture of grog and clasts, finely crushed and, like all the other Neolithic and Early Bronze Age pottery, most likely to have been made locally. The other sherds were assessed macroscopically and were judged to be fairly characteristic in both fabric and decoration of Early Beaker styles, with horizontal bands of hyphenated or rouletted lines in simple designs. Comparison with other Welsh Beakers (Lynch et al. 2000 Fig 3.13, p 117) would put them in Lanting Steps 2 or 3 (Lanting and Van der Waals 1972) at a chronological horizon of 2500 – 2250 cal BC (Needham 2005 Period 1 – Pre-Fission). However there are no rims present and no indication of the shape of the body so this is not a firm conclusion. More pertinent is the condition of the sherds and their scattered distribution which suggests that they are essentially domestic rubbish and comparable to a number of similar scatters often found beneath the protection of later monuments or in patches of eroding soil.

In Anglesey the collection from the Newborough sand dunes (Lynch 1991, 123-5) is the best known and has been compared to other coastal sites at Merthyr Mawr Warren, Glamorgan, Dalkey Island south of Dublin and Glenluce Bay in south-west Scotland. A more recent find of similar material was made at Cromlech Farm, Llanfechell where some 20 small sherds with zoned hyphenated decoration were found in a crack in the bedrock close to the remains of the fallen megalithic tomb at Cromlech (Smith 2013, 60). Elsewhere scatters of Beaker sherds have been found beneath Bronze Age monuments at Brenig 51 (Lynch 1993, 104-5), Trelystan (Britnell 1982, 165) and throughout Britain (Gibson 1982).

Beyond Area E at Parc Cybi fragments of Beaker are very rare. There are a couple of classic decorated sherds from Cae Glas 1 to the east, excavated by Wessex Archaeology, and there were thought to be 3 undecorated, Beaker fabric sherds from Area I, which are now thought more likely to be Middle Bronze Age in date, and there is one small fragment with possible decoration (5416) from Area F1, from the old ground surface around Roundhouse I.

Although complete Beakers were very carefully buried in 3 pits within Henge B at Llandygai I (Lynch and Musson 2001, 65-7) there were none at nearby Parc Bryn Cegin within the virtually contemporary 'broken pot pits' (Kenney 2008) and there are none within pits here, nor at Llanfaethlu. Whatever the role of these pits, Beakers do not seem to be involved. They seem to be either trodden under foot or reserved for more formal roles, normally accompanying burials.

On Ynys Cybi itself the only other Beaker finds come from one of the barrows at Porth Dafarch which were excavated by W.O. Stanley (Stanley 1876; Lynch 1991, 126, 130-2). The virtually complete Beaker is Long-necked and belongs to Step 5, probably dating to around 2000 cal BC. Two small sherds from another Beaker, perhaps never complete, were also found in the central cist. They look very similar to 2323 from Parc Cybi and demonstrate the difficulty of precisely dating very small remains.

Over the country as a whole Beaker pottery is found more frequently in the formal context of burials where a complete pot may have served to hold refreshment for the journey to the underworld. In the barrow in Area M one of the stone cists (7) contained just such a complete pot.

Multiple Cist barrow
Beaker (SF 4102) from Cist 7 (Fig I.1.1.11)
This is a rather wide but short Long Necked Beaker (diameter at mouth 160mm; height 168mm) decorated with two similar panels, on body and neck, of exuberantly scored chevrons. The gently everted rim is encircled with short vertical strokes. The decoration suggests rapid work by an experienced hand. The fabric is pale beige and contains a good deal of stone grit, including serpentine which indicates local manufacture (See Williams and Jenkins). The pot is complete, barring a damaged foot but had been broken. This revealed that it was constructed from two broad coils (neck and body) with the foot added to a gently rounded base.

A close parallel to this Beaker is the one from Linlathen, Angus, which was associated with a flat bronze dagger which can be dated to 2200-1950 cal BC. The pot is judged to belong to a class of Weak-Carinated Beakers (WC) in the Fission Period or middle stage of Beaker currency (Needham, 2005, 189). In Clarke's 1970 *Corpus* the Linlathen pot and several others with largescale angular decoration are designated S4 (Final Southern), something of a 'dustbin' category. Needham also admits that his WC Beakers are morphologically mixed and suggests that they may reflect more domestic styles, the formality of funerary wares having by this stage diminished.

A single worn sherd from close to the collared rim of another Beaker comes from Cist 2 (Fig I.1.1.11). This is very unlikely to have been part of a funerary vessel in the cist. The fabric is typical and it is decorated with one clear hyphenated line and perhaps another below.

Bipartite Vase Food Vessel (SF 2038) from Cist 3 (Fig I.1.1.11)
This small Vase Food Vessel is 144mm in diameter and 135mm tall, decorated to the foot with deep horizontal grooves creating a corrugated profile in which there are three broader bands which are variously decorated with vertical incisions created with a squared stick. The central band has alternate vertical and horizontal lines reminiscent of the lugged Bowl Food Vessels, just as the three broader bands reflect the Tripartite Bowls. Two intermediate ridges have a row of squared dots which are also present on the inner slope of the rim. The pot is complete except for some damage to the top of the rim, suggesting that the pot was not specially made for the funeral, but taken from a domestic shelf.

This type of ovoid Vase Food Vessel is not especially common in Wales, but is quite widespread, having been found in cairns at Llanllechid and Llandygai, near Bangor (RCAHMW 1956), at Trelystan and Fourcrosses in Montgomeryshire (Britnell 1982) and at Welsh St Donats 2 in the Vale of Glamorgan (Charlton *et al* 1982). It is also to be found in Ireland, especially in the north (Waddell and O'Riordain 1993 nos 73, 509, 511, 556) and the Isle of Man where the pot from Lhergyveck, Kirk Michael, was a chance find without funerary context (Woodcock 2008, no.19). Anna Brindley (2007, Figs 63 and 153) places these Bipartite Vases of ovoid profile in her Stage 1, overlapping with the Bowl Food Vessels, with a date range of 2000-1900 cal BC. The date from Trelystan (Britnell 1982, 167 and 191 (CAR -279 (3750 +/-70 BP), which, recalibrated, would be 2460-1950 cal BC[4]. Such a date would allow this Vase and the Beaker from Cist 7 to be contemporary within the same cairn.

Other Early Bronze Age Sherds (Fig I.1.1.12)
The ditch of the D-shaped Enclosure : Area M
Sherds from an Undecorated Vase Food Vessel and a single sherd from what is probably another Vase Food Vessel come from three different points in the ditch fill of this enigmatic feature whose date and purpose is unknown.

[4] Calibrated using OxCal 4.3

There are seven sherds and scraps from a small undecorated Vase Food Vessel (FV1: Sf 1090 /1094 (Fig I.1.1.12)) from two different points in the ditch of the D-shaped Enclosure. There is no suggestion that these sherds belong to a container or accompaniment to a cremation burial, beyond the fact that it is not far from the Multiple Cist Barrow and has been broken and thrown away, perhaps at a later date.

This pot has a rim diameter of 200mm and a probable height of 220mm, a sharp inwardly bevelled rim and an unusually high shoulder. The fabric is beige throughout with plentiful well-crushed grits which is generally typical of Food Vessels. Analysis has shown that there is local serpentine amongst these grits and the composition of the matrix and fillers is similar to that of the Cordoned Urn from Area K1 and Beaker from cist 7, as well as some of the earlier pots from Trefignath (see Williams and Jenkins, this volume Part I.2.1).

The sharp high shouldered profile puts this pot into the class of Tripartite Vase Food Vessels (O'Riordain and Waddell 1993 no 409). The lack of any decoration is rare but not unknown in Ireland, though a glance through Abercromby's catalogue (1912) reveals none, emphasising the normal density of decoration on these vases. In Anglesey the Vase Food from Cerrig Dewi (Lynch 1991 Fig 53.7) is very much the same size and has a high shoulder, but is covered with the ubiquitous herring bone incision. Elsewhere in Wales the vase from Candleston on Merthyr Mawr Warren in Glamorgan (Ward 1919), found with a flat bronze dagger similar to the one from Linlathen, judged to date from 2200-1950 cal BC, is similar in shape, though it has some limited decoration. This burial has been dated by Anna Brindley for her larger project of dating Bronze Age pottery in Ireland (Brindley 2007, 367). The dates of 2130-1890 cal BC (GrA-27615) and 2120-1880 cal BC (GrA-27614[5]) conform with the Irish series (Brindley 2007, 265).

The other pot (FV2: 1074 (Fig I.1.1.12)) is represented by a single large sherd (65 x 60 x 12mm) with 2 lines of fingernail marks, one on the edge of the rim, the other set between very shallow grooves. The rim is lightly expanded, with a slight inward bevel. The fabric is hard and well-fired with a lot of stone small-medium grit: mica and hornblendite. Analysis by Patrick Quinn (this volume, part I.2.2) concludes that the fabric is similar to that of the Cordoned Urn from Area K1, and to a lesser extent, the Beaker from Cist 7 and the Undecorated Food Vessel (FV1) from this same ditch. These pots belong to Williams and Jenkins Group 3a.1 containing ultramafic rocks suggesting local manufacture.

The dating of this sherd (1074) has been the subject of much debate because it was at first thought to be a piece of stamped Malvernian Iron Age pottery. This was categorically rejected by Elaine Morris on grounds of both fabric and decoration. The fact that the subsequent detailed microscopic analysis demonstrates that it is similar in composition to the Cordoned Urn and must be a local product has turned attention to earlier periods. Comparison with the not very plentiful Middle and Late Bronze pottery in North Wales (Castell Odo (Alcock 1960), Rhuddlan (Berridge in Quinnell and Blockley 1994 132-8) Glanfeinion (Britnell et al 1997) and Llandegai (Lynch and Musson 2001, 74) is not very close.

Since the other sherds from the ditch of the D-shaped Enclosure can be reasonably confidently identified as part of a Vase Food Vessel, it is worth looking for possible parallels within that group. Close parallels do not occur but the burial urn from the foot of Maen Llwyd, the Standing Stone in Glynllifon Park south of Caernarfon (Wynn 1875) is an undecorated pot of much the same size, with a similar rim. This is normally identified as a Vase Food Vessel (Savory 1957 no.B3) for which its context is appropriate.

Another couple of sherds (Sf 4327 and 6339 (FV3 (Fig I.1.1.12)) come from a tree hollow, 40199, close to the edge of the Multiple Cist Barrow. These have the same fabric as the Vase Food Vessel (FV1) discussed above, but are rather thicker and clumsier. 4267 is a fragment of an out-curved rim with oblique incisions on the exterior. They do not seem to be part of a herringbone decoration. 6339 is undecorated and from a gently curved shoulder. Identification as a large Vase Food Vessel or Food Vessel Urn is dependent more on fabric than shape or decoration, but a reasonable parallel can be found in the pot from a cairn at Garthbeibio, Montgomeryshire (Savory 1957, Fig 4.3).

Two other fragmentary rims, 1635 and 6352, from areas K and J in the hollow between the elevated ground of Trefignath at the east and the Multiple Cist Barrow at the west end of the site, might belong to Vase Food Vessels or perhaps an Early Collared urn.

[5] GrA-27615: 3630 +/- 35 BP; GrA-27614: 3605 +/- 35 BP

Pot FV4 (SF 1635 and 1637 (Fig I.1.1.12)) is from topsoil close to the Early Christian Cemetery in Area K7. 1635 is part of a well-made everted rim with 2 lines of twisted cord on the sloping inner face, and slashes across the outer edge of the rim. The fabric of the rim and of the featureless 1637 and 5 crumbs is hard with a lot of well crushed grit, typical of many Food Vessels.

Pot FV5 (SF 6352 (Fig I.1.1.12)) from J3 is a fragment of a pointed rim with whipped cord in herring bone pattern on both sides. This could be a Food Vessel rim or perhaps an Early Collared Urn where the use of whipped cord and of herring bone patterns is more popular than in the Late Neolithic styles. It comes from a deposit of buried soil in the vicinity of some collapsed later walling and is very worn and abraded (found in sieving). The fabric is dark, hard and without out much visible grit.

Neither of these pieces is significant beyond demonstrating that there is non-funerary Early Bronze activity on the site, some 650m to the east of the burial cairn and the Standing Stone.

Cordoned Urn (SF 1031 and 1476) from Fire pit 20081, Area K1

Sherds of a cordoned Urn (SF 1031 and 1476) were found in a fire pit 20081, in Area K1, some 20m west of the Timber Roundhouse.

There are 26 sherds from probably a single Cordoned Urn in this fire pit, confirming the non-funerary nature of the Early Bronze Age activity on the lower ground. Cordoned Urns are normally associated with cremation burials but they do occur on settlements on the northern Irish coast, notably at Downpatrick where sherds from several urns were found in occupation layers associated with two round wooden houses (Pollock and Waterman 1964).

The sherds are all abraded and there are no joins on ancient breaks though they all come from a segment, amounting to about 25% of the circumference, of the upper part of the pot (Fig I.1.1.12). The fabric is distinctive: brick red on the outside at the rim with a sharp distinction between the red and a dark inner core/surface. Lower down the pot this distinction is less sharp and the surface is a reddy brown. Fresh breaks show the fabric to be compact with a lot of well-crushed stone grit. A few small sherds seem to have a darker grit than others and might not be the same pot, but this is unlikely.

The decoration is made by lines of thick cord carefully impressed in the upper section between the simple upright rim and the cordon. Not enough of the pot survives to show whether or not there was a second cordon.

Cordoned Urns are most frequently found in burial contexts and occur in Scotland (more than 150) and Ireland (more than 80) and in smaller numbers in the Isle of Man and in coastal areas of Wales (Waddell 1995, Fig 11.3). It is interesting that the Early Bronze Age material at Parc Cybi , such as it is, follows an Irish Sea style, so prominent in the Early Neolithic but lacking in the design of Middle and Late Neolithic material. However, like all the pottery on site, this very Irish looking Cordoned Urn was locally made, containing a very rare hornblendite from intrusions of ultramafic rocks in the Rhoscolyn area (See Williams and Jenkins, vol III, part I.2.1). This rock also occurs in the problematic sherd FV2 (1074).

In Anglesey Cordoned Urns have been found at Treiorwerth, Llanddyfnan and Menai Bridge (Lynch 1991); in Caernarfonshire at Braich Lwyd, and at Circle 278 on the hills above Penmaenmawr (RCAM 1956). All these are burial sites, but there is a sherd from another probable Cordoned Urn from what may be a metal-working pit at Tre-wyn near Pentraeth (White 1977 and Lynch 1991, 363, Fig 17a). In mid and south Wales they have been found with burials at Fan y Big on the Brecon Beacons (with a bronze razor – a strangely consistent association throughout the country and in Ireland) (Briggs et al 1990) and at Mount Pleasant, Glamorgan (Savory 1952). In Ireland they have been part of an extensive dating programme and typological study (Brindley 2007).

This pot with its simple upright rim and its large-scale open ornament is typical of Stage 3 urns in Ireland and elsewhere (Brindley 2007, 287-92). Stage 1 Cordoned Urns overlap with Collared Urns and look very similar; Stage 2 is the largest group, current from 1650-1600 and the final Stage 3 urns are judged to be current from 1570-1500 cal BC.

Middle Bronze Age Pottery (Fig I.1.1.12)

Evidence of settlement and activity seems to be the densest and longest in Areas K and J, which is at a crossing between two areas of marshy land. Whereas Early Neolithic occupation seems to prefer the higher ground (Areas H and E) activity from the Middle Neolithic, through the Bronze Age to the Iron Age, Roman and post Roman periods seems to concentrate in this valley bottom.

Early Bronze Age activity occurs here, but also elsewhere, whereas Middle Bronze Age material is concentrated (if that is the word for no more than a handful of sherds and a few crumbs) within Areas K and J. A few other undistinctive sherds which may be later Bronze Age in date come from Areas L, B and F in the vicinity of the Iron Age stone round houses and granaries,a little closer to the marsh.

The rim and 3 fragments (sf 952 and 951) from an earth oven (Pit 31306) in Area E is the most far-flung of the possible later Bronze Age material. The rim (sf 952) has a slight internal bevel and may have been gently in-turned (Fig I.1.1.12). Though the fabric has a rather loose vesicular texture, sf 952 and the 3 similar fragments in sf 951, are unlike the Early Neolithic or Beaker pottery from Area E and are best compared to the simple Middle Bronze Age rims in Area J.

A group of intercut pits and hollows (70050/70054/70128 and 70126) in Area J have produced 6 small sherds (one of them a rim sf 1703) and Middle Bronze Age radiocarbon dates of 1450-1370 cal BC (SUERC-81339) and 1400-1210 cal BC (SUERC-83269). This is the strongest evidence for pottery of this date at Parc Cybi and has influenced the interpretation of other undated deposits with essentially featureless pottery in this part of the site.

The rimsherd (1703) is small, flattened and slightly out-turned in a hard but smooth fabric with small grits (Fig I.1.1.12). It is not distinctive but it is compatible with other pottery of this date. There is another featureless sherd in this same find which contains rather more grit and is closer to some of the other possibly Middle Bronze Age material from Area B. The rest are featureless and also very small, several only crumbs, but the group is consistent.

Three other sherds and 6 crumbs (sf 1630, 1793, 1800, 1801), recovered from the ploughsoil in Area J, are broadly similar in fabric. 1793 with a compact smooth fabric and small grits is fairly close to the non-rim sherd in sf 1703; 1800 is red/black and might be Grooved Ware but a later identification is more probable. The fragments are very small.

Some 20m to the SE is another pit (70064) with a sherd (1782R) of hard dark fabric which might equally be residual Early Neolithic, and about 40m further S is Sf 6440R – less likely to be Early Neolithic. Both these pieces were found in sieving, an indication of their small size and scarcity.

Further west in Area K1 lies a firepit (18124) which contained 2 quite large but featureless sherds (sf 3051) from two different pots. One is hard, with orange/pink surfaces and slightly darker core; relatively sparse angular grits of large-medium size include black shiny rock. The other piece shows clear indication of coil building and is pale grey with beige surfaces, rather soft with relatively sparse angular grit. The diameters of both are 280-300. Neither of these sherds is dateable. They could belong to a Late Bronze tradition, but the fabric could also be Late Neolithic. However the grit seems sparser than is usual in the Late Neolithic pots on this site. This firepit is some 9m east of the Wooden Round house. To the west of it lies the pit (20081) containing the Early Bronze Age Cordoned Urn which has a more distinctive red/black fabric.

Some 100m north, in Area K7 near the clay walled roundhouses which stand close to the edge of the eastern marsh, are 4 pieces of hard abrasive pottery with visible grits but otherwise entirely featureless (sf 4482/4375 from a gully and a burnt patch). Sf 4382 also contains 4 pieces which are probably rotted stone rather than pottery. Sadly these hardly help to date the structures.

Areas L3, B1, B2, and F2

These areas are down by the marsh and contain a complex group of stone round houses and possible granaries. The finds are sadly very sparse and undiagnostic and are little help in sorting out the history of this area of long occupation. There is some residual Late Neolithic material and a few sherds, listed below, which might be Middle Bronze Age, but they lack good diagnostic features. The only distinctive material is some sherds from Cheshire Salt Containers which should belong to the Iron Age.

Area L3

A small structure with postholes and hearth in a roughly oval hollow (see volume 2 figure 83) produced from the central hearth 5 pieces of similar brown pottery and 1 scrap of paler pot (sf 5495R). These were all essentially featureless and no shape could be reconstructed but the fabric : brown, very hard, sandy and abrasive with angular stone grits of variable size, some quite large, most medium. The surface, where present, is dark brown and fairly well smoothed. It is impossible to guess at the date of these sherds from 5495R, but it is

noticeable that the reddish brown, slightly abrasive sandy surface of the main group is common to other finds in this area: sf 88, 766, 2098R and 4123R. All could be Middle Bronze Age in date.

This fabric, and the simple rims of the possible Middle Bronze Age material generally at Parc Gybi, find their closest parallel in the simple rounded pot from Pit 38 at Capel Eithin (White and Smith 1999, 59 and Fig 28; Lynch 1991, Fig 12a, 253) which has a date of about 1400 cal BC, broadly comparable to the date from the pits in Area K.

Area B1: Pit group 25046
A group of 19 pits with fairly charcoal-rich fills. Only 4 contained pottery, three only crumbs and the fourth (Pit 10001) contained a single rimsherd SF 1210 (30 x 25 x 8mm) in a compact heavily gritted fabric (medium stone grits), well fired and brown throughout (Fig I.1.1.12). The bevelled rim has a slight inward curve. This could be MBA and is not unlike the fabric of sf 1703 in Area K, but it is not the sandy fabric which occurs in possible MBA contexts in L3 and B2.

Area B2
Area B2 contains a very complex group of stone round houses and granaries with a certain amount of superimposition. The discovery of two pieces of Grooved Ware already suggests that that relict material may be involved, so dating by artefacts will be very difficult. The ceramic material found is all very small and featureless, and the similarity of fabric may be the safest guide. In this respect there are several find groups which include small featureless sherds which are similar to the larger group from L3, but none provide any diagnostic elements.

Roundhouse A has produced 2 relevant contexts : 92073 (sf 2098R)and 701 (4 sherds)
Roundhouse B has produced 1 relevant context : 90002 (1 sherd sf88)
Roundhouse C has produced 4 relevant contexts : 91161; 91745; 91516; 92324 (2 fragments and 58 crumbs, only sf 4123R is close to L3 sherds)
Roundhouse E has produced 1 relevant context : 91579 (1 sherd, 1 fragment and 3 crumbs sf766)

The other material which is fairly widespread is Cheshire Salt Containers, of which there is one diagnostic sherd (Fig I.1.1.12) from Roundhouse E whose identity has been confirmed by Dr Elaine Morris, and 9 other find groups of small sherds and crumbs from Roundhouses A (6) , C (1) and I (2).

Area F2
Context 21122 (F697), patch of burnt clay, possibly a hearth on the distinctive rounded hill just west of the roundhouse settlement, produced 2 featureless sherds (sf 1095) of a general Bronze Age fabric which could be either Early or Later Bronze Age.

Commentary on Later Bronze pottery

Later Bronze Age pottery is both rare and undistinctive in Wales, as in many areas of the west and north of these islands. The reduction in funerary pottery and the elusiveness of settlements is undoubtedly a factor, but it is also likely that pottery was no longer valued and used in the way that it had been; no longer are there regional styles expressive of cultural identity or pride in craft skills. And because of the functional uniformity there is little evidence of trading networks. Analysis suggests that the vast majority is locally made. The appearance of boundaries and of possibly defensive enclosures in this period gives an impression of societies more turned in on themselves and more anxious than in the past.

There are not many assemblages of Later Bronze Age pottery in Wales. The best is from Glanfeinion in the Severn valley near Llandinam (Britnell *et al* 1997) where there is a good wooden round house, 258 sherds from some 10 pottery jars and secure radiocarbon dates in the range of 1400-1170 cal BC. The pottery is all heavily gritted, rough surfaced and simple in shape with very tentative and minimal decoration. The profiles are largely straight-sided with upright rims, often with an internal bevel. There is one more rounded pot with an out-turned rim, and a single base sherd suggestive of a slightly bulbous lower wall. All the decoration is carelessly applied without much coherent design but there is a variety of technique: impressed cord, incision and fingernail/tip slashing on poorly defined cordons.

The parallels quoted in 1997 include the pottery from the Late Bronze Age hillfort on the Brieddin (Musson 1991) and various of the late burial urns from Bromfield (Stanford 1982) as well as one with a Middle Bronze

date from Pennant Melangell (Britnell 1994). Comparable collections of coarse and simple pottery were also quoted from the Peak District and the north of England, from Yorkshire to Northumberland.

The pottery from the Breiddin is well stratified within the Late Bronze Age timber-laced rampart, from under the Iron Age rampart and Bronze Age deposits behind it (Musson 1991, 118-23). There are 47 vessels represented, but few profiles are complete. Most of the rims are simple upright rims as at Parc Cybi and there are straight-sided jars and bowls with a gently curved profile. Some of the fabrics are very coarse, which is not the case at Parc Cybi, but there are smoother surfaces amongst the bowls, comparable to the material from L3. The stratified contexts could have some chronological depth, but Musson (1991, 119) suggested an 8th century bc date (uncalibrated) for the assemblage as a whole. However the calibrated dates from the Bronze Age hillfort range from at least 11th to 5th centuries cal BC (Musson 1991, 195) and closer analysis would be necessary to improve the precision. Dates associated with the pottery are 1020-540 cal BC (HAR-1223) and 800-430 cal BC (HAR-1415) (95% confidence, recalibrated).

Another hillfort, Castell Odo on the Lleyn Penisinsula, has pottery (some 158 small sherds) from an early phase of occupation. Its stratigraphic position under the first rampart is not in doubt, but the date remains uncertain. However the upright and slightly everted rims are comparable to those at the Breiddin and the red, rather smoother fabric may bring them closer to the Parc Cybi material.

Another north Welsh site mentioned in relation to Glanfeinion is Rhuddlan where the major excavations of the 1970s (Quinnell *et a*l 1994, 132-9) produced a good deal of pottery but, because of later mediaeval disturbance, the context was less clear. The largest group was from a pit, C46 on site A, which contained the remains of 15 large jars, many with well-formed internally bevelled rims, and most with perforations below these rims. Fingernail slashing on cordons and incised decoration on the upper part of the jar were also present. There were no direct dates from Rhuddlan but arguments from comparable sites suggested a horizon between 1300 and 900 cal BC; before Breiddin and after Fourcrosses This material in turn was compared to a smaller assemblage from the upper levels of the ditch at Henge B at Llandygai I (Lynch and Musson 2001, 73-5) and a far smaller group from Bush Farm (Longley *et al* 1998, 230 Fig 19). The perforations or pits beneath the rim were a particular feature of these groups. The Llandygai material had a date of 1210-940 cal BC (GrN-26821[6]) (Lynch and Musson 2001, 121).

In Anglesey pottery with perforations below a simple rim, as seen at Rhuddlan, appears at the multi-period site at Capel Eithin (White and Smith 1999, Fig 28) in two very rough-surfaced jar s C14 and C15. A radiocarbon date for the poorly preserved C15, which contained a little cremated bone, indicate a very late (after c. 800 cal BC[7]) example of funerary use of this crude pottery, which is not represented at Parc Cybi. Though there is a parallel between the smoother but abrasive pottery from L3 and a pot from Pit 38, Capel Eithin with a date in the Middle Bronze Age, other parallels are not close. There are a few sherds of a very hard brown/black pottery, one with a simple upright rim, from within the 'cairn' which are relatively smooth surfaced, though containing a good deal of grit. These are broadly similar to the undistinctive 'Middle Bronze Age ' material from Parc Cybi and might be contemporary since the cairn overlies a surface containing a few Early Bronze Age sherds.

Recent work on the Wylfa Estate in north Anglesey has produced evidence of two possible Bronze Age settlements. One at approximately SH 350 927 (Hotspot 14) produced evidence of a small (c. 4m) wooden round house associated with five sherds which probably were part of two Early Bronze Age Food Vessels. Other sherds excavated by Wessex Archaeology in the same area, but less clearly associated with the structure, represent two further Food Vessels. The discovery of Early Bronze pottery in a settlement context is rare but is seen at Stackpole Warren Pembrokeshire, Site A where it is found in a building, perhaps a house later associated with burial and ritual, as the site was eventually covered by structures related to the Devil's Quoit Standing Stone (Benson *et al* 1990, 185-9, 216-8).

The other Wylfa site was not far away at SH 350 933 and produced some 24 body sherds, 1 large rimsherd and 2 pieces of base. Not all are from the same pot but they share a broadly similar fabric, hard, heavily tempered with variably sized stone grits which are visible on the surface. The surfaces are quite smooth but lumpy. The one rimsherd is rather clumsily out-turned but crisply finished and has a row of fingernail marks 30mm below it. It is very similar to Pot 7 from Glanfeinion and the Wylfa site has a comparable Middle Bronze radiocarbon date.

[6] GrN-26821: 2890+-30 BP
[7] CAR-455 2530± 70BP (810-430 cal BC at 95% confidence)

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I am grateful to Horizon Plc, Iwan Parry of Brython Archaeology and Cat Rees and Matt Jones of CR Archaeology for permission to mention these sites before final publication. Sadly they do not provide close comparisons to the Parc Cybi material but, with the varied material from Capel Eithin, they demonstrate that the functional pottery of the Middle and Late Bronze Age can be quite variable, perhaps because interest in 'fashion' has diminished.

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Figures for Part I.1.1

Fig I.1.1.1. Irish Sea Ware from the hearths/fire pits in the Early Neolithic Building (drawn by Frances Lynch)
Fig I.1.1.2. Irish Sea Ware from the middle and western sectors of the Early Neolithic Building (drawn by Frances Lynch)
Fig I.1.1.3. Irish Sea Ware from the eastern sector of the Early Neolithic Building (drawn by Frances Lynch)
Fig I.1.1.4. Irish Sea Ware from Area E (drawn by Frances Lynch)
Fig I.1.1.5. Irish Sea Ware from Area M (drawn by Frances Lynch)
Fig I.1.1.6. Mortlake Ware from Area K9 (drawn by Frances Lynch)
Fig I.1.1.7. Fengate Ware from Parc Cybi (drawn by Frances Lynch)
Fig I.1.1.8. Grooved Ware from Area J (drawn by Frances Lynch)
Fig I.1.1.9. Grooved Ware from Areas B2 and D3 (drawn by Frances Lynch)
Fig I.1.1.10. Beaker sherds from Area E (drawn by Frances Lynch)
Fig I.1.1.11. Pots from the multi-cist barrow (drawn by Frances Lynch)
Fig I.1.1.12. Bronze Age pottery and a sherd of Iron Age Cheshire Salt Container from Parc Cybi (drawn by Frances Lynch)

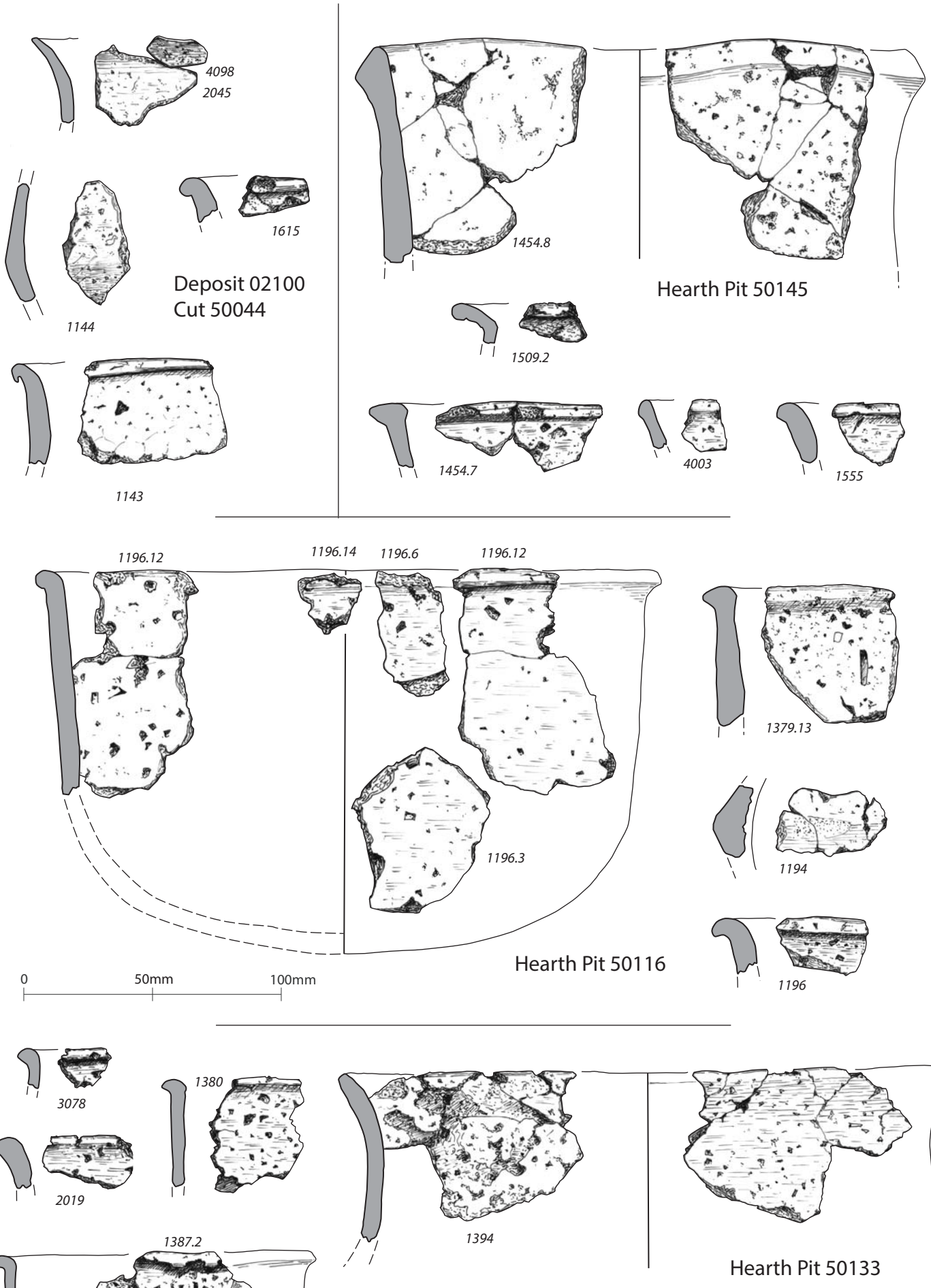


Fig I.1.1.1. Irish Sea Ware from the hearths/fire pits in the Early Neolithic Building (drawn by Frances Lynch)

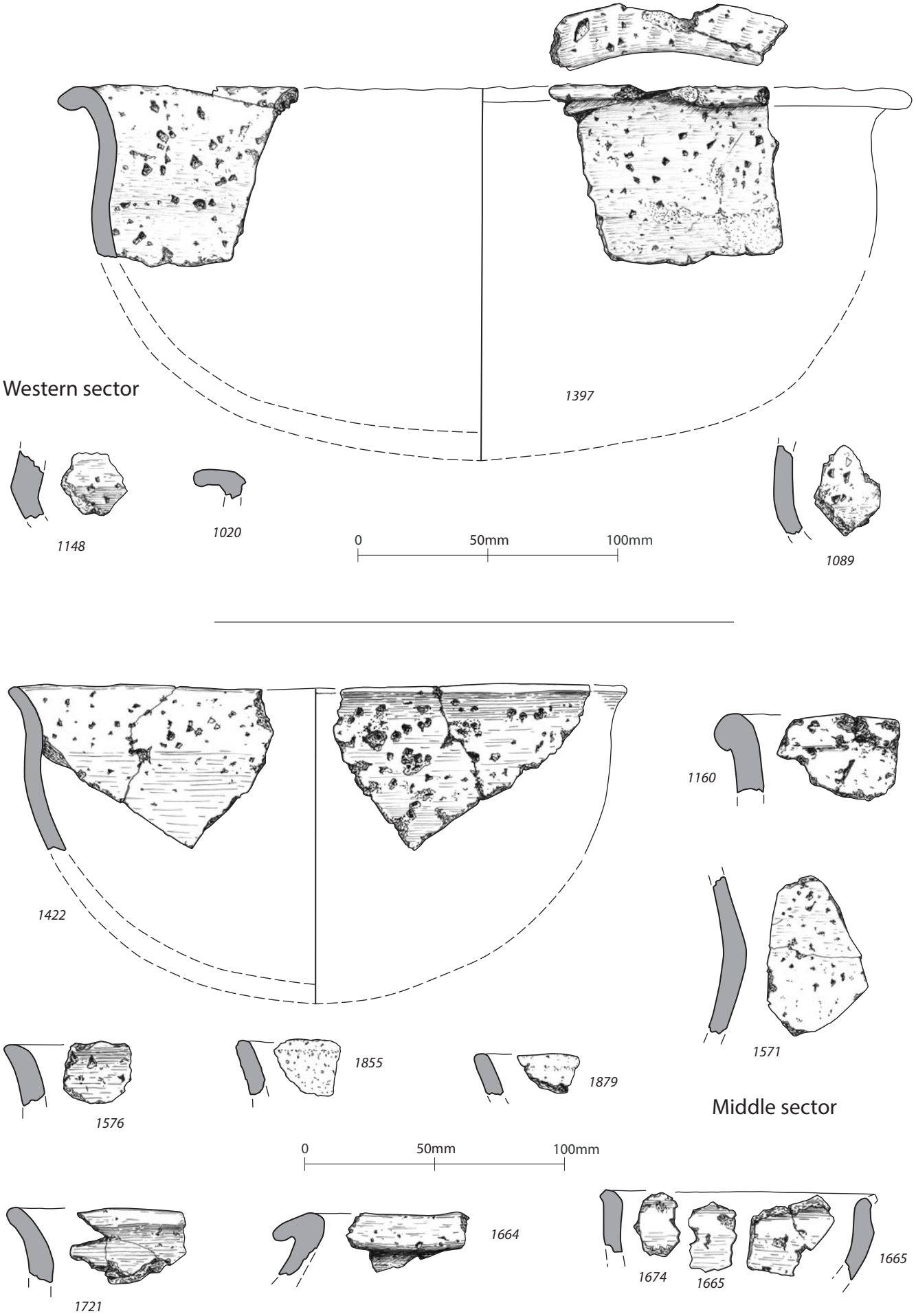


Fig I.1.1.2. Irish Sea Ware from the middle and western sectors of the Early Neolithic Building (drawn by Frances Lynch)

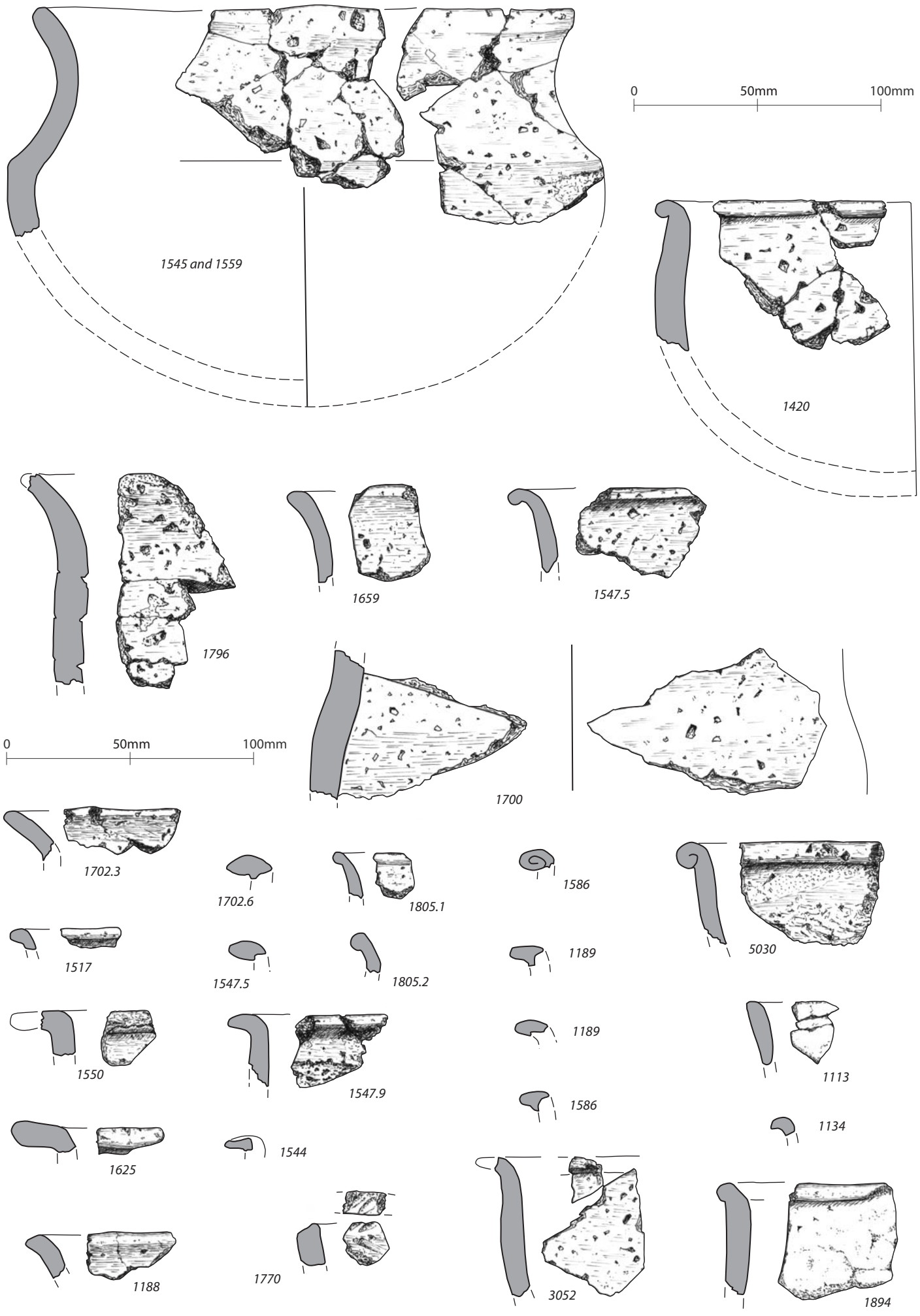


Fig I.1.1.3. Irish Sea Ware from the eastern sector of the Early Neolithic Building (drawn by Frances Lynch)

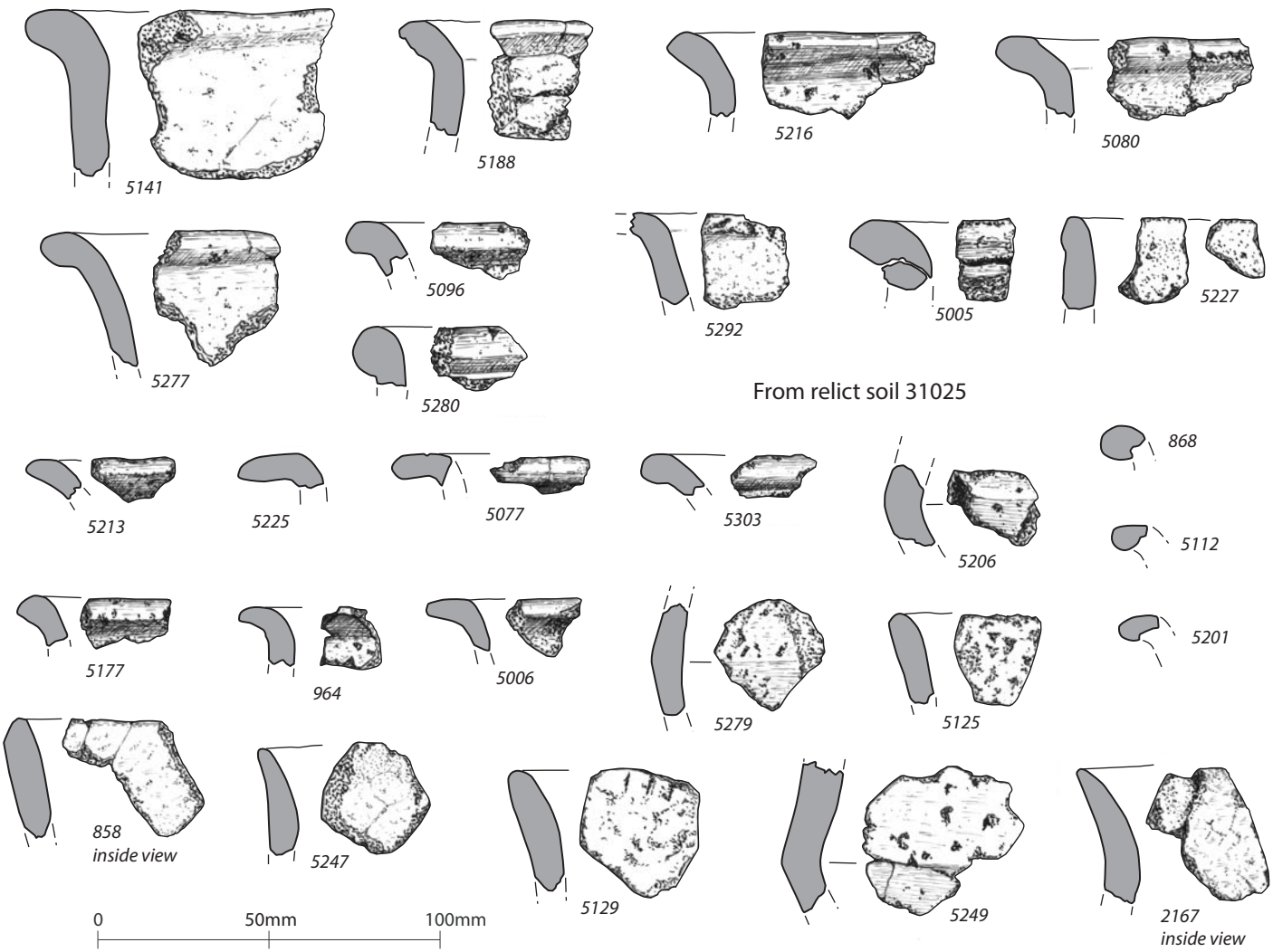
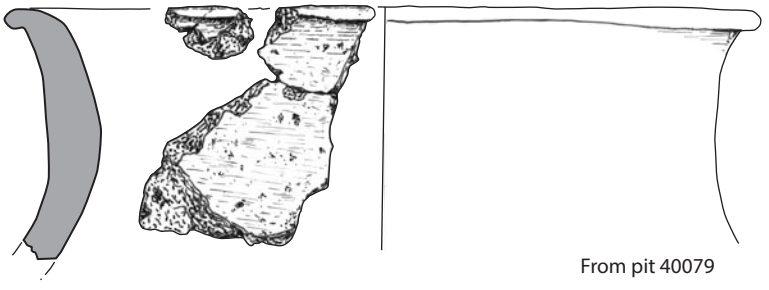


Fig I.1.1.4. Irish Sea Ware from Area E (drawn by Frances Lynch)

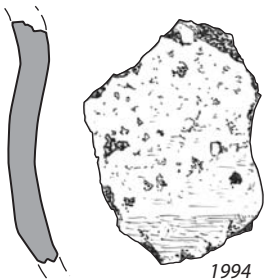


1892.2

From pit 40079

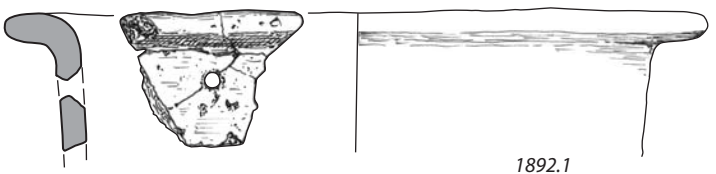
1892.3

From pit 40079



1994

From posthole 40088



1892.1

Fig I.1.1.5. Irish Sea Ware from Area M (drawn by Frances Lynch)

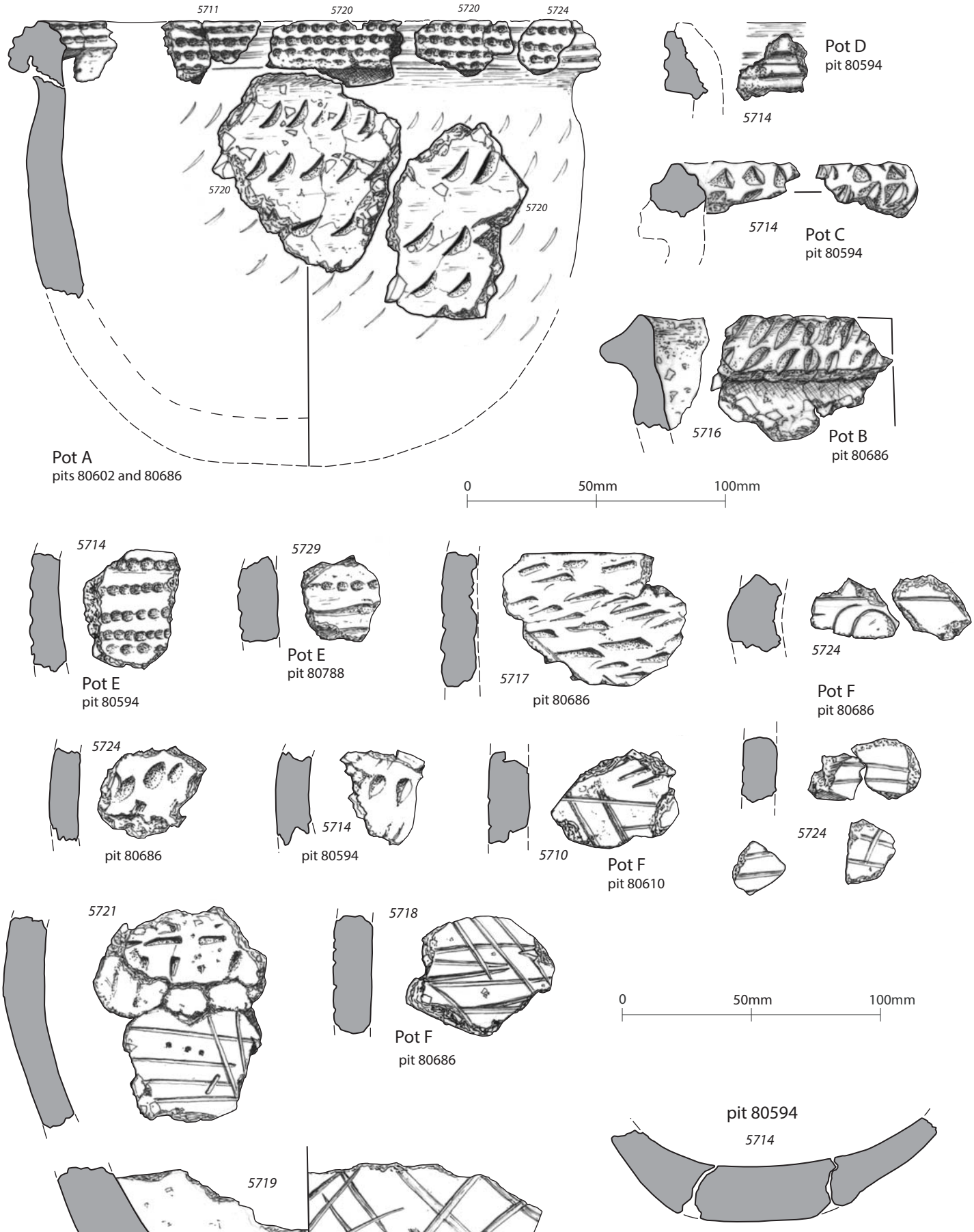


Fig I.1.1.6. Mortlake Ware from Area K9 (drawn by Frances Lynch)

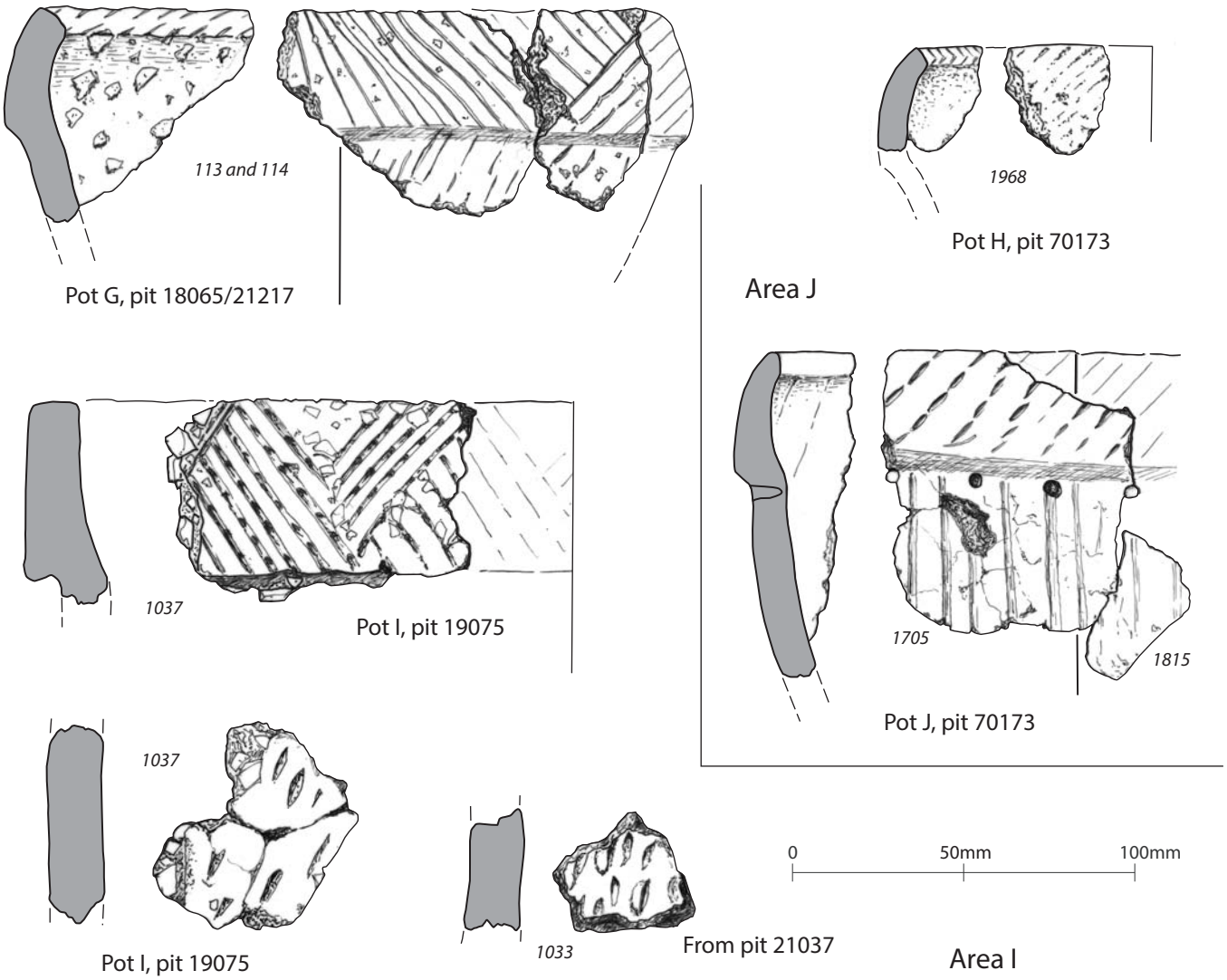


Fig I.1.1.7. Fengate Ware from Parc Cybi (drawn by Frances Lynch)

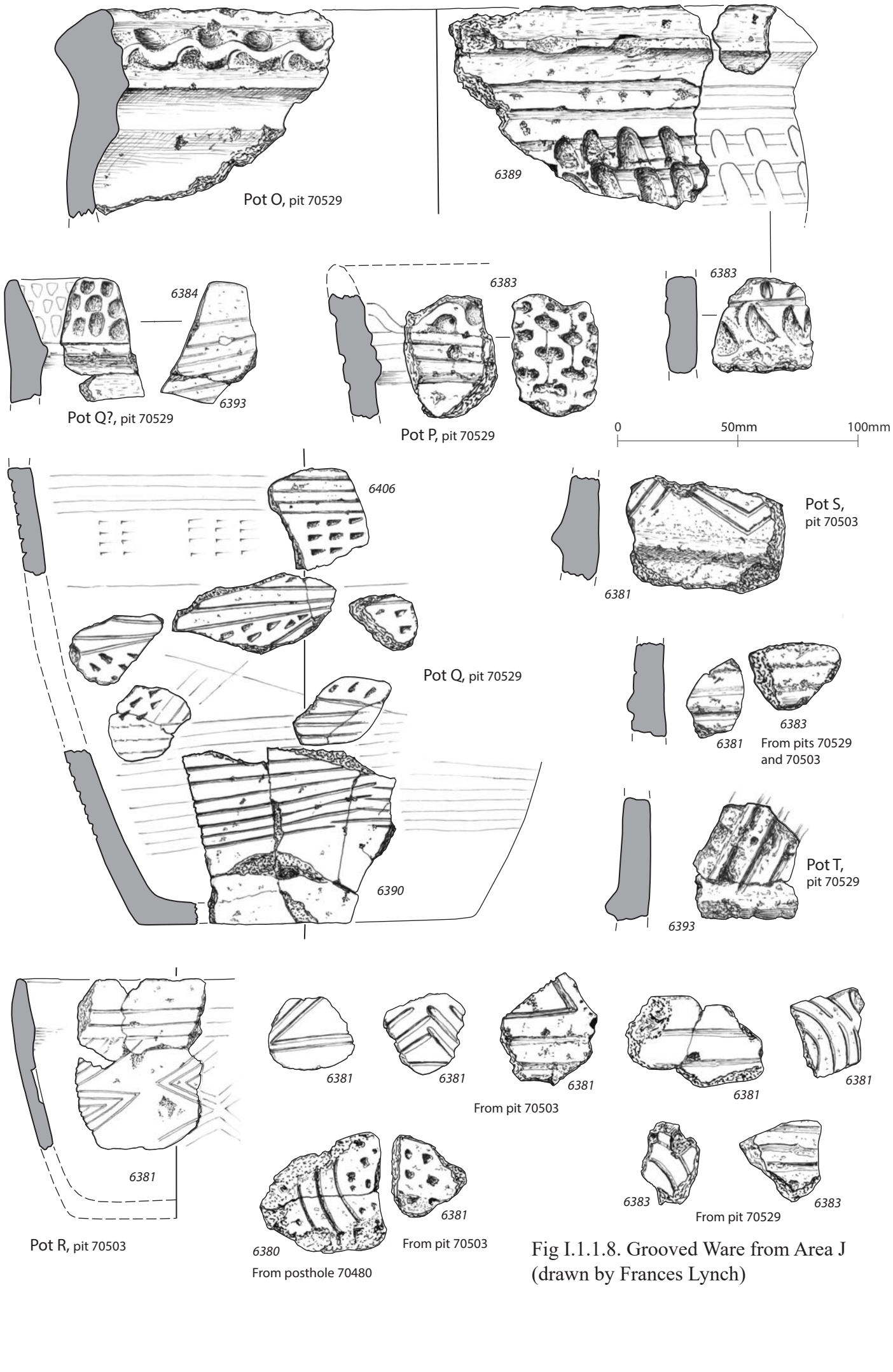


Fig I.1.1.8. Grooved Ware from Area J (drawn by Frances Lynch)

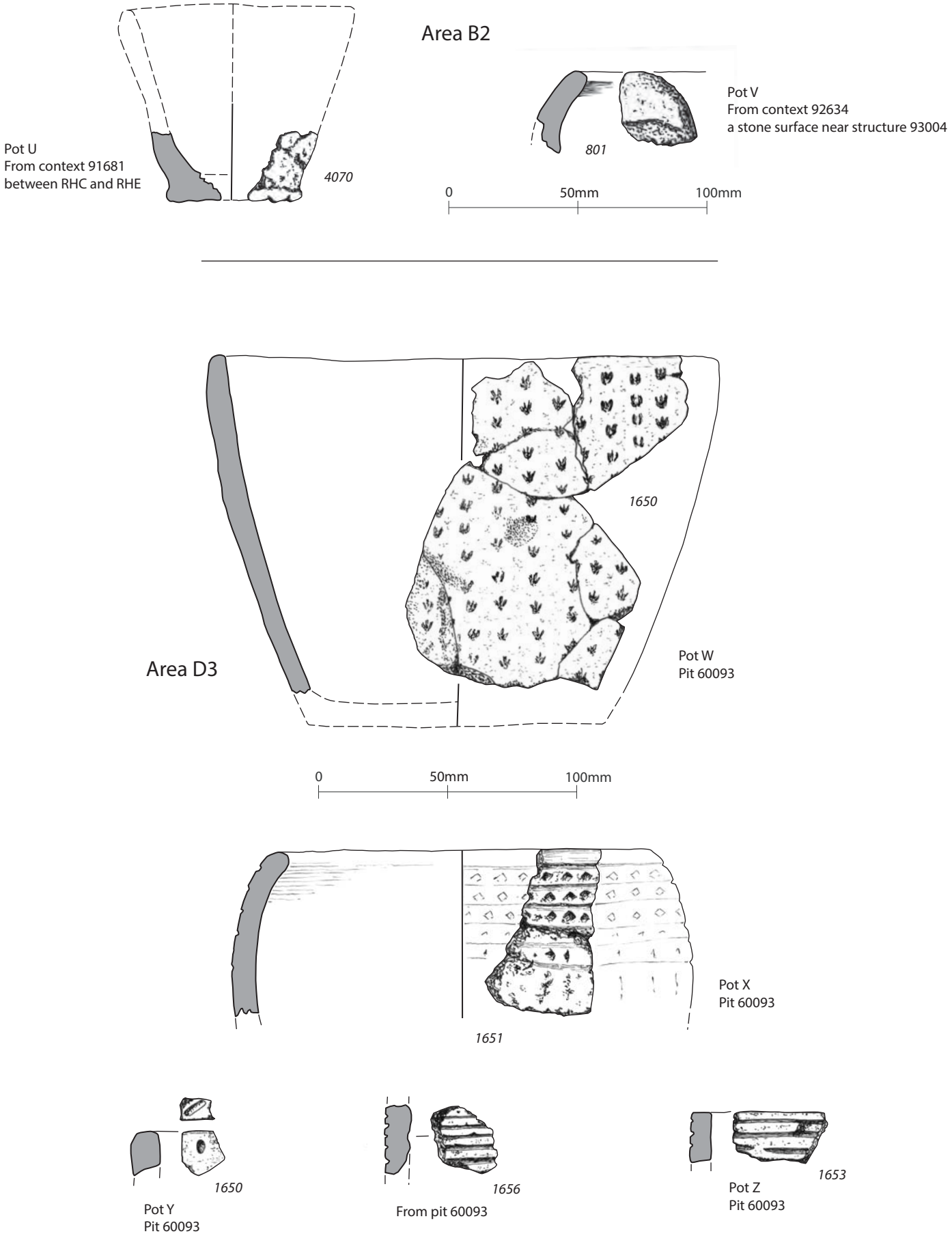
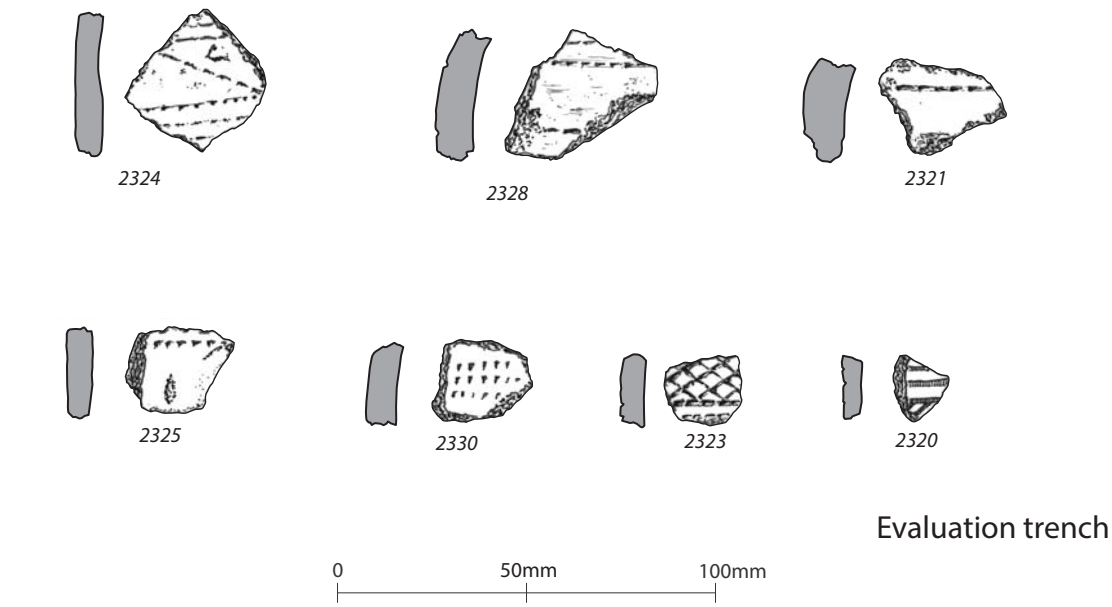


Fig I.1.1.9. Grooved Ware from Areas B2 and D3 (drawn by Frances Lynch)



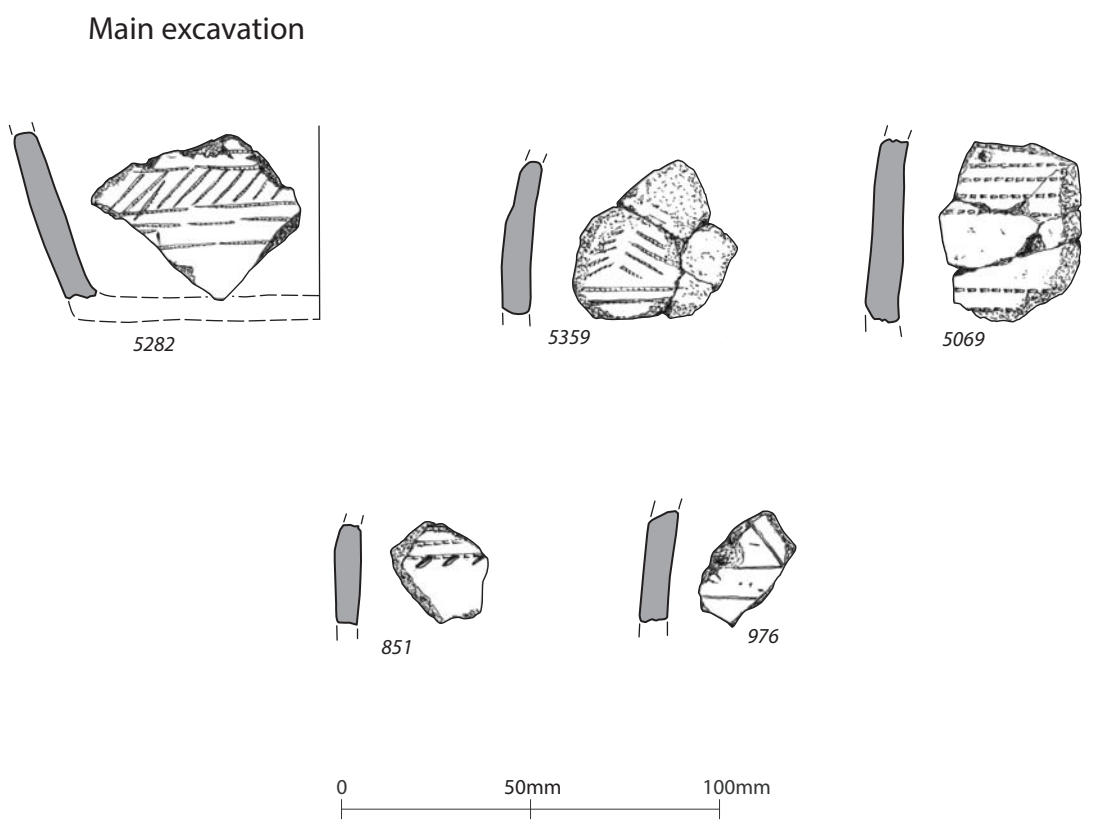
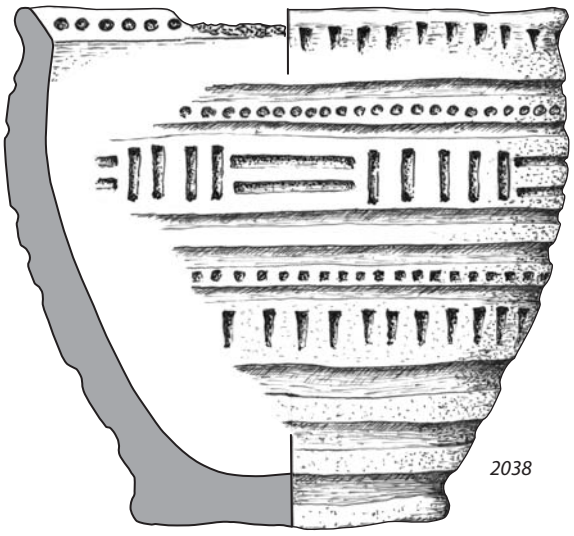
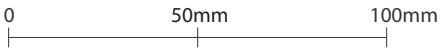
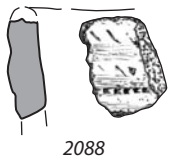


Fig I.1.1.10. Beaker sherds from Area E (drawn by Frances Lynch)

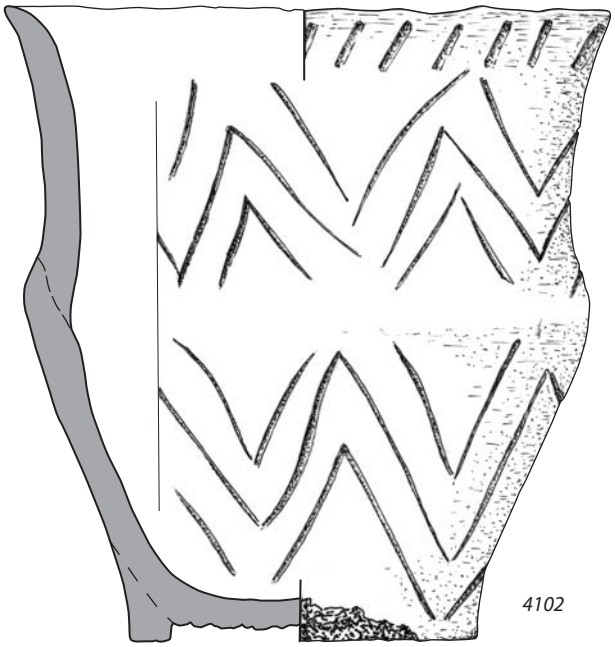


Food vessel from cist 3



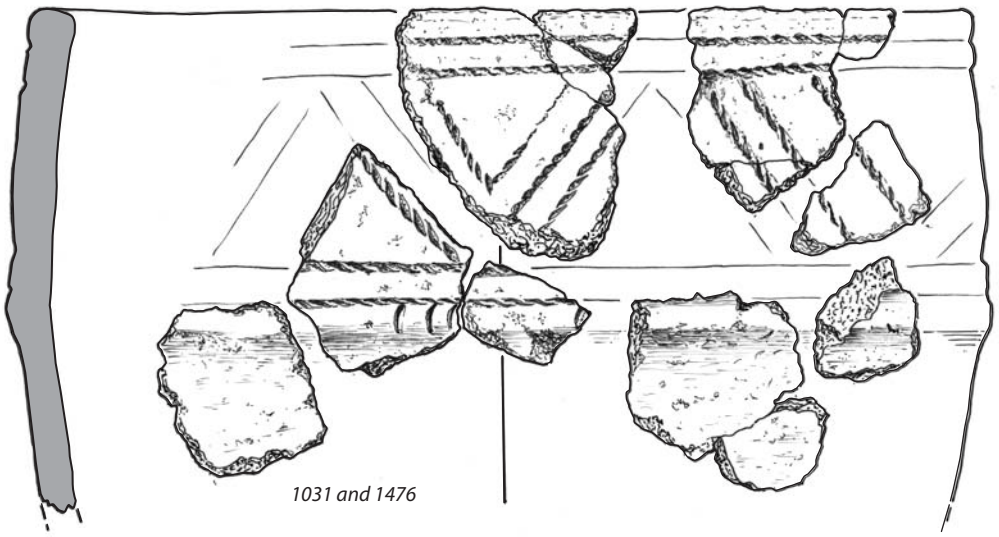


Beaker sherd from cist 2



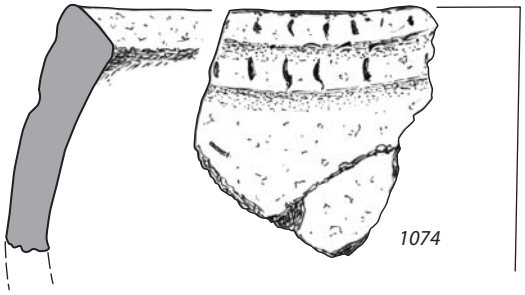
Beaker from cist 7

Fig I.1.1.11. Pots from the multi-cist barrow (drawn by Frances Lynch)

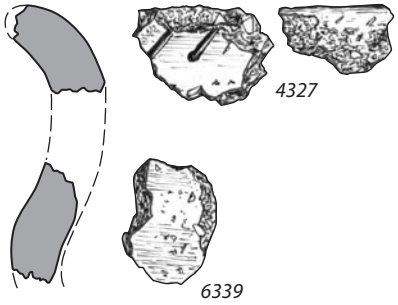


Cordoned urn from pit 20081, Area K1

FV1 from D-shaped enclosure, Area M



FV2 from D-shaped enclosure, Area M

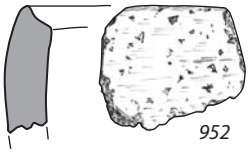


FV3 from root hollow
40198/40199 near the cist cemetery

FV4 from buried soil 70437, Area J

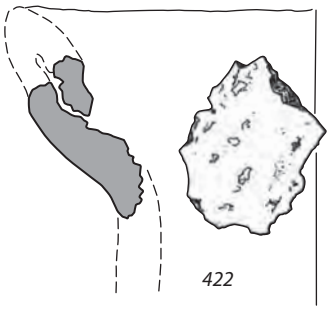
FV5 from ploughsoil in Area K7

From pit 70054, Area J



From earth oven 31306, Area E

From pit 10001, Area B1



Iron Age Cheshire Salt Container
from posthole 91442, Area B2

Fig I.1.1.12. Bronze Age pottery and a sherd of Iron Age Cheshire Salt Container from Parc Cybi (drawn by Frances Lynch)

Part I.1.2. Note on Pottery from Cae Glas, Penrhos

Frances Lynch

See Fig I.1.2.1

Evaluation excavations in 2014 by Wessex Archaeology in Cae Glas (Cae Glas 2), the area just to the east of Parc Cybi, revealed a pit in Trench 24 (Wessex Archaeology 20xx). This pit contained the remains of 2 Fengate Ware jars and some pieces of burnt clay.

One collared jar in a red fabric containing well-crushed quartz filler was represented by only 2 sherds, one being part of a fairly broad collar decorated with counter-hatched incised lines.

The other pot was more complete, and was believed to have been fully complete on discovery, but this is unlikely since so little (less than 1/3) of the rim now remains. It is a small conical jar with a narrow inturned collar and a rim with a corrugated edge. The rim and body are covered with fingernail rustication in approximately horizontal rows. The fabric is very heavily gritted with large dark stone grits, most angular but some rounded. The colour throughout is mainly dark grey. The diameter at the top is 170mm and the height about 150mm.

The medium-sized conical jar is the commonest form among the 11 poorly preserved Fengate pots at Parc Cybi, where Pot G from finds 113 and 114 is the closest parallel. The very heavy rustication is less common, only appearing on a small body sherd, 1033 from Pit 21037, but preference for the use of fingernail decoration is everywhere, and this pot from Cae Glas is obviously the product of the same community.

Close parallels occur at Parc Bryn Cegin where PGIII.C is very close in size and shape (Kenney 2008 Fig 11). The narrow inturned collar is also popular in Yorkshire. At Sewerby Cottage Farm near Bridlington there are 5 examples on relatively small conical jars as here and at Carnaby Top there are 2 others, although they have rather more T-shaped rims than inturned collars (all illustrated by Manby in Fenton Thomas 2009, 167-73). The decoration on the other collared jar can also be seen at Sewerby Cottage Farm which has a particularly varied Fengate assemblage.

In the nearby Trenches 25 and 26 6 small sherds of Early Neolithic 'Irish Sea Ware' were found, including a damaged out-turned round rim, probably from a typical open bowl. The fabric is classic dark vesicular (Williams and Jenkins Group 1), smooth surfaced and thin. In Trench 27 there were 2 scraps of pottery, one a piece of thin yellow Beaker fabric with 2 lines of hyphenated impressions. The other is undatable 'prehistoric'. These limited finds suggest that the prehistoric activity seen in Parc Cybi continued eastward. But the second area explored at Cae Glas (Cae Glas 1) some 400m further to the east produced no prehistoric material.

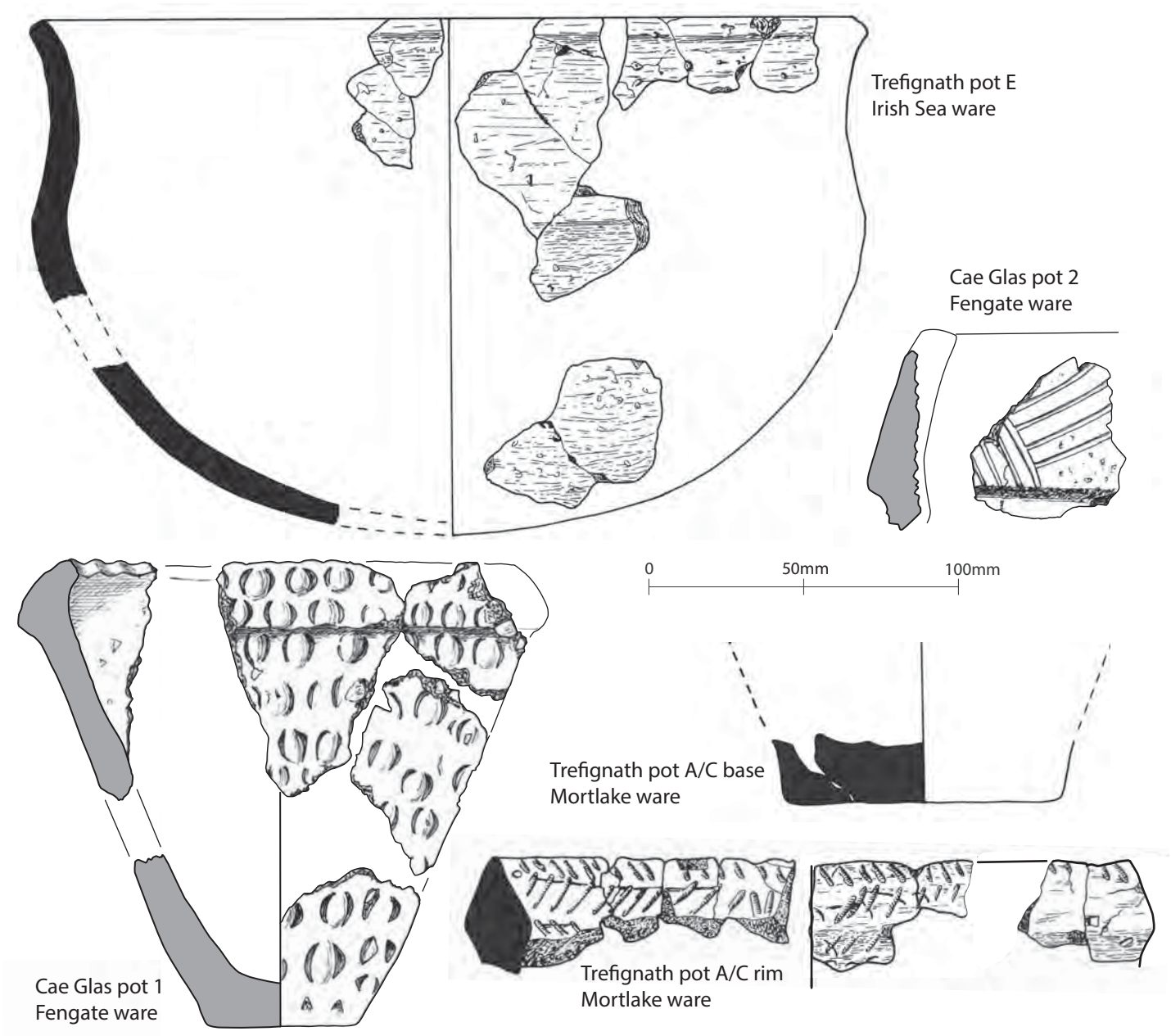
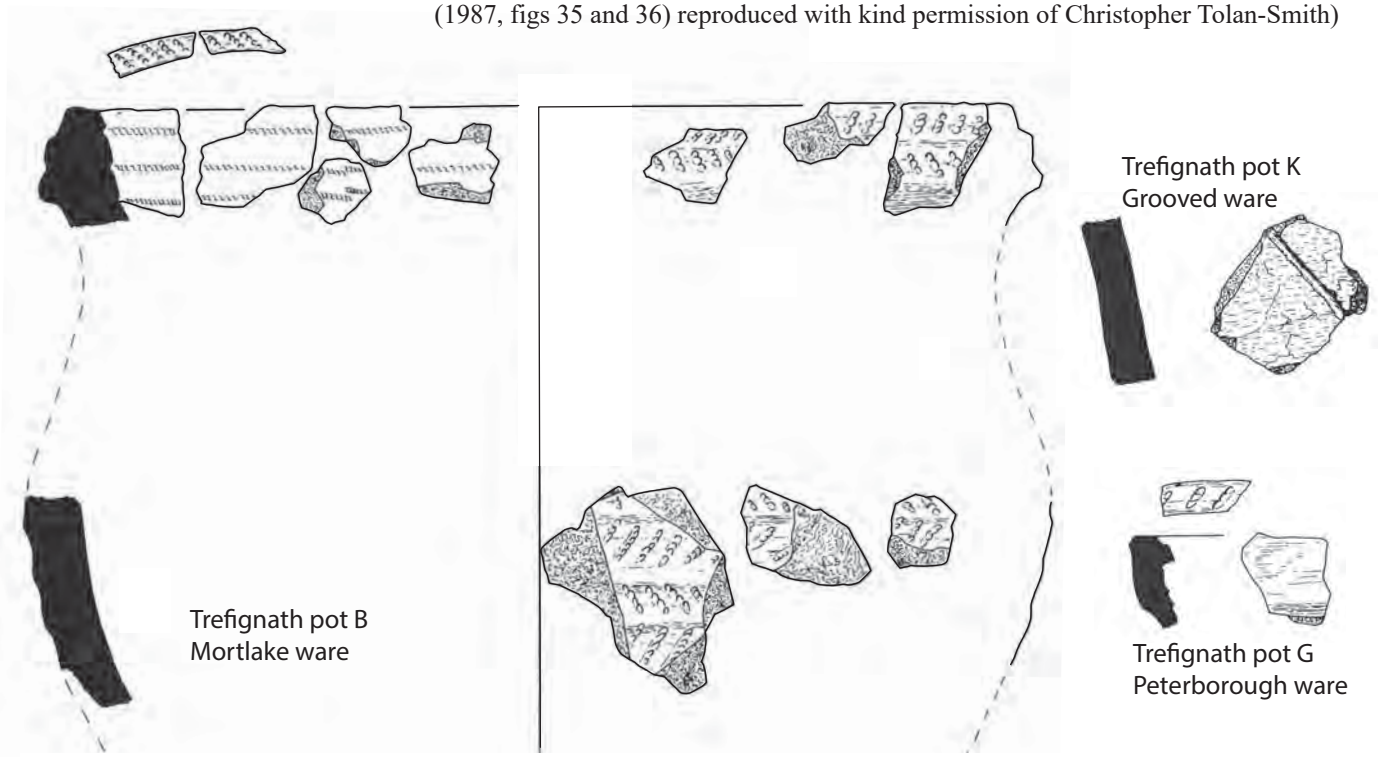


Fig I.1.2.1. Pottery from Trefignath and Fengate pot from the Wessex Archaeology Cae Glas 2 evaluation trenches (Cae Glas drawn by Frances Lynch, Trefignath after Smith (1987, figs 35 and 36) reproduced with kind permission of Christopher Tolan-Smith)



Part I.1.3. Notes on Sherds sf1074 and sf4070

Elaine L Morris

Sf1074

Fig I.1.1.12

1. The fabric is not Group A (Malvernian rock-gritted) fabric. This was immediately observed at x10 power microscopy as a high density (visual abundance representing 40% or more of the fabric as a whole) of what appeared to be a uniform variety of very poorly-sorted ferromagnesian/mafic minerals (very shiny, platy) which were vary greatly in size, with pieces from less than 0.3mm up to 5mm across. Group A fabric Iron Age pottery as defined by Peacock (1968, 415-21) does not have large quantities of very large fragments of ferromagnesian minerals. This has been confirmed by Dr Patrick Quinn in his detailed, thorough petrographic report (Quinn 2018). Quinn has identified the principal inclusion type as an amphibolite such as hornblendite and proposed that the most likely source would be a local one. Dr Quinn has been asked to investigate whether the fabric may have originated from resources located in Cornwall or Ireland which, if so, would indicate that the vessel had been transported to Anglesey in the later prehistoric period.

2. The form and size of the vessel based on the upper vessel profile including rim, is not similar to Iron Age pottery made from Group A (Malvernian rock-gritted) fabric: (a) The diameter of SF 1074 measures c. 220-240mm across. The vast majority of Iron Age vessels made from Group A fabric are smaller, ranging from 100-180mm in diameter. SF 1074 is a medium-sized (200mm-<300mm), rather than small-sized (100-<200mm) vessel. The size ranges of Group A fabric vessels were calculated using publications for Croft Ambrey hillfort (Stanford 1974) in Herefordshire and Midsummer Hill (Stanford 1981), and Conderton Camp (Thomas 2005) hillforts in Worcestershire, as well as others examined by Peacock (1968); and (b) Group A fabric vessels are ovoid, convex jars with simple, rounded rims curving slightly inwards or slack-shouldered, S-shaped profile jars with slightly everted rims as shown in these same publications. These vessel forms are not at all like that of the SF 1074 vessel which is thickened at the upright rim and very strongly bevelled on its interior which is much more reminiscent of Middle/Late Bronze Age pottery such examples recovered from excavations at Rhuddlan, Clwyd, North Wales (Berridge 1994, fig. 12.1, 1, 3, 5-10).

3. The method of decoration and decorative design is not at all similar to that found on Group A Malvernian rock-gritted fabric Iron Age pottery. The SF 1074 vessel was decorated very lightly with small, shallow and faint, finger-nail impressions in two significant rows and a third quite minor or incomplete row around the upper rim/neck area of the vessel including one row along the exterior edge of the rim lip. Group A Malvernian fabric pottery vessels are not decorated with up to three rows of finger-nail impressions but with tooled impressions which leave clear, not faint, marks or with shallow, tooled designs in a linear, parallel pattern that occasional includes a line crossing the parallel lines.

Conclusion This vessel was not made by a potter using natural resources on or around the Malvern Hills in the Herefordshire-Worcestershire area of England during the Iron Age. The most likely interpretation currently favours a Middle/Late Bronze Age or at least a Bronze Age date for the vessel form and decoration and a local, Anglesey source for its production until further information is received from Dr Quinn.

Sf4070

A single base sherd from a handmade vessel with a soapy feel to it (find no. 4070; Pot U; Fig I.1.1.9) was recovered from context 91681, a small dump of charcoal likely to have been placed on the surface of a courtyard related to roundhouse E, part of the main enclosure settlement (volume 2 figure 69).

Although the sherd weighs only 9 grammes, it provides a considerable amount of information as to the type and date range of the vessel from which it derives. It belonged to a small, handmade, bonfired pot with a base measuring just 50mm in diameter; a significant 25% of this diameter is represented by the small sherd making this measurement quite reliable. The vessel had been ring or coil-built as the sherd clearly displays a spiralling coil rising up from the base angle on the exterior wall surface, which is typical of vessels made by this method (Gibson and Wood 1990, 36-9, figs. 11, 1, 7-8 and 13); this joint had been well-smoothed over on the vessel interior surface but not on the exterior. The lower wall of the container measures 5.5-6mm thick. The wall had been attached to the base plate or disc by pinching the joint together creating a frilled or curled-up, exterior edge to the vessel which not only kept the wall and base together but also offered an extra projection around the base which had the ability to assist in balancing the original small pot on irregular surfaces, such as the ground inside a roundhouse or on a trampled, earthen courtyard. The profile of the vessel wall expands upwards and outwards beyond the base circle revealing that the body of the original pot had not been straightwalled but rather convex

in shape. Such a small base diameter and relatively thin lower wall thickness point towards this having been quite a small pot.

The fabric of the vessel was slightly affected by having been incorporated into the charcoal-rich deposit where it was recovered. Nevertheless, it is possible with careful washing of the sherd's fractures (broken edges) to determine that it is finely grog-tempered with a common to very common amount (20-25% concentration) of well-sorted, angular to subangular grog fragments measuring up to 2mm across in a fine, slightly silty, clay matrix. The presence of this grog temper explains the soapy feel to its texture. No lithic or mafic inclusions were identified in this paste. The sherd fractures were examined using x10 power binocular microscopy and this description utilises the recommendations for the analysis provided by the Prehistoric Ceramics Research Group (2010, appendices 2-6).

The firing method of the vessel is indicated by the overall brown colour of the sherd with hints of orange demonstrating incomplete or irregular oxidisation of the vessel during firing. The surface of the sherd can be scratched by a fingernail which reveals that the firing had occurred at a low or modest temperature which made this a softly-fired vessel fabric (see Peacock 1977, 30; Orton, Tyers and Vince 1993, 138; Orton and Hughes 2013, 158).

Based on the recovery location of the sherd, the prospect that this base fragment may have derived from an Iron Age vessel was a prospect. However, the details provided above have removed that option completely. Instead, it is most likely that this sherd had been incorporated into the charcoal-rich layer at some stage in its history. All of the characteristics described above point towards this small vessel dating from within the Early/Middle Bronze Age, with the prospect that it may have been an undecorated Beaker. Detailed analysis of Neolithic and Bronze Age pottery from North Wales has shown that coarsely grog-tempered pottery fabrics were used to make later Neolithic vessels, while finer grog-tempered fabrics are frequently found amongst Final Neolithic/Early Bronze Age Beakers in particular, including both domestic and funerary examples (Williams and Jenkins 2004, 13-18, table 3). This fabric type, the thin-walled construction, and the small diameter support such a date for this vessel.

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Part I.1.4. Cheshire Salt Containers (Stony VCP)

Elaine L Morris

Two contexts from different areas of the site produced examples of Cheshire salt container material. Two sherds of a handmade, coarse fabric, pot-like material (sf422; 20 grammes (Fig I.1.1.12)) were found in context 91443, one of the stone roundhouses in Area B2. The larger piece is a body sherd with a concave or waist-bearing profile from the middle of a vessel and the other is a fractured-off flake from this same sherd to which it joins. Both sherds are oxidised throughout and are a homogenous medium orange colour. The main sherd measures a variable 9-12-mm thick, and with the attached flake in place they measure 12-18mm thick. The exterior of the sherds when joined is a consistently smoothed surface while the interior is highly irregular in its landscape with finger-pressed clay creations of rounded hills and sweeping valleys along its surface. If the bulbous end of these joined sherds is called the lower part of the sherd pair, the upper end displays a strong 45 degree angle typical of handmade, collar-or ring-built vessels with one collar put on top of another collar/ring, pressing down on the interior creating the lumpy interior surface and smoothing upwards to join the added collar to the next collar above creating the distinctive angle and construction weakness. The fabric comprises a number of angular rocks up to 8mm across in a sandy clay matrix. Three minute pieces of similar material were recovered from context 05027 in Area B1 (sample 8; sf2067; less than 1 gramme). This material was from pit 05026 in pit group 25046 (PRN 31592), about 40m NW of the stone roundhouses. The pit group produced a sherd of Bronze Age pottery but also three late Iron Age radiocarbon dates, which fit with the presence of the Cheshire salt container material. Other material submitted as possibly from salt containers proved not to be so.

These pieces derived from a type of ceramic container used to evaporate water from brine and transport the dried salt crystals from brine springs located in Cheshire to settlements and hillforts in the West Midlands Welsh Borderland and Wales during the second half of the first millennium BC (Morris 1985, 353-370, figs. 7-10; 1994). During the past 30 years, excavations at many more Iron Age sites in these areas have revealed dozens of additional examples of these containers throughout the area (volume 2 figure 132) (Morris 1985 figs. 9-10; 1999; 2002; 2015; Hancocks 2006; Philpott 2010, fig. 5.5) demonstrating an extraordinary distribution of Cheshire salt to sites from Anglesey to Nottinghamshire and from Monmouthshire to Leicestershire. The examples found at Parc Cybi reinforce this dynamic network of contacts between Wales and the Midlands during this period. These two small sherds from such a distinctive type of ceramic container provide tangible evidence for this connected world.

Cheshire salt containers were made from a very distinctive but highly varied type of fabric characterised by the presence of angular, igneous and sedimentary rocks including microgranite, granophyre and felspathic sandstone, to name a few, and their disaggregated components of potash and plagioclase felspar and mafic minerals (Morris 1985, 355-64, tables 2-4). In addition, many but not all sherds of have been shown to have rounded examples of micaceous siltstone/fine sandstone. Altogether, these highly characteristic rocks and mineral comprise an ill-sorted collection of pieces measuring from very small fragments up to large pieces 10mm or more in size and are found to have a density ranging from 5 to 45% concentration in the fabric. So far, no single sherd displayed all of the rock types described. These various types of rock were found to occur in a typical sandy clay matrix with round to subround quartz grains usually measuring about 0.7mm or less in size with the occasional much larger grain up to 1mm across which represent 10-35% of the fabric. Detailed research has demonstrated that the range of rock types mirror the distribution of Lake District glacial drift erratics and local sandstone found on the Cheshire Plain where naturally-occurring sandy clays are also common (Morris 1985, 364-6). The presence of both angular and rounded large rocks in the fabric of Cheshire salt container sherds has been interpreted as indicative of the rocks being naturally-occurring in the sandy clay matrix of this fabric; had there been only angular rock fragments in the sandy matrix, then this could have been described as a humanly-made fabric with crushed rocks added as temper to the clay. Currently, there is no actual published evidence of prehistoric salt production in the Cheshire Plain region as has been found at Droitwich. However, saltworking sites of Roman medieval and modern date are well-documented at Middlewich, Nantwich and Northwich, so there is every prospect that prehistoric evidence will be discovered – and hopefully, in the near future.

Due to the fragmentation which Cheshire salt containers were subjected to, presumably in order to extract the salt they contained, most sherds are quite small which makes reconstruction of vessel form challenging. The Parc Cybi sherds display the typical characteristics of vessel form and manufacturing technique recognised elsewhere, including the flared profile of the upper part of these vase-shaped cylinders, walls measuring 12-18mm thick depending upon building angles of collar/ring joints and bulbous mounds of clay from finger-pressing effects to keep the collar/rings together. Evidence from several excavated assemblages has indicated that examples probably measured approximately 190mm tall with a rim diameter of c.180mm and base of

c.95mm with rims either folded over to the interior or simply rounded (Morris 1985, figs. 7-8; Britnell 1989). These vessels were industrial ceramics; practical, functional containers with flaring profiles that allowed for steady evaporation of water from brine and a construction method that held together during brine processing and transportation of the salt but were easy to crack open when necessary to extract the salt.

Cheshire salt containers, like the one found at Parc Cybi, once boasted the descriptive but now obsolete name of stony VCP (the rock-rich variety of Very Coase Pottery; see Gelling and Stanford 1965m fig, 1). The manufacture and use of Cheshire salt containers occurred at a similar time to the production and more southerly distribution in the West Midlands, Welsh Borderland, Cotswolds, Oxfordshire and Wiltshire area of salt crystals which had been dried in either sand and marl or organic-tempered fabric containers made near the brine springs at Droitwich in Worcestershire (Morris 1985, 338-352, figs. 3-6; Rees, 1986; Woodiwiss 1992). The pieces found at Parc Cybi are typical examples of this special ceramic material, as are those identified previously on Anglesey at Bryn Eryr (Longley 1998) and Pant-y-Saer (Morris 1985, tables 3 & 5).

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Catalogue of material studied as possibly Cheshire salt containers

Find Nos. 198 and 200, 90475 (RHA) - sparse (5-7%), A-sub-A quartzites up to 2mm with majority < 1mm in a sandy clay matrix; one side of the pieces subjected to high heat, melting the quartzite to fuse the surface hard; interpretation = general furnace or hearth material - and none obviously crucible, mould or tuyere fragments

Find No. 209, 90009 (RHA) - too much quartzite and no rhyolites or granophyre fragments and also fabric is full of holes (vesicles) in the structure of the matrix which is very NOT Stony VCP in nature which is properly dense like pottery; interpretation = generally irregular structure typical of fired clay fragments

Find No. 228, 90479 - only fired clay fragments with the too porous structure as for Find No. 209

Find No. 231, 90479 - see Find Nos. 198 & 200 above as this is the same type of furnace/hearth material

Find No. 2060, 91858 - (a) two reddish-orange round pieces = fired clay fragments; (b) two black core/brown surface = potsherd 'flakes' (not full vessel wall thickness); *definitely pottery* but not VCP

Find No. 2067, 05027 - (a) three pieces (total weight less than 1 gramme) of Cheshire salt container material/Stony VCP based on pale orange-coloured clay, rare (1%), round quartz grains measuring about 1mm in size and rare igneous rock fragments that appear to be the usually common types; these pieces have been put into a very small bag and labelled 'Cheshire salt container' and put back into main context bag; (b) rest of this context of ceramic material is fired clay with one possibility of a pot sherd

Find No. 2349, 701 - (a) two fragments are not VCP because they have the wrong clay colour and no real rock inclusions (these are tiny pieces); (b) one fragment has a massive amount/high density of the wrong rock types and also has the wrong clay colour to be VCP; most likely fired clay...(?); (c) one has the wrong sorts of rocks

Find No. 4018, 90632 - minute pieces of fired clay

Find No. 4089, 90919 - (a) one has a massive quantity of the wrong range of rocks and the wrong colour of clay as mentioned previously; (b) one has a really red (iron-rich) clay which is wrong for VCP

Find No. 5475, 93524 - fired clay

Find No. 5747, 93605 - most likely potsherd; definitely not VCP with wrong rocks and wrong clay

Part I.1.5. Catalogue of Prehistoric Pottery from Parc Cybi, Holyhead

Frances Lynch

NB. The catalogue below and commentaries in the main text superceed the preliminary assessment and interpretions within that. The preliminary assessment can be found in Kenney *et al* 2011

Find numbers in bold indicate the sherd has been illustrated. "R" after a find number indicates that it came from the wet sieving residue.

For references see bibliography to Part I.1.1

Early Neolithic Pottery

Area H: Early Neolithic Building

Hearth pits

Hearth A, cut number 50044 (and possible secondary cut 50041). This hearth is in the western sector of the building.

Context 2100

1025 originally 1 sherd; curved body yellow out surface soft, not obviously vesicular but Neolithic 38x36 x09mm. **Sherd sampled for lipid analysis**

1615 1 out-turned rim sherd 27x15x07mm dark vesicular ?burnish over rim + 1 crumb

2001 2 crumbs vesicular? incomplete surface

2002 R 1 curved body sherd 25x25x07mm red outer surface vesicular + 4 scraps beige vesicular + 4 crumbs yellow/black vesicular. **One sherd sampled for lipid analysis**

2045 R 1 sherd from thin pointed ? rim pale beige vesicular 23x10x04mm + 2 crumbs similar

2084 R 1 crumb pale beige vesicular 07mm thick

4098 R 1 badly eroded out-turned rim sherd 40x30x04mm. Pale beige vesicular + 2 dark crumbs. **Sherd sampled for lipid analysis**

4216 R 1 scrap eroded yellow vesicular

Context 50045

1143 1 rimsherd (57x40x06mm) from a possible straight-walled pot c. 180mm in diameter; rim is unevenly curled; hard brown vesicular + 1 scrap with evidence of coil fracture. **Sherd sampled for lipid analysis**

1144 2 sherds (1: 30x15x05mm, featureless) 2: 47x28x05-07mm from a poorly defined shoulder. Both are dark grey vesicular, very abraded. 1 featureless sherd (30x25x09mm) with orange/brown surface and brown core, vesicular; might be part of pot in find 1143.

1969R 2 small sherds (31x20x06mm and 20x20x06mm) + 2 crumbs of dark vesicular (1 with pale surface) Early Neolithic; 3 scraps + 2 crumbs of red/black harder pottery with some grits, 08mm thick. *These scraps could be late Neolithic or Bronze Age, but impossible to say.*

3084 R Tiny crumbs and another bag with 1 crumb, orange/brown.

Two finds were not seen; 2024R had been lost and 4260R was judged not to be pottery and discarded.

Hearth B, cut number 50116. Hearths B and C are in the same place, with B represents a re-use of C

Context 50108

1194 15 crumbs brown vesicular; 1 thick vesicular sherd 35x45x11mm (similar 1196 or 1379); 3 sherds hard thin slightly darker vesicular. 30x30x07, 30x22x05mm and 22x12x05mm; 4 scraps similar with new break. These could be from 1196 main pot; 1 sherd brown vesicular smooth outer surface, badly corroded inner one 42x25x05-07mm showing **shoulder ledge.** This is not the same as the fabric of the unshouldered bowls where an eroded inner surface is not evident.

1448 R 1 eroded sherd 25x18x06mm brown vesicular

1534 R Tiny crumbs

1600 R 10 washed scraps; 5 show tiny stone grits alongside voids

Context 50110 and 50111

1196 42 sherds altogether of which the majority are probably from 1 non-shouldered bowl (diameter c.240mm) with flattish out-turned rim; hard brown vesicular quite thin (07mm) on main section but there is another rim sherd which is 09mm at wall. Wall gets slightly thicker (08mm) and less hard-fired as is goes down. There are softer pieces with pink/beige surfaces in and out (with evidence of

grass wiping) which look like base (12-14mm thick) which might be the same pot, or another very similar. Several sherds are 50x60mm and have quite fresh (but not recent) breaks. This contrasts with other find groups where the sherds are clearly eroded. There are 2 rimsherds and a 3rd which is close to the rim; there is no evidence of a shoulder and the main rimsherd joins another giving a depth of 85mm without any indication of a concave neck. 5 scraps have a rather more yellow/beige surface and might be a different pot. 1 sherd (50x25x07mm) is close to a less abruptly out-turned rim, is in the same dark hard fabric but might be a different pot. All edges are ancient breaks. More work would lead to more joins but not greater length of profile to main pot. **Sherd sampled for fabric analysis, and another sherd for lipid analysis (1196.10)**

1366 6 featureless sherds in 3 fabrics + 9 crumbs similar. 2 sherds soft pale beige outer surface, grey inner, vesicular; 1: 42x30x06mm, other 20x20x08mm; 2 sherds very hard ,thin large voids, dark grey vesicular 26x30x04mm; 25x20x06mm. 2 sherds brown slightly softer than other dark ones 25x25x06mm; 25x20x06mm. Similar range to 1196. **Sherd sampled for fabric analysis**

1367 R 8 crumbs including 1 pale beige. All vesicular

1368 R 5 scraps of gritted pottery, featureless but quite thick (11-14mm), pale outer surface, black core and inner, small angular grit including mica.

1389 2 sherds thick softish vesicular, red outer, brown inner, 35x45x12mm and 40x25x12mm (similar 1194), 1 sherd 20x20x10mm with slight concavity = neck, 2 scraps similar red surface. 3 crumbs brown vesicular; 2 scraps hard thin (04mm) vesicular; 1 eroded scrap with some small angular quartz grit.

1409 R Lots of washed crumbs. Red surfacing shows more than in main find groups

1430 R 1 scraps pale beige with some v. small quartz grits showing

1464 R Many crumbs dark + red surfaces

1436 R 10 fragments of dark vesicular with very well crushed grit including mica

1535 R Many crumbs similar to 1436 but with some quartz grit.

Context 50115

1379 15 sherds showing the same range of fabrics as 1196. 1 rimsherd (54x55x11mm) in a well-fired but softer fabric than 1196 main pot with pink outer surface. It has a flattened out-turned rim similar to the thicker rim in 1196. They might be the same pit with colour variation. Both are probably 200mm diameter rather than 240mm. The profile is likely to be unshouldered. There is a hard grey body sherd (45x55x05-09mm) and a scrap which might belong to 1196 main pot and show thickening towards base. There are 2 small scraps of hard 04mm thick fabric and 1 scrap of yellow/beige. The other 8 sherds probably belong with the rim. **One sherd sampled for lipid analysis (1379.13)**

1646 R A lot of scraps and crumbs, vesicular with a few small grits showing; dark and pale surfaces.

Context 50122

1377 2 sherds and 2 scraps. The 2 sherds (50x44x06mm and 35x33x06mm) are hard vesicular and could be part of 1196 main pot, one has grey outer surface with grass marks, the other rather paler. 1 scrap is red; the other is a more abrasive fabric with possible a little stone grit. **One sherd sampled for lipid analysis (1377.1)**

3081 R 1 30x25x06mm dark vesicular + 3 scraps paler surface, 1 with tiny grits showing + 4 crumbs

4063 R 7 crumbs, 3 red

4132 R 2 red crumbs

Context 50123

1621 R 1 scrap vesicular. Beige outer black inner surface

Hearth C, cut number 50133 (underlies Hearth B).

Context 50124

1380 1 rimsherd and 9 other sherds of thin (04mm) black vesicular fabric. The rim is flat out-turned and the body probably straight. The other sherds have strong curvature but do not join the rim. Diameter diff to judge (measurement of 1387 sherd from same pot suggest diameter of 140mm) but thinness and fragility suggest a small cup/pot. Rimsherd 45x35x04mm; main body sherd 45x35x04mm; 3 others c 30x25x04mm. 4 other pieces probably belong but are even thinner and may lack a surface. All are hard but fragile.

1 rimsherd from a simple, possibly out-turned, rim of shouldered bowl but no concave neck nor shoulder survives. A good section of body (broken at both edges of coil join) suggests a pot with body 240mm+ in diameter. These sherds are softer, thicker vesicular with brown/pink exterior and dark grey interior surfaces. Rimsherd 30x23x07mm). Body coil 97x47x08mm. 3 other featureless sherds + 1 scrap.

4 scraps pink/yellow throughout ? burnt clay or reburnt sherds. Slightly vesicular

3 sherds of soft pink outer/grey inner vesicular c. 35x35x 09-14mm thick
1 sherd 35x27x09mm of beige denser vesicular
1 burnt stone
9 scraps and crumbs all vesicular
One sherd sampled for lipid analysis (1380.13)

1385 3 featureless vesicular. sherds+ 2 crumbs (1 red) 2 sherds, thin very fine, dense clay, join on old break making piece 52x36x06mm., quite marked curve, as of small bowl base; a v slight angle is probable a coil join. Other sherd (40x24x08mm) is looser vesicular.

3076 R 1 tiny rimsherd from same pot as 1380 but doesn't join; 1 sherd 20x27x05mm from same and several crumbs. 1 yellow/grey vesicular sherd 45x25x06mm; 1 scrap red/black vesicular.

4060 R crumbs

4131 R many tiny crumbs

Context 50127

1934 R 2 crumbs thin black vesicular

Context 50132

1387 Rimsherd + wall sherd 70x50x05mm, diameter c 120mm. This is part of the unshouldered bowl from 1380

1394 6 pieces (of which 4 can be reconstructed on recent breaks). Others are part of same piece but joins lost.

Section of neck of shouldered bowl with simple out-turned rim 240mm in diameter. Fabric black vesicular, outer surface had been well-smoothed and is reasonably intact, inner surface red brown, badly eroded. 9 sherds and scraps may also belong to this pot. They are 06-08mm thick and have a very similar colour. All are featureless; 1 (30x40x06mm) has a curvature which suggests lower body.

1 red/black vesicular 52x38x09mm suggests body and 1 greyer piece of same size shows clear coil join at top. Both are too thick to belong to the main piece.

1 softish yellow sherd 40x35x11mm is from yet another pot. 4 pots represented in this find group

1 scrap ? burnt clay

2019 R 1 rimsherd flat slightly out-turned 34x20x08mm, grey vesicular + 6 scraps similar. Sherd 40x25x11mm grey vesicular with yellow outer surface, featureless, 1 scrap ? burnt clay. **One sherd sampled for lipid analysis**

3024 R 1 scrap beige tiny quartz grit

4072 R many tiny crumbs

Hearth D, cut number 50145 in the western sector of the building.

Context 50146

1622 R 3 scraps: 2 red/black vesicular, 1 more beige.

Context 50147

1454 3 pots represented, 2 with rimsherds.

Pot1: outward sloping rim rather than out-turned, fairly compact grey vesicular averaging 09mm thick + 3 featureless sherds + 1 scrap. Rim section joins make a piece 80x80mm with an outward lean which suggests quite an open bowl, but no indication of shoulder. Diameter at rim 240-200mm lower down it could be 160mm but only a short ac present. Test on paper. Surface of pot eroded below c.65mm.

Pot 2: Diameter c. 200mm; flat out-turned rim (uneven) in harder, thinner dark grey vesicular (average thickness 06mm) + 3 featureless sherds.

3rd pot: 1 featureless softish orange vesicular 50x40x10mm.

1900 R 3 scraps. 1 might be part of Pot 1 rim

3088 R 3 scraps red/black vesicular; 1 scrap grey vesicular

4050 R Tiny crumbs

5875 R Tiny crumbs

Context 50153

3068 R 6 scraps, hard dark thin vesicular

4002 R 1 body sherd 32x29x09mm in dark grey vesicular

Context 50154

1457 9 sherds + 4 scraps of featureless body. 3 pots may be represented.

Largest group (5) are red surfaced vesicular with brown eroded inner surface. Largest sherd 77x65x09mm is from curved body 200mm in diameter. 4 other sherds 40x30 – 30x20mm belong.

3 other sherds are from the body of a beige/brown vesicular pot; largest sherd 50x60x08mm.

1 other sherd 3030x06mm is more yellow and harder.

1509 2 sherds + 1 crumb. 1 small piece of out-turned rim, very loose black vesicular in poor condition 25x20x?07mm. Featureless sherd 35x27x09mm of same fabric. Crumb is redder tinge.
4003 R 1 small rimsherd in dark vesicular 20x20x06mm + 1 crumb same + 1 crumb redder.
4086 R 1 scrap dark vesicular with 2 quartz grits visible
5776 R 2 tiny crumbs
5900 R 2 tiny crumbs

Context 50158
3040 R ***not found***
3053 R 3 scraps and 4 crumbs (largest 40x18x08mm) of featureless thin vesicular with a very white outer surface. Similar to Clynnog pottery

Context 50161
1552 1 featureless sherd 35x35x09mm of loose red/brown vesicular.
4480 R 1 sherd red/black vesicular. 35x23x08mm. Decoration noted is grass wiping + another scrap and 2 crumbs. 1 scrap grey vesicular.

Context 50163
1518 featureless sherd 45x30x08mm of loose red/black vesicular
1555 Small rimsherd (25x25x08mm), neatly out-turned. Red surfaces, vesicular brown core. Accidental fingernail mark below rim. **Sherd sampled for lipid analysis**
1852 R 1 crumb red/black vesicular
1976 R 1 scrap hard black vesicular showing coil join (not rim)
3035 R 3 tiny crumbs
4321 R 1 thick softish vesicular featureless sherd 45x25x11mm; 1 scrap and 3 crumbs + crumbs of yellow burnt clay.
5544 R 3 crumbs; 2 dark, 1 yellow
5953 R 1 tiny crumb

Context 50206, small hearth pit 50207
1682 1 sherd (20x22x07mm) + 2 crumbs, vesicular, orange throughout with visible small white grits
5903 R Tiny crumbs, dark gritty

Structural features: Postholes, beam slots etc

West Sector
Context 2096: cleaning over posthole 50051, North Wall
1021 1 featureless body sherd (40x32x09mm) softish pink/brown vesicular
Context 2097, western gable end posthole 50033
1022 1 sherd (43x37x06mm) very hard, dark vesicular.
Context 2095, posthole 50058, near North Wall
1020 1 small rimsherd (20x17x06mm) in well-smoothed dark vesicular. Rim is out-turned and might have been a flattened rim since inner edge seems to have a coil finish + 1 crumb.
Context 2099, aisle posthole 50062
1024 1 soft orange sherd 50x35x08mm; curved piece from base. Slightly vesicular but poorly fired; with a few v. small grits
Context 50038, posthole 50270
3008 R ***not found***
Context 50040, posthole 50039, W gable end
1079 1 sherd (20x20mm) possibly the back part of an out-turned rim. 1 featureless sherd (20x20x07mm) + 3 crumbs, brown vesicular.
1080 2 featureless sherds (40x35x09mm and 45x50x08mm) + crumb in soft vesicular; pale beige surfaces, brown core. Scoring on one sherd is recent damage.
1083 1 sherd 25x23x07mm beige surface, brown core, vesicular + 5 crumbs
4504 R 3 scraps + 7 crumbs, thin black vesicular and another bag with 6 similar crumbs.
Context 50048, slot 50047, part of western gable
1089 1 sherd (35x25x10mm) from a rounded shoulder in softish yellow/beige vesicular with brown core + 2 scraps + 2 crumbs similar.
1645 1 scrap hard red/black vesicular
Context 50064, aisle posthole 50062
1489 1 fragment outer surface orange, inner lost vesicular
Context 50086, posthole 50085, inside south wall line

1148 2 sherds and 8 crumbs. Crumbs and 1 sherd (25x25x09mm) are hard, brown almost burnished vesicular. The sherd shows a shoulder angle. Other sherd (30x30x09mm) is also vesicular but softer and paler.

1617 ***not found***

Context 50144, posthole 50143, just inside W gable wall

1393 3 fragments vesicular pot, not obviously part of 1397

1397 1 sherd (86x69x07mm) giving profile from rim through shoulder. The rim is smoothly out-turned and curled over with the hint of rippling on the almost flat upper surface; the shoulder is softly rounded with no sharp change of direction though the upright neck is certainly concave. The fabric is vesicular, brown outer, black inner, with a well smoothed surface (almost burnished over the curve of the rim). It is less well-fired below the shoulder. Diameter at shoulder and inside rim 300mm

1876 R 1 fragment orange/black vesicular; unlikely to be part of 1397.

Context 50177, aisle posthole 50178

1573 1 small sherd (25x20x08mm) dark vesicular, slightly abrasive; 1 sherd (18x18x09mm) yellow gritty

1576 1 rimsherd (25x25x09mm) hard brown vesicular, v. slight out-turn to rim; 1 body sherd (50x50x09mm) softish pink/brown vesicular with a few v. small grits, groove on outer surface is trowel damage; 1 sherd (30x27x08mm) similar pink vesicular; 2 fragments from different vesicular pots.

1816 R 1 sherd (20x25x06mm) black vesicular with good surfaces + 6 crumbs similar

1984 R Tiny crumbs, mainly dark vesicular.

4053 R 1 crumb, red/black.

4332 R 1 sherd (23x27x09mm) brown vesicular + 3 fragments similar; 1 fragment 05mm thick better quality black vesicular; 1 fragment 06mm thick, beige vesicular.

4342 R not found

6088 1 featureless body sherd (60x40x08mm) of very loose red/brown vesicular fabric with badly corroded outer surface and heavily grass-wiped inner surface + 4 other pieces and crumbs similar; 2 scraps yellow gritty fabric.

Mid Sector

Context 50068, posthole 50067, on South Wall

1160 1 thick clumsily out-turned rimsherd (45x30x11mm), grey/brown vesicular, possible diameter 260xmm

Context 50077, posthole 50065, near S Wall and on line of internal division

1161 1 sherd (22x22x08mm) beige/black vesicular with some small grit

Context 50148, gully 50176, internal division

1422 1 large piece of rim (100x65x08-08mm) from a non-shouldered pot 240mm diameter at out edge of rim; hard brown vesicular, carefully smoothed at rim but outer surface corroded below.

1569 2 featureless sherds + 3 fragments + crumbs of grey/brown softish vesicular. Both sherds (50x40mm and 25x25mm) are 10-12mm thick. Larger sherd is from a slightly concave neck 200mm in diameter**. Sherd sampled for fabric analysis**

1571 2 sherds + crumbs, encrusted with sooty deposit. 1 sherd (58x45x10+mm) from concave neck or perhaps the inner face of pot from 1422, in pink vesicular with small grits, reasonably good ?outer surface but poorly fired ?inner surface lost; 1 featureless sherd (30x33x10mm) with pink outer surface and good black inner surface; 6 fragments, gritty as 1666.

1572 1 sherd (42x25x09mm) hard brown vesicular; 1 sherd (25x25x09+mm) pinker vesicular + 2 'lumps' and crumbs of hard gritty vesicular (as 1666).

1666 4 featureless sherds and 3 fragments in 4 different fabrics. 2 (43x30x10mm and 40x25x10mm) in softish pink/beige vesicular; 1 (25x20x08mm) in hard abrasive surfaced brown vesicular; 1 (35x30x09mm) in brown gritty fabric with vesicular inner surface and very uncertain outer surface; fragments are thinner (05mm) hard, dark vesicular.

1988 R 2 fragments dark vesicular

4317 R 1 sherds (30x20x08mm) pink/brown vesicular + 6 crumbs

4380 R 1 fragment red, slightly abrasive surfaces; 3 crumbs red/black vesicular

4432 R 1 sherd (25x30x07mm) beige/grey vesicular + 2 crumbs thin (05mm) dark vesicular

4433 R 4 fragments hard dark vesicular+ 4 crumbs; 1 crumb beige/grey vesicular

4450 R 1 crumb dark vesicular with small grit

4479 R 1 abraded fragment grey vesicular

5541 R Many tiny crumbs

5545 R 1 fragment red/black vesicular with small grit

5894 R ***not found***

5895 R 1 crumb
6341 R Tiny crumbs, some with grits

Context 50168, aisle posthole 50167.

1855 R 1 featureless sherd (35x25x07mm) pink-beige/black vesicular; 1 possible straight, rounded rimsherd (20x25x07mm) (but all edges abraded) in hard dark abrasive fabric with v. small grits + 4 fragments and 1 crumb similar; 1 abraded black vesicular sherd (18x23x06mm) + 3 fragments similar. Sherd has curve which suggests a rounded shoulder, but outer surface gone.
4308 R 3 fragments of black vesicular 05mm thick. Similar 1855 but better condition.
5577 R 2 crumbs yellow gritty, 1 crumb red.
5817 R Tiny crumbs, mainly black abrasive, as 1855.

Context 50188, posthole 50196, part of internal division

1663 1 sherd (32x28x07mm) pink/grey vesicular + 3 fragments and 11 crumbs generally similar. **One sherd sampled for lipid analysis (1663.2)**
1665 1 sherd (25x37x08mm) very close to rim + another fragment probably from same pot, beige/grey vesicular + 2 crumbs.
1674 Another ? rim fragment from same pot
4496 R 1 sherd (30x30x07mm) with red black outer surface and greasy black inner surface, vesicular with slightly abrasive surface + 1 crumb similar
5818 R 2 crumbs (thin slivers).

Contexts 50189, 50190, 50191, 3 fills of aisle posthole 50179.

1945 1 scrap red/black vesicular 06mm thick
1949 R 1 sherd (223x18x04mm) + 1 crumb, hard dark vesicular
3092 R Tiny crumbs, orange, some v. small grit
5820 R 2 tiny crumbs, red/black vesicular
6080 R 1 fragment of thin dark Neolithic with tiny grits.
1672 1 sherd (30x25x08mm) very pale pink-beige soft vesicular; suggestion of smooth shoulder curve
4111 R 2 frags; 1 + crumb dark vesicular, 1 red
4138 R 2 tiny crumbs, red
1670 2 featureless sherds + 2 crumbs (25x25x07mm and 25x20x06mm) soft orange vesicular
1879 1 small rimsherd + 2 crumbs. Rim rounded upright similar 1855 from Pit 15, hard, dark abrasive with v small grits.

Context 50193, posthole 50200 on S wall line and start of internal division

1664 1 rimsherd (45x20x10mm) with ? sloping out-turned rim (inner diameter 160mm) in hard dark vesicular with well smoothed surface over the rim. Probably a pot-bellied pot.
5436 R 1 crumb dark gritty

Context 50198, posthole 50199, on internal division

1676 1 sherd (20x25x06+mm) hard dark vesicular with small grits

Context 50247, possible posthole 50248, in Mid Sector

1721 3 sherds: 1 Rimsherd (45x25x09mm) probably from an open bowl perhaps 240mm in diameter in hard dark vesicular ware with well smoothed surfaces in and out, almost burnished on the outside. 1 featureless sherd (25x18x08mm) from same pot, and another (20x20x07mm) from a different pot because the dark vesicular has more voids. **Sherd sampled for lipid analysis**
3042 R ***not found***

Context 50275, possible posthole 50276, on North Wall

2093 R 3 scraps yellow gritty pottery

Eastern Sector

Context 02093, old ground surface/relict soil in eastern end of building

1015 1 sherd (23x27x07mm) brown vesicular with well-smoothed surface.
1153 4 scraps all grey rather compact but still slightly vesicular fabric with a little small grit
1173 1 sherd (60x38x08mm) softish pink-brown vesicular + 3 crumbs.
1182 1 sherd (65x40x10mm) yellow/black vesicular from body of pot c. 280mm diameter; 1 other sherd (35x27x09mm) probably from same pot + 2 crumbs, similar.
1189 3 incomplete rimsherds: 2 from flat-topped overhanging rims (possible same pot) in had dark vesicular (24x14 and 22x12mm); 1 fragment (18x12mm) from perhaps similar rim but in more compact and abrasive fabric; 3 crumbs similar 1182; 2 crumbs hard dark vesicular; 2 crumbs dark gritty fabric, v. small angular stone.
1500 1 crumbs thin red/black; 1 crumb dark vesicular

1586 1 rimsherd (15x15x09mm) could be part of 5030; 1 incomplete rim or shoulder (20x14mm) in hard, dark fabric with very small angular grits; 1 sherd (35x20x14mm) soft pink/beige vesicular; 8 crumbs thin hard black vesicular.

5030 1 rimsherd (60x42x09mm), rolled over rim, fairly straight-sided pot c. 30-34mm diameter in very hard dark vesicular. There is a gouge running beneath the rim, seemingly part of the final shaping process ? accidently cutting too deep. 1 sherd (32x37x08mm) + 1 crumb in pink-surface vesicular; 2 scraps brown.

5897 R crumbs

5901 R crumbs

Context 50083, posthole 50084, on South Wall

1445 1 crumb dark, hard

1563 Several crumbs, hard, dark vesicular

3052 3 sherds from same hard, dark vesicular pot: 1 incomplete rim (14x20mm), quite squarely out-turned; sherd (50x42x10mm) from slightly undulating straight neck + scrap (25x21x08mm); 1 sherd (33x25x10mm) softish yellow/grey vesicular. **One sherd sampled for lipid analysis (3052.1)**

Context 50099, South Wall foundation slot 50101

1176 1 sherd hard black vesicular (37x35x07mm); inner surface damaged by a groove. This must have happened in antiquity by unlikely to be functional.

1177 1 scrap (09mm thick) pink/black vesicular. Groove on inner surface prob. Damage.

1181 ***not found***

1418 3 scraps dark vesicular 06-07mm thick with almost polished surfaces and indication of concave neck; 2 scraps orange ?re-burnt.

Context 50102, posthole 50164, part of E gable end

1186 5 scraps red/black vesicular with some small grits.

1512 1 sherd (20x20x04mm) + 4 crumbs similar; 1 scrap and crumb similar 1806.

1806 1 sherd (43x25x07mm) beige/brown vesicular with some quartz grit + 1 scrap + 1 crumb similar

3062 R 1 scrap (? reburnt) orange vesicular

Context 50105, posthole 50139, inside E gable end

1188 1 simple everted rimsherd (35x20x08mm) in very hard black vesicular with well-smoothed surfaces; 1 fragment dark vesicular, badly abraded + 3 crumbs and others in separate bag

1417 1 sherd (30x20x09mm) in softish beige/grey vesicular + crumbs (pinker)

5812 R 3 tiny crumbs

Context 50135, posthole 50136 inside E gable end

1388 5 crumbs dark vesicular

1699 1 body sherd (53x40x09mm) in hard beige/grey vesicular. **Sherd sampled for fabric analysis**

1707 2 crumbs beige/grey vesicular

1742 R 1 fragment dark, slightly abrasive with some small grit.

4326 R 1 fragment yellow/grey vesicular

4413 R 1 crumb red.

5543 R 2 crumbs dark vesicular

Context 50137, posthole 50138, inside E gable end

1414 2 sherds + scrap probably from same pot in hard dark vesicular (40x30x09 and 40x40x09mm), outer surface well smoothed, inner eroded, suggestion of slightly concave neck + 13 crumbs of dark vesicular; 2 scraps redder from a different pot.

4135 R 1 tiny red crumb

Context 50159, posthole 50164, part of E gable end

1514 4 featureless sherds of pink/brown softish vesicular 10-11mm thick + 4 crumbs; 3 sherds hard thinner dark vesicular, 1 (40x30x06mm) being from a concave neck

1517 1 rimsherd (26x10x06mm) neatly rolled, fine red vesicular

1798 1 fragment very hard black vesicular + crumbs

3057 R 1 fragment dark vesicular

4011 R 1 crumb dark gritty vesicular

5758 R 1 crumb of hard black slightly abrasive **rim edge** + others various

5866 R dark crumbs

Context 50165, beam slot 50166 in E gable wall

1544 2 small abraded sherds, 1 the outer edge of a rim (30x10x05mm) ?flattened + crumbs, all in fragile, thin black vesicular.

1545 a section of the rim and neck of pot found in sf 1559 from Posthole 50173 made up of 6 sherds, the segment measures 92x68x8-11mm with shoulder diameter of probably 240mm and a rim diameter of 220mm (same as 1559), the pink/brown fabric is well fired, the outer surface hard and

smoothed, the inner one somewhat corroded. It is likely that it reached the postholes as several pieces but it cannot have been a pot in recent use. 1 sherd of softer pink-grey vesicular (40x42x12mm); 2 fragments main pot. **Sherd sampled for fabric analysis**

1695 ?1696 2 small sherds yellow beige/black vesicular

1755 R Several crumbs

5450 R ***not found***

5769 R Tiny red crumbs

6106 R 2 crumbs very hard black vesicular

Context 50171, posthole 50173, part of E gable end

1547 1 rimsherd (50x35x08mm) hard vesicular, probably from a shouldered pot c.280mm in diameter; 1 rimsherd (37x29x07mm) looser vesicular pink/brown surfaces + 1 sherd (45x33x08-09mm) with slight s-curve; 1 rimsherd (30x15x08mm) in black vesicular; 1 sherd close to rim (37x30x08mm) very hard vesicular with grit, grey + small scrap; 3 other featureless body sherds, some with exceptionally large stone grits; 3 frag, 1 very thin =possibly 7 different pots represented. 1 bag of crumbs, none interesting. **Sherd sampled for fabric analysis and another for lipid analysis (1547.5)**

1557 2 featureless sherds (40x40x06mm and 30x30x06mm) from same pot, hard coke-like vesicular, pink/brown outer surface, core black, not same as any in 1547.

1559 A single section of a shouldered bowl in softish pink/grey vesicular 09-10mm thick. The piece is 90 x 90 x 08-11mm, made up from 5 recently broken sherds. The rim is a simple out-turn and the shoulder is strongly defined. Diameter at shoulder is 240mm, the rim (not very even) perhaps a little less ?220mm. ***This is part of the same pot as sf 1545 from slot 50166 which is close by***.

1975 R 1 crumb of rim joins 1547; several dark crumbs, 1 pale beige.

1989 R 1 fragment dark vesicular 06mm thick

4075 R ***not found***

4403 R several vesicular crumbs

Context 50172, posthole 50174, part of E gable end

1550 1 partial rimsherd (20x23x08mm) from a flattened out-turned rim, red-surfaced vesicular; 1 sherd (40x40x06mm) very hard black vesicular similar to a featureless sherd in 1547; 1 sherd (40x25x08mm) pale beige/grey vesicular; 1 sherd (43x30x12mm) pink/black vesicular; 1 scrap yellow vesicular + crumbs

1628 A lot of vesicular crumbs, mainly dark.

1625 R 1 complete red-surfaced rimsherd as that in 1550. Rim is flat out-turned 21mm wide. There is no indication of shape of rest of the pot. 1 scrap of pale grey vesicular; 3 dark vesicular crumbs.

Contexts 50183 upper fill / **Context 50184** lower fill posthole 50182, E gable end

1702 2 rimsherds, 3 sherds and 2 crumbs probably all from the same pot in hard black vesicular, but not joining. I rim (50x30x09mm) is simple, pointed probably from a concave neck; the other (20x25x09mm) is slightly more rounded. The largest body sherd is 50x45x09mm and has lost most of the other surface, the others are 35x35x09mm and 25x23 without an outer surface. Several crumbs similar to main pot.

1796 A large upright neck sherd (87x48x10-12mm) made up of 4 recent breaks of softish grey vesicular with some largish grits and complex voids, 1 sherd (35x25x10mm) + 6 scraps; 3 sherds (larger 20x23x 05mm possibly an abraded rim) hard dark vesicular + 1 crumb.

1805 3 tiny fragments of rolled over rim in hard dark vesicular + 9 small fragments of similar thin dark fabric; 3 scraps red/black vesicular, thicker.

1882 R 6 red/black crumbs

4142 R 1 red crumb

4507 R 7 red/black crumbs

5449 R 1 crumb vesicular

1660 2 sherds (35x35 and 35x25) softish pink black vesicular with grits 12mm thick; 2 sherds (35x35 and 25x25) compact grey vesicular with well smoothed, almost burnished surfaces, 07mm thick; 2 crumbs.

1659 1 rimsherd (40x34x06mm) hard well smoothed black inner and outer surfaces, coke-like vesicular, slightly out-turned rim on concave neck. No other pieces of this pot present. 2 featureless sherds of softish pink/black vesicular with grits 12mm thick; 1 small thinner pink/black sherd and 2 sherds beige/grey; 1 larger sherd (50x50x11mm) softish grey vesicular with some large grits and complex voids (this is quite a distinctive fabric which appears in several contexts, but without evidence of shape).

2086 R 4 red/black crumbs

3085 R ***not found***

5862 R Tiny dark crumb
5984 Said to come from east end 'facade' 1 sherd (35x30x10mm) hard yellow/beige vesicular

Context 50208, hollow 50209 in NE corner
1680 1 arc of body 200mm diameter, well fired orange outer surface, brown inner, vesicular with a few small grits, sherd 70x30x10mm, breaks fresh and unabraded but not recent.
1681 3 crumbs pink/beige vesicular

Context 50211, posthole 50210, at NE end of North Wall
1685 +1689 1 large body sherd (62x50x11mm) beige/brown vesicular with black core.
1686 1 sherd (35x25x07mm) compact with much v. small quartz grit, black burnished outer surface with yellowing brown inner surface. **Sherd sampled for fabric analysis**
1687 scrap pink/beige vesicular 09mm thick. Might belong to 1685.
1688 2 crumbs pink /black vesicular
1690 3 scraps of pink/black vesicular 10-11mm thick + 2 crumbs
4323 R 4 yellow/beige frags; 3 crumbs black vesicular (1 a tiny piece of rim tip)

Context 50213, beam slot 50166 in E gable wall
1722 1 very hard dark vesicular sherd (30x35x08mm) with an indication of change of direction as at shoulder; 2 scraps red/black; 1 sherd (25x30x10mm) softer pink brown vesicular.
1947 R 1 scrap 06mm thick hard black compact slightly abrasive, + 3 crumbs
1978 R several crumbs, red/black vesicular
4503 R ***not found***

Context 50222, posthole 50221, part of North Wall
1694 1 sherd (30x24x09mm) softish orange/brown vesicular. Surface voids look a bit like impressed decoration but interior clearly vesicular, some medium stone grit.

Context 50229, natural hollow 50228 in NE corner
1700 Exceptionally thick sherd 95x55x13-16mm, very hard grey/beige vesicular with a **polished** outer surface and well smoothed inner. Sherd has slight S-curve, diameter of body 240mm

Contexts 50233 upper fill and **50235** lower fill of beam slot 50232
1708 1 body sherd (45x43x12mm) in very hard and compact fabric, pink/black, voids on surface; 1 sherd (30x28x10mm) beige-pink/brown, hard but looser vesicular.
1914 R 1 scrap pink vesicular.
4483 R 1 sherd (32x25x09mm) similar to body sherd in 1708 + frag. Orange ? re-burnt
4329 R 1 fragment dark vesicular + 1 crumb yellow
5873 R 1 crumb red/black vesicular.

Context 50249, probable posthole 50258, on North Wall
1720 1 tiny crumb, red/black vesicular
1770 1 small rimsherd (15x17x10mm) in a hard brown fabric, slightly greasy to touch, but also some vesicularity, Rim has outward slope and might have some decoration, but deepest mark might just be grass inclusion. **Possibly not Early Neolithic**.

Context 50274, E gable wall slot 50166
1794 2 small sherds (20x30x05mm) dark vesicular and 1 sherd (25x30x07mm) orange vesicular with grit.
3020 R 1 sherd (30x25x07mm) + 2 scraps dark vesicular; 4 crumbs orange/black vesicular.
5902 R Several dark crumbs + 2 red crumbs

Context 50277, probably fill of beam slot 50101
4158 R vesicular pot fragment
5814 R 2 dark crumbs

Pits within Early Neolithic building

Context 50055, pit 50054, in middle of W Sector
1118 1 scrap softish orange vesicular
1119 1 scrap + 2 crumbs of dark vesicular, abraded
1123 1 scrap of softish orange vesicular; 2 scraps very hard thin dark vesicular + 2 crumbs
1124 1 body sherd (45x50x08mm) in beige/brown vesicular with a great number of complex angular voids; 1 sherd (20x24x07mm) hard orange; 1 scrap thin dark vesicular (as 1123). **Sherd sampled for fabric analysis**
1125 2 sherds joining at ancient break to form a section of curved body (67x40x05-07mm) c. 240mm in diameter; thin, hard dark vesicular.
1643 R 1 crumb, hard dark vesicular
2021 R 3 scraps as 1124 (2 with many voids, other hard orange)
5899 R Tiny crumbs

Context 50090, pit 50092, large central pit

1482 R 17 crumbs of yellow gritty fabric, **unlike others** from this area but not possible to date (but similar 1497) which includes definite Neolithic sherd.

Context 50103, pit/hollow 50104 in Middle Sector

1185 1 sherd (20x18x08mm) pinkish beige/brown vesicular

Context 50106, pit 50107 in Middle Sector

1199 1 sherd (30x25x08mm) from curved body; hard yellow/black vesicular with some v. small grit.

1519 1 tiny crumb, red

Context 50117, pit 50120, central pit with stone capping

1429 1 crumb orange/grey. Doesn't look v. Neolithic

1433 1 small sherd (18x20x07mm) reddish brown vesicular with some grit. This is Neolithic

1497 12 crumbs yellow ?pot with a good deal of small angular stone grit similar 1482 + 4 crumbs redder but probably the same.

Outlying features

Contexts 02098, 50060 and 50061, pit 50059, just W of building

1023 3 scraps (2 join) c.20x20x08mm; pink/beige surfaces with black core. Not noticeably vesicular, but Early Neolithic.

1064 1 scrap + crumb pink/black vesicular 045mm thick

1130 1 scrap hard darkish vesicular (similar 1125)

1131 1 crumb

4148 R Tiny crumbs only

4005 R 1 scrap thin red/black vesicular + 10 crumbs similar

Context 02103 Patch relict soil to north of building

1029 1 scrap orange (?re-burnt) gritty fabric.

Context 20048, posthole 20047, just E of the building

118 Not found

119 1 body sherd (60x58x08-10mm) in hard dark vesicular. Shows a very slight s-curve. 1 crumb dark gritty

3054 1 fragment pink/black vesicular + 1 curved fragment but too small to understand.

Context 20050, pit/posthole 20049/50142, just E of the building

120 and 121 2 body sherds (53x37x07-08mm and 28x35x07-08mm) from same pot, pink/black hard vesicular

Context 50026, posthole 50025, to the W of the building

1772 3 crumbs, black gritty

Context 50076, large amorphous pit 50075, immediately west of building

4253 R 1 featureless abraded sherd (25x25x07mm) of hard dark grey vesicular

1110 2 fragments + 2 crumbs of hard black slightly vesicular, but with a few v small grits

1111 1 fragment beige/black slightly vesicular but with abrasive feel as 1140

1113 1 fragment of neat rim which joins a fragment from 1110; slightly abrasive surface, 07mm thick

1115 1 small sherd (20x25x05mm) + 1 fragment same red/black vesicular

1121 5 small fragments similar 1140--gritty

1134 1 tiny crumb of neatly out-turned rim. This is softer and thinner (05mm) than 1113, also outer surface beige

1136 1 fragment + 7 crumbs similar 1140 + 3 stones to which pottery had adhered.

1140 1 crumb. Very small grits present in some quantity. Abrasive feel

Context 50141, pit/posthole 20049/50142, just E of the building

1642 2+ crumbs of hard black vesicular

1644 1 crumb same

Context 50152, hollow/animal burrow 50151, just S of South Wall

1420 + **1423** 1 rimsherd (70x63x10mm) hard black/grey vesicular fabric. The pot has a curled over rim (outer diameter 205mm) and an unshouldered profile (possibly 120mm deep), 4 sherds join, at least one is an ancient break; 3 fragments grey vesicular (1 with grit); 1 lump ? burnt clay

4520 R 2 crumbs dark vesicular, 1 with grits

Context 50203, posthole 50202, near SE corner of building

1673 Scrap of orange hard vesicular pot 06mm thick ? re-burnt

Context 50265, natural hollow 50264, to N of building

1894 1 rimsherd (50x50x10mm) with roughly turned over rim and straight neck, probable diameter 240mm outside, hard brown fairly compact vesicular. 3 body sherds (largest 65x57x06mm) in hard pink/black looser vesicular, diameter perhaps c.280mm, unabraded breaks but no joins. 1 fragment dark gritty. **One sherd sampled for lipid analysis (1894.6)**

4120 ***not found***

Area E: Occupation area
Fabric types
V = vesicular
G = gritty
V 7 : A hard compact grey vesicular with or without a beige surface (which might be a slip).
V 8 : A softer compact beige/grey vesicular. It varies from 7 mainly in the firing. Both vary in thickness from 05 - 012mm, the majority being 07-10mm thick.
V 9 : A very hard reddish brown vesicular with complex voids (and occasional grits) which tends to laminate or split vertically. It is normally 05-08mm thick.
G 4 : yellow soft surface with medium exposed grits on grey core (rare)
G 5 : A hard grey fabric with an abrasive surface and occasional small grits, otherwise similar to V 7 and 8.
0 : A poorly fired, red/black 'mealy' fabric with a smooth matt surface which survives occasionally over the rim but has usually become badly eroded on the exterior

NB. There was also some Beaker pottery from this area, for Beaker and possible Beaker pottery see "Early Bronze Age Pottery" below.

Context 31001 ***Natural Loess*** 20 sherds
850 1 sherd (30x30x12mm) orange grey V8
879 lost
880 1 sherd (30x20x10mm) V8
887 1 sherd (25x25x08mm) pale grey hard slightly abrasive G5
903 1 fragment similar 887 G5
944 1 crumb reddish
980 top (23x12x07mm) red /black, hard ?V5
981 top Recently broken small sherd V4 as 887 V8
5135 R 2 fragments + 3 crumbs
6340 R 2 sherds (25x20x11mm V8) and (25x20x07mm G5)

Context 31013, ***Pit 31010*** 1 sherd
4565R 1 crumb dark, G2

Context 31024 ***Hollow 31082*** 30 sherds
305 2 v. abraded sherds + 1 fragment of yellow/grey V8 09-12mm thick. Largest sherd 25x30x12mm.
872 2 sherds join on ?ancient break There are other recent breaks as well) to make piece of **concave neck** (60x43x11mm) Rim has been abraded. Diameter 300mm. Fabric orange/black dense vesicular probably with a lot of v. small grits. A rather mealy/ crumbly appearance. This is what is described as odd fabric = Fabric 0.
873 1 sherd (25x20x10mm) + 3 fragments same V8 + a sherd now in 872.
883 3 abraded sherds all yellow/grey, 2 12mm thick, other harder, 08mm thick. V7 & 8. Largest sherd 45x25x12mm.
905 1 sherd 45x20x11mm similar 883 V8
906 lost
907 1 sherd hard grey vesicular with rather sandy/abrasive feel not quite G5 20x23x12mm with curve on ?outer surface, either a shoulder or close to rim.
908 1 sherd 23x25x11mm V8
4555 R 4 fragments of yellow/ grey + 7 crumbs similar V8 1 fragment darker with largish grits ? G2
4559 R 2 fragments grey, outer surface lost, some grit G5
5447 R 1 fragment yellow/grey, some minute grit visible G5
Except for 872/3 this hollow contains almost exclusively yellow/grey sherds (V8) which might have come from a single pot.

Context 31025 ***Relict Soil***
This is the major context for this area with 275 pottery find groups but there are only 132 sherds more than 25x25mm in area, as against more than 396 scraps, fragments or crumbs, a ratio of 1:3 indicating that the material in this soil has been trampled, though not necessarily moved very far since some groups of finds are likely to belong to the same pot and there are a few joins on ancient breaks. The material from Context 31596,

a pit containing 54 pieces of pot representing perhaps 7 pots contained 16 sherds over 25x25mm and 33 scraps etc., a ratio of 1:2. Most edges were quite abraded, unlike sherds from the postholes in Area H.
Some find groups are noted as coming from the 'top' or 'bottom' of this soil layer. The range of fabrics etc from these sub-contexts does not suggest any significant variation between the two.

858 1 freshly broken rimsherd (30x35x09mm) in 'odd fabric' = Fabric 0
865 2 sherds same hard grey vesicular (25x25x11 and 20x34x10mm) ? join on an abraded break G5
866 1 sherd (30x22x07mm) hard grey/beige vesicular V8
868 Tip of rim coil join (10x23x11mm) well fired beige/grey vesicular V7
869 2 fragments hard dark vesicular 05m thick V9
871 1 crumb similar
870 1 fragment same
874 1 fragment same showing angle ? shoulder V9
875 1 crumb
876 1 fragment gritty vesicular 06mm thick G5
881 1 fragment hard brown slightly abrasive vesicular G5
882 2 bags **Charcoal** and several crumbs, hard fired.
889 fired clay not certainly pottery
890 1 sherd (25x25x09mm) softish crumbly + 1 fragment hard grey vesicular 08mm thick ?Fabric 0 and V7
891 1 sherd (25x21x08mm, hard grey vesicular as 890 V7
893 1 crumb hard grey vesicular V7
900 4 pieces of 1 fragment hard grey vesicular V7
910 5 crumbs softer grey vesicular V8
911 1 v. abraded sherd (20x20x07mm)
931 1 sherd softish beige grey vesicular showing coil overlap (37x40x08mm) V8. **Sherd sampled for lipid analysis**
963 bottom 1 sherd softish yellow/grey vesicular (40x35x07mm) and 1 hard grey vesicular (35x25x10mm) V8 & 7
964 bottom 1 fragment of sharply out-turned rim softish beige/grey vesicular (18x20x08mm); 1 sherd (25,30x10mm) similar fabric; 3 fragments thin (06mm) hard grey/beige V8
971 bottom 7 fragments and crumbs of thin (06mm) hard grey vesicular, probably all same pot but ancient breaks; 1 fragment and 2 crumbs softer yellow grey vesicular. V9
964 and 971 suggest that the bottom layer of this relict soil has not been disturbed or sherds moved much.
979 top Scrap hard beige/grey vesicular with at least 1 small quartz grit, 11mm thick G5
988 4 scraps + 1 crumb softish beige/grey 10-11mm thick V8
989 3 scraps beige/grey vesicular 10mm thick with grits; 1 scraps no grist + crumbs G5
2166 1 sherd (45x30x08mm) soft beige/grey vesicular, all edges abraded V8
2167 1 everted pointed rimsherd of Fabric 0 (42x28x09mm) + crumbs same. V. similar 858 but rim is pointed. Outer surface is badly eroded.
4487 1 sherd + 3 scraps same (25x25x10mm) brown vesicular with grits. All edges eroded ? R G5
5004 top 3 crumbs hard grey vesicular. 06mm thick V7
5005 top 2 pieces of rim hard grey vesicular (20x25x14mm and scrap 12mm thick + scrap of coil below rim) + 2 crumbs and scrap of softer pink beige vesicular V7
5006 bottom 1 out-turned rimsherd (22x20x07mm) hard beige/grey vesicular, eroded V7
5008 top 1 sherd (2 pieces ? join) thick hard grey similar 2005 (38x24x12mm); 2 scraps thinner (10mm) and 7 fragments and crumbs 07mm thick all hard grey. V7
5009 top 2 scraps grey/beige with grit. G5
5010 1 curved sherd (35x30x08mm) softish yellow grey vesicular and 1 scrap + crumb harder. V8
5011 1 scrap badly eroded, yellow grey with grit + 3 crumbs. G4
5020 1 sherd (20x20x07mm) pale grey vesicular + 3 crumbs similar V8
5022 4 crumbs beige/grey with grit 12mm thick G5
5026 **missing**
5028 1 sherd (37x30x11mm) beige/grey vesicular, softish V8
5029 1 scrap similar V8
5030 number problem 1 fragment hard thin (05mm) dark grey V9
5032 1 sherd (25x20x06mm) very hard dark grey vesicular V9
5033 bottom 2 fragments similar V9
5034 1 scrap similar V9
5035 bottom 1 scrap similar, with undulating surface V9
5036 top 2 softer, thicker scraps ? yellow/grey V8
5037 top hard beige/grey crumb 08mm thick V8

5038 1 scrap + 2 crumbs hard grey vesicular 08mm thick V7
5041 bottom 1 scrap hard grey with grit G5
5042 3 crumbs beige/grey with grit G5
5043 **missing**
5044 bottom 1 scrap + 1 crumb hard grey/beige vesicular, concave sherd V7
5045 bottom 1 sherd (35x27x11mm) beige /grey vesicular formed from 1 recent and 1 ancient break + 5 scraps similar and 2 crumbs V8
5046 bottom 1 sherd (30x35x09mm) possibly from near everted rim, softish grey/beige vesicular + 2 scraps + 1 crumb similar. V8
5047 bottom 1 sherd (20x30x10mm) softish grey vesicular, some grit. G5
5048 bottom 1 sherd (25x22x06mm) hard grey, vesicular; 4 scraps and 4 crumbs beige/grey softer vesicular V7 & 8
5067 1 crumb beige/grey vesicular with grit G5
5068 2 bags 1 crumb hard grey + 1 tiny crumb
5070 bottom 1 scrap and 3 crumbs hard grey 05mm thick V7
5071 top 1 scrap similar V7
5072 bottom 1 crumb beige/grey V8
5073 bottom 1 lump (35x25x15mm) rolled appearance yellow clay with much small grit ?? part of pot
5074 bottom 1 scrap and 1 crumb hard beige/grey 09mm thick V8
5075 1 scrap hard pink-beige/grey vesicular showing coil join 07mm thick ?
5077 1 rimsherd in 4 pieces (27x18x08mm) out-turned, hard grey with some grit G5
5078 bottom 2 scraps pink-beige/grey with grit 07mm thick, same pot ?
5079 bottom 1 sherd (25x25x08mm) pink/dark grey vesicular *Pink surfaced sherds are rare in E*
5080 flattish out-turned rim in hard grey vesicular (45x27x08mm wall) V7
5081 bottom 2 scraps beige/pale grey vesicular 09 and 08mm thick V8
5082 bottom v. badly eroded, curve towards rim, pink beige throughout ? reburnt
5084 1 fragment + crumbs had grey 07mm thick
5085 crumbs
5086 bottom 1 fragment beige/dark grey vesicular 07mm thick
5088 top 2 crumbs
5089 bottom 1 sherd (22x25x08 wall) in very hard grey (apparent rim due to hollow caused by loss of ? shell inclusion) V9 + 1 scrap softish beige grey V8
5090 bottom 1 scrap hard beige/grey vesicular 07mm thick V7
5091 bottom 1 sherd (37x24x07mm) softish pink beige/grey vesicular showing coil overlap + 2 fragments similar V8
5092 bottom 1 sherd (45x35x10-12mm) beige/grey vesicular with 1-2 grits, imminent lamination G5
5093 bottom tiny crumbs
5095 top several small crumbs
5096 bottom 1 rimsherd rounded everted (30x18x10mm wall) hard grey vesicular with beige **?slip** V7
5106 top 1 scrap + several crumbs, softish pale grey vesicular 10mm thick V8
5107 bottom 1 scrap + several crumbs, similar V8
5109 1 crumb hard dark grey
5110 1 scrap + crumbs v. hard laminated beige grey V9
5111 1 scrap hard grey 09mm thick V7
5112 top 1 rimsherd (20x11x05mm wall) hard grey vesicular V7
5115 1 sherd (32x25x09mm) hard beige grey vesicular V7
5116 3 scraps + 4 crumbs beige/grey vesicular V8
5117 4 crumbs + dust, beige grey vesicular 07mm thick V8
5120 **missing**
5121 1 scrap beige/grey vesicular with grit 08mm thick G5
5122 **missing**
5124 1 abraded scrap beige grey 08mm thick V8
5125 1 rimsherd (28x25x09mm) badly eroded, in Fabric 0,
5128 1 scrap v. hard grey 08mm thick V9
5129 1 rimsherd (36x34x09mm) badly eroded in Fabric 0. **Sherd sampled for lipid analysis**
5130 1 sherd (30x25x08mm) softish beige grey vesicular + crumbs same V8
5131 Destroyed
5132 1 fragment v. hard grey 05mm thick V9
5134 bottom **Concave neck** sherd (37x25x08mm) in hard brown/grey vesicular V9
5137 top several grey crumbs

5138 top 1 sherd (25x30x09mm) in softish beige/grey vesicular V8
5140 bottom 1 fragment + crumb grey 05mm thick
5141 top 1 rimsherd (50x55x10mm) hard grey vesicular with some grit, inner surface eroded, outer good. Out-turned rim and probable straight neck, diameter c. 240mm G5. **Sherd sampled for lipid analysis**
5142 top 4 fragments + crumbs softish beige grey vesicular V8
5143 1 fragment of top of quite thick rounded rim in hard brownish vesicular V9
5144 bottom 1 sherd (15x27x08mm) hard beige/grey vesicular V7
5149 4 fragments softish beige/grey V8
5150 2 fragments same (V8) 07mm thick; 1 crumb Fabric 0
5151 1 scrap brownish/grey liable to laminate, 08mm thick V9
5154 3 fragments beige grey
5155 1 scrap Fabric 0 05mm thick (thinner than usual); 1 fragment v. hard grey with ?grass marks; 2 fragments + 2 crumbs beige/grey 06 and 09mm thick V9 & V7
5156 1 crumb beige grey 06mm thick
5157 bottom 1 sherd (25x26x09mm) beige grey vesicular V8
5158 bottom **missing**
5159 **missing**
5160 1 sherd (20x20x10mm) and 1 scrap + crumb all softish beige/grey vesicular V8
5163 top **missing**
5164 bottom 1 fragment hard grey 05mm thick V7
5165 1 fragment + 4 crumbs yellow grey
5166 crumbs and dust
5167 1 sherd (20x20x10mm) beige grey vesicular with some grit + 1 crumb G5
5169 top 1 crumb red, ? re-burnt
5172 bottom several crumbs (3 Fabric 0)
5173 top 1 sherd (30x30x09mm) hard compact grey vesicular; 1 sherd (25x22x05mm) v. hard browny beige/grey slightly laminated. V9 & G5
5174 top 1 fragment orange ? re-burnt
5175 top 1 crumb softish grey V8
5176 3 fragment hard grey vesicular 06mm thick; 1 fragment (spall of beige outer surface) V7
5177 top 1 out-turned rimsherd (25x18x08mm wall) hard grey vesicular, coil join at top of wall + 1 crumb V7
5178 top 1 sherd (30x25x09mm) softish beige grey, compact vesicular (*as most of softish b/g are*) V8
5179 top 1 fragment softish beige grey 09mm thick + 2 crumbs
5181 top 1 sherd (25x20x09mm) softish beige/grey compact vesicular. V8
5183 top several crumbs gritty vesicular G5
5184 top tiny crumbs
5186 top scrap of beige grey vesicular with grits recently broken into crumbs G5
5187 top 1 sherd (25x20x11mm) beige grey compact vesicular + 2 crumbs V8
5188 top 1 rimsherd (35x25x09mm wall) in hard beige grey looser vesicular, out-turned rim as added coil. V7
5189 6 crumbs, all thin ? laminations of outer surface V9
5190 top 1 scrap of gritty fabric **? tip of rim** G5
5191 top 1 crumb 05mm tick
5192 top 1 scrap rather poorly fired (*rare in this group*) 07mm thick
5193 bottom 1sherd (35x25x10mm) pink beige/grey hard but laminated and outer surface lost in places (*often the case with this fabric*) + 1 crumb same and 1 crumb more compact 07mm thick. V9
5196 top 6 fragments + crumbs softish beige grey vesicular V8
5197 1 scrap similar 09mm thick. V8
5198 top 1 scrap similar 11mm thick V8
5199 top crumbs and dust, poorly fired vesicular
5201 top Outer lip of rim (20x10x08mm) hard grey vesicular, some grit, coil join visible. G5
5203 several crumbs
5204 1 scrap gritty pot, as 5219 ?G2
5205 1 sherd (32x25x11mm) + 4 scraps and 5fragments + 6 crumbs of softish orange (? Reburnt). Slightly gritty fabric, v. difficult to identify surfaces. 2 scraps may show angle of out-turned rim, one has lines which I think are trowel damage. *Impossible to make much of this but all same pot.*
5206 4 sherds (largest 25x25mm), 3 fragments + 3 crumbs from same pot, hardish, compact beige grey vesicular 08-10mm thick. 1 sherd (25x25x10mm) may show angle of shoulder, another has angle

but it is on inside and must be coil overlap, another scrap may be part of an everted rim; 1 sherd (25x25x07mm) + crumb in hard laminating fabric. V8 & V9

5207 2 scraps (join on ancient break to make piece 35x25x06mm)+ 2 crumbs v. hard grey laminating fabric; 1 sherd (32x20x10mm) + 2 scraps softish beige/grey compact vesicular V9 & V8

5208 1 scrap v. hard grey vesicular 09mm thick

5212 1 thin crumb

5213 1 lightly everted rimsherd (25x18x06 wall) in hard grey vesicular with some grit + fragment similar G5

5214 1 sherd 25x22x09mm beige grey compact with some grit G5

5216 1 rimsherd, slightly angular everted rim (50x25x08mm wall) in very hard dark grey vesicular, possible diameter 280mm V7

5217 1 sherd (25x18x11mm) beige/grey abrasive surface. Damage to inside looked like angle of shoulder, but it is not. G5

5218 1 dark laminated crumb 06mm thick + stone V9

5219 1 scrap + crumbs of brown gritty pot like 5204 ? G2

5220 1 scrap 05mm thick of Fabric 0

5221 2 sherd, 3 scraps + 3 crumbs of grey vesicular 09mm thick, 1 sherd (40x30x09mm) is from a concave neck, others featureless; 1 sherd (30x20x07-04mm) in fabric 0 is from close to pointed everted rim. Another tiny crumb (12x15x06-04mm) in another fabric may be tip of another pointed rim. F 0 & V7. **One sherd sampled for lipid analysis**

5222 1 sherd (27x20x07mm) of softish beige grey vesicular badly abraded is from just under small rolled rim (line of definition but overhang of rim lost); 2 fragments v. hard dark grey laminated V8 & V7

5223 bottom 1 sherd (23x30x07mm) + crumb, pink-beige/dark grey laminated V9

5224 bottom 1 sherd (45x35x10mm) + 1 crumb hard grey vesicular, 2 fragments v. hard dark grey laminated. V9

5225 (2 bags) bottom 1 crumb + 1 lump (25x25x18mm) of burnt clay.
1 everted rimsherd 45x25x09mm in several fragments, softish beige grey vesicular V8 + stone

5226 top **missing**

5227 2 rimsherds (25x20x11-09mm and 20x18x09mm) could be same pot but don't join, + 2 fragments similar fabric, hard dark grey vesicular with abrasive surface. G5 or V9

5229 Hard dark grey similar 5227 but with lost large inclusion **? sea shell**, 20x20x08mm V9

5230 1 sherd (recent break) (30x20x09mm) softish pink beige/grey vesicular some grit G5

5231 1 crumb beige/grey compact vesicular V8

5232 1 sherd (12x25x07mm) with hint of shoulder angle, odd inclusion on interior and scratches (some recent) on exterior surface, hard beige/grey vesicular V7

5234 1 scrap hard thin (05mm) grey vesicular

5235 1 sherd (25x20x12mm) + fragment in hard beige/grey with abrasive surface; 1 sherd (20x23x07mm) softish beige grey vesicular fairly compact; crumb orange ? re-burnt G5 & V8

5236 1 sherd (30x27x07mm) hard compact beige grey vesicular; 1 sherd (25x25x10mm) looser vesicular, pink-beige/grey. V7 & ?

5238 1 scrap 05mm thick beige grey vesicular with grit G5

5239 5 crumbs (2 fabric 0, 1 grey with grit, 2 grey vesicular) + 1 stone and charcoal fragment F0, G5, V8

5240 top 1 sherd (25x20x07mm) with curve towards rim, soft yellow vesicular, 3 fragments grey with grit + 2 crumbs V8 & G5

5241 1 sherd (30x25x08mm) in soft beige grey vesicular + 3 frags, harder V8

5242 1 scrap hard grey 07mm thick

5244 3 crumbs beige grey vesicular

5246 top 1 sherd (ancient break) (40x25x08mm) hard brown/dark grey vesicular V9

5247 top 1 pointed rimsherd (30x30x08-04mm) in Fabric 0; 1 scrap hard brown/dark grey as 5246 07mm thick; 2 fragments beige/grey; 1 fragment v. hard dark grey 05mm thick F.0, V7, V9. **One sherd sampled for lipid analysis**

5248 1 sherd (30x25x10mm) hard grey with some grit G5

5249 top 1 sherd (25x22x07mm) badly abraded hard brown/grey with abrasive surface G5

5250 top 1 sherd (27x20x10mm) + 2 crumbs softish beige/grey vesicular V8

5251 top 1 scrap hard brown/dark grey vesicular 07mm thick V9

5252 21 sherds (25x23x08mm beige/grey with grit) and (25x23x05mm yellow soft and eroded) G5 & V6

5253 2 lumps clay (23x25x20mm and smaller)

5254 top 1 abraded sherd (25x16x 07mm) dark grey with grit G5

5257 1 sherd (30x25x07mm) + crumb in Fabric 0; 1 scrap brown/grey vesicular laminated F.0 & V9

5259 3 sherds, 1 scrap, 3 fragments and 1 crumb of same beige/pale grey compact vesicular all 10mm thick. Sherds 40x23x10mm, 30x25x10mm, 25x18x10mm. *Non joins but probably from same pot.* V8. **One sherd sampled for lipid analysis**

5260 (2 bags) 2 fragments softish grey 07 and 10mm thick 2nd bag 1 fragment +2 crumbs hard, thin. V8 & V9

5264 1 sherd (50x35x09mm) in hard compact grey vesicular, outer surface badly eroded, inner smooth, 1 fragment beige/grey 09mm thick V7. **Sherd sampled for lipid analysis**

5266 1 sherd (30x25x11mm) softish beige/grey vesicular V8

5268 2 sherds badly eroded soft beige/grey (27x22x07mm probably an everted rimsherd and 27x20x07mm) + 4 crumbs; 1 sherd (27x15x09mm) in harder grey vesicular V8 & V7

5269 1 shoulder sherd (47x45x11mm) in 3 pieces with 1 join on ?ancient break, softish beige/grey compact vesicular V8

5270 top 1 sherd (40x21x07mm) v. had red-beige/dark grey laminate vesicular V9

5271 top 4 fragments soft orange ? re-burnt

5272 bottom 1 scrap +1 crumb v. hard dark grey with grit G5

5273 1 scrap hard beige grey with grit G5

5274 1 sherd (36x32x12mm) + 3 crumbs softish beige grey fairly compact vesicular V8

5275 1 sherd (27x23x06mm) hard beige/dark grey laminating vesicular V9. **Sherd sampled for lipid analysis**

5277 1 rimsherd (37x40x07mm wall) thick out-turned rim, hard grey compact vesicular, no beige out surface. V7. **Sherd sampled for lipid analysis**

5278 top 1 scrap (09mm thick) + 2 crumbs, Fabric 0

5279 top 1 **shoulder sherd** (40x30x08mm) in hard compact pale grey vesicular V7

5280 top 1 rimsherd (28x19x08mm wall) in hard dark grey vesicular with grit G5

5281 bottom 1 lump (25x25x12mm) orange clay ? refired

5283 crumbs v. dark grey vesicular

5284 1 scrap beige grey 07mm thick + crumbs

5285 4 crumbs beige/grey with grit G5

5287 1 scrap hard red/grey vesicular 04mm thick

5288 1 crumb grey vesicular with grit G5

5289 1 sherd (30x20x05mm) hard red laminated vesicular V9

5290 top 2 crumbs soft beige grey V8

5291 3 scraps and crumbs softish beige grey 09-11mm thick V8

5292 1 damaged rimsherd (25x30x07mm wall) softish beige grey compact vesicular, straight-sided pot, 2 fragments (1 a laminate spall) V8

5293 2 scraps beige grey and 1 stone

5294 1 scrap, 1 fragment and 1 crumb of dark grey laminate 07mm thick V9

5295 1 sherd (recent breaks) strangely flat piece (38x35x05mm) in Fabric 0.

5297 1 fragment + 3 crumbs hard red/grey vesicular 05mm thick; 2 black crumbs no surfaces. V9

5300 missing

5301 1 sherd (35x30x11mm) softish compact beige grey vesicular; 1 scrap hard grey vesicular 05mm thick V8 & V9. **One sherd sampled for lipid analysis**

5302 top 1 scrap hard compact grey vesicular 09mm thick V7

5303 top 1 rimsherd (25x15x07mm wall) in hard grey vesicular (as 5302); 1 sherd (23x25x07mm) hard beige grey laminated vesicular. + 1 crumbs V7 & V9

5305 top 2 fragments v. hard dark grey laminated vesicular V9

5306 top 1 scrap 1 fragment softish beige/grey vesicular V8

5307 top 1 sherd (22x25x07-04mm) from neck of bowl. Fabric 0

5308 top 1 sherd (30x25x07mm) hard beige/grey laminated vesicular. V9. **Sherd sampled for lipid analysis**

5309 top 2 fragments beige grey vesicular

5311 1 scrap orange, ? re-fired vesicular

5312 1 crumb Fabric 0

5313 1 scrap dark grey laminated vesicular V9

5316 bottom 1 scraps, 2 fragments + crumbs hard grey vesicular 10-09mm thick V7

5317 bottom 1 scrap with curve of everted rim, hard grey vesicular. 10mm thick; 1 sherd (25x25x08mm) beige grey compact vesicular + 2 crumbs V7 & V8

5318 bottom 1 scrap + crumbs of softish beige/grey vesicular. 08mm thick V8

5319 bottom 2 scraps, 2 fragment + crumbs beige/grey compact vesicular 10mm thick V8

5320 2 scraps, 1 fragment + crumbs beige/grey compact vesicular 11mm thick; 1 fragment v. hard dark laminated vesicular. 05mm thick V8 & V9
5321 4 fragments + crumbs soft beige ? baked clay
5322 1 piece (30x20x09mm) + 1 scrap + crumbs of pale beige baked clay (? Pot) with much variable grit
5323 top 1 fragment beige grey 09mm thick
5325 top 2 scraps grey vesicular 08-09mm thick + crumbs and stone
5328 top 1 scrap pale beige with largish grits + 3 crumbs. *More convincing as pottery than 5322*
5330 top 1 sherd (25x23x07mm) v. hard dark laminated vesicular + crumbs V9
5331 1 scrap yellow-beige/grey abrasive fabric with small grits ?2 fingernail marks but shape of scrap is impossible to interpret. Odd
5334 1 sherd (25x25x08-10mm) hard beige grey compact vesicular. + 1 crumb; 1 fragment v. hard dark grey V7 & V9
5335 several crumbs, beige/grey
5342 1 fragment grey 09mm thick
5344 1 fragment fabric 0
5346 2 fragments fabric 0
5349 bottom 1 scrap v. hard dark grey laminated 05mm thick + crumbs V9
5350 1 sherd (21x23x08mm) v. hard dark grey laminated vesicular V9
5351 1 neck sherd, diameter c. 260mm (47x35x07mm) in very hard brownish/dark grey laminated vesicular. Outer surface has ? greasy deposit. Coil join (? to rim) or loss of large ?shell inclusion. V9. **Sherd sampled for fabric analysis**
5352 1 sherd (25x23x08mm) pink-beige/grey very hard laminated, slightly gritty vesicular, 2 lines thought to be decoration are probably accidental; 1 crumb softer beige/grey vesicular. V9 & V8
5353 1 fragment hard dark grey vesicular.
5355 1 scrap recently broken softish beige/grey compact vesicular. 10mm thick. V8
5356 stone + charcoal
5357 1 scrap hard beige grey compact vesicular 09mm thick V7
5358 missing
5359 2 crumbs beige/grey Early Neolithic pot and Beaker sherd (see below).
5360 1 sherd (30x17x05mm) hard dark laminated vesicular, badly abraded + 7 crumbs. V9
5361 missing
5363 missing
5908 R 3 tiny dark crumbs.

Context 31097 ***Stakehole 31097*** cuts relict soil
857 2 sherds from same pot which do not join. Rim (35x20x09mm) and piece of concave neck (40x27x08mm) in dense orange/grey vesicular with sandy/ abrasive surface. No grits visible *Not same as fabrics from relict soil.* **One sherd sampled for lipid analysis**
5507 R 1 fragment red/black

Context 31110 Variant of 31025 = ***relict soil*** 17 sherds all v. small
894 4 crumbs 'odd fabric' + 1 charcoal. Fabric 0
896 4 crumbs grey vesicular V8
897 2 abraded sherds, larger 25x20x10mm beige /grey vesicular V8
898 1 fragment 18x18x07mm of simple rim, red/black
5050 top 1 sherd 25x20x10mm, possible curve towards rounded shoulder, but too badly abraded for certainty, Hard grey with some grit G5
5057 bottom 1 fragment hard grey/orange with small grit as 5050

Context 31123 Variant of 31025 = ***relict soil*** most finds from base of deposit (including modern sherd)
5051 3 crumbs beige /grey vesicular with small grits G5
5052 1 sherd (25x20x07mm) yellow/grey vesicular with some v. small grit. Hint of 2 lines ??hyphenated, probably accidental + 2 crumbs similar. Fabric is not similar to 5069, possibly Beaker
5053 1 sherd close to curve of rim (30x23x12mm) hard beige/grey vesicular, slightly abrasive feel. G5
5054 3 crumbs beige/grey vesicular V7
5055 5 tiny crumbs
5056 1 crumb, hard grey vesicular 06mm thick V7
5058 1 fragment + 2 crumbs black
5059 stone
5062 1 crumb black

5100 1 fragment beige /grey, softish and thick (section incomplete) V8
5104 1 very abraded sherd (25x35x12mm) hard grey vesicular with some small grits G5

Context 31148 ***Pit 31147***
4548 R 1 fragment yellow/grey vesicular with small grits

Context 31201 variant of 31025 = ***relict soil***
934 7+ crumbs beige /grey with small grits G5

Context 31374 = ***silt*** below 31025
972 1 sherd (20x23x07mm) orange/black mealy fabric (odd); 2 sherds (larger 35x25x11mm) hard beige/grey. Fabric 0 & V7

Context 31401 ***pit or posthole 31402***
5473 R 1 fragment hard grey with grits G5

Context 31403, patch of clayey silt
983 1 sherd (25x30x10mm) hard, abrasive surface, brown/grey vesicular but probably some grits G5

Context 31510 ***Pit 31509***
5429 R 1 crumb 'odd fabric' Fabric 0

Context 31527 ***deposit probably caused by root activity***
5012 1 heavy rounded out-turned rim (40x40x10mm) + 1 sherd same pot (25x30x10mm) beige surfaced hard grey vesicular. 1 small damaged out-turned rim sherd (25x15x08mm) in softer beige/grey fabric + crumb. V7 & V8. **One sherd sampled for lipid analysis**

Context 31551 ***probable variation in the natural or root activity***
5098 Tiny crumbs Vesicular c 06mm thick

Context 31554 ***probable variation in the natural or root activity***
5040 Tiny crumbs dark
5061 Tiny crumbs orange
Added nos.
5019 1 sherd (25x15x08mm) yellow/grey with grits on surface +crumbs ?G5
5315 1 rimsherd (37x35x09mm) well made out-turned rim in hard pink-beige/grey vesicular ?V9

Context 31557 patch of soil part of 31025 7 sherds including rim
5484 R 1 rimsherd (23x30x09mm), soft orange vesicular (?re-fired) with small grits; 1 sherd 25x25x05mm) + 2 crumbs 'odd' fabric ?V6 & Fabric 0
5512 R 3 dark tiny crumbs

Context 31570 ***Hollow 31571, partly burnt root hollow***
5097 1 rimsherd (25x25x06mm) in very fine black dense fabric, but surface quite badly eroded. Possibly G1. **Sherd sampled for lipid analysis**

Context 31596 ***Pit 31595*** 66 sherds Perhaps 8 pots involved including several rims and three joins on ancient breaks, though most edges are abraded and no pieces are very large.
4542 3 crumbs dark vesicular; 2 crumbs grey abrasive
4554 9 crumbs dark gritty G5
4562 1 crumb, hard beige/grey V7
5209 16 sherds + 6 fragments of burnt clay. 1 rimsherd (40x50x07mm) joining on crisp ancient break, though all other edges v. abraded in hard slightly abrasive beige/grey fabric with some grits as in 5371 + 10 frags. 1 rimsherd in crumbly orange/black (odd fabric) but thinner than in 5371 and a more elegant everted rim (joining at ? ancient break, 50x30x09mm. 1 featureless sherd (40x30x08mm) in yellow/grey fabric with grits as 5371 + 2 frags. 1 sherd (20x30x12mm) beige/grey softish as 5371. Fabric 0, G5, V8
5371 19 sherds from perhaps 5 pots (+ 3 fragments burnt clay showing fingernail marks). 1 out-turned rim joins a piece of neck at an ancient join (45x45x08-10mm). This is in a grey/beige vesicular with a soft soapy surface. Another rimsherd (30x20x13mm) in similar fabric may be from the same pot

despite difference of thickness; 1 featureless sherd (35x20x12mm) similar fabric. 1 out-turned rim (40x35x09mm) in harder greyer vesicular; 2 fragments might be part of this pot. 1 everted rim (25x20x08mm) in hard beige/grey vesicular with some grits akin G1; 1 sherd (25x25x08mm) and 2 frags. similar. 1 ?upright rim (30x35x10mm) in crumbly pink/grey fabric (odd fabric) + 1 sherd (25x30x09mm) possibly another similar rimsherd but more abraded. 3 featureless sherds (largest 40x30x09mm) is yellow/grey fabric with some angular grit. 3 fragments of burnt clay. V8, V7, G5 & Fabric 0. **One sherd sampled for lipid analysis**

5386 1 rimsherd (30x20x07mm) similar in fabric to beige/grey abrasive fabric in 5209, but rim shape more angular; 2 fragments possibly similar. G5

5477 1 fragment ? pot

5423 R from sample 961 1 pointed rim (25x23x06mm) + 2 crumbs in orange slightly vesicular fabric and 11 crumbs hard grey slightly abrasive. All v. abraded. ? & G5

Context 31602 ***Pit 31595***

5446 R Crumb of black vesicular

Context 31606 ***Pit 31605***

5489 R 1 crumb 'odd fabric' Fabric 0

Context 31609 ***Pit 31608***

5365 (5364 on bag) 2 sherds (35x35x06mm and 25x25x07mm) + 2 fragments same, hard dense grey vesicular with well smoothed surfaces (outer surface lighter) ; 1 fragment looser hard V1 05mm thick + 2 crumbs; 1 fragment softer vesicular

5485 R 5 sherds (largest 25x25x06mm) of hard beige/grey vesicular with a few grits, 3 fragments similar + crumbs. 2 crumbs of orange/black mealy (odd) fabric. V7, V8, V9, G5 & Fabric 0 = *all Area E fabrics represented here.*

Context 31622 ***Pit 31621***

5378 1 sherd (25x20x07mm) + crumbs similar, beige/grey hard vesicular fabric. V7

Context 31624 ***Pit 31623***

5385 1 sherd (20x23x10mm) + crumb in hard beige/grey vesicular V8

Context 31650 ***Pit 31652***

5370 1 sherd (37x30x10mm) in softish orange fabric with grits on surface + 11 fragments and crumbs similar, heavily abraded. ?G3

Context 31663 ***Pit 31666***

5255 1 sherd (25x30x10mm) + 2 crumbs hard beige/grey vesicular. 2 fragments + 2 crumbs looser black vesicular V7 & V9

Context 31667 ***Root hollow 31668***

5383 2 non-joining pieces of the same rolled over rim in hard well-smoothed brown vesicular (35x15x 06mm wall) + (20x15mm outer edge only). V9

Context 31669 ***Animal burrow 31670***

5039 1 fragment hard grey vesicular but only 07mm thick V9

Area E: Burnt mound

Context 31422 **Burnt Mound**

5542 1 crumb, hard grey with tiny grits

Area M Early Neolithic Pottery

There are 2 contexts with possible residual Early Neolithic pottery just to the west of the Multiple Cist Mound, and 2 (or 3) postholes with a single sherd of probably Early Neolithic pottery, and a single pit (40079) with a significant quantity of Early Neolithic pottery. These last 3 contexts are quite close together near the Ring Ditch and some 40m to the south east of the first contexts. A posthole (22118) between the Ring Ditch and the D-shaped Enclosure contains 1 Early Neolithic sherd but also some possible FV, so the Early Neolithic is undoubtedly residual.

Context 22117 cut 22118 posthole close to *D-shaped* Enclosure

3049 1 curved body sherd (35x35x07mm) hard brown vesicular with grit, crisp edges, definitely Early Neolithic;

A good crisp sherd of Early Neolithic comes from this posthole but is associated with probably Early Bronze Age sherds from a single pot

Context 40011 cut 40010/40088 posthole

1411 1 sherd (45x25x06mm) pink-beige/grey vesicular, hard inner surface but badly eroded outer (pink) surface + 6-10 crumbs of dark vesicular, probably similar to the sherd. ***Genuine Early Neolithic, but in eroded condition.***

Context 40072 cut 40071 pit

5850 26 tiny crumbs of which 24 are likely to be stone; 2 might possibly be eroded, residual pottery**.**

Context 40077 cut 40076 pit

4100 1 fragment probably stone; other poss. V. eroded dark ?Early Neolithic pot

5805 most of the many tiny crumbs are likely to be stone, 3 are uncertain and 3 are likely to be pottery (1 is certainly a red/black vesicular fabric 06mm thick)

4508 1 crumb red/black vesicular pot 05mm thick; 1 uncertain and 1 stone as 4100 etc.

5575 content lost except crumb modern. Note on bag that FML thought it Early Neolithic

Context 40080 cut 40079 pit

1892 Parts of 4 pots, 3 of which are certainly Early Neolithic. Joins of non-recent breaks suggest that this group cannot be dismissed as simply residual. There must have been quite large segments of pot available (there are some fresh-looking breaks which do not join) when they got into the pit. Nothing indubitably post-Neolithic from this pit.

1 rimsherd (40x50x07mm wall thickness) out-turned, flattish rim with small hole drilled into wall below it; hard grey vesicular + 1 small wall sherd (30x15x06mm). Junction of rim and wall is an old break.

2 rimsherds from a thick grey hard vesicular with a little grit. Main piece (70x50x13mm wall thickness) is a section of concave neck from everted rim to close to shoulder. Another piece of the rim survives which may have joined a lost segment.

A third rimsherd + crumb (27x17x07mm wall thickness) in fabric similar to holed sherd.

Fourth pot is represented only by 3 featureless body sherds of orange/brown softer gritted fabric with some vesicularity, not obviously Bronze Age. Largest sherd (32x37x12mm). There are 5 scraps and 2 crumbs of thinner (07mm) orange/brown fabric which might be from the upper part of this pot.

4481 2 fragments smoothed and eroded red/black 05mm Early Neolithic

5883 4 crumbs yellow-beige pot + lots of tiny grey crumbs, probably mostly pot

Context 40089 cut 40088 posthole

1994 1 sherd (60x50x09mm) from a pot, diameter 200mm, with ?everted rim and slight shoulder 50mm below it. Fabric rather poorly fired with a lot of well crushed stone grit.

4525 1 fragment only 05mm thick of same fabric.

5886 1 crumb certainly from 1994; 2 other crumbs more orange, but with similar grit.

4 pieces of probably the same pot with an Early Neolithic profile but not a typical fabric. However they are close to other features with Early Neolithic pottery

Context 40093 cut 40092 posthole

4093 1 small sherd (25x20x08mm) very hard beige/black laminated vesicular. Genuinely Early Neolithic

Area M: Uncertain finds

Context 40098 cut 40097 natural hollow in pit/posthole scatter SE of multi-cist barrow

5877 1 minute crumb of crumbly black ? mineral

Context 40138 cut 40137 pit in pit/posthole scatter SE of multi-cist barrow

3070 1 sherd (25x20x08mm) of poorly fired orange sandy fabric with smooth strange coloured surfaces, bluey-green; might be close to a simple rim

Context 40153 cut 40152 posthole

5887 4 minute crumbs. Impossible to identify!

Context 40156 natural deposit cut by cist 40119

4230 1 fragment, rolled. Probably conglomerate stone

Context 40198 patch of silt containing charcoal within area of multi-cist barrow

5885 1 crumb, stone

Mid Neolithic Pottery

Mortlake Pottery from Area K9

Context 80601 pit 80602

5711 1 reconstructed rimsherd (40 x 22 x 20mm - 4 pieces); 2 sherds (40 x 26 x 15 and 50 x 30 x 13mm) + 3 fragments and 4 similar crumbs of pink heavily gritted pottery with fingernail marks. These are undoubtedly the **same as the Mortlake bowl 5720** from the lower fill of Pit 80686. **Pot A**
This rimsherd is the best preserved piece of this rim, showing 4 lines of rounded stab marks on the outer bevel and two on the inner, an area badly damaged on the other finds. There are fewer large grits in this piece which probably explains its better survival. A rimsherd from **5724** (upper fill of Pit 80686) is also likely to be part of this same pot, which links Pits 80602 and 80686.

Context 80609 pit 80610

5710 1 sherd (50 x 37 x 15mm) of hard pink heavily gritted fabric decorated with lightly scored lines in a criss-cross pattern similar to **5719** from the lower fill of Pit 80686. **Pot F**.

Context 80638 pit 80594 4 pots involved, none present in large quantity.
Dated pit

5714 The bulk of this material is sherds in a pink, heavily gritted fabric with indications of fingernail mark decoration. There are 4 featureless sherds of this type, of which the **best** (30 x 35 x 15mm) has 3 fingernail marks in a line. 3 other pieces in the same fabric may fit together as part of a **rounded base**. These do not show signs of decoration and the base is definitely more rounded than that in 5719.
1 body sherd (35 x 45 x 11mm) with 5 horizontal lines of stab and drag decoration made with a rough stick. The fabric is hard and well-fired with a good deal of medium angular granitic grit; colour pink/beige with a dark interior. A similar piece (5729) comes from Pit 80788 in Area K9b. **Pot E**
1 rimsherd (30 x 23mm) (outer corner only) with 2 horizontal grooves. Dark fabric with plentiful grit. **Pot D**
1 rimsherd (40 x 20mm) (top of bevel) decorated inside and out with deep fingernail marks in a herringbone pattern; heavily gritted pink/grey fabric. There are slight (accidental) finger nail marks on the top suggesting that the larger gouges were made with the thumb nail, the clay pinched between thumb and first finger. **Pot C**

5741R 1 fragment of main group

Context 80684 Upper fill of Pit 80686
Dated pit
Small quantities of various Peterborough pots. Links can be demonstrated with Pits 80602 and 80610 and also the lower fill of this pit (Context 80685).

5716 **1 rimsherd** (62 x 45 x 10mm (wall)) in beige/grey hard fabric with much large angular granitic grit; decorated with 2 rows of fingernail marks on sloping out bevel of complex rim with slight internal overhang. Rim diameter 200mm. The concave neck and poorly defined shoulder exist but there is no sign of other pieces of this pot from this context. It is different in fabric and rim profile to the fingernail decorated rim in 5714 (Pit 80594). **Pot B**

5717 **decorated body sherd** (70 x 55 x 14+mm) from a bowl perhaps 280mm in diameter. The fabric is pink with a grey interior and large angular grits including quartz, but unlike others in this broad group it may have had a gritless slip added to the outside to allow the decoration to be cut through it. The decoration is probably cut with a blade rather than a finger or thumb nail since the marks are often 15mm long, deeply sliced and neatly arranged giving the impression of wickerwork. No other pieces of this pot were found.

5718 **decorated body sherd** (50 x 50 x 15mm) in pink/grey fabric with much angular grit including quartz, decorated with scored lines in a rather haphazard diagonal and criss cross pattern. This is very probably the same pot as 5721 from the lower fill. **Pot F**

5724 **4 small decorated sherds,** same as **5718**, with scored decoration. Most have lost the inner surface. **Pot F**
1 rimsherd (20 x 20 x 10+mm) almost certainly from the same rim as 5720 from the lower fill of this pit and possibly the same as 5711 from Pit 80602. **Pot A**. Only the outer bevel survives, but decoration and fabric match.

3 decorated sherds in similar pink/brown fabric, hard with much large angular stone grit and a relatively smooth outer surface. One (30 x 40 x 12mm) has shallow gouged depressions (?fingernail) and the other two (30 x 25 x 15+mm and 30 x 20 x 17mm) have incised lines, one suggesting a unusual concentric circle pattern.
7 featureless, heavily gritted fragments and 13+ crumbs similar

Context 80685 Lower fill of Pit 80686
Larger quantities of 2 Peterborough Mortlake bowls

5719 **Pot F** A large section of flattened base 110mm in diameter and 20-30mm thick. It is widely splayed and the pot may be 190mm in diameter only 70mm from the base. It is decorated to the base with a lightly scored lattice pattern made with a pointed stick. The fabric is poorly fired, pink surfaced with much angular stone grit (creamy white but not quartz).

5721 1 large body sherd (65 x 80 x 14mm) of pink surfaced fabric with light grey core containing angular white grits (fewer than in 5720). This is more likely to belong to Pot F than A though the decoration includes both finger nail marks and lightly scored lines.

5726 3 sherds (largest 30 x 31 x 15+mm) and 3 fragments of pink fabric similar to 5721 with hints of scored lines.

5720 **Pot A**. 2 sections of rim + 1 fragment (with **5711 and 5724** amounting to c. 140mm (approx 40%) of the rim of a bowl 230mm in diameter, with 2 large sherds (70 x 80 x 15mm and 50 x 75 x 16mm) from the upper body with deeply cut fingernail marks. The larger sherd shows the curve of the neck but does not join the rim. The fabric is pink on the outer surface with a dark core and inner surface, very heavily gritted with large angular grits which include a good deal of quartz. The firing is not very good and there are several large recently broken fragments. **Sherd sampled for fabric analysis**

Context 80787 pit 80788

5729 2 body sherds with stabbed and scored decoration both similar in fabric and decoration to **5714** from Pit 80594 in Area K9a**,** but thicker. **1 sherd** (30 x 30 x 15mm) with 3 lines of decoration, stab and drag, the others scored with a rough stick. The other fragment (25 x 15 x 13+mm) has a hint of circular stab marks. **Pot E**

Fengate Pottery

There is a cluster of 9 pits in Area Ia, 8 of which contain small quantities of Fengate pottery and knapped stone. The 9th pit contains a stone macehead and other knapped stone. There are 2 isolated pits with Fengate sherds some 20-40m away from the cluster, and in Area J there is one pit (70173) which contains good Fengate pottery and two other pits which contain possible Fengate sherds.

Pit group PRN 31572 in Area Ia

Context 18064 pit 18063 c. 13 sherds, possibly 3 pots involved
Dated pit

3012 2 sherds (both 20 x 20 x 12+mm) and 2 crumbs of dark pot as 3080; 2 fragments of pink abrasive pot as in 3080; 1 featureless sherd (35 x 40 x 12mm) brown/black with much angular grit (quartz and other stone) and 2 marks, unlikely to be decoration. The surface colour of the slightly greasy surface suggests that it might be part of the same pot as the rimsherd of 3058; one fragment of similar. The thick sherd shows a tendency to spilt longitudinally so the dark sherds in 3080 might belong with this one and the rim, though quartz is not so obvious in either.

3058R 2 sherds not from the same pot. 1 **rimsherd** (40 x 30 x 11mm wall) of very hard fired brown/black fabric with large/medium angular stone grit. **Pot M**. The rim has an internal bevel, clumsily turned over on the inside. The exterior has two diagonal slashes probably a fairly uniform collar decoration. There is one apparently deliberate stab mark on the rim bevel but it is unlikely that there was consistent decoration there. Fengate rim but not absolutely typical.
The **second sherd** (58 x 33 x 12+mm) has a pink outer surface with two probably horizontal incised lines and black core. The fabric is more heavily gritted with medium and small grits; the outer surface is more abrasive than the rimsherd. The inner surface is lost. There is a crumb of this pot (and more in 3080).

3080R 9 sherds probably from the second pot in 3058. The largest is 30 x 30 x 13mm, the smallest 17 x 10 without inner surface. 3 have an incised line; 6 lack an inner surface. There are several similar crumbs.

1 sherd (50 x 40 x 10+mm) of hard heavily gritted dark pottery with lost outer surface. 3 smaller sherds and 3 crumbs might be from the same pot. This pottery might be similar to the thick sherd in 3012.

4117R 11 tiny crumbs of the dark pot

4124R 9 tiny crumbs of the dark pot and 3 from the pinker one.

Context 18066 pit 18065/21217

2 quite large joining sherds of 1 pot

113 and **114** 2 rimsherds joining on an ancient break, from a medium-sized **Fengate jar** 200m in diameter. **Pot G**. The collar has an inturned, flat-topped rim with diagonal slashes at the edges. The collar is decorated with incised lines, the majority in one direction but with one section counter hatched. The surviving segment of rim is about 25% of the circumference. The body below the collar is haphazardly marked with short incisions. The fabric is hard and well-fired, red/black on the outside and brown on the inside. The inner surface is very uneven with a lot of protruding large angular granitic grit; the same grit is less obvious on the outer surface which has been slightly smoothed and may have had a wet clay skim so that the decoration could be applied. No other sherds or crumbs from this pit.

Context 21209 pit 21208

1425 1 flat sherd (40 x 35 x 20mm) perhaps part of a base. Hard, heavily gritted with large angular quartz grits, orange surfaces, quite smooth, with brown core.
1 sherd (25 x 23 x 12mm) similar fabric and 3 crumbs.

Context 21211 pit 21210

1082 and 1137 2 rimsherds from the same **collared Fengate jar**. **Pot K**. The larger sherd has ancient breaks, the smaller one has a fresh break but it is unlikely that they would have joined; the thickness of the rim and the slight variation of decoration suggest that they come from separate parts of the collar. The decoration on the top of the rim is carried out with a very sharp tool which has also been used to define the triangles on the collar. These triangles are filled with neat stab marks made with a thicker point. On the larger sherd they echo the triangle, on the smaller one this is less obvious. The edge of the collar is defined by a raised cordon.
The fabric is very hard and well fired, with beige/brown surfaces and darker core. The surfaces are well smoothed but the clay contains a good deal of medium stone grit, including quartz.

Context 21213 pit 21212

1139 1 sherd (30 x 25 x 12mm) soft orange outer surface, inner surface harder, dispersed grit, probably quartz + 2 fragments similar

1504 9 crumbs representing 3 pots, not obviously similar to 1139. 4 softish brown with some angular grit; 4 smaller crumbs beige/brown more heavily gritted; 1 orange fabric with abrasive surfaces.

Context **21214** pit 21212

1138 1 sherd (40 x 30 x 12mm), brown with large and small grits, possibly a coil join.

1232R 2 fragments + 3 crumbs of very abraded pottery (residue), red/black with angular quartz grits. Largest 24 x 20 x 11mm; others have no good surfaces. Fabric suggests Late Neolithic.

Context 21218 pit 18065/21217

1451R 1 fragment, mid brown, undiagnostic

Context 21220 pit 21219

1149 1 sherd (40 x 40 x 16mm) with curve of shoulder. Random stabbing is probably decoration. Hard, heavily gritted with medium/large quartz grits, pinky yellow colour.

Context 21224 pit 21219

1443R 1 featureless sherd (25 x 20 x 15mm) orange/brown with angular grits including quartz + tiny crumb

1590 Crumbs, very tiny, orange

Context 21222 pit 21221

Major deposit of pottery At least three Fengate pots are present amongst the 34 sherds and 53 fragments. There are also 2 sherds of residual Early Neolithic. There are close links with Pit 25054

1151 13 pink/orange body sherds (largest 55 x 53 x11mm; smallest 18 x 17 x 08+mm) decorated with at least one quite deeply scored horizontal line. Where 2 are present they are 25-35mm apart. Most

are about 12-15mm thick, suggesting that the decoration probably covers most of the body. There are two fragments without outer surfaces in the same fabric and one piece (35 x 21 x15+mm) with a sharp bend on the inside suggestive of a flat base.
The fabric is uniformly red/orange on the outer surface but brown inside. The surface is smooth but slightly abrasive to the touch. There are plentiful large angular grits but it is not quite as densely tempered as 1167. There is one small sherd which might be the dark brown fabric as in 1167.
These pieces must come from the lower half of the pot and the fabric would be consistent with the Fengate tradition. There are a few other pieces of this pot in 1163, 2027, 1150, 1567, 1595 and 1618. **Pot J**.

1162 **Base insertion, probably belonging to Pot L.** 1 segment of this 70mm diameter base survives reasonably intact (48 x 45 x 27mm). 2 other pieces show a smooth upper surface combining with the large piece to suggest that about half the base would have been present originally. There are 4 other lumps and many crumbs. The condition of the outer edge and the fact that the top surface runs up to a point shows that this is not the true base but is an insert. The fabric (poorly fired, dark brown with a lot of large angular stone grit) suggests that it belongs to the Fengate jar **Pot L**.

1163 2 small sherds (25 x 18 x 11+mm and 20 x 20 x 16mm) of red surfaced abrasive fabric (as 1151)

1170 1 undecorated sherd (33 x 22 x 12mm) from near the **collar of Pot L** (1167); 3 sherds (largest 33 x 31 x 11mm); 5 fragments (1 curved) and 8 crumbs in the same brown, heavily gritted fabric. 1 crumb of a different fabric. **Sherd sampled for fabric analysis**

1405R **1 Fengate rimsherd** (27 x 28 x 11mm) in a well fired brown fabric with small/medium quartz grits. The surfaces are smooth and appear slightly shiny (perhaps from washing in the sieving process). This is not the same brown fabric as 1167. The inner surface is slightly red. The rim is inturned and internally bevelled with diagonal slashes on both edges. The collar has short sharp slashes at the top and hints of other dashed lines below. A second sherd in the same fabric (24 x 22 x 12mm) is undecorated. Another sherd possibly from this pot is in 4181R. **Pot N**

1567 1 crumb of abrasive red-surfaced fabric; 5 fragments of brown fabric; 30 crumbs and 39 tiny crumbs of brown fabric.

1595 1 sherd (25 x 30 x 08mm) with red outer surface with large grit + 3 crumbs similar; 2 crumbs red throughout, abrasive.

1618R 2 small sherds from the collared jar **Pot L**. 1 (20 x 20 x 9+mm) is from the collar with decoration; the other is a piece without outer surface (20 x15 x07+mm). 14 crumbs of brown fabric.
1 sherd with an incised line, red fabric (50 x 30 x 11mm) and 3 fragments and 5 crumbs similar.

1954R 2 featureless sherds (30 x 28 x 11mm and 25 x 20 x 09mm) + 1 crumb of dark brown vesicular fabric. These are residual **Early Neolithic** pottery.

2027R 1 sherd (25 x 28 x 10mm) red-surfaced fabric + 1 crumb

4116R 2 crumbs brown fabric

4181R Tiny fragment (15 x 10 x 3+mm) from a decorated surface, brown fabric closer to 1405 than 1167. Decorated with small neat stab marks, rather similar to those on Pot K.

Context **21223** pit 21221

1150 1 sherd (45 x 31 x 16mm) red abrasive fabric with large grits including some quartz. It is clearly the same pot as 1151 and has one horizontal line of decoration.

Context 25053 pit 25054

*Pit 25054 was next to Pit 21221 and the 3 sherds are all from the same **Pot L** to which other sherds in finds 1162, 1170 and 1618R in Pit 21221 belong.*

1167 Sherd (80 x 44 x 13mm) from the **collar of a Fengate jar** 200mm in diameter (**Pot L**). The rim is not present but would have been inturned and perhaps bevelled. The body is likely to have been conical and about 190mm tall, if the diameter of its likely base (1162) is a guide. *This type of Fengate jar was common at Parc Bryn Cegin, especially in Pit Group III (Kenney 2008b, 37). The decoration of counter-hatched triangles and more tentative lines below the collar is well matched at Parc Bryn Cegin but at Parc Cybi the use of fingernails to create the lines is less popular. It is possible that the collar of 1167 is decorated by fingernail, but it is more likely incised with a sharp pointed stick.* There is a small sherd (20 x 20 x 9+mm) from 1618R and another from 1170 which are part of this collar and other find groups contain featureless undecorated sherds which probably come from the body of this pot.
The fabric is dark brown throughout and contains a great deal of large angular stone grit which breaks the surface making it rough and uneven. The whole impression is of a crudely made and decorated vessel. A high proportion of the undecorated sherds which probably belong to it have lost the outer surface.

1168 2 sherds (34 x 29 x 11+mm and 33 x 23 x 09+mm) of inner surface of heavily gritted brown fabric as 1167 (This find no. is recorded under 21222 but this has been changed to Context 25053 on the box).

Isolated Pits in Area I

Pits 19075 and 21037 are isolated pits some 45m and 23m respectively from the main cluster.

Context 19076 pit 19075.

2 sherds of 1 pot

1037 2 sherds, one a large piece of a **heavy collar**, the other a piece from lower down the same pot. **Pot I**. *The scale and shape of the collar which was probably over 300mm in diameter, suggests* ***a Collared Urn of full Early Bronze Age type,*** *but the fabric, rather poorly fired with a great deal of angular granitic grit, looks Late Neolithic, as is the probability that the lower body is decorated. The dilemma is the same as that posed by Pot A from Pit Group VI at Parc Bryn Cegin (Kenney 2008b, 40, 45). In fact the pots are remarkably similar. At Parc Bryn Cegin the pot was assigned to the* ***Fengate Tradition*** *and that judgement could stand for this one as well.*

The rim is flat and might have been decorated, but the unevenness caused by the heavy gritting makes this uncertain. The flat collar (49mm deep and 16mm thick) is decorated with counter-hatched triangles carried out with a pointed stick and a stab and drag technique. The collar is well defined but none of the neck, which would have been 13mm thick, survives.

The body sherd (60 x 48 x16mm) is decorated with vertical thumbnail marks which create a slight rustication of the surface. It is difficult to judge the diameter but it probably comes from fairly close to the base.

Both sherds are similar in fabric but both surfaces of the collar are orange/brown in colour with a black core revealing a low firing temperature. The body sherd has an orange outer surface and brown inner, with a brown core. Both contain a lot of large/medium angular granitic grit which breaks both surfaces.

Context 21038 pit 21037

1033 **1 Fengate body sherd** (35 x 31 x 15mm) + 3 fragments and 7 tiny crumbs similar. The outer decorated surface of the sherd has split from the inner**.** It is decorated with deep, close-set fingernail marks which create a noticeable rustication. The fabric is hard and well fired but has a tendency to split as both the sherd and fragments demonstrate. The outer surface is pink / orange, the inner black; there is a good deal of angular grit but little of it shows on the surfaces.

Area J Fengate Pottery

Pits PRN 74831

Pit 70173 lay about 144m north-east of the Fengate cluster in Area Ia

Context 70171 upper fill of pit 70173

1815R 1 sherd (40 x 30 x 11mm) joins the main section of **Fengate jar, Pot J** (1705) at an ancient break. The two lines of scored decoration are much more abraded than on 1705 which might suggest a different pre-deposition history, however this sherd comes from sieving.

1 featureless sherd (15 x 25 x 09mm ***analysis***) and 2 crumbs of similar hard fabric with medium angular grit. **Sherd sampled for fabric analysis**

1824R and 1993R 4 dark crumbs similar to 1705 and 1 red/black crumb.

4189R 1 crumb red/black similar 1968

5851R Minute dark crumbs with well-crushed grit similar 1705; 1 red crumb.

Context 70172 lower fill of Pit 70173

1705 **Section of collar and neck of Fengate jar**. **Pot J**. Originally a single sherd 80 x 75mm; all the outer edges are ancient but with sharp breaks and the surfaces seem fresh. However the sherd from 1815, which joins it convincingly at the lower side, has a more worn and abraded surface which might suggests that it had been lying around for some time before it reached a pit (but see comment above and below re SF 6409R).

The jar has a curved collar decorated with oblique lines probably made with a fingernail; below the collar there are small pits which almost pierce the wall and the neck is decorated with shallow vertical lines scored with a rough stick. The rim had been badly damaged in antiquity and only a slight, abraded bevel survives to suggest the common Fengate inturned rim with chevron marks.

The diameter at the collar is 200mm and the conical body was perhaps 190mm tall. *This is a style of pot found frequently at Parc Bryn Cegin near Bangor (Kenney 2008).*
The fabric is hard and well-fired, with brown surfaces and core with much angular stone grit of medium size. The proportion of filler to clay is high.

1968R **A single sherd** (30 x 30 x 07mm) from **another Fengate jar** of similar design but smaller than 1705. **Pot H**. The inturned rim and collar survive but the piece is very abraded and worn and the decoration on the collar can scarcely be seen. It consisted of oblique lines with a hint of some herringbone element. It may have been impressed rather than incised. The decoration on the rim bevel, in contrast, is a sharply and neatly incised chevron pattern. The diameter at the collar may have been 160mm. The fabric is hard with a black core and red surfaces. It is possible that this may be a red slip. It contains a good deal of small grit, including some rectangular pieces which seem unusual.

5794R 4 crumbs of pottery (1 pink, 3 dark) and 1 stone

Context 70182 pit 70181

1888R 1 fragment + 1 crumb very similar to 1953

1953R 1 featureless sherd (40 x 27 x 11mm) of abraded black fabric with a lot of small-medium stone grits. There seems to be a variety of stone involved. The surfaces seem to have been smoothed but a lot of grit is visible on the outer surface. This looks a bit like 1968 but without the red surfaces and obviously a thicker wall.

3043R 5 dark fragments, as 1953, 3 paler with well-crushed grit) + 1 dark crumb and 2 red crumbs

5797R 6 crumbs similar 1953

Context **70201** pit 70202

1878R 1 fragment (20 x 12 x 10mm) of heavily gritted pottery **similar to Fengate Pot J** (1815 and 1705).

Later Neolithic Pottery

Grooved Ware was found in three areas of the site: J3 and D3 with pits and B2 with presumably residual sherds found in the stone-walled roundhouse settlement.

Area J3: pits PRN 74832

There are some 87 sherds from perhaps 31 different pots, mostly represented by a single sherd

Context 70479 posthole 70480. *12 sherds from 4 pots.*

6380 1 fragment as 6404,1 sherd of soft yellowish fabric with decoration, 3 pieces of harder pinker surfaced ware with blackened interior and 1 sherd (25 x 23 x 13mm) of beige-surfaced grey fabric with grits and slightly abrasive surface.
The yellow sherd **Pot 6380** (50 x 50 x 13mm recently broken across the centre) is decorated with curving lines enclosing an area of stabbed dots. The fabric is yellow/beige inside and out with a grey core, a little small rounded grit is visible. It is light to pick up.
Grooved Ware *- both dec and fabric.* **Sherd sampled for fabric analysis**
The 3 pieces of harder fabric are pink with blackened interior. I sherd (30 x 25 x 12mm) is decorated with a single shallow groove, roughly scored.

6404R 6 sherds from a single pot (+ 1 tiny crumb of pink fabric). There is 1 fragment of this pot in 6380. The largest sherd is 35 x 40 x 13mm, the smallest 20 x 17 x 11mm. The fabric is dark grey, with one reddish surface; hard but rather vesicular, though stone grits of varying size can be seen. The dark surface is decorated with **random deep triangular jabs**. This just might be on the interior but the shape of the pot is impossible to reconstruct. *It is very difficult to visualise what this pot may have looked like and it may not be a true vessel, just mangled fired clay.*

Context 70502 Fill of pit **70503** (This cuts pit 70529)

31 sherds from more than 12 different pots, several links with pots from Pit 70529

6381 12 sherds of good **Grooved Ware** pots; 8 small sherds of similar fabrics and 7 crumbs (2 of which might be similar to 6404). 1 sherd (37 x 30 x 20mm) is clearly a piece of the rim of **Pot O** from pit 70529; 2 pieces might be similar to the yellow sherd in 6380, 2 red sherds are similar to **Pot Q** from pit 70529 and 1 pink-surfaced grooved sherd joins another from 6383 (70529). **Sherd sampled for fabric analysis**
The ancient breaks on those sherds (which are not from sieving) are relatively sharp if the pottery is well fired. Most joins are on recent breaks and the original segment of pot in such cases is quite

small. Many pots are represented by a single sherd which suggests that this is normal domestic rubbish which has found its way into posthole and pit fills. There is no hint of structured deposition, but links might suggest redisposition from the same midden.

Pot R Small thin-walled bowl 140mm in diameter and perhaps about 100mm tall, decorated with 3 horizontal grooves below which there is a panel with filled lozenges. Another band of horizontal grooves might have completed the scheme. The decoration is not symmetrical but is carefully and sharply cut. The upright pointed rim has a slight internal bevel. The fabric is well-fired, hard and smoothed on the outer surface. It has a tendency to split vertically. The colour is uniformly brown. The surviving segment is 50 x 70 x 05mm.

Pot S One sherd (65 x 50 x 12-15mm) from a **cordoned jar** perhaps 280mm in diameter. There are three lines of zig zag grooves above the cordon (or possibly below it). The fabric is compact, with medium-small rounded grits, beige/pink in colour and slightly soft to the feel. There are 2 or 3 other sherds with chevron or triangular grooved designs broadly similar to this jar but they are unlikely to belong to it, because of the use of a thicker line or a slight variation in fabric.

1 sherd (38 x 30 x 11mm) with a soft yellow outer surface but black and hard inside is decorated with horizontal grooves 10-12mm apart and there is another with broader grooves a little further apart which joins a sherd from sf 6383 (Pit 70529)

1 sherd (30 x 30 x 10mm) in a yellow beige fabric has a curvilinear design. With the piece from 6380 (Posthole 70480) and another from 6383, there are three different pots with curvilinear patterns.

2 sherds (43 x 40 x 09 and 35 x 30 x 10mm) in a compact brick-red fabric, decorated with lines and triangular stab marks must be part of the bowl from 6390 and 6393 from pit 70529 (Pot Q).

6405R 2 sherds (25 x 20 x 11 and 30 x 20 x 09mm) of dark grey with small grits, both decorated with 3 lines of small grooves c. 5mm apart; 1 fragment similar and 2 fragments of hard dark grey slightly vesicular fabric similar to 6404

6409R 1 rimsherd (37 x 24 x 09mm) from small decorated bowl, **Pot R**. This piece is from sieving and joins the main rim at a recent break which is sharp and fresh on the 6381 piece, but is badly rubbed and eroded, as is the outer decoration, on 6409. This demonstrates that judgement of abrasion and wear cannot be made on finds from sieving.

Context 70528 Secondary fill of Pit **70529**

44 sherds in three context groups from possibly 15 pots.

6383 This is a mixed group containing single sherds from a variety of pots; some belong to pots more plentifully represented in other find groups from Pit 70529 or Pit 70503.

Pot P A single sherd (50 x 35 x 11mm wall) from near the **rim of a pot with a complex internal bevel and a heavily rusticated exterior**. The bevel seems to have a wave-like cordon similar to that in Pot O, above a broad horizontal cordon divided by 2 scored grooves. The exterior is rusticated by horizontal jabs which create a comparable vertical wave effect, emphasised by vertical lines, perhaps created with a fingernail. The fabric is softish, pink with a grey core and some medium-sized grits.

1 sherd (30 x 25 x 13mm wall) from a **pot with a thin cordon** defined by two rounded grooves. The pink/yellow fabric is soft and slightly crumbly with small rounded grits. It may be the same pot as a sherd from 6381 with two horizontal grooves above a slight cordon. The fabric is very similar but the thickness not quite the same

1 sherd (30 x 22x 11mm) with **2 curved lines of grooved decoration**. The fabric is a dark pink and much harder than the soft yellow fabric of sherd 6380 with curved decoration in Posthole 70480.

1 sherd (40 x 40 x 11mm) in pink/brown fabric with **rusticated decoration and grooves** similar to Pot O). The breaks are ancient and the sherd may come from lower down the body of that pot.

1 small sherd (30 x 20 x 11mm), hard red surfaced fabric and triangular stab marks similar to those on sherds from 6393 (Pot Q) to which it very probably belongs.

1 sherd (32 x 32 x 14mm) in soft yellow fabric as in 6380 and 6381 with a damaged surface which may have complex stab marks as found in those two find groups.

1 sherd (35 x 37 x 12mm) with two grooves joins another from 6381 (Pit 70503).

1 sherd (32 x 32 x 12mm) in a hard brown fabric with some medium stone grit has 3 quite close set horizontal grooves.

6 sherds (largest 40 x 25 x 12mm; smallest 23 x 15 13mm) with single grooves; 3 in similar fabric to Pot O, the others more compact and slightly abrasive.

5 featureless sherds and 2 crumbs in softish pink/grey fabric.

6390 **Pot Q** 1 section of the **lower body and base of a bowl** about 220mm in diameter. The flat base (160 in diameter) is neatly made and the wall flares out from it quite steeply, undecorated for the

lowest 40mm and then decorated with quite close set horizontal grooves. The fabric is red-surfaced with a dark core and rather poorly fired in this lower section. It is compact and the well-crushed grits are difficult to see. The edges of this segment of pot are quite sharp, though clearly broken in antiquity. There is another sherd (60 x 30 x 12mm + a crumb joining on an ancient break) which does not join this base segment but must be part of the same bowl. It is decorated with 3 horizontal grooves with above (or below) an area with triangular stab marks bounded by an oblique line suggesting a band of filled triangles. Estimation of the diameter of the pot at this point would suggest that it was about 120-130mm above the base. A crumb (15 x 15 x 10mm) with 2 grooves has the hint of a slight cordon. There is a similar suggestion of a thickening above the grooves on the larger sherd from 6381 (Pit 70503).

1 sherd (35 x 20 x 13mm) which is clearly different, being hard, slightly vesicular, yellow and black and decorated with 2 or 3 fingernail marks. This is similar to 6404 (Posthole 70479) but more carefully made and a different colour. This might be Fengate Ware but mixing of the traditions is rare. Neither here nor at Parc Bryn Cegin are sherds of the two found in the same pits, though several decorative traits seem similar.

Context 70531 Central fill of pit 70529

6384 1 rimsherd (40 x 30 x 13mm) in a hard, compact reddish brown fabric with well-crushed rounded grits, rather similar in texture to the brighter red fabric of **Pot Q**. The rim is pointed (with rounded tip) with an internal bevel ending with a rounded cordon-like ledge**. The inner bevel is decorated with a series of shallow gouge marks creating a honeycomb pattern.** The tool had a jagged surface. On the outside there are 6 grooves set at a slight angle. These are reminiscent of Pot Q but it seems a bit too heavy to be the rim.

6389 **Pot O** A single rimsherd (110 x 85 x 11mm wall) from a large pot 300mm in diameter with an outwardly bevelled rim and probably a curved profile. The inside of **the rim has a complex profile with a wave-like cordon** set within a broad concave groove, with a further groove below. The fingernail marks of the potter pressing in the cordon are clearly visible. The nails were long. The exterior of the rim is plain but the neck and body are decorated with roughly scored horizontal grooves, crossed lower down by a series of deep jab marks, made with a rounded stick. This rustication has a very rough effect.

A sherd from 6383 (40 x 40 x 13mm) very probably belongs to this pot somewhere further down the body where the marks are more triangular and may have been made with a fingernail.

A small piece (25 x37 x 20+mm) of the outer edge of the rim comes from 6381 (Pit 70503).

The fabric has a red/orange surface and grey core. It is rather harder than some of the other pinky fabrics and contains quite a lot of medium, rounded stone grit.

6393 2 sherds (40 x 30 x 11 and 25 x 15 x 11mm) of red compact fabric similar to 6390. The smaller sherd is a dark red/brown with horizontal grooves and is the same pot as 6384 (**Pot Q?**) with which there is a reasonably confident join. The larger one is brighter and closer to 6393 and 6406, with triangular stab marks and grooves which may be oblique. This is almost certainly from **Pot Q.**

Pot T 1 sherd (50 x 40 x 11mm wall) + one crumb of yellow surfaced fabric with grey core with medium ?rounded grits. The texture is open and the outer surface is badly corroded but shows oblique grooves above (or below) a **rounded cordon** which has broken away in part. This is the third Cordoned Jar from the site.

6427R 2 fragments of pink-surfaced fabric with grey core, some rounded grit.

Context 70536 Primary fill of pit **70529**

6394 1 fragment + 1 crumb of light, soft fabric with very well-crushed grit, pinky beige in colour. 1 slightly larger sherd has already been sent for **fabric analysis**.

6406R 1 sherd (37 x 30 x 10mm) in compact red-surfaced fabric decorated with 4 grooves and triangular stab marks. Part of pot from 6390 (**Pot Q**)

Area B2 and F1 Round Houses

Context 91681: a charcoal patch between RHC and RHE, probably belonging to the first phase of RHE

4070 **Pot U**. A single base sherd (35 x 25, 6-10mm, diameter of base 50mm) from a small individual eating bowl designed to be held in one hand like a Chinese rice bowl: probable rim diameter 100mm and height 80mm. The fabric is beige throughout and is notably lightweight with a slightly greasy smooth but lumpy surface. The foot is roughly pinched out in such a way as to accommodate a finger to support the bowl when held in one hand.

This has been examined by Dr Elaine Morris because of the potentially Iron Age date of the stone round houses. She has identified grog as the temper.

The use of grog temper, the lightweight soft fabric and beige colouring all suggest that this may belong to a Grooved Ware phase of activity on this much-built-on site. A small undecorated jar from Clynnog (Roberts 2009) is a reasonable parallel in size and fabric. The distinctive fabric is also seen in larger tubs at Parc Bryn Cegin and in cordoned jars at Llanfaethlu.

Context 92550, a charcoal-rich deposit in the first phase of **RHC**

4316R 4 tiny crumbs; 6 crumbs (10 x 10mm); 5 fragments (20 x 25mm) and 1 sherd (20 x 20 x 8mm) in a softish grey/pale beige fabric with possible grog tempering. Similar to 4070 (above) and 801 from RHG, which might also be Grooved Ware.

Context 92634: a stone surface in vicinity of the stone round houses which was probably in use with the granary structures.

801 **Pot V.** 1 rimsherd (30 x 30 x 8mm) in hard grey pottery with a good deal of tempering which may include grog. The piece is lightweight and the undecorated rounded rim is incurved like sf 1651 (**Pot X**) from the Grooved Ware pits in Area D3. It is darker than the base sherd (4070 above) but the consistency of the clay is similar. Some crumbs (sf 4377R) from al layer just below might be part of this pot.

Context 92786, layer between the two stone surfaces (92633 and 92634) related to the granaries

4377R 7 hard crumbs which could be part of 801, but the small-medium grits seem to be mainly stone rather than grog and the (washed) colour is brown rather than grey.

Area D3

2 pits (1 undatable with 2 sherds and crumbs, 2 Grooved Ware pits (1 with a lot of pottery, other only 2 sherds). This isolated cluster of pits produced about 40 sherds from 5 pots

Pit 60093

Contexts 60092, 60100 and 60102 are three fills of a **single Pit 60093** which contains 36 sherds from 5 pots. There is one large section (about a quarter of the whole) of a single Grooved Ware bowl and very small quantities of four others. The mixture of sherds in the three contexts suggests that the distinctions do not reflect a significant sequence. What remains of the four decorated pots suggests that all are likely to belong to the **Grooved Ware tradition**. All fabrics are broadly similar, hard, compact, with well-crushed grits.

Context 60092 (upper fill of 60093)

1650 Pot W. Six sherds join on several recent and one ancient break to form a section of the side of a conical bowl with a simple upright rim. Another sherd with a good length of rim fits acceptably close to the main section.

The diameter at the rim is 200mm and lower down is 165mm. The height is estimated to be 142mm but no indication of the base survives. The thickness of the wall is 08mm.

The bowl is decorated overall with neat vertical lines of sharply cut impressions. Uniformity of size suggests that these marks are all made with the same tool but some seem to be triple (like a tiny bird footprint) and others double. Fanciful ideas of mouse footprints were disproved by experiment and they are likely to have been made by a carved wooden stamp.

The fabric is compact and well-fired, pink-beige on the smooth outer and inner surfaces with a dark grey core which contains well crushed grits.

1650 Pot Y. A single small piece (15x17x11mm) from the upright rim of another pot is present in this find group. It is hard, very well fired, brown throughout, with well crushed grits. The rim is flat-topped with a diagonal slash which seems to be deliberate. Just below it is a small stab mark which is certainly deliberate and was presumably repeated around the rim.

A single sherd (35x35x08+mm) in three pieces joining on an ancient join might be part of this pot but the outer surface has been lost. It is hard and brown with well crushed grit.

4449R 2 eroded scraps of hard, dark brown pottery with grits. They might be part of **Pot Y**.

5830R 4 tiny crumbs, red/black, probably belonging to **Pot W**.

Context 60100 (middle fill of 60093)

1651 Pot X. 3 sherds (2 join) + 3 fragments from the rim and upper part of a decorated bowl. The joining sherds (65 x 40 x 08-09mm) show a rounded incurving rim (diameter 150mm) with a band of decoration of horizontal grooves and oblique square-ended stab marks. This band seems to be 45mm wide and may end with a fringe of confused vertical marks. The separate sherd (35x30x07mm) is undecorated. The fragments have lost their outer surface. 2 small sherds from Context 60102 Find 4502 may belong to this pot and show a similar fringe.

1 sherd (30x25x07mm) + 2 fragments, reddy brown in colour with much well crushed grit has a badly eroded outer surface. The fabric is similar to others but not close.

1 undecorated sherd (37x34x08mm) + 2 scraps pink/brown well-fired pottery with much angular grit which looks granitic. The fabric is similar to others but not close.

Sherd sampled for fabric analysis

1653 **Pot Z.** 1 rimsherd (35x20x06-08mm) + 2 scraps which may belong to the same pot but their outer surface is badly eroded. The rimsherd is sharply flattened and decorated on the outside with 3 rather carelessly incised shallow grooves. The fabric is hard and well fired with medium grits; the colour is beige-grey and the inner surface and the top of the rim are almost polished. Context 60102 find 1656 contains a small decorated sherd which probably belongs to this pot.

1910R 1 fragment of very dark pottery similar 4449R

1987R 1 sherd (30x15x11mm) undecorated, with much grit; 1 sherd (20x25x05mm) pink brown with ?granitic grit as above in 1651 + 2 crumbs redder brown with visible grit

3039R 1 fragment brown, very compact fabric with some grit.

4524R 1 sherd (20x25x09mm) + 1 crumb with a lot of large and small grit

5754R 4 tiny crumbs, black, gritty

Context 60102 (lowest fill of 60093)

1656 1 sherd (25x25x08-09mm) decorated with 5 sharply cut grooves. The outer surface is grey and smoothed almost to a polish, the inner is pink-beige, rather eroded with a lot of grit showing. It is difficult to judge where this might fit on a pot, perhaps as a band of horizontal grooving below the rim, but the close-set grooves and the polished surface distinguish it from 1653.

1 sherd (25x25x07-09mm) with two horizontal lines and a blank area below. The fabric is pinker than 1653 but it is likely to belong to that pot, or another very like it.

1 sherd (22x21x07mm) + 4 crumbs of undecorated hard pink/grey pottery similar to the undecorated pink sherds in 1651. Both have a well-finished inner surface.

4502R 2 joining sherds (37x30x10mm) + 1 crumb hard dark brown pottery with largish grits. 3 grooves and confused stab marks suggest that it may belong to the bowl in 1651.

Pit 60162

Context 60163 Fill of pit 60162 *Only 2 sherds*

1667 1 sherd (30x37x07mm), beige/black hard pottery with much well crushed grit. The inner surface is smooth and almost polished, the outer appears eroded but has corrugations which might be intentional.

1 sherd (50x40x08mm) in 4 pieces, reddy brown with black core and a good deal of granitic grit. One surface is rough and grits stand proud of it; the other is well smoothed. The piece is very flat and has one curved edge. It might be part of a **base** 110mm in diameter.

The fabric of both these sherds suggests that they belong with the Grooved Ware pots from Pit 60093.

Early Bronze Age Pottery

Beaker sherds from Area E

The vast majority of the material from the relict soil in Area E is clearly Early Neolithic, but there is a very small amount of Beaker pottery, some 14-16 small sherds in all, from the vicinity of the hearths and the relict soil.

Context 31040 ***Stakehole 31039*** cuts relict soil

851 Beaker 5 sherds, 3 fragments + 7 crumbs of the same hard red/black, well fired clay with some minute grit; surfaces well smoothed. Largest sherd 30x25x08mm, smallest 25x17x07mm. 1 sherd decorated with 2 horizontal lines with a fringe of dashes; all others undecorated; possibly close to base. None join but ancient breaks seem fairly fresh. **Sherd sampled for fabric analysis**

4387 R 2 frags same as 851

Context 31406 ***Pit 31412***

976 Red/black possible **Beaker**. 1 sherd (30x20x07mm) with v. faint incised lines and 2 ? dashes

Context 31025 Relict soil

5282 1 sherd **Beaker** (55x45x08mm) red/black fabric with some well-crushed grit, outer surface v. well smoothed, horizontal band of hatched decoration made with very fine roulette.

5286 1 scrap poorly fired red/black ? vesicular 05mm thick, less obviously Beaker

5359 1 sherd (42x43x08mm formed of 4 abraded frags) red/black compact fabric with v. small grits = **Beaker** decorated with fine roulette with horizontal lines and close set chevrons. Surface lost on some areas + 3 crumbs; also 2 crumbs beige/grey Early Neolithic pot. *Does not have the fine smoothed, almost polished, surface of 5282, nor its sharp edges, but the roulette could be the same.*

Context 31123 Variant of 31025 = ***relict soil***

5052 1 sherd (25x20x07mm) yellow/grey vesicular with some v. small grit. Hint of 2 lines ??hyphenated, probably accidental + 2 crumbs similar. Fabric is not similar to 5069

5069 Beaker 1 sherd (50x41x08mm) with zoned hyphenated lines; fabric well-fired reddish beige/grey with very small grits, well smoothed surfaces. Edges quite sharp but some abrasion, recent breaks join.

Evaluation Trench 6

Evaluation trench 6 dug in 2004 cut through the same area and also produced some Beaker sherds.

Context 603, judged to be the same as the relict soil 31025

All this pottery (17 sherds and 1 group of tiny scraps and some scraps from flotation) is clearly Beaker, both in fabric and decoration. This is rather surprising since Beaker is rare at Parc Cybi and the later excavation of Area E only produced 5 other decorated Beaker sherds, and those from quite widely scattered contexts. However, despite the concentration, all the decorated sherds come from different vessels and most are fairly worn, suggesting a residual scatter of domestic rubbish.

The decoration is mainly comb-stamped and arranged in horizontal lines with undecorated zones between - from the classic earlier Beaker repertoire. Two sherds (2323 and 2320 (and also a fragment 2322 which is part of 2320) from very thin and carefully decorated pots, are more complex with cross-hatched or diagonally filled zones. The small piece of 2323 is exceptionally carefully made with very, very fine whipped cord (or hair perhaps) impressed into sharp grooves. Although there is more incised decoration amongst the 5 decorated sherds from the wider excavation of Area E there is no reason not to suggest that all the Beaker pottery belongs to a single, perhaps short, phase of occupation sometime around 2500-2400 BC.

2320 I fragment (10x 10 x 5mm) from a finely decorated Beaker with impressed whipped cord; hard fabric, red outer and black inner surface with fine stone grit.

2321 1 sherd (33 x 25 x 10mm) from a Beaker decorated with zoned comb-stamped lines. This may be from near the curve of the waist. The fabric is softish with a yellow/beiger outer surface, black within. 2 scraps and a crumb similar.

2322 A tiny scrap from 2320 which might be useful for analysis

2323 1 small sherd (20 x 18 x 6mm) with cross-hatched zonal filling, neatly comb-stamped. The fabric is hard and yellow beige throughout. I crumb of thicker (7mm) of softer red fabric.

2324 1 sherd (38 x 37 x 7mm) decorated with 2 groups of horizontal comb-stamped lines with a diagonal line crossing the undecorated zone between them. Hard fabric, yellow/red throughout with small stone grits. Outer surface worn

2325 1 sherd (22 x 25 x 7mm) decorated with one horizontal line of pointed comb-stamping. The fabric is hard, red/orange on the outside, darker inside with small stone grits.

2326 1 small undecorated sherd in red/black fabric c. 10mm thick. Recently broken
2327 6 crumbs, similar fabric to the rest of the Beaker finds
2328 1 decorated sherd (34 x 35 x 10mm) 3 horizontal comb-stamped lines with undecorated zone between, similar to 2324 but thicker and more curved; 1 smaller sherd possibly from an undecorated part of the same pot and a thicker (13mm) fragment. All are the same yellowish red and black fabric with small stone grits.
2329 1 scrap of undecorated red/orange Beaker fabric.
2330 1 sherd (25 x 22 x 8mm) with 3 horizontal lines created with a sharply pointed comb. The fabric is red/black with small-medium stone grits.
2331 1 small sherd (15 x 18 x 5mm) from close to the outward curve of the rim, in yellowish red Beaker fabric.
2332 1 hard, thick uniformly red/orange sherd (27 x25 x 9-14mm).
6344 5 red/black crumbs from sieving.

Area K 1: features near roundhouse PRN 31588
For possibly middle Bronze Age sherds see relevant section below

Context 19110 pit 20081 with **Cordoned Urn**

This pit contains 26 sherds + crumbs all from a single vessel, a Cordoned Urn of Early Bronze Age type. The edges of the sherds are quite abraded, as if they had been broken some time before disposal; but the group seems close-knit, all coming from a segment (perhaps about 25% of the circumference) of the upper part of the urn.

The urn, about 250mm in diameter, has a rounded upright rim and a not very prominent cordon 80mm below the rim. The band above the cordon is decorated with twisted cord forming wide zig-zags between double horizontal lines of impressed cord. The cord used is quite thick and rough. There are 2 fingernail marks on the cordon itself, but these appear accidental. Not much of the undecorated body below the cordon survives.

The fabric is distinctive: brick red on the outside at the rim with a sharp distinction between the red and a dark inner layer/surface. Lower down the pot this distinction is less sharp and the surface is a reddy brown. Fresh breaks show the fabric to be compact with a lot of well-crushed granitic grit.

The thickness of the wall varies from 10 – 07mm.

1031 This find contains the bulk of the larger and decorated pieces of the Cordoned Urn, so presumably the sherds were deposited as a group. Some joins on recent breaks were made, but none on ancient breaks. Four sherds with decoration and three undecorated pieces with the curve of the cordon come from this find together with six undecorated sherds (largest 25 x 30 x 07mm) and 7 crumbs which could not be fitted into the reconstruction drawing.
1208R Numerous tiny crumbs, red/black with granitic grit similar to 1031
1213R 4 small sherds (largest 25 x 20 x 09mm) and 3 fragments similar 1031
1476R This find comes from sieving and contains 1 decorated sherd and one piece with cordon (not illustrated 35 x 25 x 07mm) and 5 small sherds (largest 23 x 20 x 07mm). **Sherd sampled for fabric analysis**
There are 3 featureless sherds (largest 25 x 20 x 10mm) in a very similar fabric, but pale beige in colour and containing a black grit not seen in the main group. These featureless sherds may be a different pot since there is a faint incised line on one.
1496 Fragment (21 x 15 x 07mm) red/black fabric as 1031
2063R 5 very tiny crumbs similar 1031.
6107R Fragment (17 x 10 x09mm) red/black fabric as 1031

Context 19108 pit 19109 *This pit is close to the Cordoned Urn pit.*
1523 3 tiny crumbs – possibly just large grits.

Context 19114 fill of possible posthole 19113
1253 2 tiny pot fragments, largest is 7mm across plus a crumb. One fragment and the crumb are a red fabric and one fragment is a dark fabric.

Area K7
Near early medieval cemetery PRN 31600
Context 80002 ploughsoil / unstratified 'near' early medieval cemetery PRN 31600

1635 **Pot FV5**. Tip of rim (37 x 16 x 10mm) probably from a **Food Vessel** about 200mm in diameter. The rim is bevelled, with indications of two lines of horizontal lines, possibly twisted cord. The outer flange of the rim has gashes across the arris.
Another small fragment of the same rim but without clear indication of decoration.
Fabric hard and compact with both medium grits and very small grains set in a black matrix with brown smooth but abrasive surface. This looks like a competent Food Vessel fabric to me.

1637 5 crumbs from same pot as 1635

Context 80115 posthole 80116, next to early medieval cemetery

5855 1 crumb ? rotted stone

Clay-walled Roundhouses (Iron Age)

Context 80181 gully/drain 80180 in roundhouse 80249

4482 3 crumbs (2 probably stone); 1 dark abrasive pottery (? Similar 1031 Cordoned Urn)

Context 80222 burnt clay patch near hearth in roundhouse 80249

4375 3 crumbs hard, abrasive pottery, varying colours with visible grits; 1 lump (30 x 30 x 16mm) burnt clay.

Context 80230 cut 80227, hearth in roundhouse 80249

4382 4 pieces of rotted stone I think.

Context 80368 internal drain 80331 in roundhouse 80248

5483 2 pieces of iron-rich rotted stone

Context 80390 internal drain 80259 in roundhouse 80248

5945 minute crumbs of iron-rich rotted stone

Area M Early Bronze Age Pottery

D-shaped *enclosure PRN 31591*

Context 22077 upper fill of ditch 22072, part of enclosure ditch

1074 **Pot FV2**. 1 large rimsherd (65x60x12mm) with 2 lines of fingernail marks, one on edge of rim, the other set between very shallow grooves. Some ?accidental fingernail marks above the lower line**.** Rim is lightly expanded, with a slight inward bevel. Fabric is hard and well-fired with a lot of stone small-medium grit: mica and hornblendite. Analysis by Patrick Quinn concludes that the fabric is similar to that of the Cordoned Urn from Area K1, and to a lesser extent, the Beaker from Cist 7 and the Undecorated Food Vessel from this same ditch. These pots belong to Williams and Jenkins Group 3a.1 containing ultramafic rocks suggesting local manufacture.
The dating of this sherd has been the subject of much debate because it was at first thought to be a piece of stamped Malvernian Iron Age pottery. This was categorically rejected by Elaine Morris on grounds of both fabric and decoration. The fact that the subsequent detailed microscopic analysis demonstrates that it is similar in composition to the Cordoned Urn and must be a local product has turned attention to earlier periods. Comparison with the not very plentiful Middle and Late Bronze pottery in North Wales is not very close. Fingernail marks are normally lower down on the shoulder, and under the bevelled rims there are frequently perforations (Rhuddlan and Llandegai (Berridge in Quinnell and Blockley 1994, 132-8 and Musson and Lynch 2001, 74)). The Late Bronze Age assemblage from Castell Odo (Alcock 1960) has a predominance of everted rims.
Since the other sherds from the ditch of the D-shaped Enclosure can be reasonably confidently identified as part of a Vase Food Vessel, it is worth looking for possible parallels within that group. The suggested incurving profile occurs on the secondary vessel (J) from the East Chamber at Dyffryn Ardudwy, only very tentatively identified as a Vase Food Vessel (Powell 1973) and considered Middle-Late Bronze Age by others (Berridge 1994, 137). It has decoration up close to the rim but these are fingertip, rather than fingernail, marks and there are random impressions over the body as a whole. Perhaps a better parallel is the burial urn from the foot of Maen Llwyd, the Standing Stone in Glynllifon Park south of Caernarfon (Wynn 1875). This is an undecorated pot of much the same size, with a similar rim. This is normally identified as a Vase Food Vessel (Savory 1957 no.B3) for which the context is appropriate.

Context 22084 fill of cut 22082, part of enclosure ditch

The 2 cuts from which 1094 and 1090 come are quite widely separated. 1090 is at the W junction of the N and S ring ditches, and 1094 is on the S side of the southern ditch.

1094 3 non-rimsherds of undecorated **Food Vessel (Pot FV1),** 2 show the shoulder, one with sharp shoulder as in 1090, the other rather more rounded. Both show the inner edge of the bevelled rim. The 3rd sherd is a featureless body sherd (40x35mm) only 09mm thick. This is thinner than the neck but similar to thickness of the wall below the shoulder. There are 2 scraps which are not the

same pot. 1 is soft beige with large quartz grits in grey core; the other a compact soft, sandy fabric + 1 crumb similar (?similar to 3070 from Area M4). **Sherd sampled for fabric analysis**

Context 22087, fill of cut 22090, part of enclosure ditch

6108 5 gritty crumbs similar 1094 (**Food Vessel**) or 1994 or 5891

Context 22108, fill of cut 22111, part of enclosure ditch

1090 Four joining rimsherds of small undecorated **Food Vessel (Pot FV1),** diameter 200mm and probably about 140mm high. Joins are abraded but convincing. Only one piece reaches the angle of the shoulder. Fabric (as 1094) beige throughout (redder on exterior surface), with plentiful medium grits which break the inner surface but have been better smoothed on the exterior.

1104 Small fragment of Food Vessel

Multiple Cist Barrow PRN 31589

Context 40115 cut 40127 **Cist 2**

2088 1 small worn sherd of **Beaker** (25x23x08mm) red/brown hard slightly abrasive fabric with a few small grits. May be close to a collared rim. Decoration 1 clear hyphenated line and perhaps another below, with v. light finger nail marks above.

This is very unlikely to have been part of a funerary vessel in the cist.

5997 small sherd of vesicular Early Neolithic pottery, residual in the cist

Context 40133 cut 40119 **Cist 3**

2038 complete Bipartite Vase Food Vessel

This small Vase Food Vessel is 144mm in diameter and 135mm tall, decorated to the foot with deep horizontal grooves creating a corrugated profile in which there are three broader bands which are variously decorated with vertical incisions created with a squared stick. The central band has alternate vertical and horizontal lines reminiscent of the lugged Bowl Food Vessels, just as the three broader bands reflect the Tripartite Bowls. Two intermediate ridges have a row of squared dots which are also present on the inner slope of the rim. The pot is complete except for some damage to the top of the rim. **A sample from the vessel was taken for lipid analysis.**

Context 40177 cut 40169 **Cist 7**

4102, **Beaker** from Cist, virtually complete

4112, 4113, 5841 Sherds and crumbs of same **Beaker**.

This is a rather wide but short Long Necked Beaker (diameter at mouth 160mm; height 168mm) decorated with two similar panels, on body and neck, of exuberantly scored chevrons. The gently everted rim is encircled with short vertical strokes. The fabric is pale beige and contains a good deal of stone grit, including serpentine which indicates local manufacture (See Williams and Jenkins). The pot is complete, barring a damaged foot, but had been broken. This revealed that it was constructed from two broad coils (neck and body) with the foot added to a gently rounded base. **Sherd sampled for fabric analysis. A sample from the vessel was taken for lipid analysis.**

Other features

Context 22117 cut 22118 Posthole 2m SE of D-shaped Enclosure

1222 1 crumb similar 3049 **Food Vessel**

1469 1 crumb similar 3049 **Food Vessel**

1491 1 gritty crumb not quite so like 3049 but probably EBA

3049 1 small sherd (30x22x13mm) rather poorly fired fabric with much angular well crushed grit, could be **Food Vessel**.

1 curved body sherd (35x35x07mm) hard brown vesicular with grit, crisp edges, **definitely Early Neolithic**;

A good crisp sherd of Early Neolithic comes from this posthole but is associated with probably Early Bronze Age sherds

Context 40131 slight charcoal patch in pit/posthole scatter SE of multi-cist barrow

5891 dark, hard, gritty similar 1994, i.e. possibly Early Neolithic

Context 40200 - animal burrow adjkacent to the multi-cist barrow

4327 2 sherds (damaged rim 30x23x14 posssibly with nicks at edge) (concave sherd 35x30x14mm with 2 diagonal slashes) similar in fabric and possibly in shape to **Food Vessel** 1090, but a different pot. **Pot FV3**

5848 2 crumbs from same pot.

6339 1 shoulder sherd (35x25x11-15mm) similar in fabric and profile to **Food Vessel** 1090 but different pot. **Pot FV3**

Middle and Late Bronze Age Pottery

Area E, pits PRN 31585

Contexts 31305/31307 both from ***Pit 31306*** (Earth Oven) 2 sherds (1 rim)

951 2 frags + 1 crumb softish orange/black with small grits. Probably same pot as 952 but definitely more orange

952 Rimsherd (40x32x11mm) in red/black rather loose vesicular with some grit. Rim is possibly slightly in-turned and inward sloping with a slight circumferential groove (possibly accidental). Diameter possibly 200mm. *This fabric is different from other undecorated fabrics from Area E, and this rim is now judged to be possibly Middle Bronze Age. It is distant from the Early Neolithic area*

Context 31512 ***Pit 31513***

5435 R 1 crumb V1

Areas I and Ia

A few undecorated sherds with Beaker-like fabric. *These are now judged to be* ***Middle Bronze Age***

Isolated pit

Context 18060 pit 18059

1250R 1 fragment pink/red well fired thin sherd similar to SF 1207

Pit Group 19073

Context 22014 pit 22015

1480 1 fragment of orange, slightly abrasive pottery. This fabric is similar to material from B2

Context 22016 pit 18085

1207 9 crumbs very abraded red slightly sandy pottery 07mm thick. Hint of grooves/corrugation on one piece. This fabric is similar to material from B2

1255 burnt clay

Area J

This area has middle and later Neolithic pits, scraps of early Bronze Age pottery and many undated structures. Some of the sherds included below are probably early Bronze Age but most are more likely to be middle Bronze Age so they are all included here.

Context 70000 Unstratified finds from Area J

1630 1 featureless sherd (60 x 60 x 13mm) + 1 crumb similar in a hard fabric, pink outer and black inner surface with large angular stone grit.

This could be Late Neolithic or Later Bronze Age. However there is pale hard pottery with small/medium grits in this area, one sherd with a flat rim, which might suggest a Later BA element; and the Fengate Ware here is normally dark rather than pink surfaced, as the Mortlake pottery in Area K.

1 fragment (17 x 10 x 04mm) might be residual Early Neolithic; 1 fragment of stone.

Context 70001 Natural in area J

1793 1 featureless sherd (20 x 17 x 10mm) in a compact fabric with small grits; smooth orange outer surface, black inner. Broadly similar to non-rim sherd in 1703

1800 1 fragment of red fabric with black core. *This is broadly similar to Pot C 70529 but the fragments are too small to bear any argument about identification as Grooved Ware, since that pottery seems to be very restricted at Parc Cybi – only one pit in Area D3 and one or two pits in J3*

1801 2 crumbs red/black fabric

1802 4 crumbs and 7 tiny crumbs red/black fabric – small grits visible.

Settlement activity PRN 31576

Context 70423 Fill of posthole 70422

6440R Featureless sherd (20 x 20 x 10mm) of hard grey gritty fabric (small angular grits on surface) **unlike other fabrics from J3.**

Context 70437 Deposit ? buried soil in vicinity of Roman wall

6352R **Rimsherd,** worn and badly damaged in antiquity. The sherd comes from a pointed rim decorated inside and out with several lines of whipped cord maggots in a herring bone pattern. The fabric is hard and dark with not much, if any, grit. The surfaces that remain seem almost burnished but that may be due to washing.

In a clear Bronze Age context this would be identified as a ***Food Vessel or Early Collared urn*** *where the pointed rim and especially the use of whipped cord and herringbone patterns inside and out are common. Whipped cord is less common in Late Neolithic pottery traditions.*

Settlement activity PRN 31578

Context 70063 pit 70064 *This pit is about 20m SW of Pit 70054*

1782R 1 fragment (20 x 15 x 05mm) + 1 crumb of dark, slightly abrasive fabric with some very small grit. Very abraded (but this might be due to washing). Might be **residual Early Neolithic.**

Settlement activity PRN 31580

Context 70053 recut 70146 of pit/animal burrow 70050

1862R 6 fragments (largest 20 x 15 x 11mm) + 2 tiny crumbs; 3 x pale fabric with medium/small grits; 2 x grey fabric with granitic grit; 1 x orangey brown with grit but smooth surface, perhaps similar 1703 (MBA).

Context 70055 pit 70054

1703 **1 rimsherd** (32 x 30 x 10mm) with a sharply flattened rim and straight wall. The fabric is hard with a good deal of medium and small grit including quartz and some granitic stone; colour is a pale brown. **Middle Bronze Age**

1 featureless body sherd (35 x 30 x 11mm) in a hard pale brown fabric with rather less visible grit than the rim and a smoother outer surface. The inner surface is blackened. Probably the same pot as the rim and quite a good match to some of the other pale coloured sherds in this area.

1899R 1 fragment pale hard fabric with medium and small grits

4030R 2 pale crumbs similar to others from this pit.

Context 70127 linear feature 70126

1812R 1 featureless sherd (40 x 25 x 11mm), hard fabric, very pale colour throughout, quite a lot of small and medium grits

Context 70129 pit 70128

1926R 1 fragment red/black hard fabric with well crushed grits

4495R 1 sherd (30 x 27 x 12mm) + 11 crumbs, red-orange surfaces with black interior and well-crushed grit

5800R Numerous minute crumbs similar

East end of Roman trackway PRN 31597

Context 70537 bank material / unstratified

6407R 1 sherd (17 x 17 x 09mm) of well smoothed compact orange fabric similar to SF 1793 from Context 70001, the natural surface in Area J1 i.e. possibly later Bronze Age. This has also been considered to be Roman redware and as this is probably a Roman feature that may be more likely.

Area K 1: features near roundhouse PRN 31588

This is an area close to the head of the marsh with Middle Neolithic pits and scraps of EBA pottery, undated structures, including a timber roundhouse, and Early Mediaeval burials nearby.

Context 18125 pit 18124 *This is about 9m E of Wooden Round House*

1209 3 crumbs dark pottery, one with v. tiny grits, other medium grits, paler surface

3051 2 essentially featureless sherds, not from the same pot.

1 piece (50 x 50 x 16mm) hard, with orange/pink surfaces and slightly darker core; relatively sparse angular grits of large-medium size include black shiny rock. Diameter about 280mm.

1 piece showing clear indication of coil building (50 x 30 x 14-03mm). The fabric is pale grey with beige surfaces, rather soft with relatively sparse angular grit. This seems to be a coil strip with one concave surface and narrowing to overlap another coil. However the edges are badly abraded. Diameter probably over 300mm.

Neither of these sherds is dateable. They could belong to a Late Bronze tradition, but the fabric could also be Late Neolithic. However the grit seems sparser than is usual in the Late Neolithic pots on this site.

Areas B1, B2, F2 and L3

These areas are down by the marsh and contain a complex group of stone round houses and possible granaries. The finds are sadly very sparse and undiagnostic and are little help in sorting out the history of this area of long occupation. There is some residual Late Neolithic material and a few sherds, listed below, which might be Middle Bronze Age, but they lack good diagnostic features. The only distinctive material is some sherds from **Cheshire Salt Containers** which should belong to the Iron Age (these are listed separately below).

Area B1

Pit group 25046

Group of 19 pits in area B1 with fairly charcoal-rich fills

Context 05027 from Pit 05026

2067R 9 red crumbs pottery. 4 have a good deal of stone grit and may be **Cheshire Salt Container;** 5 are softer and have a similar orange/red colour but lack obvious grits.

Context 06088 natural hollow or patch of occupation deposit

5753R 2 tiny crumbs of dark pottery

Context 10002/3 from **pit 10001**

1210R Rimsherd (30 x 25 x 8mm) in a compact heavily gritted (medium stone grits) fabric well fired and brown throughout. The bevelled rim has a slight inward curve. This could be **MBA** but it is not the sandy fabric which occurs in possible MBA contexts in this area.

Area B2

Context 10015 from pit 07013, small pit to north-west of roundhouse settlement

5810R 1 crumb red/black pottery

Roundhouse A

Context 92073 patch of burnt clay interpreted as a hearth in the passage-way to RHA

2098R 2 featureless sherds (20 x 20 x 8+mm and 20 x 20 x 12+mm) from the same pot. Neither retains both surfaces. The fabric is reddish brown, sandy and slightly abrasive, similar to 5495R from **L3**.

Context 701, topsoil in evaluation trench 7 which cut through RHA

2349 2 sherds (20 x 25 x 12+mm and 20 x 20 x 6+mm) and 2 crumbs of orange/red fabric with one good surface – a lot of small crushed stone grit. Probably **Cheshire Salt Container** but is also broadly similar to the non-rimsherd in 1703 (**MBA**)

Roundhouse B

Context 90002, ploughsoil. Find located over eastern edge of Roundhouse B

88 1 piece (30 x 20 x 15mm) of very worn pottery (orange/ reddish brown) with stone grit. One side is very flat and might come from a base. The colour and the slightly sandy feel to the clay is similar to the probably **MBA** pottery in L3 (5495R).

Context 90899, charcoal patch on second phase of floor surface in roundhouse B

4408R 5 hard dark gritty crumbs of pottery with no obvious outer surfaces

Context 90927, charcoal patch on second phase of floor surface in roundhouse B

5941R 2 tiny crumbs red pottery

Roundhouse C

Context 91161, deposit same as 90012, wall of roundhouse C

5948R 7 crumbs, red with stone grit, all similar

Context 91516, second phase of floor surface in roundhouse C

4122R 51 crumbs (largest 10 x 10mm) all the same beige coloured pot with a lot of medium stone grit.

Context 91601, material built up around outside of wall of RHC, probably related to use of RHC but possibly earlier, i.e. related to RHE. Overlies deposit 91681.

3034 1 very gritty (includes quartz) dark crumb. Might be Middle Neolithic

Context 91745, from 91744, stakehole in first phase of roundhouse C

4083R 1 fragment of dark brown pottery without much grit.

Context 92324 charcoal patch over second phase floor in RHC

4123R 1 fragment (20 x 15 x 9+mm) of reddish brown/black, rather sandy pottery, ?outer surface largely lost. Perhaps similar to the **L3** sherds but it is softer.

Roundhouse D

Context 90473, possible levelling layer for roundhouse D

458R 1 very red crumb ?? Roman pot or burnt clay

Roundhouse E

Context 91224, fill of 91223, posthole probably in first phase of RHE

374 3 tiny crumbs of very dark fine clay; all originally 1 piece (10 x 10mm)

384 2 crumbs + 1 stone. 1 crumb of pale brown softish pottery and 1tiny crumb of dark pottery

Context 91579 fill of 91598 a robber cut to remove part of the wall of RHE. Cut presumably post-med in date but may have disturbed deposits under the roundhouse.

766 1 sherd (20 x 25 x 7mm) in a hard, reddish brown, rather sandy fabric with sparse small grits.

1 fragment (25 x 15 x5mm) and 3 crumbs of reddish brown fabric, less sandy than the larger piece. Possibly **MBA**

Area F1

Context 93326, old ground surface on the edge of the marsh buried under thick deposit interpreted as soil platform for Roundhouse I. *There is a Bronze Age date for a patch of burnt stones on this ground surface.*

5416R 2 fragments (both 10 x 10 x 6mm) of different pots; 1 light brown with small stone grits; the other a sandy beige clay with possible decoration ???Beaker or MBA

Area F2

Context 21122 patch of burnt clay, possibly a hearth on the distinctive rounded hill just west of the roundhouse settlement.

1095 1 featureless sherd (30 x 33 x 10mm) undecorated, well smoothed outer surface, small-medium stone grit, well-fired. Not noticeably sandy. Reddish brown outer surface, core and inner surface black. A general **Bronze Age** fabric but could be either EBA or later BA.

Another sherd (sf 1058 now lost) was found in cleaning just near this feature. Photo suggests that this is the other half of sf 1095 which has a recent break.

Area L3

Small structure with postholes and hearth in a roughly oval hollow

Contexts 22143 and 22168 central hearth of the small structure

5495R 5 pieces of similar brown pottery and 1 scrap of paler pot.

1 sherd (35 x 18 x 20mm) perhaps some kind of rim with possibly 2 fingernail marks on the top, or, less optimistically, part of a thick base. The fabric is brown, very hard but sandy and abrasive with angular stone grits of variable size, some quite large, most medium. The 4 other smaller pieces are obviously the same fabric but none retain both surfaces. The surface, where present, is dark brown and fairly well smoothed.

1 scrap (20 x 12 x 8mm) of paler grey dense sandy fabric.

It is impossible to guess at the date of these sherds from 5495R, but it is noticeable that the reddish brown slightly abrasive sandy surface of the main group is common to other finds in this area: sf 88, 766, 2098R and 4123R. All could be MBA; as could the rim in sf 1210 which is similar in fabric to the non-rimsherd in find group 1703 in Area J for which there is a Middle Bronze Age radiocarbon date.

Iron Age Cheshire Salt Container fragments from Roundhouses in Areas B2/F1 and B1

Several sherds and small fragments were considered as possibly Cheshire salt containers (CSC). These were sent to Elaine Morrris for study and she determined that only one sherds and a group of fragments were of CSC material. The rest were burnt clay, hearth or furnace lining or other pottery.

Genuine Cheshire Salt Container Fragments

Roundhouse E

Context 91443 from 91442, posthole in second phase of roundhouse E

422 2 sherds (joining) of very heavily gritted hard fabric, pink on the surface but orange/red inside, identified by Elaine Morris (*see Report*) as Cheshire Salt Container. The larger piece (45 x 32 x 18mm) shows the curve at the base of the cupped top where it joins the supporting column; the other (20 x 20 x 8mm) is a small concave scrap from the interior which joins the larger piece.

Small fragment sampled for fabric analysis

Area B1 Pit group 25046
Group of 19 pits in area B1 with fairly charcoal-rich fills
Context 05027 from Pit 05026
2067R 9 red crumbs pottery. 4 have a good deal of stone grit and may be **Cheshire Salt Container;**
5 are softer and have a similar orange/red colour but lack obvious grits. *Elaine Morris confirmed that these fragments **are** of CSC.*

Material considered to be possibly CSC not proved not to be

Roundhouse A
Context 90009, tumble from wall 90010 in passage-way leading to RHA
209 Lump (20 x 20 x 20mm) and 3 fragments and 4 crumbs similar to 4089 (Cheshire Salt Container)
Context 90475, wall collapse from roundhouse A
200 1 lump (20 x 20 x13mm) of very hard red clay with very large grits, very similar to 198
198 1 piece (30 x 30 x 15mm) of badly worn bright red clay with black interior and a good deal of grit. *This material was previously identified as furnace lining, but is broadly similar to 4089. Considered possibly to be fragments of Cheshire Salt containers and sent to Elaine Morris but she confirmed that 198 and 200 were not CSCs and interpreted them as furnace or hearth material.*
Context 90479, same as 90475, wall collapse from roundhouse A
228 1 piece (joining to be 30 x 20 x 10 mm) orange/red, possible CSC but rather softer and with less grit than the others. *Confirmed by Elaine Morris not to be CSC.*
231 3 lumps (20 x 30 x 15mm) of very hard orange /red clay with much stone grit. One piece has a shine as if due to excessive temperature. One piece shows the margin of blowhole so these are furnace lining rather than pottery.
Context 90632, second phase of hearth in roundhouse A
4018R 3 tiny crumbs, orange/red pottery
Context 90919, first phase of hearth in roundhouse A
4089R 3 sherds (all 25 x 25 x 5mm – only 1 surface surviving). They are orange/red with plentiful, variable stone grits 3-4mm across. May be Cheshire Salt Container. *Elaine Morris confirmed that these fragments are not CSC.*
Context 92018, from 92017, possible stakehole in first phase of roundhouse A
1902R 1 fragment probably stone
Context 701, topsoil in evaluation trench 7 which cut through RHA
2349 2 sherds (20 x 25 x 12+mm and 20 x 20 x 6+mm) and 2 crumbs of orange/red fabric with one good surface – a lot of small crushed stone grit. Possibly Cheshire Salt Container but is also broadly similar to the non-rimsherd in 1703 (**MBA**). *Elaine Morris confirmed that these were not CSC, so they are presumably middle Bronze Age.*

Roundhouse C
Context 91858, layer forming part of platform on which roundhouses were built, probably immediately pre-dated RHE but located underneath RHC
2060R 4 crumbs, all different. 1 might be Cheshire Salt Container; 2 are hard, dark brown with medium grits and a smooth surface (only one surface remaining); the 4th is a tiny crumb of fine red pottery ??Roman. *Elaine Morris confirmed that none of these fragments are of CSC.*

Roundhouse I
Context 93605, fill of 93604, posthole in first phase of Roundhouse I.
5747R 1 fragment (20 x 20 x 12+mm) 1 surface survives, orange in colour with quite a lot of small-medium stone grit. This might be Cheshire Salt Container
Context 93524, fill of 93523, posthole in first phase of roundhouse I.
5475R 3 fragments very similar to those in sf 5747.
Elaine Morris confirmed that neither 5475 nor 5747 are CSC material.

Part I.2. Fabric Analysis of Prehistoric Pottery from Parc Cybi

I.2.1. Petrographic Report on Prehistoric sherds from Parc Cybi

John Ll. Williams and David Jenkins

Abstract

Petrographic analysis of 20 sherds from Parc Cybi has shown that many contain materials that show definite links to the distinctive local geology, and others show probable links. With the exception of a sherd (1686) of unusual fabric, all can be classified by fabric and petrology into groups that have already been established for sherds from North Wales, and these classes in turn tend to be linked to typology this needs to be sorted out. The analytical results also raise interesting possibilities in terms of the broader archaeological significance of the pottery production in the Neolithic.

Introduction

Twenty sherds of prehistoric pottery were submitted for petrographic analysis as part of the post excavation programme by GAT at Parc Cybi, Ynys Môn. Selection was guided by a preliminary macroscopic study of the pottery in consultation with Frances Lynch who has described the typology of the Parc Cybi ceramic assemblage elsewhere in this report. The present study aims to classify the pottery by fabric, to discuss the provenance of the ceramic raw materials, to establish the typological association of the fabrics and to place the assemblage within the wider context of prehistoric pottery production in northern Wales. Reference is also made to previous analyses of sixteen sherds recovered from the excavations of the megalithic tomb of Trefignath that is situated on the eastern periphery of the Parc Cybi complex (Jenkins, 1987). The schedule of the sherds analysed is presented in Table I.2.1.1a and b below.

Table I.2.1.1: Excavation context and typological features of analysed pottery sherds
(a): Timber building

Sherd (Sample No.)	Typology	Additional Information	Context
1124	Early Neolithic - Irish Sea Ware	Vesicular sherd	Area H - Timber building - west sector
1196	Early Neolithic - Irish Sea Ware	Vesicular sherd	Area H - Timber building- hearth B
1366	Early Neolithic -- Irish Sea Ware	Vesicular sherd	Area H - Timber building - hearth B
1545	Early Neolithic -- Irish Sea Ware	Vesicular sherd	Area H - Timber building – East end gable
1547	Early Neolithic -- Irish Sea Ware	Vesicular sherd	Area H - Timber building - East end gable
1569	Early Neolithic -- Irish Sea Ware	Vesicular sherd	Area H - Timber building – mid sector
1686	Early Neolithic -- Irish Sea Ware	Non-Vesicular sherd	Area H - Timber building – east sector
1699	Early Neolithic -- Irish Sea Ware	Vesicular sherd	Area H - Timber building - east sector
5351	Early Neolithic -- Irish Sea Ware	Vesicular sherd – base sherd	Area E – relict soil in occupation hollow

(b): assorted pit sites

Sherd (Sample No.)	Typology	Additional Information	Context
1170	Fengate	Undecorated sherd part of collar of pot 1167	Area Ia - context 21221, pit
1815	Fengate	Plain sherd part of Jar 1705	Area J – context 70171, pit
5720	Mortlake	Sherd of decorated bowl (Pot B)	Area K9 – Context 80685 Pit

1651	Grooved Ware	Sherd of decorated bowl	Area D3 – context 60163 –fill of pit 60162
6380	Grooved ware	Featureless sherd	Area J3 – context 70479, posthole 70480
6381	Grooved Ware	Decorated sherd	Area J3 – context 70502, fill of pit 70503
6394	Grooved Ware	Featureless sherd	Area J3 – context 60536, pit 70529
851	Beaker	Body sherd	Area E – context 31040 –stake hole cutting relict soil
4113	Beaker	Virtually complete pot	From Cist 7
1094	Food Vessel	Body sherd	Area M – context 22084 – Ditch of D-shaped enclosure
1476	Cordoned Urn	Featureless sherd	Area K –context 19110,fire pit

Methodology

The processes of thin sectioning the pottery and of establishing quantitative data for classifying the fabrics have been described in detail elsewhere (Williams and Jenkins 1999, 2004b) and will not be repeated in the present report. Sufficient to note is that, first, all the sherds were thin-sectioned both in their original and in a re-fired condition, the re-firing in an oxidising atmosphere used to remove dark carbonaceous matter and so clarifying the fabrics **(**Appendix I.2.1). Second, the analytical data upon which the classification is based were established by point counting. For each thin section a total of 400 points was recorded, identifying the following components – matrix (<0.06mm), grains (0.06-0.2mm) clasts (0.2->2.0 mm), voids and grog.

It should be noted that the analytical data presented in Tables I.2.1.2a and b would only justify two significant figures due to sampling limitations, as recorded in Appendix I.2.1, but three significant figures are still presented in the tables for values obtained >10% to balance the %totals. For example, this problem of representivity is illustrated in Mortlake sherd 5720 where counted clasts total 2% only whilst a photograph of the whole sherd records a large single quartz clast which was not included in the area analysed (Appendix I.2.1). In dealing with the nature of the samples an ambiguity also arises with the use of the term 'clay' which is defined geologically as material <2µm in size. However, in the context of pottery the term is used more generally and practically to describe the initial material used to manufacture wares (the matrix) and which therefore includes larger particle sizes: This usage will be distinguished by "clay" in this report.

Geographical location

The nature of the site can be expressed in terms of the geomorphology, climate, soils, and geology. Of these the first three influenced the occupation of the site, but the geology has direct relevance to pottery production in that raw materials available for its manufacture on site would have depended on the rock types that would have been exposed in outcrops of the solid geology and in the petrology and mineralogy of the superficial deposits that subsequently were overlain.

The solid geology is exposed in numerous scattered rocky outcrops revealed by glacial erosion (Fig I.2.1.1). These have been mapped in detail (*summarised* by Howells, 2007), and are comprised of rocks of the "New Harbour" and "Holy Island Groups" of the Proterozoic/Cambrian "Monian Supergroup". They are dominated by chlorite-mica schists grading into meta-sandstones, including quartzitic, turbitic and volcaniclastic varieties to the North, and with occasional jaspers and metabasalts. They are intruded by a small but distinctive group of ultramafic rocks 5km to the South (serpentinite and hornblendite, discussed by Maltman 1978), and also by both Palaeozoic dolerite and Tertiary olivine dolerite dykes trending mostly north west-south east.

Superficial deposits are dominated by glacial till which is mostly derived from the local solid geology and also that offshore to the north/north-east. On Anglesey the till carries more of local Lower Palaeozoic argillaceous rocks but, being relatively soft, these appear in the finer rather coarser fractions. The till also becomes increasingly influenced to the East by the "Red northern drift" which, as its name implies, carries a higher proportion of rock material from the north including Triassic sandstones. In addition, harder rocks from the Lake District, southern Scotland and Ireland are incorporated as erratics. These have been released from shore exposures of till as beach cobbles by marine erosion to provide a variety of accessible igneous and other rock types. Subsequent periglacial activity produced frost wedges and patterned ground, as seen on site, and wind erosion of fluvioglacial sands resulted in loess and cover sands being incorporated into local soils and hence

becoming the possible presence of exotic sand-sized mineral grains. Postglacial activity has produced further localised fluvial deposits of sand, silts and clays.

The result is a variety of rock materials at Parc Cybi, dominated by the local schists, metaquartzites and volcaniclastic sandstones. This is confirmed by the microscopic analysis of the 2.0-0.6 mm material from on site by the preparation of a thin-section of a resin-impregnated sample (TS.2309). It showed that this size fraction, which would have been available as a "clay" to the potters, was dominated by chlorite schist (42%), rhyolitic lavas and tuffs (32%), quartz/metaquartzites (10%) and phyllites/shales (10%) with traces of altered dolerite (4%) and possibly of serpentinite. This corresponds closely to that recorded previously at Trefignath (Jenkins 1987).

Results of the petrographic analysis

A detailed description of each individual sample is presented in Appendix I.2.1 and is summarised below in Tables I.2.1.2a & b together with the quantitative data obtained. Graphical presentations of sherd compositions in terms of fabric (%-matrix/filler/voids) are shown in Fig I.2.1.2 and of filler type (% clast-voids/grog/clasts) in Fig I.2.1.3. The analysis of these data has identified a number of fabric types and these have been classified according to the scheme outlined by the authors in their summary of prehistoric pottery from northern Wales (Williams and Jenkins 2004a). However, in reconsidering and developing the categories proposed in 2004, 'group 1m' has been subdivided and redistributed within the mixed 'groups 1/2, 1/3 and 2/3' for consistency in terminology and further broad categories have been introduced for the subdivision of clast petrologies in Group 3, namely: 3a.1 ultramafic, 3a.2 mafic, and 3d sedimentary: as discussed below a further new category of 4 has also been introduced. These changes have proved to be more relevant at this site, and have enabled the following six groups to be distinguished below, with three sub-groups in the fifth (see table I.2.1.3).

Table I.2.1.2a: Petrographic analysis of pottery sherds from Parc Cybi: assorted pit fabrics.

Sample No.	**1124**	**1196**	**1366**	**1545**	**1547**	**1569**	**1699**	**5351**	**1686**
	Early Neolithic ware								
Sherd *Width (mm)*	8	4	7	11	8	9	8	7	7
Colour[1] – initial (Munsell)	7.5*5/4 bn	7.5*5/2 bn	7.5*4/1 dk-bn	10*5/2 gr-bn	7.5*4/2 dk-bn	7.5*3/2 dk-bn	7.5*3/2 dk-bn	7.5*3/1 dk-bn	7.5*4/2 dk-bn
Re-ignited	5*5/6 y-red	7.5*6/5 red-y	7.5*6/4 lt-bn	5*5/6 y-red	7.5*6/5 r-y	5*6/5 red-y	5*6/5 red-y	5*5/6 red-y	7.5*6/5 red-y
Matrix	**75.0**	**80.0**	**80.0**	**60.2**	**79.0**	**81.7**	**77.2**	**74.5**	**57.0**
Texture[2]	sC	sC	sC	sC	sC	sC	C	C	sC
Birefr./orient.[3]	M/w	M/w	M/w	W/w	M/w	M/w	M/w	M/w	W/w
Voids	**12.7**	**8.2**	**6.5**	**19.5**	**13.7**	**6.7**	**19.4**	**18.7**	**2.7**
constructional	*0.2*	*0.7*	*0.5*	*2.0*	*2.0*	*1.0*	*3.7*	*3.0*	*2.7*
clast void	*12.5*	*7.5*	*6.0*	*17.5*	*11.7*	*5.7*	*12.7*	*12.0*	-
organic -	-	-	-	-	-	-	*3.0*	*3.7*	-
Grains[4]	**10.5**	**8.2**	**11.9**	**16.4**	**7.2**	**10.2**	**3.2**	**4.5**	**13.2**
quartz (angular)	*9.0*	*7.7*	*11.7*	*15.7*	*7.0*	*9.7*	*3.2*	*4.5*	*11.5*
quartz (rounded)	*0.5*	-	*r*	*0.2*	*r*	*r*	-	-	*r*
felspars	*r*	*0.5*	*r*	*r*	*r*	*r*	*r*	*r*	*1.7*
muscovite	*r*	*r*	*r*	*r*	*r*	*r*	*r*	*r*	*r*
biotite	-	-	-	-	-	-	-	-	*r*
hornblende	*0.5*	*r*	-	-	-	*r*	-	*r*	-
pyroxene	*0.5*	*r*	*0.2*	-	-	-	-	-	-
serpentine	-	*r*	-	-	-	*?*	-	*?*	-
clinozoisite	*o*	*r*	*r*	*r*	*r*	*o*	*o*	-	-
others (rare)[5]	-	*r,z r*	*r,z r*	*z 0.5*	*z,t,r 0.2*	*z,r 0.5*	-	*r,z r*	-
Bioliths (rare)[6]	*s r*	-	-	-	*s r*	-	*d r*	-	-
Grog	**0.2**	**3.0**	**0.2**	**0.7**	*p*	**0.5**	*p*	**-**	*p*
Clasts	**1.4**	**0.4**	**1.2**	**2.9**	***2.0***	**0.7**	**-**	**2.2**	**26.9**
granite/dior.	*r*	-	-	-	-	-	-	-	*17.7*
rhyolite	-	-	*r*	*r*	-	-	-	-	*0.5*
u/maf - serpentine	-	-	-	-	*r*	-	-	*0.5*	-
- amphiboles	-	-	-	-	-	*r*	-	-	-
dolerite	-	-	-	-	-	-	-	-	-

- olivine dolerite	-	-	-	-	-	-	-	-	-
trachyte/basalt	-	-	-	-	-	-	-	-	*r*
metaquartzite	-	-	-	*1.0*	*2.0*	-	-	*1.2*	-
mica schist	-	*r*	-	-	-	*0.5*	-	*p*	-
mica/chlorite	-	-	-	-	*r*	-	-	-	-
clinozoisite/quartz	*r*	-	-	-	-	-	-	-	-
orthoquartzite	*r*	-	-	-	-	-	-	-	-
sandstone	*0.7*	-	*0.2*	-	*r*	-	-	-	*0.7*
shale/siltstone	*r*	*0.2*	-	-	-	-	-	-	*2.0*
quartz – angular	*0.7*	-	-	*0.7*	*r*	*0.2*	-	*0.5*	*3.5*
- mosaic									
- rounded	-	*0.2*	*1.0*	*1.2*	*r*	-	-	-	*2.5*
Class	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**3b**

N.B. [1]. Colour: bn – brown; y – yellow; lt – light; dk – dark; gr – grey.
[2]. Texture: C – clay; zC – silty clay; sC – sandy clay
[3]. Aggregate birefringence: M/ - moderate; W – weak; degree orientation: /w – weak; m – moderate
[4]. Grains: detected but not in count, *r* – rare; *o* – occasional; *c* – common.
[5]. Other minerals include: [z]-zircon, [t]-tourmaline, [r]-rutile, [g]-garnet, [c]-chlorite, [a]-actinolite
[6]. Bioliths: these include obscure [s]-spicules and [d]-pinnate diatom fragments

Table I.2.1.2b: Petrographic analysis of sherds from Parc Cybi: assorted pit fabrics.

Sample No.	**Fengate ware**		**Mortlake ware**	**Grooved ware**				**Beaker**		**Food Vessel**	**Cordoned urn**
	1170	**1815**	**5720**	**1651**	**6380**	**6381**	**6394**	**851**	**4113**	**1094**	**1476**
Sherd *Width (mm)*	9	10	*n.d.*	7	12	10	13	8	8	9	8
Colour[1] - initial	7.5*4 /3 d bn	nd	nd	7.5*5 /6 s bn	7.5*6 /4 l bn	7.5*5 /2 bn	7.5*3 /2 d bn	5*3/2 d r-b	5*3/4 l r-bn	7.5*5/2 bn	7.5*5/3 bn
Re-ignited	nd	5*6/6 r-yw	nd	2.5*6 /6 l red	5*6/4 l r-bn	5*6/5 r-yw	5*6/6 r-yw	5*5/6 y-red	5*6/4 l r-yw	5*6/5 r-yw	5*6/5 r-yw
Matrix	**60.0**	**56.0**	**79.0**	**61.2**	**72.7**	**70.7**	**67.0**	**58.7**	**63.5**	**47.0**	**47.5**
Texture[2]	C	zC	sC	sC	sC	sC	sC	sC	sC	sC	sC
Birefr./orient.[3]	(Fe)	W/w	M/m	W/m	W/w	M/w	W/w	M/w	W/w	W/w	M/w
Voids	**12.0**	**7.2**	**11.0**	**12.7**	**9.9**	**16.9**	**12.0**	**1.7**	**0.5**	**11.7**	**6.0**
constructional	*12.0*	*7.2*	*11.0*	*12.7*	*1.7*	*3.7*	*0.5*	*1.7*	*0.5*	*11.7*	*6.0*
clast void	-	*r*	-	-	8.2	*13.2*	*11.5*	*r*	-	-	-
organic	-	-	-	-	-	-	-	-	-	-	-
Grains[4]	**0.2**	**5.7**	**11.0**	**0.9**	**7.9**	**3.2**	**5.6**	**13.9**	**11.5**	**9.7**	**10.7**
quartz - angular	*0.2*	*5.5*	*6.2*	*0.2*	*5.7*	*3.0*	*4.2*	*10.2*	*10.0*	-	*6 .2*
quartz - rounded	-	*0.2*	*r*	*R*	*1.2*	*0.2*	*r*	*R*	*C*	-	-
felspars	*r*	*r*	*r*	*0.2*	*r*	-	*0.2*	*3.5*	*1.5*	*1.5*	*1.0*
muscovite	-	*r*	-	-	*r*	*r*	*r*	*R*	*R*	*c*	*r*
biotite	-	-	-	-	*r*	-	*r*	-	-	*c*	-
hornblende	*r*	*r*	-	-	-	-	*r*	-	*R*	*8.2*	*3.0*
pyroxene	*r*	-	-	*0.5*	*r*	-	*1.2*	-	-	-	*r*
serpentine	-	-	-	-	-	-	-	-	-	*o*	-
clinozoisite	*r*	*o*	*r*	*R*	*r*	-	*r*	*R*	*R*	[c,r]*r*	*r*
others (rare)[5]	-	-	-	-	[c]*1.0*	-	-	[z,t]*0.2*	-	-	[g,z]*0.5*
Bioliths (rare)[6]	-	-	-	-	-	[s]*r*	-	-	-	-	-
Grog	**-**	**2.2**	**-**	**10.5**	**1.0**	**5.7**	**12.7**	**9.7**	**3.2**	**-**	**-**
Clasts:	**27.7**	**28.8**	**3.6**	**14.4**	**8.3**	**3. 5**	**2.4**	**15.7**	**21.1**	**31.5**	**35.7**
granite/dior.	-	*r*	-	-	*0.5*	-	-	*14.0*	-	-	-

Sample No.	Fengate ware		Mortlake ware	Grooved ware				Beaker		Food Vessel	Cordoned urn
rhyolite	-	-	-	-	-	*r*	-	-	-	-	-
u/m - serpentine	-	-	-	-	*0.7*	-	-	*r*	*16.0*	*31.5*	-
- amphiboles	-	*0.2*	-	-	*0.7*	*r*	-	-	-	-	*25.7*
dolerite	*25.5*	-	-	-	-	-	-	-	-	-	*10.0*
olivine dolerite	-	-	-	*12.0*	-	-	-	-	-	-	-
clinozoisite	-	*r*	-	-	-	-	-	-	-	-	-
metaquartzite	-	-	*2.2*	*0.5*	*3.7*	*1.5*	*0.7*	-	*0.2*	-	-
qu-mica schist	-	-	-	*R*	*0.5*	-	-	*r*	*r*	-	-
orthoquartzite	-	-	-	-	-	-	-	-	-	-	-
sandstone	*2.2*	*24.7*	*0.7*	*1.2*	*0.7*	*2.0*	-	-	*0.5*	-	-
shale/siltstone	-	-	-	-	-	-	*r*	-	*r*	-	-
quartz - angular	-	*2.7*	*0.7*	-	*1.5*	-	*1.7*	*1.0*	*0.7*	-	-
- mosaic	-	*r*	*p*	*r*	-	-	*r*	-	*r*	-	-
- rounded	-	*1.2*	-	*0.7*	-	-	-	*0.7*	*3.7*	-	-
Class	**3a2**	**3d**	**4**	**2/3**	**1/3**	**1/2**	**1/2**	**2/3**	**3a1**	**3a1**	**3a1**

(a) Group 1 – Clast-void fabrics.
Eight sherds fall into this the largest group – samples **1124, 1196, 1366, 1545. 1547, 1569**, **1699** and **5351.** The group is distinguished by the abundance of clast- voids varying between 6.5% to 18%, and the relative paucity of clasts (<3%) and grog (<3%). Two types of clast-void can be identified: first, those large, angular and rhombic-shaped resulting from dissolved clasts of calcite cleavage fragments together with curved shell fragments present in the first six samples; second, cylindrical objects of very low birefringence thought to be biogenic (opaline spicules) which are present in samples **1699** and **5351**. It is quite apparent that even within this group of eight sherds there are clear divergences in the composition and quality of the fabrics that would suggest further subdivision. Samples **1699** and **5351** are distinguished by a well-orientated clay matrix showing strong aggregate birefringence and also by their low grain (<4.5%) and very low clast content (<2%). In the remaining six samples clast-voids are accompanied by minor amounts of grog (0.2-3.0%) in sandy, well compacted matrices (60-80%) containing small amounts of angular silt/fine sand and larger rounded/sub-rounded sand grains that are probably of windblown origin. The grog fragments are large (0.5-1.5mm) and angular.

(b) Group 1/2 – Fabrics with a mixture of grog and clast-voids
Two sherds are represented in this group - 6381, **6394.** They form an intermediate group between Groups 1 and 2 and are characterised by a significant clast-void content (8%-13%) and are rich in grog (5%-13%: Fig I.2.1.3). Matrices contain abundant voids (11-13 %) – both small (<0.5mm) rectangular voids and lozenge shaped voids with pointed terminations (0.5>1.0mm), possibly from the dissolution of spicules. Grog is present as subangular/subrounded particles some of a different fabric to that of the host sherd, others replicating the matrix of the host fabric; two-generation grog fragments are also present. The sparse clast fraction (2-3%) includes angular fragments of detached quartz, chert, metaquartzite, schist and subangular/subrounded quartz sandstone. Also present are angular/sub-angular fragments of strained quartz, rounded clasts of fine-grained siltstone and particles of a dark brown, layered, iron- impregnated clay/silt material. They therefore represent a distinctive fabric type.

(c) Group 1/3 - sherd **6380** falls in this group which contains clast-voids, clasts and grains all at 8%**,** but it differs in a low value of grog in the fabric (1%). It shares most of the fabric characteristics noted above in Group **1/2** but it differs from the other two grooved ware in generally having a coarser-textured fabric. The clast component includes angular fragments of metaquartzite, sandstone and detached quartz in a sandy matrix.

(d) Group 2/3 - Fabrics with a mixture of clasts and grog.
Two sherds are represented in this intermediate fabric group – **851** and **1651.** The group is defined by moderate clast and grog contents (>10%), and absence of clast voids (Fig I.2.1.3), but two very different fabric

compositions are represented. In sherd **851** angular fragments of a silicic igneous rock (10%) form the dominant clastic constituent in a sandy clay matrix; in sherd **1651** angular clasts of a fresh olivine dolerite (12%) are contained in a sandy clay-rich matrix. Grog is represented by angular particles varying in size from small (0.5mm) to large (1.5mm) and in sherd **851** a distinctive over-fired type is present.

(e) Group 3 - Fabrics rich in rock clasts.
Six sherds are represented in this group – **1094, 1170, 1476, 1686, 1815, 4113.** All Group 3 fabrics are defined by a medium to high clast content (>10%), low incidence of grog (0-3%) and absence of clast voids (<0.2%). Clast-rich fabrics contain rock fragments dominated by specific rock types and at Parc Cybi the group is divisible into the following four sub-categories:

Sub-group 3a1 - ultramafic rock types dominate, with serpentinite (32%) in **1094;** dolerite (10%) and an amphibole-rich rock (26%) in **1476**; a feldspar, clinopyroxene/olivine rich ultramafic rock (16%) in **4113**.
Sub-group 3a2 - sherd **1170** has a much altered pyroxene dolerite (26%)
Sub-group 3b sherd **1686** contains abundant fragments of granite (18%);
Sub-group 3d; in sherd **1815** a coarse grained sandstone at 25% is the dominant lithic component.

In general the rock fragments are angular/sub-angular, varying in size from 0.5->5mm. All matrices are sand-rich with the exception of **1170** and **1094** which are clay-rich and contain a very sparse detrital fraction.

(f) Group 4 – low concentration of filler comprising sparse clasts only.
The single sherd **5720** falls in this group. It has a sandy-clay matrix displaying weak to moderate birefringence and containing an abundant grain fraction (11%) of angular quartz grains (>6%) and rare grains of feldspar and clinozoisite: rare grains of rounded quartz are also present in the matrix. Meandering thin construction voids are prominent (11.0%) indicating weak consolidation of the matrix in the manufacturing process. However, it is distinguished by the absence of grog and clast-voids whilst the low clast fraction, consists mainly of small angular metaquartzite fragments with rare fragments of sandstone and fractured quartz. This places it nominally in Group **3** (Fig I.2.1.3**)** but a separate new Sub-group **4** has been deemed necessary due to the low clast content (4%): the sparse clasts are mainly metamorphic (*i.e*. **4e**) This detail of classification may seem miniscule but still remains precise in establishing a separate group for **5720** which is different to the samples so far examined from northern Wales.

Provenance of materials
Questions relating to provenance can be discussed first by considering the matrix textures (a-c below), second the biogenic components (d) and third the lithic clasts (e), particularly those present in Group **3**, and its mixtures **2/3, 1/2** and **1/3** fabrics. The provenance of the matrix may also be indicated by its mineralogy and, environmentally, by any biogenic constituents.

Matrices
Three matrix groups are identified:

(a) Clay-rich matrices: Three sherds fall in this category –**1699, 1170** and **5351**. They show moderate to strong aggregate birefringence, prominent parallel lamellar banding of matrix with non-branching construction cracks adopting the same orientation except in the vicinity of large clasts where curved deviations are apparent. Lenticular clay- or silt- rich concentrations are a recurring feature. The accompanying low grain fraction (<5%) consists mainly of sparse angular, subangular and subrounded quartz grains grading from silt to fine sand grades. The matrices are sparsely micaceous and muscovite shreds and probably highly altered biotite/chlorite flakes are represented. Very sparse subrounded to rounded sand grains of quartz, dirty brown siltstone generally in size grade >0.2mm contrast with the silt/fine sand component above. Round to sub-rounded fragments of a very fine grained foliated siltstone and sandstone may belong to the 'clay' body, but this rock is also present in the silty and sandy fabrics described below.

(b) Silty-clay matrix:
Only sherd **1815** falls in this textural group. The fine-grained matrix is characterised by a dense silt/clay fraction with moderate to weak aggregate birefringence, prominent parallel lamellar banding, with non-branching construction cracks adopting a similar orientation; lenticular sandier aggregates are also a feature. Matrices are non-micaceous. The sparse grain fraction consists mainly of angular, subangular and subrounded quartz grains grading from silt to fine sand grades and there are rare rounded Triassic quartz grains/clasts.

(c) Sandy-clay matrices:
These matrix textures are shown by the remaining 16 sherds. They have fine-grained matrices developing moderate to weak aggregate birefringence and short non-branching construction cracks - a consistent feature in matrices that are otherwise well compacted. The grain fraction consists of abundant silt to fine sand quartz in angular to sub-rounded forms and with sparse muscovite flakes. Rounded grains of quartz grading to rounded/subangular clasts may represent a Triassic quartz sand fraction. The identification of a clast fraction native to the clay body will be discussed below but in general sandier fabrics contain a greater range of rock fragments grading from rounded to sub-angular in outline and including rare small clasts of siltstone, sandstone, quartzite and mica schist.

It may therefore be concluded that the above matrix types represent a gradation from the finer grained clay-rich types to the sandier varieties in which a detrital fraction is more abundantly represented. However, in the finer grained matrices, trace fragments of shales and less frequently rocks of igneous/metamorphic origin suggest that the "clays" are derived from local deposits thus emphasising the general uniformity of the pottery sample.

(d) Biogenic constituents.
Biogenic components such as phytoliths, and diatom tests were not seen in 13 of the sherds thin-sectioned, and this probably implies the use of a sterile "clay" by the potter, such as the glacial sediment till. In other sherds such as **1124, 1547** and **6381** obscure small tubular features were seen which would imply the use of terrestrial, lacustrine or marine sediments. Occasional, but distinct, fragments of a pinnate diatom were seen in sample **1699** indicating that post-glacial sediments, or tills incorporating earlier sediments, were used for "clay": this had previously been seen in Trefignath samples **D** and **M** (Jenkins 1987). Biogenic contributions can also be inferred from appropriately shaped biolith clast-voids where calcite had subsequently been dissolved, as in samples **1699, 6380, 6381** and **6394**. The composition of the **1/2** matrices in **6381** & **6394** presents a problem in interpretation. It is unclear whether the vesicles were originally organic or carbonate – the distinction being that the former would have been burnt out in the firing, the latter subsequently leached out after burial. Whichever, it is unlikely that the organic or carbonate constituents would have survived in the "clay".

(e) Lithic Clasts
As evident in Tables **1a & b** information on provenance is directly available from the lithic clasts present. This is particularly true in **Group 3a.1** fabrics where they are diagnostic, sherd **1094** clasts being dominated by serpentinite and those in sherd **1476** by hornblendite, both distinctive ultramafic rocks available locally. A few clasts of both these rock types occur in sherds of other groups, as in sherd **6380** (**Group 1/3**) and of serpentine in sherd **851** (**Group 3b**) and of hornblende gabbro in sherd **6381** (**Group 1/2**) and sherd **1815 (Group 3d)**. In **Group 3** fabrics the overall rock assemblages are dominated by ultramafic and mafic igneous, silicic igneous and sedimentary rocks, the latter ranging from coarse lithic sandstone to fine grained foliated sandstone. Metamorphic rocks represented by metaquartzites form an accessory component to the above igneous/sandstone dominant rock types. Rock clasts, particularly of igneous and arenaceous rock types, are characterised by their angularity and sharp fractures; they contrast with the more rounded outlines of the argillaceous sedimentary rocks, particularly the softer mudstones.

Sourcing **Group 3** rock types to specific geological formations in Ynys Cybi is of particular relevance (Fig I.2.1.1). The following correlations are:

highly probable:

i) The distinctive serpentinite, hornblendite and clinopyroxene/olivine-rich ultramafic rock clasts dominant in sherds **1094**, **1476** and **4113** which characterise Group **3a.1** may be sourced to a small ultramafic complex in the southern part of Ynys Cybi, some 5 km from the site. This group includes Beaker, Food Vessel and Cordoned urn sherds.

probable:

ii) Sherds **1170** with Palaeozoic dolerite clasts dominant may be sourced to the numerous dykes that have been intruded into the Precambrian rock formations of Ynys Cybi.

iii) Sherd **1651** (Grooved ware) with Tertiary olivine dolerite clasts dominant may be sourced to the large dyke that forms significant outcrops in the north part of Ynys Cybi.

iv) Sherds **6380, 6381, and 6394** (Grooved ware) in **Group 1/2** and **1/3** fabrics contain an assortment of metamorphic clasts, with metaquartzite as the dominant type, and may be sourced to the Holyhead quartzite which forms outcrops in the north part of Ynys Cybi. The presence of a serpentinite fragment in sherd **6380** reinforces the identity of a local source for these fabrics. Although poorly defined, the composition of sherd **5720** (Mortlake ware) may be compared with

the three represented in Group **1/2** and Group **1/3** above, since it shares the same, though sparse, clastic fraction of metaquartzite fragments; this rock also appears as a trace component in sherds **4113** (Beaker) and **1651** (Grooved ware).

v) **Group 1** clast-void fabrics, where crushed shell or vein calcite is suggested to have been the original clast component, generally do not contain large rock fragments and without such a signature fraction they are difficult to source. Nevertheless, in the present eight samples there are sufficient trace grains/clasts to suggest a likely Ynys Cybi origin for the pottery. Most contain rare, small clasts of metamorphic rocks – metaquartzite, mica schist – but, most significantly, sherds **1124, 1547** and **1699** include rare fragments of serpentine rock. These sherds are all Early Neolithic.

uncertain:

vi) An extraneous Ynys Cybi element may be identified in the following three samples: sherd **1815** with sandstone clasts dominant, sherd **851** with granitoid clasts dominant and sherd **1094** with granite clasts abundant. Although these rocks are not from recognisable Ynys Cybi formations, they could have been available in the glacial tills that cover large parts of Ynys Cybi, and indeed of Anglesey, and therefore a local source could still be suggested for the production of these vessels. It is also significant that a fragment of Permian sandstone is present in Sherd **1815** and this is consistent with the persistent presence of rounded aeolian quartz grains in most of the fabrics. Their presence may indicate a contribution from the Red Irish Sea Drift in adjacent Anglesey or as sand grains in periglacial cover sands that are present in the area.

All **Group 3** fabrics are characterised by single or dominant rock types, which may suggest that selection of specific rock fillers may have been of importance, requiring a degree of conscious selectivity in the pottery-making process. The presence of grog as an accessory constituent to rock clasts in sherds **851** and **1651,** or even as a minor component in a number of other fabrics (*e.g.* sherds **1815, 4113**), further confirms the selective process of pottery production in the Parc Cybi pottery. This proposal will be further discussed when the typology of the pottery is presented in section 6 below.

Classification of the sherds on the basis of the filler type used (clasts, grog and clast-voids; Fig I.2.1.3) shows that the eight "corky" ware sherds fall in the group **1** area but that filler in the ninth sample (**1686**) is comprised of clasts. Three sherds are dispersed within intermediate groups **1/2** (**6381, 6394**) and **1/3** (**6380**) and two fall within the mixed group **2/3** (**1651, 851**). The remaining six sherds in group **3** have filler dominated by lithic clasts. Again, other than for the "corky" ware in group **1**, there does not appear to be any distinct clustering of sherd fabric according to typology other than the four Grooved ware sherds all having a clast proportion less than 60%.

Typological correlations

The typological classification of the Parc Cybi pottery in relationship to the fabric classification is presented in Table I.2.1.3 and in Figs I.2.1.2 and 3. The table also shows the typological/fabric correlations of the Trefignath pottery sample (Jenkins 1987) which is discussed below.

The classification groups derived from the analytical data are summarised in triangular diagrams (Figs I.2.1.2 and 3) that conveniently allow variation in sherd composition to be depicted graphically in terms of three variables. In a broad context the fabric of the sherds (Fig I.2.1.2**)** can be compared to those from the earlier study in North Wales (Jenkins 1978) and seven of the distinctive "corky" ware (Group **1**) fall in the same area as those for this group in previous studies (Williams & Jenkins, 2004a) as will be discussed below. The eighth (**1196**) is closely adjacent, and the one unusual Mortlake ware **(5720,** Group **4**) also falls within the same area according to its fabric**,** but sherd **1686** contains a much higher level of filler (27%).

The later wares similarly mostly fall within the larger area previously identified, although the two Beaker sherds (**851, 4113**) show denser fabrics, one Grooved Ware sherd (**6381**) falls in an intermediate area, and the Cordoned Urn (**1476**) is the most filler-rich (36%) of the samples. The different typological wares do not show any marked clustering on this diagram, other than the Beaker ware having filler contents of >25%.

The analyses have indicated the strong correlation between Group **1** clast-void fabrics and Early Neolithic pottery from the house structure at Parc Cybi and reaffirm the similar association noted in the pottery from the Parc Bryn Cegin and Llandygai structures (Williams and Jenkins 2004b; 2008). As suggested elsewhere, clast-void vesicular ("corky") fabrics are consistently associated with the production of Early Neolithic pottery from northern Wales and conform to the more widely distributed fabrics noted elsewhere in Wales (Lynch 1976,

Lynch *et al* 2000, Peterson 2003, Jenkins 2014). It has been proposed (Williams & Jenkins 2014) that some of this vesicular structure has resulted from original calcite grains recognisable by their distinctive rhombic cleavage outlines, which were leached from the fabric in the post-depositional phase of the pottery. Such grains may have been incorporated initially for decorative purposes (white calcite grit) or possibly to actually produce a less heavy, more porous, fabric.

Table I.2.1.3: Fabric group and typology of the samples analysed, *Parc Cybi: 851-6394 (Trefignath: A-S)*

FABRIC GROUP (subgroup) ***TYPOLOGY***	**1** (clast-voids rich: >33% of filler; Fig I.2.1.3)	mixture **1/2** (Fig.3) Voids + grog	mixture **1/3** (Fig.3) Voids + grog	**2** (grog-rich >67% of filler Fig 3)	mixture **2/3** (Fig.3) Voids + grog	**3** (clast-rich - >67%of filler; Fig I.2.1.3)					**4** (clast-voids & grog absent in filler, clasts rare <4%)
						3a.1 ultra-mafic	**3a.2** mafic dolerite	**3b** silicic granite	**3d** sandstone	**3e** meta-morphic	
Early Neolithic ware	**E** 1124 **F** 1196 **L** 1366 **N** 1545 1547 1569 1699 5351	-	-	**D** **M**	-	*+serpentine* **H** **J** **R** **S** *+hornblendite.* **Q**	-	1686	-	-	-
Fengate and Mortlake	-	-	-	-	-	-	1170 Fengate	-	1815 Fengate	**A** **B** **C** **G** Mortlake	5720 Mortlake
Grooved Ware	-	6381 6394	6380	-	1651 (+3a2)	-	**K**	-	-	-	-
Beaker	-	-	-	-	851 (+3b)	*+serpentine* 4113	-	-	-	-	-
Cordoned Urn	-	-	-	-	-	*+hornblendite* 1476	-	-	-	-	-
Food Vessel	-	-	-	-	-	+serpentine 1094	-	-	-	-	-

It is clear from this study that several different strands are involved. As well as the addition of crushed shell or vein calcite to the clay it is also possible that the addition of other biogenic/organic debris, distinguishes a second group of vesicular fabrics as noted in sherds **1699** and **5351.** There is no such uncertainty in identifying a third strand which is typified by the addition of minor, but consistent, quantities of grog to the calcareous component and this third strand introduces the basis of further sub-division, particularly for sherd **1196.**

As noted above there are strong petrographic reasons for suggesting that this pottery is produced in the environs of the house structure. Clast-void pottery dominates the pottery assemblage from the Parc Cybi structure and non-vesicular pottery forms a minor component. The one sampled sherd (**1686**) with crushed granite as the dominant introduced filler could also have been a locally produced vessel utilising erratics from the local superficial glacial deposits.

Sherd **5720** (Mortlake) contains a small clast fraction (**Group 4**) in the sample, but the rest of the sherd contains large quartz clasts, as do the other sherds in this style from Parc Cybi.

The two Fengate type sherds are each, interestingly, associated with different fabric groups. In sherds **1170** and **1815** the granularity and angularity of the clasts and their different petrologies identify a particularly coarse-grained fabric type. In sherd **1170** the clasts belong to a dark coloured dolerite (**Group 3a2**) and in sherd **1815** to a light coloured sandstone (**Group 3d**). In both examples the lithic constituents have presumably been deliberately selected, crushed and added to the clay body to provide a visual as well as a tactile component to their respective vessels.

Discussion of the four Grooved Ware sherds replicates to a large extent the review of the Fengate pottery above. In sherd **1651** an exclusive complement of angular fragments of a dark coloured Tertiary dolerite impart a rough granularity to the fabric that shares common features with the two Fengate sherds **(1170, 1815)** previously referred to. In contrast, in Grooved Ware sherds **6380** and **6381** the clast fraction is restricted and although it consists of angular light-coloured quartzite, vein quartz and quartz sandstone fragments, their overall visual impact is correspondingly less obvious resulting in a very plain unpretentious fabric in which there is a certain vesicularity. Moreover, their mineralogical correspondence with the Mortlake sherd **5720** and with the fourth Grooved Ware sherd **6394** in which grog forms the principal textural component is strikingly close.

To draw general conclusions from this analysis of 20 sherds may be premature but the following observations are of interest. First, the exclusivity and angularity of the clastic component in some Mortlake, Fengate and Grooved Ware fabrics is a recurring feature that is counterbalanced by the blandness and porosity of the Early Neolithic fabric. In essence Mortlake, Fengate and Grooved Ware fabrics at Parc Cybi are remarkably similar suggesting a degree of continuity in the pot making process - on the one hand the potters made a conscious choice to introduce a clast filler into the pottery, whilst on the other they may have considered the local sand rich 'clay' bodies to be sufficiently textured as not to require additional tempering. Second, the presence of clast-voids in mid/late Neolithic pottery again establishes the longevity of this type of composition effectively assigning it to span the whole of the Neolithic period at Parc Cybi. It is more than likely that all the Middle-Late Neolithic vessels, Mortlake, Fengate and Grooved Ware, were manufactured in the vicinity of the site.

The above observations only partly reaffirm Gibson's (1995) original suggestion that coarse textured rock fillers were intentionally included in Peterborough pottery and that their visual impact may have been of greater significance than their technical function. The present analysis would suggest that both light and dark coloured rocks were introduced into Peterborough as well as Grooved Ware fabrics although it is significant that dark coloured mafic rocks dominate selection of clasts in later EBA cinerary urn fabrics in Anglesey (Williams and Jenkins 1999, 2004). A word of caution is, however, necessary since the sample of analysed Peterborough pottery in north western Wales remains very small, and is rather deficient in Mortlake ware, leading to the strong possibility that other significant fabric types remain to be discovered. The addition of filler in the form of clasts in the early Neolithic **1686** also indicates the longevity of this process.

The analysis of the post-Neolithic vessels comprising two Beaker vessels, one Food Vessel and one Cordoned Urn is of contrasting interest. Both Beaker fabrics and the Food Vessel (sherds **851, 4113, 1094**) contain large angular rock clasts in dominant proportions but with additional minor grog in the Beaker examples **851** and **4113** only. In general Beaker fabrics are usually finely textured and characterised either by sand-rich matrices or by fabrics containing abundant grog particles (Morris and Woodward 2003). However, the absence of any "signature" clastic components does not allow for specific manufacturing provenances to be identified for this type of pottery at Parc Cybi. In contrast, at Parc Cybi, the abundance of coarse textured clasts in both Beaker sherds is an uncharacteristic feature, but there is little doubt that the clastic component in the vessels had been

carefully selected, crushed and introduced to form specific fillers. It is therefore suggested that the Beakers instanced here, which include a fragment from Area E, probably domestic material and the vessel from cist 7, follow long established pottery manufacturing traditions at Parc Cybi that are first manifest in the mid/late Neolithic fabrics and are later maintained in the Early Bronze Age cordoned urn at the site. The latter vessel **1476**, with its exclusive complement of dolerite and ultramafic rocks, fits comfortably with the very selective fabrics identified in Anglesey Bronze Age cinerary urns (Williams and Jenkins,1999). There is no doubt, however, that the above four vessels are the products of local manufacture since they contain inclusions that are specifically confined to Ynys Cybi and its immediate surroundings; less diagnostically, so is the inclusion of hornblende and clinozoisite grains in the matrices of all three sherds.

Correlations with fabrics from Trefignath

A petrographic study was made of 16 Early to Late Neolithic sherds from the megalithic tomb of Trefignath (Jenkins 1987), and in Table I.2.1.3 the fabric/typological particulars of this sample are shown together with details of the Parc Cybi assemblage allowing for both to be cross-referenced. The tomb is situated 90m due east of the Neolithic house in Parc Cybi and the two sites share a common orientation that suggests they were closely related both spatially and chronologically.

The bulk of the Trefignath sample, comprising eleven sherds, belong to western Neolithic wares: Group **1**. Of these, seven (L N D M H R S) were discovered in stratified contexts on the old ground surface below the tomb and pre-date the building of the monument. E came from the quarry believed to have been created to supply stone for the enlarged cairn (Period II b) The remaining three sherds (F J Q) were from unstratified contexts. A further four sherds were associated with the eastern chamber and forecourt area of the tomb and have been variously identified typologically as belonging to Fengate (Vessel **A**) and Mortlake (Vessels **B, C, G**) wares (Smith in Smith and Lynch 1987). The final sherd (**K**) is unstratified but is an example of Grooved Ware. Frances Lynch judges that A and C are the same pot belonging to the Mortlake style (see xxxxx pp).

The importance of the sample is therefore two-fold – first it relates to a burial monument in which stratified contexts were established, and second, it provides a relative chronological sequence for Early to Late Neolithic pottery. In contrast the Parc Cybi early Neolithic pottery belongs to a structure possibly associated with domestic use (although other more esoteric interpretations have also been suggested, Kenney 2009), while the later Neolithic pottery relates to pit contexts from various locations at the site. The latter therefore lack the more significant precision of the Trefignath later Neolithic pottery although, eventually, they will be accommodated within an absolute chronological framework for the Parc Cybi site.

On first acquaintance the sherd fabrics from the two excavations share common characteristics. Vesicular and clast-rich fabrics are represented in both samples, they share similar "signature" clast rock types, such as serpentine and dolerite, and grog is often another shared component. In detail, however, the contrasts between the two samples are of significance. First, the western Neolithic pottery from Parc Cybi is represented by a uniform Group 1 clast-void fabric, with the exception of a single Group 3 clast-rich example (**1686** – granite-rich clasts). The typological analysis of the pottery from the house structure indicates that pottery with clast-void fabrics outweighs the non-vesicular type and although the petrographic sample is small it may fairly reflect the ratios at the site. In contrast the variety of fabrics on the pre-tomb old ground surface at Trefignath is most interesting in its tempering, combining clast-void (**L, N, E, F**), grog (**M**), ultramafic clasts **(Q**) and serpentinite clasts (**H, J. R, S**) fabrics. Might this suggest that pottery with varied fabrics were specifically selected for disposal on the pre-tomb ground surface in order to establish the sanctity of the area and that such vessels were considered to have greater significance than the domestic pottery in the house structure? Second, and in contrast, the later Neolithic pottery from Parc Cybi confirm that a greater range of fabric types were in circulation than appear from the restricted range sampled in the Trefignath tomb. Third, the variety of clastic constituents is of interest. For example, serpentinite is represented in the Parc Cybi early Neolithic pottery only as a trace component and not as a filler, whilst in the corresponding early Neolithic pottery of Trefignath it appears as a filler and reappears again in this same capacity in the Early Bronze Age fabrics at Parc Cybi.

Conclusions

This analysis of twenty sherds from Parc Cybi has provided specific conclusions relating to typology and provenance. In terms of typology it appears that only the "corky" Early Neolithic Group 1 can be clearly distinguished in terms of overall fabric and the nature of filler employed by the potter, other typological groups overlapping in these properties. On the other hand, the continuity of fabric groups is seen to extend from the early to late Neolithic times in terms of both the recurrence of clast-voids characteristic of the early Neolithic in

late Neolithic Grooved Ware (**6380, 6381,6394**). Conversely an isolated early Neolithic sherd (**1686**) was found to be as clast-rich as the later Neolithic ware, but using much smaller clasts

The analytical conclusions from the data proved to be more definite in terms of provenance due to the fortuitous occurrence of the distinctive rare rock types serpentine and hornblendite in small areas some 5km from Parc Cybi. Clasts of these rocks were found in four samples, and were detectable in trace, but defining, amounts in a further four, some of which carried clasts of the more ubiquitous schist and metaquartzite which also occur locally. Such extrapolation to another ten samples suggests that a majority of sherds analysed had been produced locally rather than imported. The lack of common biogenic materials, such as phytoliths, diatoms or spicules, imply that most, but not all, samples probably derived from the widespread local glacial tills rather than from other terrestrial/marine sediments or derived soils. This conclusion was supported by the presence of traces of minerals (*e.g.* clinozoisite and amphiboles) in the matrix of the sherds that are characteristic of the local geology.

The data also inform more general questions about the pottery production. One of the most perplexing questions raised by the petrographic study of prehistoric pottery is whether the potter would consciously have given such attention to the selection of raw materials for the "clay" and tempering constituents, as to the shape, decoration, the practical use and ultimately the 'commercial' value of their finished product. In addition the firing qualities of the raw materials, the techniques of their construction into pottery and the manner of their consolidation in the firing process would have been basic considerations, whether determined by experimental choice or long time practice. On the other hand would the prehistoric potter have been ultimately directed, not by practical considerations, but - as many ethnographical studies (*e.g*. Riegger, 1972; Rice, 1987; Arnold, 1985) have shown - by the values of tradition or the strictures imposed by social organisation?

An element of choice can be discerned in the construction of some British prehistoric pottery. In Beaker pottery, for example, a refined evenly textured composition appears to be one of fabric selection that presumably facilitated the smoother application of incised decorative motifs on the vessel surface (Clarke 1970). As previously noted, Gibson (1995, 2001) has suggested that coarse textured, angular, light coloured, rock fragments were deliberately introduced into middle Neolithic Peterborough pottery, either as a decorative enhancement or possibly to satisfy deeper cultural reasons. The selection of gabbroic clays for constructing early Neolithic pottery in Cornwall, and the subsequent distribution of the pottery in southern-central England (Peacock 1969), might have contributed to their desirability as items of exchange. In Anglesey the specific inclusion of dark mafic igneous doleritic rock fragments in Bronze Age cinerary urns is a consistent feature in their construction as if to suggest they are to fulfil an underlying "reverent" motive (Williams and Jenkins 1999). In contrast, the persistent use of inferior lime-rich clays in Neolithic pottery in southern Britain may reflect the limitations of choice rather than the seeking of a better suited material (Morris and Woodward, 2003).

How does the Parc Cybi pottery relate to these selections? As noted above, the first important conclusion is that the whole assemblage, regardless of typological and chronological considerations, displays remarkable continuity in the selection of pottery-making raw materials and that these can be locally sourced in the terrain of Ynys Cybi. Within this all-embracing continuity there are certain divergences that emphasise cultural choices or conventions. In this respect the Early Neolithic component at the site conforms to the overall presence of clast-void fabrics as the dominant fabric type in Neolithic pottery from other major domestic and funerary sites in north-west Wales (Williams and Jenkins 2004a, 2004b, 2008, 2012; Jenkins 1987, 1991, 1993, 2012; Jenkins and Williams 2014). In contrast the mid/late Neolithic Mortlake, Fengate and Grooved Ware are an expression of local endeavour tinged with a modicum of external cultural recognition - the latter is displayed by the boldness of the clastic constituents, the former in the "blandness" of the overall fabric. The Beaker fabrics provide the most atypical statement at the site since none conform to the refinement of their type, but manifest the parochialism of their construction. Finally, the specific selection of a unique ultramafic rock of limited distribution in the Cordoned Urn accords with the equally specific inclusion of mafic igneous rock fragments in the cinerary urns of Anglesey as of elsewhere in western Britain (Jenkins 1984, 1993; Morris and Woodward, 2003.

A second conclusion is that the insularity of Ynys Cybi, as indeed of Anglesey, and its apparent current remoteness in Britain belies its centrality in the prehistoric sea-routes of the Irish Sea Province. This was a geographical position that might be expected to reflect external interests leading to the possible exchange of artefacts. This is not confirmed in the present petrographic analysis of the pottery which emphasises that Anglesey's range of raw materials is heavily influenced by the local geological diversity, and supplemented by glacial transportation of material from the Irish Sea and northern Britain. In this respect the 'foreign' elements

detected in the composition of the Parc Cybi pottery could be from this latter source rather than due to cultural exchange.

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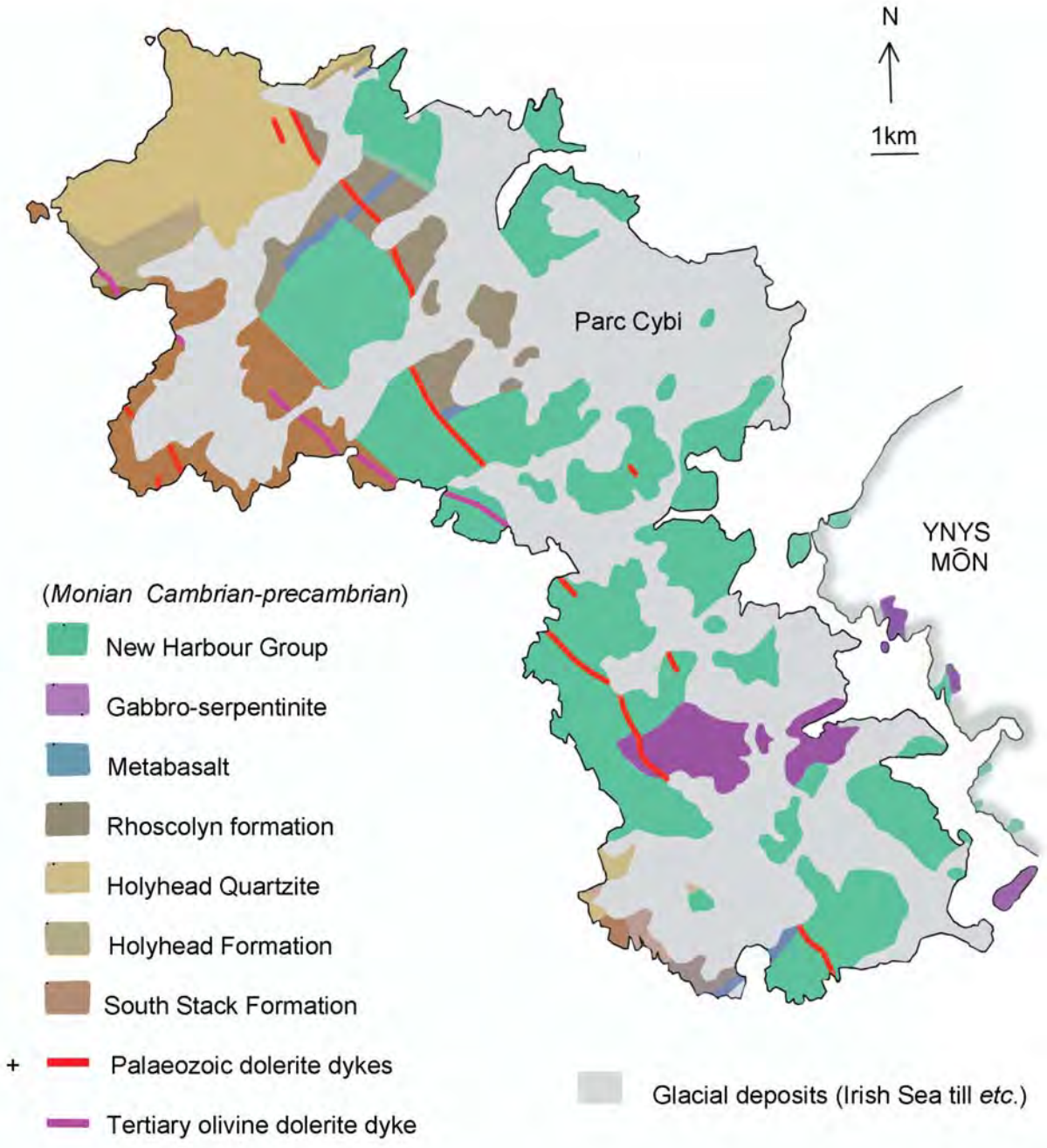
Fig I.2.1.1: Drift geology of Ynys Cybi
(*after M F Howells 2004, p.17 & IGS 1978*)



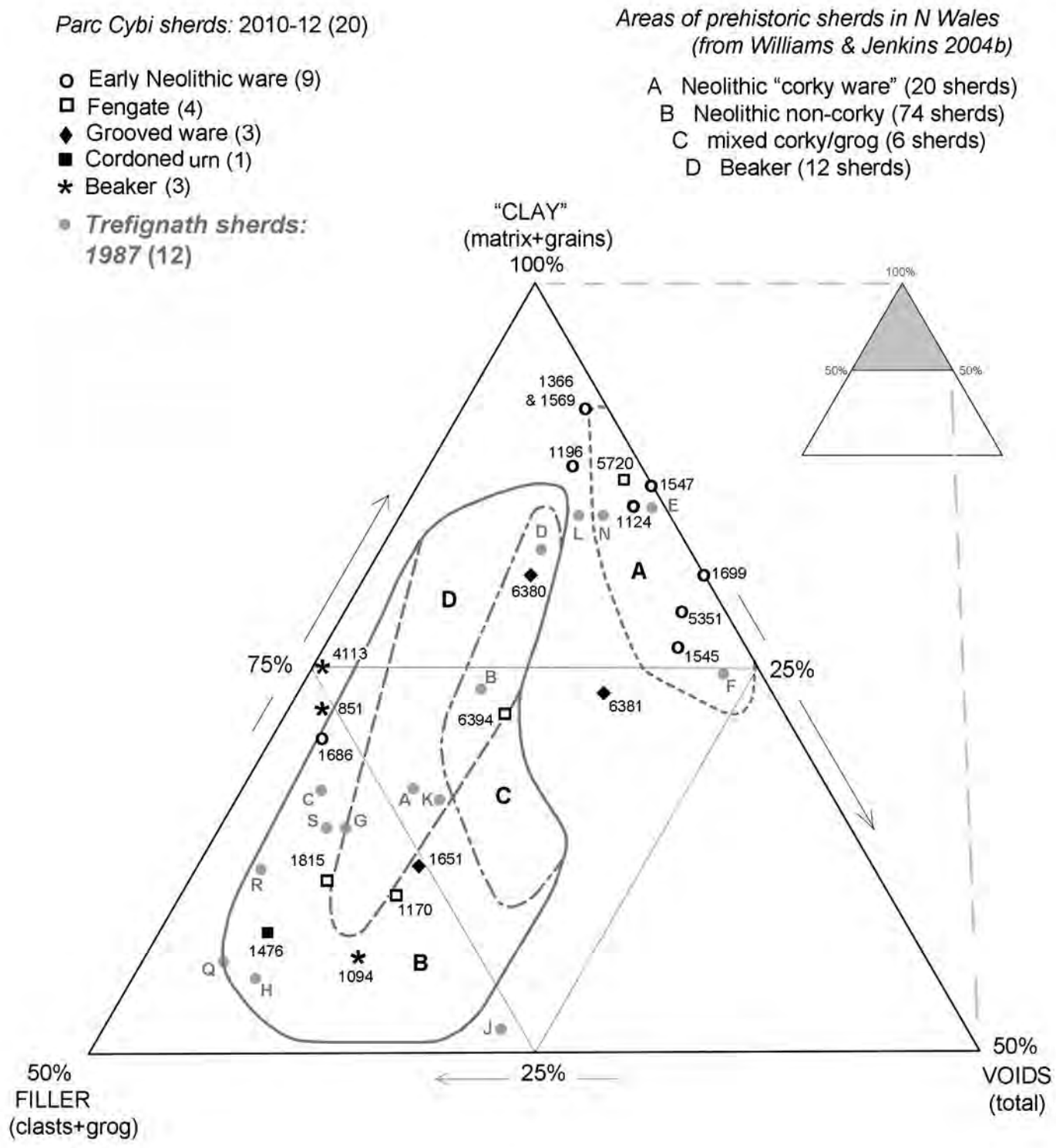


Fig I.2.1.2: Fabric of 20 sherds recovered from Parc Cybi in terms of "clay", filler and grog

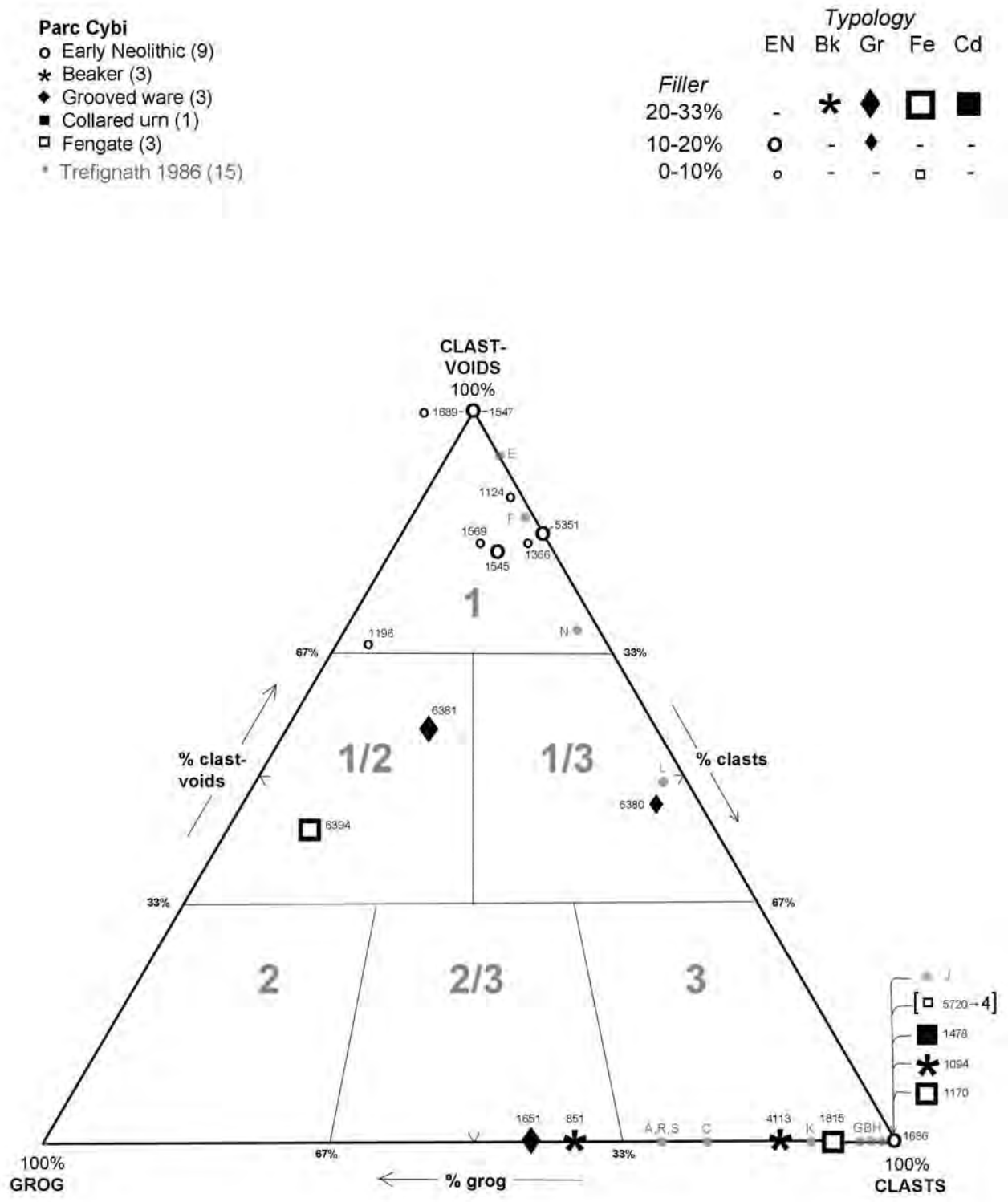


Fig I.2.1.3: Sherds according to filler type (% clasts, grog, clasts-voids)

Appendix I.2.1: Description of sherd thin-sections

These are presented in sequence of numerical order of sherds. Concentrations from point count analyses are included.

1. **SHERD 851:** Typology: **Beaker** (Thin section No. **2299**)

Matrix: *Texture:* Sandy clay (sC)
Ignited colour: reddish brown
Aggregate birefringence: moderate; patchy; weak orientation
Fabric: dense, with common Fe^{3+} concretions

Grains: occasional (14%)
coarser: rare rounded quartz some with overgrowths, quartz/plagioclase aggregates, dusky K-feldspar, fresh microcline, dusty plagioclase.
finer: common angular quartz; occasional muscovite flakes and clinozoisite; rare zircon, green tourmaline, colourless amphibole and clinopyroxene.

Bioliths: none seen (possible degraded phytolith?)

Voids: rare (1.7%)
constructional: rare thin sub-parallel linear and irregular voids
clast-voids: rare (<0.2%) obscure rhombic-edged vughs

Grog: occasional (9.7%)

Clasts: common (16%)
1. common (14%) sub-angular feldspar aggregates (1mm) with Fe^{3+}staining identifiable as plagioclase and K-feldspar (14%) **plutonic igneous – intermediate?**
2. sub-rounded 0.6mm coarse-fine quartz mosaic with some opaque minerals, not lineated **silicic igneous (tuff?)**
3. rare sub-rounded (0.7mm) felted fibrous, low relief, length-slow **serpentine?**

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2. **SHERD 1094:** Typology**: Beaker** (Thin section **No. 2300**)

Matrix: *Texture:* Clay (C)
Ignited colour: yellowish brown
Aggregate birefringence: moderate; patchy; weak orientation
Fabric: dense, with common Fe^{3+} concretions

Grains: occasional (10%)
coarser: rare rounded quartz some with overgrowths, quartz/plagioclase aggregates, dusky K-feldspar, fresh microcline, dusty plagioclase.
finer: common angular quartz; occasional muscovite flakes and clinozoisite; rare zircon, green tourmaline, colourless amphibole and clinopyroxene.

Bioliths: none seen (possible degraded phytolith?)

Voids: occasional (12%)
constructional: rare thin sub-parallel linear and irregular voids
clast-voids: rare (<0.2%) obscure rhombic-edged vughs

Grog: none obvious (NB rare obscure concretionary shapes)

Clasts: abundant (32%)
1. common subangular 1mm clasts of **serpentine,** some clear, some Fe^{3+}-stained, and some with opaque grains of ilmenite. In some clasts there is also residual amphibole (³ ^c 30°; low birefringence, finely striated and zoned) – actinolite?. In others serpeninite partially replaces ophitic clinoproxene

3. **SHERD : 1124** Typology: **Early Neolithic** (Thin section No. **2290**)

Matrix: *Texture:* sandy clay (sC)
Ignited colour: reddish brown
Aggregate birefringence: moderate; weak to moderate orientation
Fabric: dense, paler/darker areas, slightly streaky and linear but some curvature around clasts/grains

Grains: occasional (11%)
coarser: common sub-angular quartz, occasional muscovite flakes, and rare quartz/plagioclase aggregates
finer: common sub-angular quartz; occasional muscovite flakes and clinozoisite; rare zircon, green tourmaline, colourless amphibole and pale green clinopyroxene , quartz mosaics and chlorite schist.

Bioliths: very rare in non-reignited areas, obscure circular sections and spores.

Voids: occasional (13%)
constructional: occasional (13%) thin linear and irregular voids and irregular vughs
clast-voids: rare (<0.2%) some rhombic-edged vughs

Grog: rare (0.2%) small (0.8mm) aggregates

Clasts: rare (1.4%)
1. rare small (0.7mm) quartz/muscovite/chlorite/epidote aggregates and quartz-mosaic/muscovite and quartz mosaic fragments (**schist?**)
2. rare Fe-stained angular amphibole clusters **(hornblende gabbro?)**

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4. **SHERD 1170:** Typology**: Fengate ware** (Thin section **No. 2306**)

Matrix: *Texture:* clay (C)
Ignited colour: dark red brown, heavy uniform Fe^{3+}staining
Aggregate birefringence: weak; masked by Fe^{3+}staining
Fabric: uniform dense, marked lineation where visible below stain

Grains: obscured by dense matrix (>0.2%)
coarser: occasional green amphibole with clinopyroxene and rare clinopyroxene.
finer: sparse sub-angular quartz visible.

Bioliths: none seen (matrix v. dense)

Voids: occasional (12%)
constructional: sparse thin sub-parallel linear voids parallel to sherd surface, and rare larger irregular transverse voids and contraction voids around clasts
clast-voids: none seen

Grog: none seen (matrix v. dense)

Clasts: common (28%)
1. Dominated (26%) by large (4mm) sub-angular coarse-grained weathered plagioclase prisms (some zoned), K-feldspar and some clear quartz patches. Overall heavily Fe^{3+} stained but no obvious ferromagnesian minerals now evident, In other angular (4mm) clasts a colourless/ blueish-green/brown amphibole and plagioclase is common.
mafic/intermediate intrusive?
2. Sub-angular clasts of a uniform fine grained (0.2mm) quartz sandstone with minor oxidised chlorite and opaque Fe-ore grains showing weak bedding; some chlorite at 90° to bedding.
quartz sandstone
3. Rare larger irregular quartz with some mica (**metamorphic?**)

5. **SHERD 1196:** Typology: **Early Neolithic** (Thin section No. **2291**)

Matrix: *Texture:* Sandy clay (sC) with some fine sand
Ignited colour: brown, with paler/darker areas
Aggregate birefringence: weak; patchy orientation
Fabric: patchy light/dark areas, streaky with some curved lineation around Clasts.

Grains: occasional (8.2%)
coarser: rounded quartz and aggregates, with rare rounded grains of epidote, zircon, green amphibole and oxidised chlorite
finer: rare sub-angular quartz, quartz mosaic, quartz mosaic, muscovite flakes and rounded green amphibole, rutile and Fe-coated serpentine?

Bioliths: none seen

Voids: occasional (8.2%)
constructional: rare (0.5%) small (1mm) thin linear voids and irregular vughs (0.5mm)
clast-voids: occasional vughs (7.5%) with some rhombic/rectangular edges

Grog: occasional (3.0%) rounded small (0.8mm), redder brown than host, with less quartz and green amphibole

Clasts: rare (0.4%)
1. elongated (1.0mm) schistose schist with granular quartz and oxidised chlorite/biotite. **Schist**
2. rare sub-rounded **mosaic quartz**

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6. **SHERD 1366:** Typology**: Early Neolithic** (Thin section **No. 2292**)

Matrix: *Texture:* Silty clay (zC)
Ignited colour: pale brown
Aggregate birefringence: moderate; with weak patchy moderate orientation
Fabric: dense, with patches of orientation

Grains: occasional (12%)
coarser: occasional sub-angular clear unstrained quartz
finer: common quartz, rare zircon, green tourmaline, and clinoyroxene and clinozoisite.

Bioliths: none seen

Voids: occasional (6.5%)
constructional: rare thin sub-parallel linear voids and irregular vughs (root cavities?)
clast-voids: occasional (6.0%) large (3mm) obscure rhombic/rectangular edged vughs

Grog: none seen (0.2%?)

Clasts: rare (1.2%)
1. small (0.5mm) rare clasts of schistose quartz mosaic with brown mica flakes. **Schist**

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7. **SHERD 1476:** Typology**: Cordoned Urn** (Thin section **No. 2305**)

Matrix: *Texture:* Sandy clay (sC)
Ignited colour: finely mottled brown/colourless
Aggregate birefringence: moderate; weak orientation
Fabric: coarse texture, sub-linear orientation parallel to sherd surfaces

Grains: occasional (11%)

coarser: common prismatic cleavage fragments of green amphibole, rarer aggregates of plagioclase/hornblende and rounded quartz, altered K-feldspar and muscovite flakes .
finer: common small (50um) sub-angular quartz; rare zircon, garnet, clinopyroxene and clinozoisite.

Bioliths: none seen

Voids: occasional (6.0%)
constructional: irregular linear voids parallel to sherd surfaces and some transverse and contraction voids around clasts
clast-voids: none seen

Grog: none seen

Clasts: abundant (36%)
1. large (2.5mm) sub-angular clasts of green/brown hornblende crystals with colourless terminal extensions (tremolite? ¥ ^c 20°) and enclosed colourless skeletal clinopyroxene. Some attached plagioclase laths and Fe-ore granules. Others sub-rounded clasts of clear prismatic plagioclase mesh with oxidised chlorite, some with stumpy prisms of zoned ("hour-glass") clinopyroxene, some enclosing skeletal hornblende (and rare olivine?) **Ultramafic hornblendite**

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8. **SHERD 1545:** Typology**: Early Neolitihic** (Thin section **No. 2293**)

Matrix: *Texture:* Sandy clay (sC) with some fine sand
Ignited colour: brown
Aggregate birefringence: moderate to weak; with weak orientation
Fabric: dense, with patchy Fe^{3+}-staining

Grains: common (16%)
coarser: occasional sub-rounded/sub-angular clear unstrained quartz with inclusion trains, and rare quartz/altered K-feldspar
finer: common angular quartz, with possible rare quartz/feldspar, plagioclase, zircon and clinozoisite/epidote

Bioliths: none seen

Voids: common (20%)
constructional: rare (2%) thin sub-parallel linear and irregular and small rounded voids
clast-voids: common (18%) obscure rhombic and rectangular-edged vughs

Grog: v. rare (0.7%), one grain similar to host fabric but different orientation

Clasts: rare (2.9%)
1. sub-rounded clasts of quartz grains in a finer matrix (low birefringence), faintly banded, dusty trains, with sericite. **rhyolite/chert?**
2. Sub-rounded pale lineated schistose quartz (1mm) with sericite. **Schist**
3. Sub-angular fine quartz mosaic with weakly orientated mica **(meta?) sandstone**
4. Rounded micaceous **siltstone**

---

9. **SHERD 1547:** Typology**: Early Neolithic** (Thin section **No. 2294**)

Matrix: *Texture:* Sandy clay (sC)
Ignited colour: yellowish brown
Aggregate birefringence: moderate; patchy; weak orientation
Fabric: dense, uniform thin clay coatings around grains

Grains: occasional (7.2%)
coarser: occasional sub-rounded quartz mosaics and rare rounded quartz
finer: common angular quartz and quarz mozaics, some v. fine (chert)?

Rare blue tourmaline, zircon, rutile and muscovite.

Bioliths: rare (<0.2%) obscure cylindrical isotropic fragments (0.1-0.03mm)

Voids: occasional (14%)
constructional: rare fine (0.02um) long thin irregular voids and small rounded vughs (root cavities?)
clast-voids: occasional (12%) large (3mm) vughs with rhombic edges

Grog: none seen **CHECK** – "rare"

Clasts: rare (<0.2%)
1. angular flakes of muscovite
2. angular altered feldspar
silicic igneous?

---

10. **SHERD 1569:** Typology**: Early Neolithic** (Thin section **No. 2295**)

Matrix: *Texture:* Sandy clay (sC)
Ignited colour: brown with darker Fe-stained areas
Aggregate birefringence: moderate to weak, moderate orientation
Fabric: dense, lineated with some curvature around clasts

Grains: occasional (10%)
coarser: sub-angular quartz and quartz aggregates, rare rounded grains of quartz, zircon, green amphibole and oxidised chlorite
finer: common sub-angular quartz and quartz mosaic, muscovite flakes and rare rutile, zircon,amphibole and Fe-coated serpentinite

Bioliths: none seen

Voids: occasional (6.7%)
constructional: rare (1.0%) small (1mm) sub-parallel linear voids
clast-voids: occasional (<5.7%) vughs with rhombic/rectangular edges

Grog: rare (0.5%) rounded small (0.3mm) similar to host but different orientation.

Clasts: rare (0.7%)
1. small green amphibole prisms/angular quartz?
2. angular fine **sandstone** with sorted, rounded quartz
3. **mica schist**

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11. **SHERD 1651:** Typology**: Grooved ware** (Thin section **No. 2302**)

Matrix: *Texture:* Sandy clay (sC)
Ignited colour: dark reddish brown
Aggregate birefringence: moderate; patchy; weak orientation
Fabric: dense, with common Fe^{3+} concretions/staining

Grains: rare (0.9%)
coarser: angular quartz, rare rounded (0.5mm)
finer: angular quartz; occasional muscovite flakes and rareclinozoisite;

Bioliths: none seen (would be masked by staining)

Voids: occasional (13%)
constructional: rare thin sub-parallel linear and irregular voids, and larger rounded vughs

clast-voids: not seen

Grog: occasional (11%)

Clasts: common (15%)

1. common (12%) angular clinopyroxene (1.5mm, ¥ ^c 40°**,** birefringence 1st order) with apatite prisms, some ophitic with plagioclase laths, fibrous chlorite **dolerite**
2. rare clinozoisite/feldspar
3. rare fine granular quartz aggregates, recrystalled grain margins, **meta-quartzite**
4. rare schistose quartz **schist**

I.2.2. Petrographic Report on Sherd 1074

Dr. Patrick Sean Quinn

Background, Sample Materials and Aims of Analysis

Petrographic analysis has been undertaken on a single sherd of Early/Middle Bronze Age pottery from Parc Cybi, Holyhead, Anglesey, Wales. The sherd (finds number 1074) came from context 22077 within an unusual feature that is referred to as the 'D-shaped enclosure'. The aim of the analysis was to characterise its fabric and determine its possible provenance.

Methodology

The sample was prepared as a standard 30 µm petrographic thin section at the Institute of Archaeology, University College London using a modification of the standard geological technique (Quinn 2013, p. 23-33). The thin section was characterised petrographically under the polarising light microscope in terms of its constituent raw materials and manufacturing technology. Geological maps and reports (Maltman 1978; Howells 207) were consulted in order to further link the sherd to possible source of raw materials. Lastly, the petrographic composition of the sherds was compared to that of contemporaneous material from the Anglesey and North Wales, including a report on Neolithic and Bronze Age fabrics from Parc Cybi by Williams and Jenkins (this volume Part I.2.1) as well as a study by Williams and Jenkins (1999) on other Bronze Age sites on Anglesey. Photomicrographs of the sample in thin section are presented in Fig I.2.2.1.

Petrographic Composition and Technology

The Parc Cybi sherd is characterised in thin section by a coarse grained fabric containing poorly-sorted inclusions of some sort of amphibole-rich rock. The dominant mineral in the prepared thin section is some sort of green pleochroic crystal, exhibiting up to two strong cleavage planes and showing colourful, though somewhat anomalous interference colours in XP. The existence of rhombohedral shaped crystals with two sets of cleavages at 120 degrees suggests that it is some sort of amphibole, such as hornblende. It occurs as isolated mineral inclusions as well as part of rock fragments up to 3.5 mm in size. The latter are composed almost entirely of amphibole, though it also contains weathering product, including sericite and iddingstite. The amphibole may have replaced another silicate mineral, though the identity of this is not known. Other types of inclusions are uncommon in the sample, but include rare quartz and weathered feldspar, plus some possible fine mica. The inclusions in the sherd have a very poorly-sorted grain size distribution and are generally angular. This, combined with their mono-minerallic/petrographic composition, suggests that the clay used to manufacture the sherd came from the in-situ weathering of amphibole-rich bedrock. This may have been either metamorphic in origin or ultrabasic/ultramafic igneous in origin. No evidence for temper is present in the prepared thin section. The sample has an iron-rich clay matrix, enriched from the degraded amphibolite. The sherd is moderately porous, with meso- and macro-elongate voids and vughs, as well as some ring voids around large rock fragments. Firing was <750°C given the green colour of the amphibole (Quinn 2013, p. 191), though the low level of oxygen during firing is likely to also have contributed to this.

Comparison to Other Studies

The analysed sherd appears to bear some similarities to 'Group 3' of Williams and Jenkins (this volume Part I.2.1), which is referred to as 'Fabrics rich in rock clasts'. This previously defined group is very diverse and individual samples are "dominated by specific rock types". The six samples are subdivided into four sub-groups. Sub-group '3a1' contains ultramafic rock types and sample 1476 in particular is characterised by amphibole-rich rock, which they later refer to as hornblendite. No detailed description or photomicrographs were presented by the authors of this or any of the other samples in their study and certain unfamiliar nomenclature, such as the distinction between 'grains' and 'clasts' make the quantitative data difficult to use. However, table 2b of the authors indicates that in addition to abundant amphibole, sample 1476 contained angular quartz, feldspar and some dolerite. Despite the latter, which is not present in the prepared thin section, it seems that it could be closely related to sample 1476 of Williams and Jenkins (this volume Part I.2.1). This could be confirmed by viewing photomicrographs or comparing the two thin sections under the microscope.

Amphibole-containing ceramics occur in Bronze Age urns from several sites on Anglesey analysed by Williams and Jenkins (1999). They note the presence of "a small group of fabrics… associated almost exclusively with hornblendite/amphibolite rock clasts" (Williams and Jenkins 1999, p. 199). It is difficult to determine which these sherds are due to the way in which the authors present their data.

It appears that Williams and Jenkins (this volume Part I.2.1) suggest that the cordoned urn from which sample 1476 came, was tempered. They state that it is "the most filler-rich (36%) of the samples". The term filler is usually reserved for inclusions that are intentionally added to ceramic pastes. It is not clear which line(s) of

evidence were used to determine this, however, no indications of tempering could be seen in the related sample analysed in this report.

Raw Material Source and Provenance

As pointed out by Williams and Jenkins (this volume Part I.2.1), hornblendite and other ulramafic ultramafic rocks are present on Holy Island. The dominantly metamorphic bedrock are intruded on the south of the island by an unnamed body or serpentinite and hornblendite (Maltman 1978), and also by olivine dolerite dykes to the west. Despite an extensive covering of glacial till, these rocks are exposed in places and would have most likely been accessible to prehistoric inhabitants of the island. For this reason Williams and Jenkins (this volume Part I.2.1) consider sample 1476 to have been locally produced. Such an interpretation appears to be equally applicable to the compositionally closely related sherd from Parc Cybi analysed in this report.

Location of Scientific Samples and Access

The thin sections analysed in this report have been archived at the Institute of Archaeology, University College London. These can be accessed and studied for comparative purposes by arrangement with the author.

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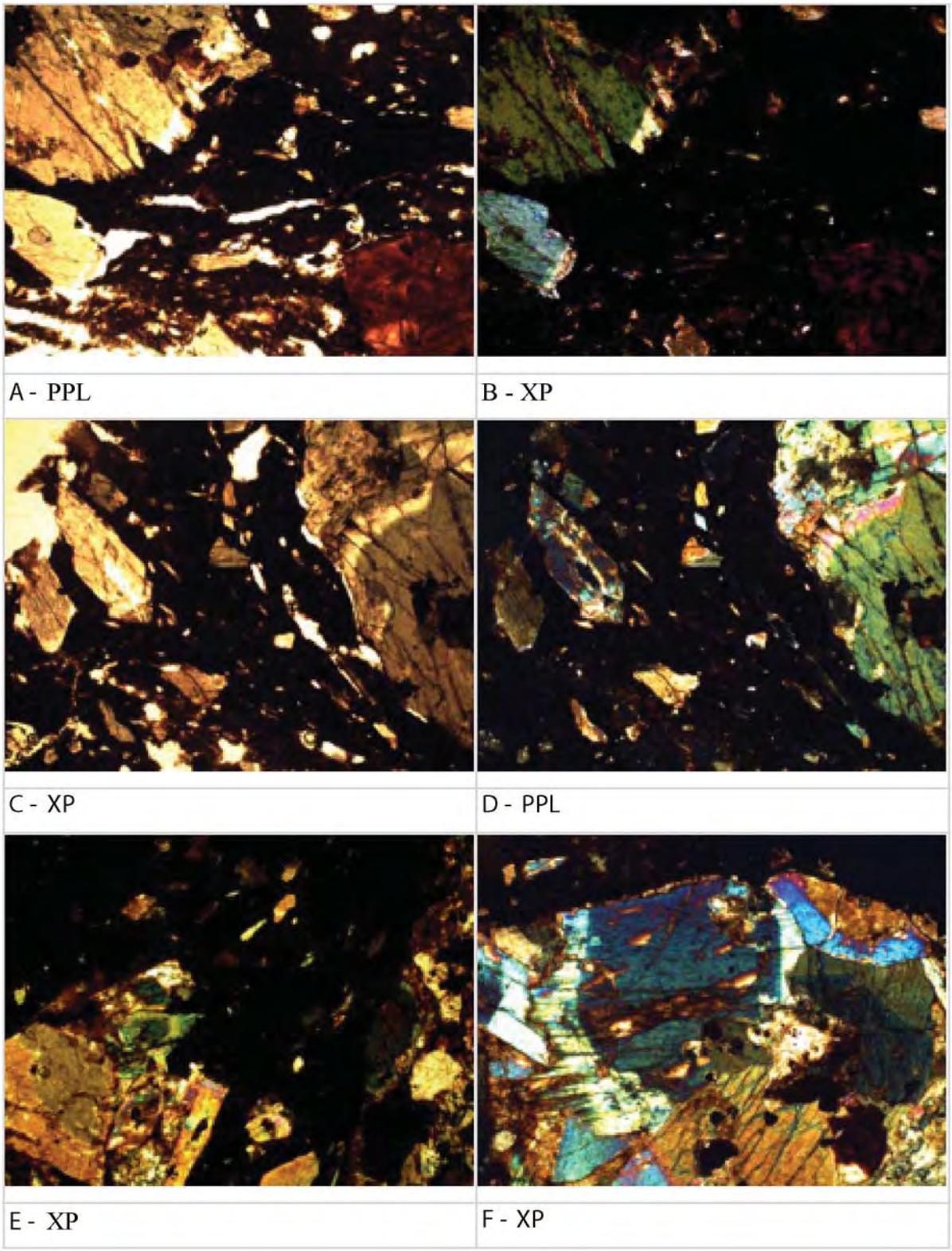

Fig I.2.2.1: Thin section photomicrographs of Early/Middle Bronze Age sherd from Parc Cybi, Holyhead, Anglesey, Wales, analysed in this report XP = crossed polars, PPL = plane polarised light. Image width = 2.9 mm.

Part I.3. Organic Residue Analysis

Part I.3.1 Organic Residue Analysis of Neolithic and Bronze Age Pottery from Parc Cybi

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Introduction

Lipids, the organic solvent soluble components of living organisms, i.e. the fats, waxes and resins of the natural world, are the most frequently recovered compounds from archaeological contexts. They are resistant to decay and are likely to endure at their site of deposition, often for thousands of years, because of their inherent hydrophobicity, making them excellent candidates for use as biomarkers in archaeological research (Evershed, 1993).

Pottery has become one of the most extensively studied materials for organic residue analysis (Mukherjee *et al.*, 2005) as ceramics, once made, are virtually indestructible and thus are one of the most, if not the most, common artefacts recovered from archaeological sites from the Neolithic period onwards (Tite, 2008). Survival of these residues occurs in three ways; rarely, actual contents are preserved in situ (e.g. Charrié-Duhaut *et al.*, 2007) or, more commonly, as surface residues (Evershed, 2008). The last, most frequent occurrence, is that of absorbed residues preserved within the vessel wall, which have been found to survive in >80% of domestic cooking pottery assemblages worldwide (Evershed, 2008).

The application of modern analytical techniques enables the identification and characterisation of these sometimes highly degraded remnants of natural commodities used in antiquity (Evershed, 2008). Often, data obtained from the organic residue analysis of pottery or other organic material provides the only evidence for the processing of animal commodities, aquatic products or plant oils and waxes, particularly at sites exhibiting a paucity of environmental evidence. To date, the use of chemical analyses in the reconstruction of vessel use at sites worldwide has enabled the identification of terrestrial animal fats (Evershed *et al.*, 1997a; Mottram *et al.*, 1999), marine animal fats (Copley *et al.*, 2004; Craig *et al.*, 2007), plant waxes (Evershed *et al.*, 1991), beeswax (Evershed *et al.*, 1997b) and birch bark tar (Charters *et al.*, 1993; Urem-Kotsou *et al.*, 2002). This has increased our understanding of ancient diet and foodways and has provided insights into herding strategies and early agricultural practices. Organic residue analysis has also considerably enhanced our understanding of the technologies involved in the production, repair and use of ancient ceramics.

Preserved animal fats are by far the most commonly observed constituents of lipid residues recovered from archaeological ceramics. This demonstrates their considerable significance to past cultures, not just for their nutritional value but also for diverse uses such as binding media, illuminants, sealers, lubricants, varnish, adhesives and ritual, medical and cosmetic purposes (Mills and White, 1977; Evershed *et al.*, 1997a).

Today, the high sensitivities of instrumental methods such as gas chromatography and mass spectrometry allow very small amounts of compounds to be detected and identified. Furthermore, higher sensitivity can be achieved using selected ion monitoring (SIM) methods for the detection of specific marine biomarkers (Evershed *et al.*, 2008; Cramp and Evershed, 2013). The advent of gas chromatography-combustion-isotope ratio mass spectrometry in the 1990s introduced the possibility of accessing stable isotope information from individual biomarker structures, opening a range of new avenues for the application of organic residue analysis in archaeology (Evershed *et al.*, 1994; 1997a).

This stable carbon isotope approach, using GC-C-IRMS, is employed to determine the $\delta^{13}C$ values of the principal fatty acids (C_{16} and C_{18}), ubiquitous in archaeological ceramics. Differences occur in the $\delta^{13}C$ values of these major fatty acids due to the differential routing of dietary carbon and fatty acids during the synthesis of adipose and dairy fats in ruminant animals, thus allowing ruminant milk fatty acids to be distinguished from carcass fats by calculating $\Delta^{13}C$ values ($\delta^{13}C_{18:0} - \delta^{13}C_{16:0}$) and plotting that against the $\delta^{13}C$ value of the $C_{16:0}$ fatty acid. Previous research has shown that by plotting $\Delta^{13}C$ values, variations in C_3 versus C_4 plant consumption are removed, thereby emphasizing biosynthetic and metabolic characteristics of the fat source (Dudd and Evershed, 1998; Copley *et al.*, 2003).

Parc Cybi, Holyhead

A programme of archaeological work was carried out at Parc Cybi, Holyhead (between 2006 and 2010) by Gwynedd Archaeological Trust for the Welsh Government. These excavations yielded features ranging from the Mesolithic to the 19th century. Significantly, a rectangular early Neolithic building, of national and international importance, was found on the site. This seems to have been aligned on the Trefignath Chambered tomb (nearby)

and had firepits dug through the demolished remains of the building. Other early Neolithic settlement, of a different character, was also present on site and extensive Neolithic activity appears to continue into the mid and later Neolithic (Kenney *et al.*, 2011).

The Early Neolithic rectangular timber building (PRN 31570) comprised a number of postholes, straight linear gullies, and internal and external pits and hearths that appear to represent the remains of a rectangular timber structure. A large number of finds were associated with the features, including black chert and flint lithics and early Neolithic ceramics. A relict soil layer was also recorded at the eastern end of the building which contained similar pottery and stone artefacts (Kenney *et al.*, 2011).

The largest concentration of early Neolithic activity beyond the timber building was in area E where activity was concentrated within a large hollow, comprising a relict soil, on a south-western facing slope. A considerable quantity of early Neolithic pottery, occasional, possibly later, sherds and flint artefacts were recovered during the excavation of the deposit. This area probably represents repeated short occupation events. (Kenney *et al.*, 2011). Significantly, although animal bones were recovered from Neolithic contexts, they were mostly fragmentary and poorly preserved, and generally not identifiable. Consequently, organic residue analysis provides a unique opportunity to investigate diet and subsistence practices, in particular, whether dairy farming was present in Early Neolithic Wales.

Aims and objectives

The objective of this investigation was to determine whether absorbed organic residues were preserved in Early Neolithic pottery from a selection of sherds from two contexts, namely a hollow with early Neolithic activity (Area E, *n*=15) and an Early Neolithic timber building (Area H, *n*=15). Two Bronze Age vessels from the cist burials in Area M were also analysed. These comprised a broken short-necked Beaker with large scale incised chevrons (PAR031: Find 4102 from Context 40187, Cist 7) and an intact small globular Bowl Food Vessel (PAR032: Find 2038 from Context 40132, Cist 3).

Materials and analytical methods

Lipid analysis and interpretations were performed using established protocols described in detail in earlier publications (Correa-Ascencio and Evershed, 2014). Briefly, ~2 g of potsherd were sampled and surfaces cleaned with a modelling drill to remove exogenous lipids. As the Bronze Age Bowl Food Vessel (PAR032) was intact, a different sampling strategy was applied where an area of the surface of the interior of the vessel was first cleaned using a modelling drill and then approximately 0.6 g of powdered sherd was removed through drilling. The cleaned sherd powder was crushed in a solvent-washed mortar and pestle and weighed into a furnaced culture tube (I). An internal standard was added (30/40 µg *n*-tetratriacontane; Sigma Aldrich Company Ltd) together with 5 ml of H_2SO_4/MeOH 2 - 4% (′ ^{13}C measured) and the culture tubes were placed on a heating block for 1 hour at 70 °C, mixing every 10 minutes. Once cooled, the methanolic acid was transferred to test tubes and centrifuged at 2500 rpm for 10 minutes. The supernatant was then decanted into another furnaced culture tube (II) and 2 ml of DCM extracted double distilled water was added. In order to recover any lipids not fully solubilised by the methanol solution, 2 x 3 ml of hexane was added to the extracted potsherds contained in the original culture tubes, mixed well and transferred to culture tube II. The extraction was transferred to a clean, furnaced 3.5 mm vial and blown down to dryness. Following this, 2 x 2 ml hexane was added directly to the H_2SO_4/ MeOH solution in culture tube II and whirlimixed to extract the remaining residues, then transferred to the 3.5mm vials and blown down until a full vial of hexane remained. Aliquots of the TLE's were derivatised using 20 µl BSTFA, excess BSTFA was removed under nitrogen and the derivatised TLE was dissolved in hexane prior to GC, GC-MS and GC-C-IRMS. Firstly, the samples underwent high-temperature gas chromatography using a gas chromatograph (GC) fitted with a high temperature non-polar column (DB1-HT; 100% dimethylpolysiloxane, 15 m x 0·32 mm i.d., 0.1 µm film thickness). The carrier gas was helium and the temperature programme comprised a 50°C isothermal followed by an increase to 350° at a rate of 10° min^{-1} followed by a 10 min isothermal. A procedural blank (no sample) was prepared and analysed alongside every batch of samples. Further compound identification was accomplished using gas chromatography-mass spectrometry (GC-MS). FAMEs were then introduced by autosampler onto a GC-MS fitted with a non-polar column (100% dimethyl polysiloxane stationary phase; 60 m x 0.25 mm i.d., 0·1 µm film thickness). The instrument was a ThermoFinnigan single quadrupole TraceMS run in EI mode (electron energy 70 eV, scan time of 0·6 s). Samples were run in full scan mode (*m/z* 50–650) and the temperature programme comprised an isothermal hold at 50° for 2 min, ramping to 300° at 10° min^{-1}, followed by an isothermal hold at 300° (15 min).

Carbon isotope analyses by GC-C-IRMS were also carried out using a GC Agilent Technologies 7890A coupled to an Isoprime 100 (EI, 70eV, three faraday cup collectors *m/z* 44, 45 and 46) via an IsoprimeGC5 combustion interface with a CuO and silver wool reactor maintained at 850°C.

Results

Neolithic Vessels

Thirty Early Neolithic sherds; 15 sherds from Area E and 15 from Area H. Lipid analysis and interpretations were performed using established protocols described in detail in earlier publications (e.g. Dudd and Evershed, 1998; Correa-Ascencio and Evershed, 2014). The lipid recovery rate for the Early Neolithic sherds was 60% in total, 53% for Area E and 67% for Area H (Table 1; *n*=30 sherds). It should be noted that a further 8 sherds did yield interpretable lipid distributions (making the actual recovery rate 87% overall), however, these were discarded as they contained modern contaminants.

The mean lipid concentration from the sherds (Table I.3.1.1) was 1.8 mg g^{-1}, with a maximum lipid concentration of 14.4 mg g^{-1}. A number of the potsherds contained high concentrations of lipids (e.g. PAR012, 3.9 mg g^{-1}, PAR014 1.7 mg g^{-1}, PAR021, 14.4 mg $g^{-1,}$ PAR022, 3.8 mg g^{-1} and PAR025, 1.9 mg g^{-1}), demonstrating excellent preservation. The maximum concentration of absorbed lipid observed in an archaeological potsherd to date is 17.8 mg g^{-1} (Copley *et al.*, 2005c). This likely indicates that these Parc Cybi vessels were subjected to sustained use in the processing of high lipid-yielding commodities. The lipid extracts comprised lipid profiles which demonstrated free fatty acids, palmitic (C_{16}) and stearic (C_{18}), typical of a degraded animal fat (Fig I.3.1.1), were the most abundant components (e.g. Evershed *et al.*, 1997a; Berstan *et al.*, 2008).

Extracts from all sherds, except PAR009 and PAR026, include a series of long-chain fatty acids (in low abundance), containing C_{20} to C_{26} acyl carbon atoms (Fig I.3.1.1). It is thought these LCFAs likely originate directly from animal fats, incorporated via routing from the ruminant animal's plant diet (Halmemies-Beauchet-Filleau *et al.*, 2013, 2014).

GC-C-IRMS analyses were carried out on the sherds (*n*=18; Table 1) to determine the ´ ^{13}C values of the major fatty acids, $C_{16:0}$ and $C_{18:0}$, and ascertain the source of the lipids extracted, through the use of the ” ^{13}C proxy. The ´ ^{13}C values of the $C_{16:0}$ and $C_{18:0}$ fatty acids from the lipid profiles are plotted onto a scatter plot along with the reference animal fat ellipses (Fig I.3.1.2a). It has been established that when an extract from a vessel plots directly within an ellipse, for example, ruminant dairy, ruminant adipose or non-ruminant adipose, then it can attributed to that particular source. If it plots just outside the ellipse then it can be described as predominantly of that particular origin. However, it should be noted that extracts commonly plot between reference animal fat ellipses and along the theoretical mixing curves, suggesting either the mixing of animal fats contemporaneously or during the lifetime of use of the vessel (Mukherjee, 2004; Mukherjee *et al.*, 2005).

Remarkably, in this instance, all the lipid residues plot within the dairy reference ellipse (Fig I.3.1.2a), suggesting these vessels were solely used to process dairy products. These data provide clear evidence for vessel specialisation, raising significant questions about the use of the site.

Ruminant dairy fats are differentiated from ruminant adipose fats when they display ” ^{13}C values of less than -3.1 ‰, known as the universal proxy (Dunne *et al.*, 2012; Salque, 2012). Significantly, lipid residues from the total of 18 vessels plot within the ruminant dairy region (Fig I.3.1.2b) confirming that these vessels were used to process secondary products, such as milk, butter and cheese.

Table I.3.1.1. Laboratory number, area, find number, context number, feature type, sherd type, lipid concentrations (µg g^{-1}), total lipid concentration in extract (µg), ´^{13}C and ”^{13}C values and attributions of Parc Cybi Early Neolithic and Bronze Age vessels (only sherds with interpretable results included).

Laboratory Number	Area	Find number	Context number	Feature type	Rim or body sherd	Lipid concentration (ug g^{-1})	Total lipid in extract (ug)	´$^{13}C_{16:0}$	´$^{13}C_{18:0}$	^{13}C	Attribution
PAR001	Area E	857	31097	Stakehole	Near rim	515.6	1170.5	-29.3	-34.0	-4.7	Dairy product
PAR004	Area E	5097	31570	Pit	Rim	1043.4	1408.6	-27.6	-33.5	-5.9	Dairy product
PAR008	Area E	5247	31025	Relict soil	Body	373.1	444.0	-28.4	-33.4	-5.0	Dairy product
PAR009	Area E	5259	31025	Relict soil	Body	81.1	188.1	-29.8	-34.5	-4.7	Dairy product
PAR012	Area E	5277	31025	Relict soil	Rim	3909.8	6646.7	-28.2	-33.9	-5.7	Dairy product
PAR013	Area E	5301	31025	Relict soil	Body	280.7	623.1	-28.6	-33.9	-5.3	Dairy product
PAR014	Area E	5308	31025	Relict soil	Body	1722.2	2480.0	-28.2	-33.8	-5.6	Dairy product
PAR015	Area E	5371	31596	Pit	Rim	199.1	474.2	-28.5	-33.3	-4.8	Dairy product
PAR017	Area H	1143	50045	Pit	Rim	186.5	378.7	-28.7	-32.8	-4.1	Dairy product
PAR018	Area H	1196.1	50110	Hearth	Body	760.2	1345.5	-28.4	-33.0	-4.7	Dairy product
PAR019	Area H	1377.1	50122	Hearth	Body	287.8	584.3	-28.0	-33.2	-5.3	Dairy product
PAR021	Area H	1380.13	50124	Hearth	Rim	14414.7	9946.1	-28.1	-33.9	-5.7	Dairy product
PAR022	Area H	1547.5	50171	Posthole	Rim	3774.5	5624.0	-27.9	-33.8	-6.0	Dairy product
PAR024	Area H	1663.2	50188	Posthole	Body	558.4	625.5	-28.0	-33.4	-5.3	Dairy product
PAR025	Area H	1721	50247	Posthole	Rim	1897.8	3378.1	-28.8	-33.8	-5.0	Dairy product
PAR026	Area H	1894.6	50295	Pit	Rim	12.2	26.0	-29.1	-33.5	-4.5	Dairy product
PAR027	Area H	2002	02100	Hearth	Body	686.5	837.2	-28.5	-32.9	-4.4	Dairy product
PAR029	Area H	3052.1	50083	Posthole	Rim	1208.9	2925.4	-28.1	-32.7	-4.6	Dairy product
PAR031	Cist burial	4102	40187	Cist burial	Rim	18.9	64.1	-27.9	-33.1	-5.1	Dairy product
PAR032	Cist burial	2038	40132	Cist burial	-	516.6	294.5	-28.2	-33.5	-5.3	Dairy product

Bronze Age vessels

Two Bronze Age vessels from the cist burials in Area M were also analysed. These comprised a broken short-necked Beaker with large scale incised chevrons (PAR031: Find 4102 from Context 40187, Cist 7) and an intact small globular Bowl Food Vessel (PAR032: Find 2038 from Context 40132, Cist 3). Lipids were recovered from both Bronze Age vessels (Fig I.3.1.3 shows the chromatogram for PAR032), although at much lower abundance in the partially broken Beaker vessel (PAR031, Table I.3.1.1). This might suggest the Beaker vessel was used minimally (possibly only once) before its deposition, whereas the Bowl Food vessel was likely used more frequently.

The lipid concentration of the sherds (Table I.3.1.1) was 0.02 and 0.52 mg g^{-1} for sherds PAR031 and PAR032, respectively. Both extracts comprised lipid profiles which demonstrated that the free fatty acids, palmitic (C_{16}) and stearic (C_{18}), typical of a degraded animal fat (Fig I.3.1.3), were the most abundant components (e.g. Evershed *et al.*, 1997a; Berstan *et al.*, 2008). Both sherds also displayed a series of long-chain fatty acids (in low abundance), containing C_{20} to C_{24} acyl carbon atoms (Fig I.3.1.3). As previously discussed, it is thought these long-chain fatty acids likely originate directly from animal fats, incorporated via routing from the ruminant animal's plant diet (Halmemies-Beauchet-Filleau *et al.*, 2013, 2014).

GC-C-IRMS analyses were carried out on the two Bronze Age vessels (Table I.3.1.1) and the $\delta^{13}C$ values of the $C_{16:0}$ and $C_{18:0}$ fatty acids from the lipid profiles are plotted onto a scatter plot along with the reference animal fat ellipses (Fig I.3.1.4a). Both plot within the dairy reference ellipse, suggesting they were solely used to process dairy products (Fig I.3.1.4a) and plot in the ruminant dairy region (Fig I.3.1.4b), confirming that they were used to process secondary products, such as milk, butter and cheese.

Conclusion

Neolithic vessels

The objective of this investigation was to determine whether organic residues were preserved in 30 Early Neolithic potsherds excavated from Areas E and H, Parc Cybi, Holyhead, Anglesey. Recovery rates were comparable, with 8 potsherds from Area E and 10 potsherds from Area H (Neolithic building) yielding interpretable lipid profiles. The results, determined from GC, GC-MS and GC-C-IRMS analyses, demonstrate that all 18 sherds from the assemblage were routinely used to solely process dairy products, such as milk, butter and cheese. These data provide clear evidence for vessel specialisation, raising significant questions about the use of the site. Remarkedly, although it is known that the exploitation of dairy products was an important part of the Early Neolithic 'package' in Britain and Ireland (e.g. Copley *et al.*, 2005; Cramp *et al.*, 2014; Smyth and Evershed, 2015), this is the first known instance where all vessels analysed from a site were found to contain solely dairy products.

The long axis of the house structure was aligned on the Trefignath Neolithic chambered tomb which stands approximately 100m to the NNE. Does this close relationship suggest a particular use for the house, perhaps as a meeting place where vessels were used to process dairy products for some special activity taking place at the tomb? It would be extremely interesting to compare these results with organic residue analysis of pottery from the Early Neolithic rectangular timber building found at Parc Bryn Cegin, Llandygai, near Bangor (Kenney, 2008), and, indeed, to the assemblage from Trefignath tomb itself.

Comparison to other British sites yields demonstrates the unique nature of this assemblage. For example, analysis of 438 potsherds from six Neolithic sites in Southern Britain (Windmill Hill, Hambledon Hill, Eton Rowing Lake, Abingdon Causewayed Enclosure, Yarnton Floodplain and Runnymede Bridge), yielded 189 potsherds containing sufficient concentrations of lipid for the $\delta^{13}C_{16:0}$ and $\delta^{13}C_{18:0}$ values to be determined (Copley *et al.*, 2005). Of these, up to 25% of the sherds (equivalent to 57% of the lipid-containing extracts) yielded evidence for the processing of dairy products. These sites include domestic and non-domestic contexts (causewayed enclosures) although only three are of an Early Neolithic origin (Hambledon Hill, Windmill Hill and Eton Rowing Lake). Regardless, it seems that generally higher abundances of dairy product processing are noted at domestic sites. Further evidence for the importance of dairying in the Early Neolithic comes from the Cotswold long barrow site at Ascott-under-Wychwood. The pottery assemblage was recovered from occupation deposits of 39th or early 38th century BC date, arguably pre-dating the building of the long barrow by at least 50 years (Benson and Whittle, 2007). Of the 32 vessels selected for residue analysis, 11 (34%) were found to contain absorbed lipid residues, reflecting a slightly lower recovery rate than at other British sites of the same age. Based on the $\delta^{13}C$ values, analysis showed that nine vessels predominantly contained ruminant dairy fats,

two contained ruminant carcass fats and one contained porcine fats. Significantly, 91% of the vessels had traces of dairy fats, the highest value so far recorded in any assemblage of early Neolithic date (Copley and Evershed, 2007). Interestingly, an overwhelming predominance of dairy products (80%) was associated with Neolithic pottery throughout the northeast archipelago of the British Isles (Cramp *et al.*, 2014) and from the island of Ireland (89%; Smyth and Evershed, 2015).

As noted, lipid residue analysis provides direct chemical evidence for commodities processed in ancient vessels and can be used as a proxy to determine the overall subsistence economies of past communities, particularly in light of the known scarcity of faunal evidence from Wales. These data suggest the exploitation of ruminants, cattle, sheep or goat, for their secondary products but not for their carcass products. There is no evidence of the exploitation of pigs but these may, of course, be processed in a different manner.

Bronze Age vessels

Two Bronze Age vessels (a Beaker and Bowl Food Vessel) from cist burials in Area M were also analysed. The results, determined from GC, GC-MS and GC-C-IRMS analyses, demonstrate that both vessels were used to solely process secondary products, such as milk, butter and cheese. However, the lipid recovery rate for the Beaker was much lower, possibly suggesting the Beaker vessel was used minimally (possibly only once) before its deposition in the burial, whereas the lipid concentration from the Bowl Food vessel was significantly higher. This implies this vessel was regularly in use for processing/cooking dairy products before its deposition in the cist burial.

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List of sherds submitted for analysis

Area E – hollow with early Neolithic activity

Find No.	Context no.	Rim or body sherd	Context description
857	31097	Near rim	Fill of stakehole [31096]
931	31025	body	Relict soil layer
5012	31527	rim	Disturbance in relict soil layer
5097	31570	rim	Fill of pit [31571]
5129	31025	rim	Relict soil layer

5141	31025	rim	Relict soil layer
5221	31025	neck near rim	Relict soil layer
5247	31025	body	Relict soil layer
5259	31025	body	Relict soil layer
5264	31025	body	Relict soil layer
5275	31025	body	Relict soil layer
5277	31025	rim	Relict soil layer
5301	31025	body	Relict soil layer
5308	31025	body	Relict soil layer
5371	31596	rim	Fill of pit [31595],

Area H – Early Neolithic timber building

Find No.	**Context no.**	**Rim or body sherd**	**Context description**
1025	02100	body	Charcoal deposit in top of pit [50044]
1143	50045	rim	Fill of pit [50044]
1196.10	50110	body	Fill of hearth pit [50116]
1377.1	50122	body	Fill of hearth pit [50116]
1379.13	50115	rim	Fill of hearth pit [50116]
1380.13	50124	rim	Fill of hearth pit [50133]
1547.5	50171	rim	Fill of posthole [50173]
1555	50163	rim	Fill of hearth pit [50145]
1663.2	50188	body	Fill of posthole [50196]
1721	50247	rim	Fill of posthole [50248]
1894.6	50295	rim	Fill of pit [50167]
2002	02100	body	Charcoal deposit in top of pit [50044]
2019	50132	body	Fill of hearth pit [50133]
3052.1	50083	rim	Fill of posthole [50084]
4098	02100	rim	Charcoal deposit in top of pit [50044]

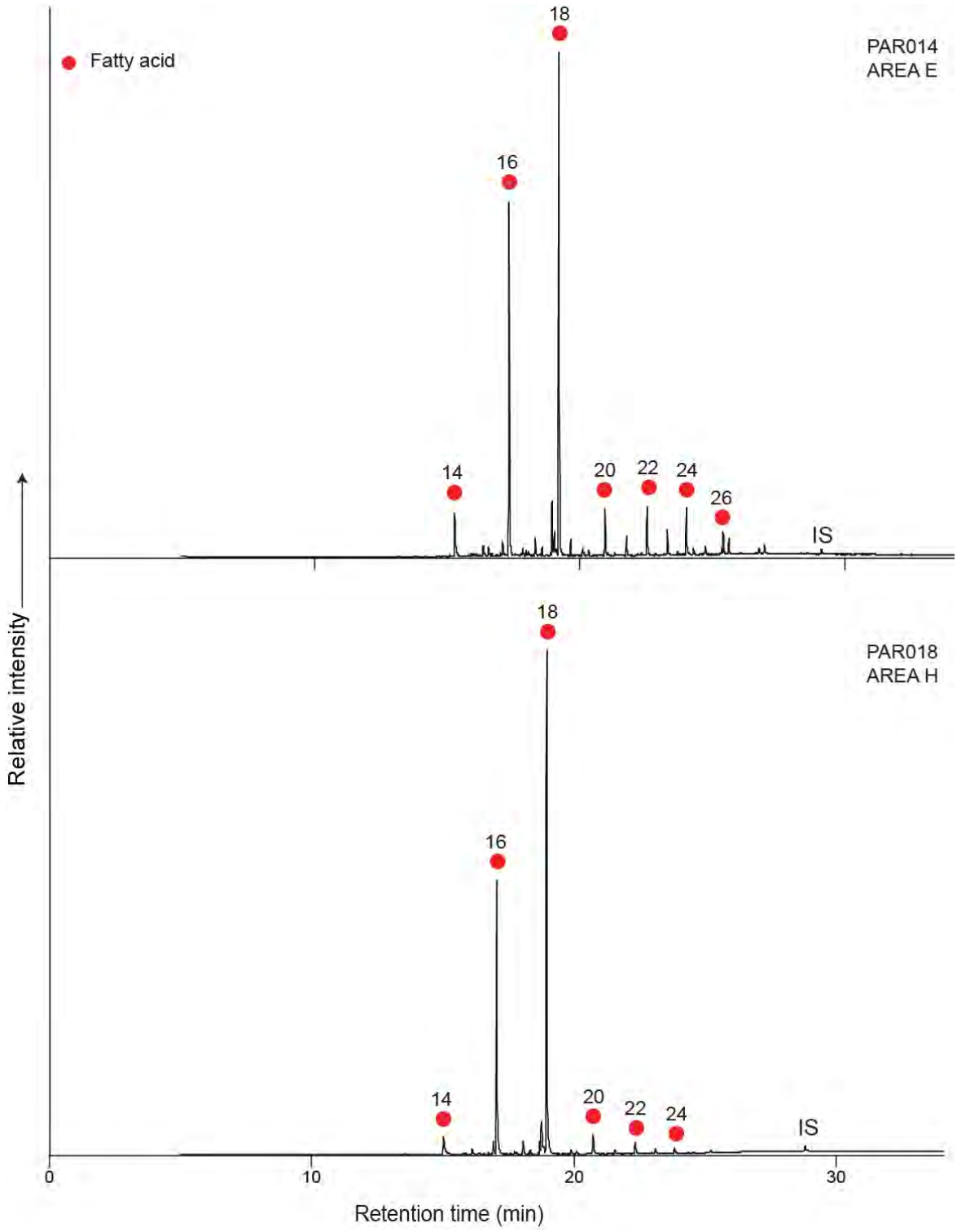

Fig I.3.1.1. Gas chromatogram of trimethylsilylated FAMEs from Neolithic pottery extracts of PAR014 (Context 31025, Area E) and PAR018 (Context 50110, Area H), respectively, circles, n-alkanoic acids (fatty acids, FA); IS, internal standard, C34 n-tetratriacontane.

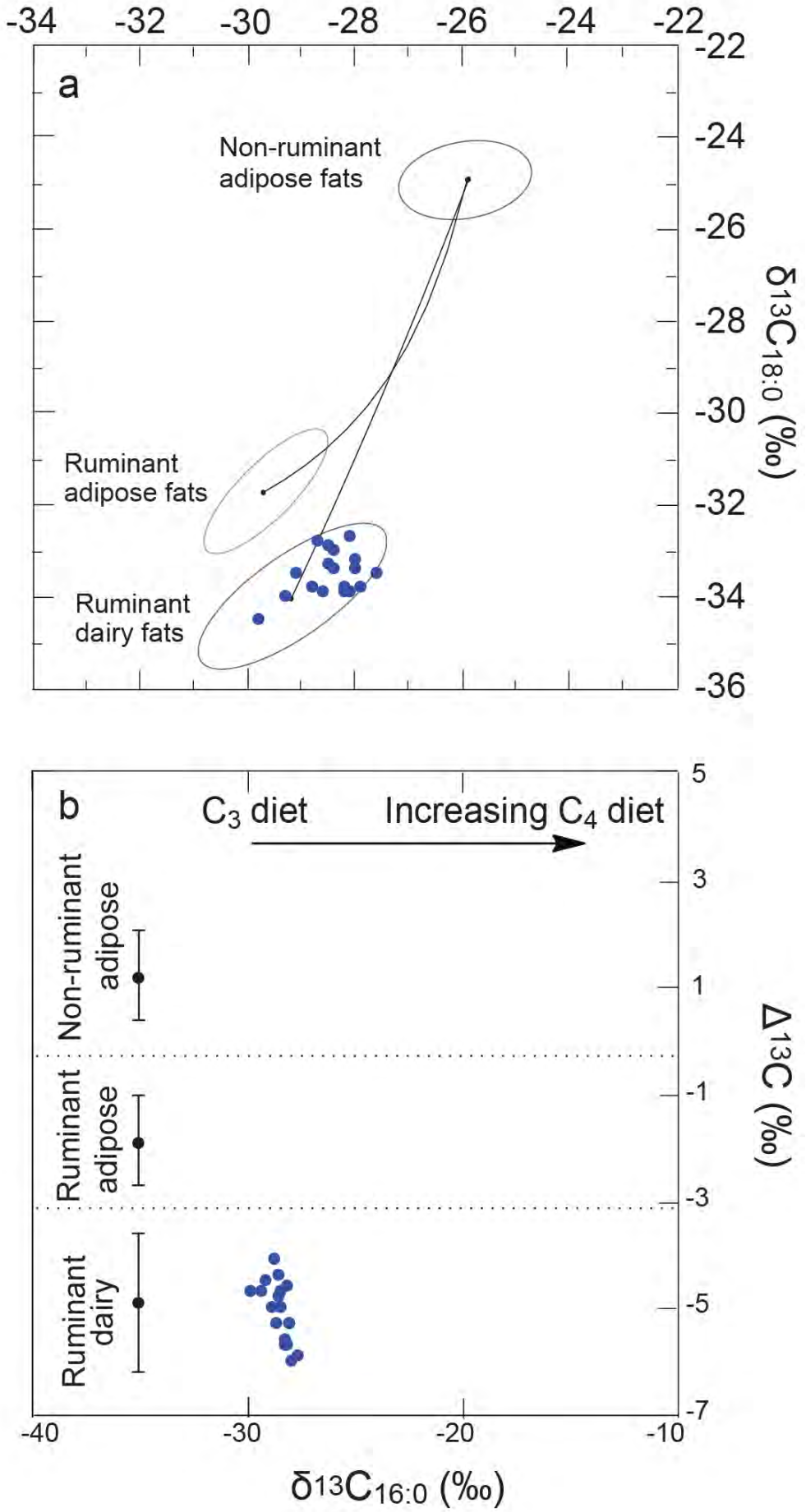

Fig I.3.1.2. Graphs showing: a. δ13C values for the C16:0 and C18:0 fatty acids for archaeological fats extracted from Parc Cybi Neolithic ceramics. The three fields correspond to the P = 0.684 confidence ellipses for animals raised on a strict C3 diet in Britain (Copley et al., 2003). Each data point represents an individual vessel. b shows the Δ13C (δ13C18:0 – δ13C16:0) values from the same potsherds. The ranges shown here represent the mean ± 1 s.d. of the Δ13C values for a global database comprising modern reference animal fats from Africa (Dunne et al., 2012), UK (animals raised on a pure C3 diet) (Dudd and Evershed, 1998), Kazakhstan (Outram et al., 2009), Switzerland (Spangenberg et al., 2006) and the Near East (Gregg et al., 2009), published elsewhere.

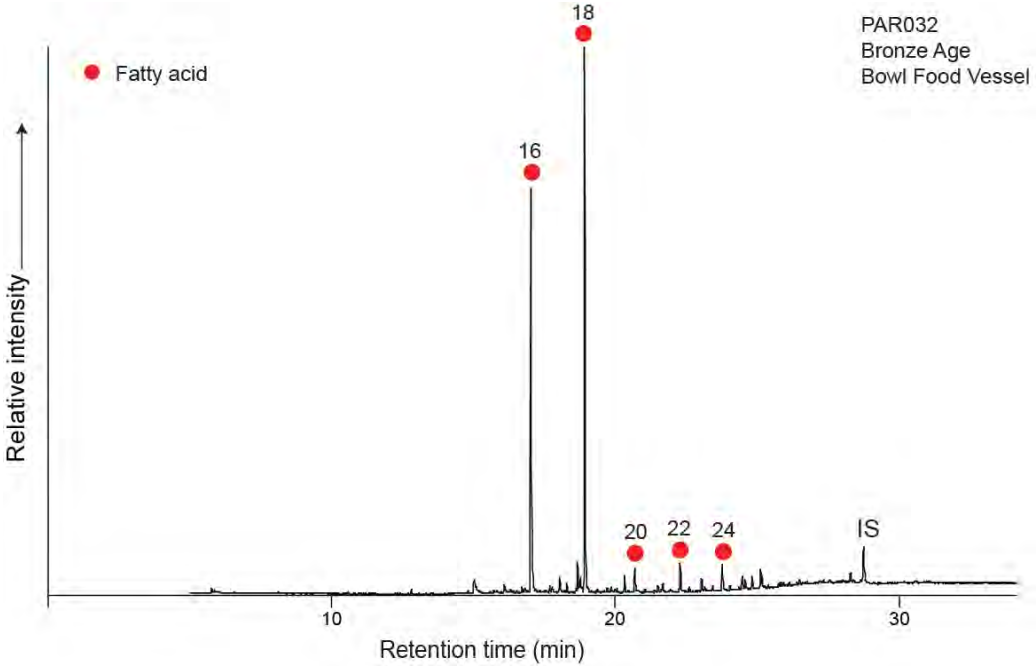

Fig I.3.1.3. Gas chromatogram of trimethylsilylated FAME from PAR032, Bronze Age Bowl Food vessel (Find 2038 from context 40132), respectively, circles, n-alkanoic acids (fatty acids, FA); IS, internal standard, C34 n-tetratriacontane.

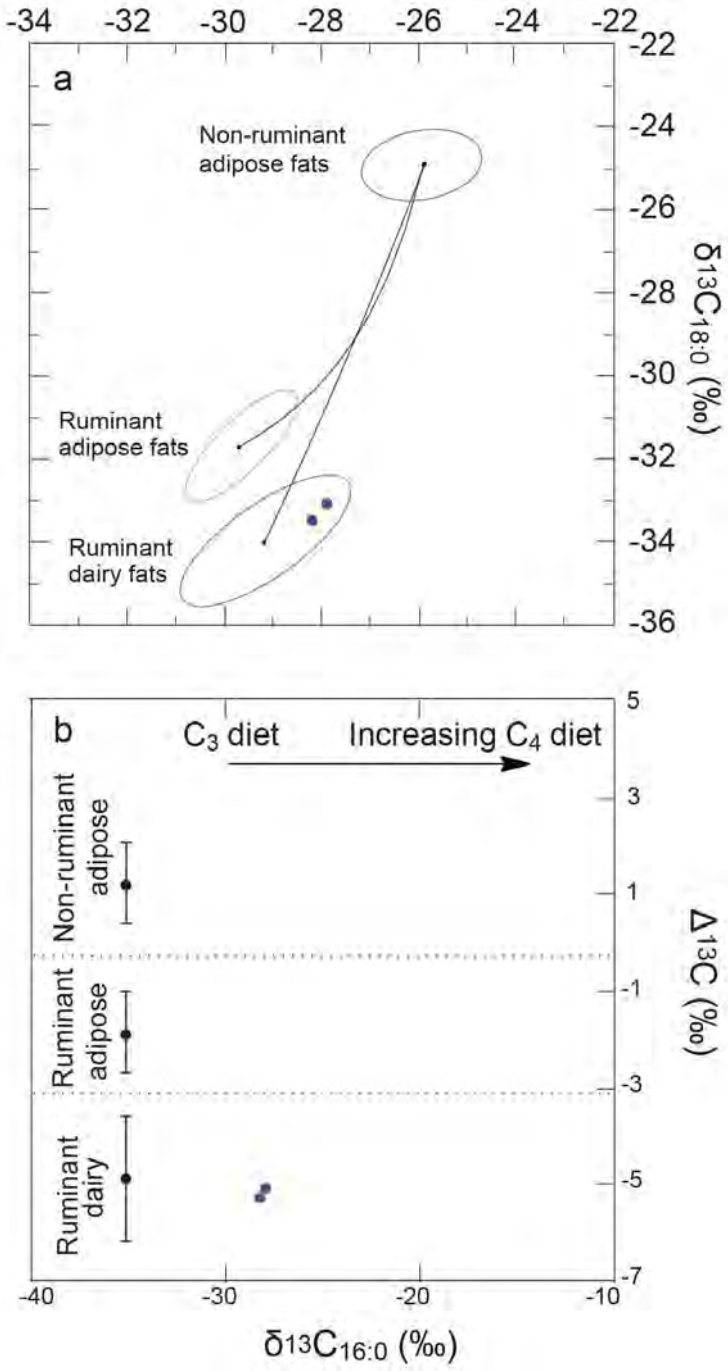

Fig I.3.1.4. Graphs showing: a. δ13C values for the C16:0 and C18:0 fatty acids for archaeological fats extracted from Parc Cybi Bronze Age ceramics. The three fields correspond to the P = 0.684 confidence ellipses for animals raised on a strict C3 diet in Britain (Copley et al., 2003). Each data point represents an individual vessel. b shows the Δ13C (δ13C18:0 – δ13C16:0) values from the same potsherds. The ranges shown here represent the mean ± 1 s.d. of the Δ13C values for a global database comprising modern reference animal fats from Africa (Dunne et al., 2012), UK (animals raised on a pure C3 diet) (Dudd and Evershed, 1998), Kazakhstan (Outram et al., 2009), Switzerland (Spangenberg et al., 2006) and the Near East (Gregg et al., 2009), published elsewhere.

Part I.3.2. Organic residue analysis of Early Neolithic pottery from Parc Bryn Cegin, Llandygai, near Bangor, Wales

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While post-excavation work was being done on Parc Cybi Drs Dunne and Evershed carried out organic residue analysis on pottery from the Early Neolithic Building found at Parc Bryn Cegin, Llandygai. The authors have kindly allowed that report to be included here as a comparison to the Parc Cybi organic residue analysis.

Introduction

Lipids, the organic solvent soluble components of living organisms, i.e. the fats, waxes and resins of the natural world, are the most frequently recovered compounds from archaeological contexts. They are resistant to decay and are likely to endure at their site of deposition, often for thousands of years, because of their inherent hydrophobicity, making them excellent candidates for use as biomarkers in archaeological research (Evershed, 1993).

Pottery has become one of the most extensively studied materials for organic residue analysis (Mukherjee *et al.*, 2005) as ceramics, once made, are virtually indestructible and thus are one of the most, if not the most, common artefacts recovered from archaeological sites from the Neolithic period onwards (Tite, 2008). Survival of these residues occurs in three ways; rarely, actual contents are preserved in situ (e.g. Charrié-Duhaut *et al.*, 2007) or, more commonly, as surface residues (Evershed, 2008). The last, most frequent occurrence, is that of absorbed residues preserved within the vessel wall, which have been found to survive in >80% of domestic cooking pottery assemblages worldwide (Evershed, 2008).

The application of modern analytical techniques enables the identification and characterisation of these sometimes highly degraded remnants of natural commodities used in antiquity (Evershed, 2008). Often, data obtained from the organic residue analysis of pottery or other organic material provides the only evidence for the processing of animal commodities, aquatic products or plant oils and waxes, particularly at sites exhibiting a paucity of environmental evidence. To date, the use of chemical analyses in the reconstruction of vessel use at sites worldwide has enabled the identification of terrestrial animal fats (Evershed *et al.*, 1997a; Mottram *et al.*, 1999), marine animal fats (Copley *et al.*, 2004; Craig *et al.*, 2007), plant waxes (Evershed *et al.*, 1991), beeswax (Evershed *et al.*, 1997b) and birch bark tar (Charters *et al.*, 1993; Urem-Kotsou *et al.*, 2002). This has increased our understanding of ancient diet and foodways and has provided insights into herding strategies and early agricultural practices. Organic residue analysis has also considerably enhanced our understanding of the technologies involved in the production, repair and use of ancient ceramics.

Preserved animal fats are by far the most commonly observed constituents of lipid residues recovered from archaeological ceramics. This demonstrates their considerable significance to past cultures, not just for their nutritional value but also for diverse uses such as binding media, illuminants, sealers, lubricants, varnish, adhesives and ritual, medical and cosmetic purposes (Mills and White, 1977; Evershed *et al.*, 1997a).

Today, the high sensitivities of instrumental methods such as gas chromatography and mass spectrometry allow very small amounts of compounds to be detected and identified. Furthermore, higher sensitivity can be achieved using selected ion monitoring (SIM) methods for the detection of specific marine biomarkers (Evershed *et al.*, 2008; Cramp and Evershed, 2013). The advent of gas chromatography-combustion-isotope ratio mass spectrometry in the 1990s introduced the possibility of accessing stable isotope information from individual biomarker structures, opening a range of new avenues for the application of organic residue analysis in archaeology (Evershed *et al.*, 1994; 1997a).

This stable carbon isotope approach, using GC-C-IRMS, is employed to determine the $\delta^{13}C$ values of the principal fatty acids (C_{16} and C_{18}), ubiquitous in archaeological ceramics. Differences occur in the $\delta^{13}C$ values of these major fatty acids due to the differential routing of dietary carbon and fatty acids during the synthesis of adipose and dairy fats in ruminant animals, thus allowing ruminant milk fatty acids to be distinguished from carcass fats by calculating $\Delta^{13}C$ values ($\delta^{13}C_{18:0} - \delta^{13}C_{16:0}$) and plotting that against the $\delta^{13}C$ value of the $C_{16:0}$ fatty acid. Previous research has shown that by plotting ^{13}C values, variations in C_3 versus C_4 plant consumption are removed, thereby emphasizing biosynthetic and metabolic characteristics of the fat source (Dudd and Evershed, 1998; Copley *et al.*, 2003).

Parc Bryn Cegin, Llandygai

In 2005, a programme of archaeological work was carried out at Parc Bryn Cegin, Llandygai, near Bangor, Wales, by Gwynedd Archaeological Trust. The most significant discovery at the site was the remains of an Early Neolithic rectangular timber building. It was well preserved with numerous related features and assemblages of artefacts and charred plant remains. This structure was radiocarbon dated to between 3760-3700 cal BC and 3670-3620 cal BC (Kenney, 2008). A number of Early Neolithic potsherds were found, mostly normal 'Irish Sea ware', which were generally small and abraded in condition.

Aims and objectives

The objective of this investigation was to determine whether absorbed organic residues were preserved in 12 Early Neolithic potsherds from Parc Bryn Cegin site.

Materials and analytical methods

Lipid analysis and interpretations were performed using established protocols described in detail in earlier publications (Correa-Ascencio and Evershed, 2014). Briefly, ~2 g of potsherd were sampled and surfaces cleaned with a modelling drill to remove exogenous lipids. The cleaned sherd powder was crushed in a solvent-washed mortar and pestle and weighed into a furnaced culture tube (I). An internal standard was added (30/40 µg *n*-tetratriacontane; Sigma Aldrich Company Ltd) together with 5 ml of H_2SO_4/MeOH 2 - 4% ($\delta^{13}C$ measured) and the culture tubes were placed on a heating block for 1 hour at 70 °C, mixing every 10 minutes. Once cooled, the methanolic acid was transferred to test tubes and centrifuged at 2500 rpm for 10 minutes. The supernatant was then decanted into another furnaced culture tube (II) and 2 ml of DCM extracted double distilled water was added. In order to recover any lipids not fully solubilised by the methanol solution, 2 x 3 ml of hexane was added to the extracted potsherds contained in the original culture tubes, mixed well and transferred to culture tube II. The extraction was transferred to a clean, furnaced 3.5 mm vial and blown down to dryness. Following this, 2 x 2 ml hexane was added directly to the H_2SO_4/ MeOH solution in culture tube II and whirlimixed to extract the remaining residues, then transferred to the 3.5mm vials and blown down until a full vial of hexane remained. Aliquots of the TLE's were derivatised using 20 µl BSTFA, excess BSTFA was removed under nitrogen and the derivatised TLE was dissolved in hexane prior to GC, GC-MS and GC-C-IRMS. Firstly, the samples underwent high-temperature gas chromatography using a gas chromatograph (GC) fitted with a high temperature non-polar column (DB1-HT; 100% dimethylpolysiloxane, 15 m x 0·32 mm i.d., 0.1 µm film thickness). The carrier gas was helium and the temperature programme comprised a 50°C isothermal followed by an increase to 350° at a rate of 10° min^{-1} followed by a 10 min isothermal. A procedural blank (no sample) was prepared and analysed alongside every batch of samples. Further compound identification was accomplished using gas chromatography-mass spectrometry (GC-MS). FAMEs were then introduced by autosampler onto a GC-MS fitted with a non-polar column (100% dimethyl polysiloxane stationary phase; 60 m x 0.25 mm i.d., 0·1 µm film thickness). The instrument was a ThermoFinnigan single quadrupole TraceMS run in EI mode (electron energy 70 eV, scan time of 0·6 s). Samples were run in full scan mode (*m/z* 50–650) and the temperature programme comprised an isothermal hold at 50° for 2 min, ramping to 300° at 10° min^{-1}, followed by an isothermal hold at 300° (15 min).

Carbon isotope analyses by GC-C-IRMS were also carried out using a GC Agilent Technologies 7890A coupled to an Isoprime 100 (EI, 70eV, three faraday cup collectors *m/z* 44, 45 and 46) via an IsoprimeGC5 combustion interface with a CuO and silver wool reactor maintained at 850°C.

Results

Lipid analysis and interpretations were performed using established protocols described in detail in earlier publications (e.g. Dudd and Evershed, 1998; Correa-Ascencio and Evershed, 2014). The lipid recovery rate for the Early Neolithic sherds was 50% (*n*=6).

The mean lipid concentration from the sherds (Table I.3.2.1) was 11.2 mg g^{-1}, with a maximum lipid concentration of 26.5 mg g^{-1}. All potsherds, save LLA010, contained high concentrations of lipids, particularly LLA001, 21.6 mg g^{-1} and LLA006 26.5 mg g^{-1}, demonstrating excellent preservation. The maximum concentration of absorbed lipid observed in an archaeological potsherd to date is 17.8 mg g^{-1} (Copley *et al.*, 2005). This likely indicates that these Parc Bryn Cegin vessels were subjected to sustained use in the processing of high lipid-yielding commodities. The lipid extracts comprised lipid profiles which demonstrated free fatty acids, palmitic (C_{16}) and stearic (C_{18}), typical of a degraded animal fat (Fig I.3.2.1), were the most abundant components (Evershed *et al.*, 1997a; Berstan *et al.*, 2008).

Extracts from all sherds include a series of long-chain fatty acids (in low abundance), containing C_{20} to C_{26} acyl carbon atoms (Fig I.3.2.1). It is thought these LCFAs likely originate directly from animal fats, incorporated via routing from the ruminant animal's plant diet (Halmemies-Beauchet-Filleau *et al.*, 2013, 2014).

GC-C-IRMS analyses were carried out on the sherds (*n*=6; Table I.3.2.1) to determine the ´ ^{13}C values of the major fatty acids, $C_{16:0}$ and $C_{18:0}$, and ascertain the source of the lipids extracted, through the use of the " ^{13}C proxy. The ´ ^{13}C values of the $C_{16:0}$ and $C_{18:0}$ fatty acids from the lipid profiles are plotted onto a scatter plot along with the reference animal fat ellipses (Fig I.3.2.2a). It has been established that when an extract from a vessel plots directly within an ellipse, for example, ruminant dairy, ruminant adipose or non-ruminant adipose, then it can attributed to that particular source. If it plots just outside the ellipse then it can be described as predominantly of that particular origin. However, it should be noted that extracts commonly plot between reference animal fat ellipses and along the theoretical mixing curves, suggesting either the mixing of animal fats contemporaneously or during the lifetime of use of the vessel (Mukherjee, 2004; Mukherjee *et al.*, 2005).

In this instance, four of the lipid residues plot within the dairy reference ellipse (Fig I.3.2.2a), suggesting these vessels were solely used to process dairy products. These data provide clear evidence for vessel specialisation. One vessel (LLA001) plots within the ruminant adipose ellipse, confirming it was used solely to process ruminant carcass products and a further vessel (LLA011) plots between the ruminant adipose and diary ellipses suggesting either the mixing of these animal products contemporaneously or during the lifetime of use of the vessel.

Ruminant dairy fats are differentiated from ruminant adipose fats when they display " ^{13}C values of less than -3.1 ‰, known as the universal proxy (Dunne *et al.*, 2012; Salque, 2012). Significantly, lipid residues from four vessels plot within the ruminant dairy region (Fig I.3.2.2b) confirming that these vessels were used to process secondary products, such as milk, butter and cheese. One vessel plots in the ruminant adipose area and the remaining vessel plots between the two regions.

Conclusion

The objective of this investigation was to determine whether organic residues were preserved in 12 Early Neolithic potsherds excavated from Parc Bryn Cegin, Llandygai, near Bangor, Wales. The recovery rate was 50 % with 6 potsherds yielding interpretable lipid profiles. The results, determined from GC, GC-MS and GC-C-IRMS analyses, demonstrate that four sherds from the assemblage were routinely used to solely process dairy products, such as milk, butter and cheese, providing clear evidence for vessel specialisation. A further vessel was used solely to process ruminant carcass products and another to process mixtures of carcass and dairy products.

It is difficult to make a full comparison between these data and the lipid residue results from Parc Cybi as this is a smaller dataset but there appears to be a notable difference. The Parc Cybi results were notable for the dominance of dairy product processing, whilst at Parc Bryn Cegin, although dairy products were clearly important, 2 of the 6 vessels were used to process ruminant carcass products. This may suggest the pottery was used for different purposes at both sites. Further analysis of a larger sample set would address this question.

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Table I.3.2.1
Laboratory number, find number, context number, cut number, sherd type, lipid concentrations (µg g^{-1}), total lipid concentration in extract (µg), ´ ^{13}C and " ^{13}C values and attributions of 6 Parc Bryn Cegin Early Neolithic vessels.

Laboratory Number	Find number	Context number	From cut number	Rim or body sherd	Lipid concentration (ug g^{-1})	Total lipid in extract (ug)	´ $^{13}C_{16:0}$	´ $^{13}C_{18:0}$	^{13}C	Attribution
LLA001	65	1216	1249	Body	21632.0	33313.3	-29.7	-32.2	-2.5	Ruminant adipose
LLA004	89	1512	-	Body	5573.4	11091.1	-28.3	-34.2	-5.9	Dairy product
LLA005	127	1683	1682	Body	3943.5	9503.8	-27.5	-33.2	-5.6	Dairy product
LLA006	134	1692	-	Body	26476.8	39980.0	-28.9	-34.3	-5.4	Dairy product
LLA010	1016	1340	1339	Body	628.3	653.4	-29.5	-33.3	-3.8	Dairy product
LLA011	1018	1216	1249	Body	8774.6	6230.0	-29.2	-32.5	-3.3	Ruminant adipose/dairy product

List of sherds submitted for analysis

Find number	Context No	From cut number	Description of feature
65	1216	1249	Pit located near SE corner of early Neolithic building.
71	1327	1328	Pit located just outside line of E gable end of early Neolithic building.
77	1389	1406	Posthole, one of the main aisle posts of early Neolithic building.
89	1512	-	Layer-Discontinuous patches of deposit, probably caused by animal burrowing, but the deposit itself probably originated from a Neolithic layer or land surface.
127	1683	1682	Posthole, NW corner post of the early Neolithic building.
134	1692	-	Animal burrow- Small curvilinear feature, possibly due to animal or root disturbance. Located just W of early Neolithic building.
143	1713	1669	Natural hollow preserving Neolithic occupation layer or old ground surface.
151	1709	1691	From post removal event [1707], within posthole [1691], one of the main W gable end posts in the E Neo building.
172	1731	1691	From post removal event [1707], within posthole [1691], one of the main W gable end posts in the E Neo building.
1016	1340	1339	A small pit or posthole inside E end of the early Neolithic building.
1018	1216	1249	Pit located near SE corner of early Neolithic building.
1030	1631	1619	A large pit to W of Early Neolithic building, containing a burnt and broken stone axe.

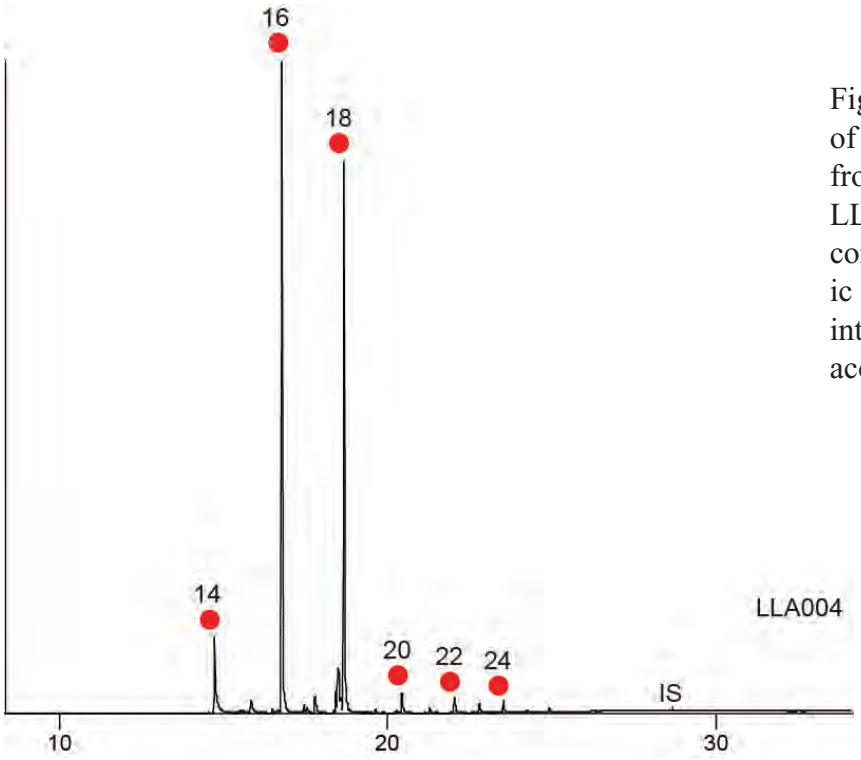


Fig I.3.2.1. Gas chromatogram of trimethylsilylated FAMEs from Neolithic pottery extract LLA004 (find number 89, context 1512), circles, n-alkanoic acids (fatty acids, FA); IS, internal standard, C34 n-tetratriacontane.

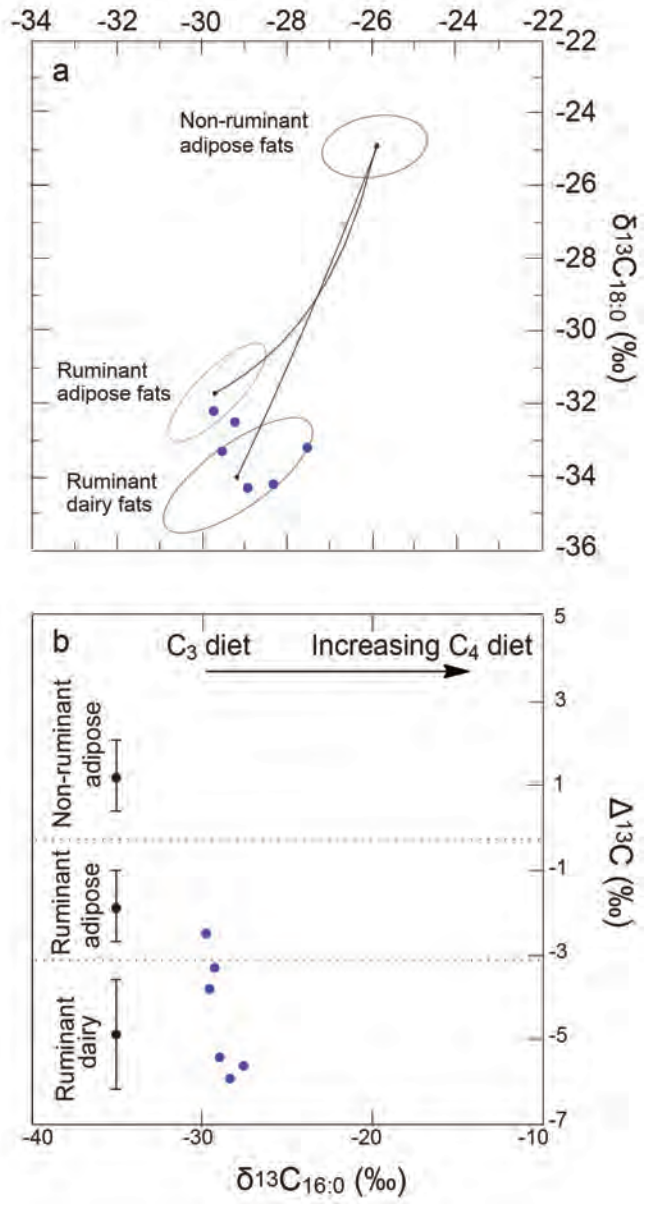


Fig I.3.2.2. Graphs showing: a. δ13C values for the C16:0 and C18:0 fatty acids for archaeological fats extracted from Parc Bryn Cegin Early Neolithic ceramics. The three fields correspond to the P = 0.684 confidence ellipses for animals raised on a strict C3 diet in Britain (Copley et al., 2003). Each data point represents an individual vessel. b shows the Δ13C (δ13C18:0 – δ13C16:0) values from the same potsherds. The ranges shown here represent the mean ± 1 s.d. of the Δ13C values for a global database comprising modern reference animal fats from Africa (Dunne et al., 2012), UK (animals raised on a pure C3 diet) (Dudd and Evershed, 1998), Kazakhstan (Outram et al., 2009), Switzerland (Spangenberg et al., 2006) and the Near East (Gregg et al., 2009), published elsewhere.

Part II: Roman pottery

Peter Webster

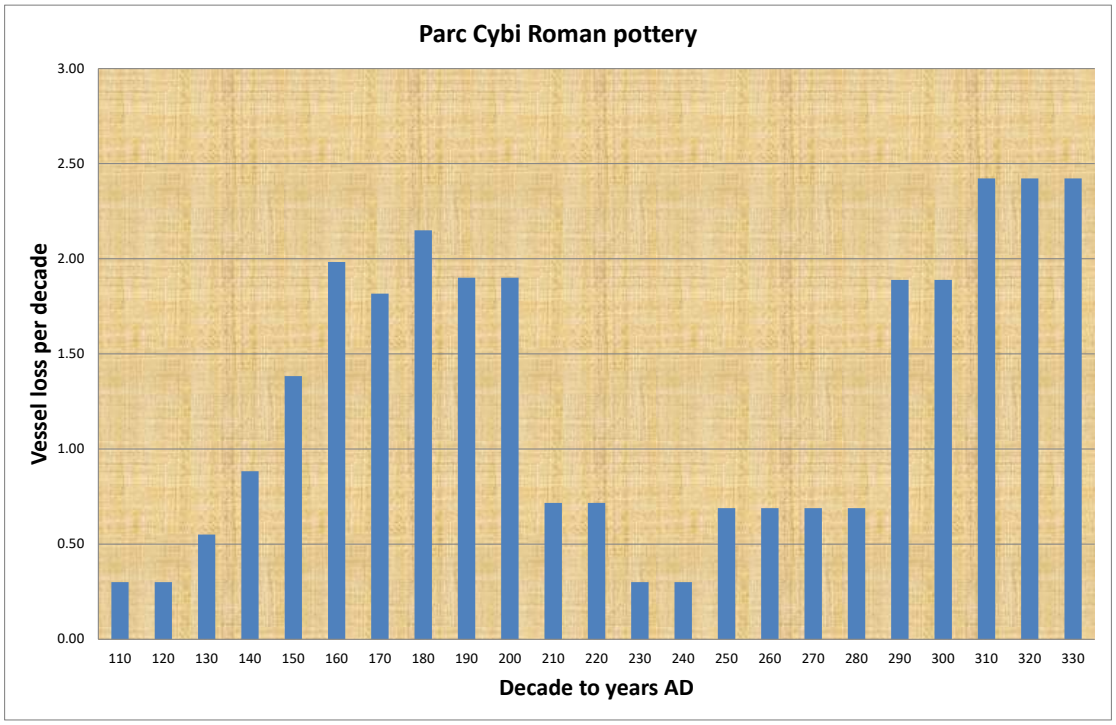
Introduction

A large number of contexts produced some Roman pottery but, in all cases, sherds were small and most contexts only produced one or two fragments. Soil conditions rendered some fabrics, especially samian, soft and easily abraded meaning that surfaces were often missing or damaged. All sherds have been recorded in the catalogue below. See Fig II.1.

Discussion

The material from Parc Cybi is spread both in terms of context and date. Chronologically, only a limited number of vessels (29) are capable of reasonably precise dating within the Roman period. No sherds need be first century and South Gaulish samian (imported up to c.A.D.110) is totally absent. There is, however, both samian and Black Burnished Ware of second century date. There is pottery likely to be of the third century and the Black Burnished Ware series certainly runs into the fourth century, although there are more of late third-fourth century date than simply fourth century. There are none of the characteristic flanged and ridged bowls (Gillam 1976, nos.45-9) but this may be due to the unusual character of the major late assemblage (see below) in which jars predominate. There is, however, also a bowl which appears to derive from the Crambeck potteries and is unlikely to predate the fourth century. On this basis, it may be suggested that activity continued at least into the early or early/mid fourth century.

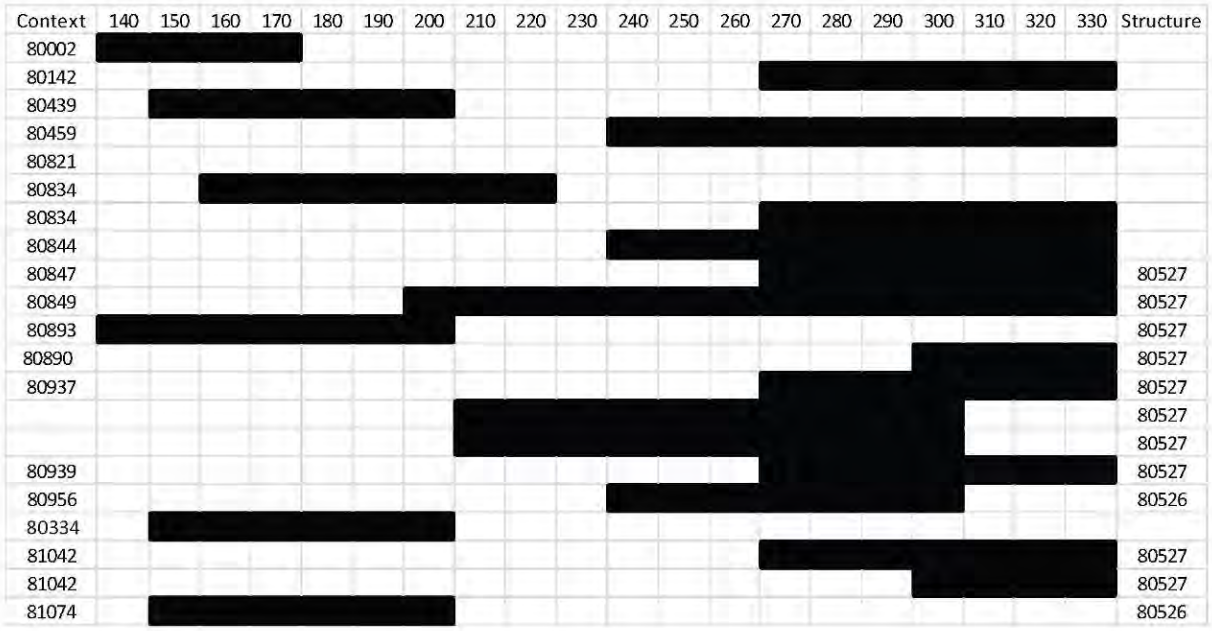
Any attempt to indicate the intensity of occupation must be very tentative, given the small number of closely datable pieces. If, however, we present the 29 pieces in histogram form, within the second to early-mid fourth century span suggested, we see that there is some degree of polarisation towards the two ends of the period covered:



In is clearly unwise to place too much weight on such a small sample but the predominance of mid to late second century and late 3rd to early/mid 4th century pieces is of interest and does suggest that these are the periods which saw most activity although some qualification needs to be born in mind in connection with the second century activity (see below).

If the sample size for an overview of this large site is a small one, then that for any specific feature or area is inevitably even smaller. Nevertheless, it is worth pointing out that the majority of the Roman pottery came from

a complex of features in an area around the end of the trackway which traverses the site. This includes the square stone building (80526) and the clay-walled roundhouse (80527) with its associated industrial activity. Here, the majority of the ceramic finds are Black-burnished ware with such a preponderance of 3rd-4th century jars as to be unusual. Normally one would expect more bowls and dishes and a rather limited cuisine or some specialized use seems to be implied. Given the limited range of vessels, and a very small number of rims, a precise chronology is difficult as it is the rim form of Black-burnished jars which is the most diagnostic. However, the lattice decoration around the girth of BB1 jars shows a progression from that with an acute angle at the top and bottom of the diamonds, to obtuse angles often below a horizontal line and this can be used to give a broad outline of the date. The precise chronology of this progression of lattice form is difficult, not least because the lattice was drawn freehand and angles can vary around the same pot. Gillam suggests that the obtuse angled lattice appears by the mid 3rd century (Gillam 1976, 63 and Fig.1, 7-8) with the horizontal line becoming popular by the mid to late 3rd century (*ibid.* Fig.1, 9). Bidwell and Holbrook argue for slightly earlier dates of introduction (1991, 96) but Gillam is more concerned with the date when these designs became common and, if this is taken into account, the Bidwell/Holbrook dates are not at such variance to those of Gillam as they would suggest. Here it is assumed that obtuse angled lattice below a horizontal line was present by the end of the third quarter of the third century. Using this and the early/mid fourth century terminus of occupation suggested above, we can produce the following pattern of currency for the more diagnostic vessel sherds (in all fabrics) found in and around structure 80527:



The preponderance of vessels clearly date between the mid third and the early-mid 4th century but also obvious is the number of second century pieces. All of these are, in fact, Central or East Gaulish samian ware (sherds from 80002, 80439, 80834, 80893, and 81074). This is the only fineware from the area, apart from a single sherd of probable Oxfordshire red colour coated mortarium (from 80844) and a possible flagon (from 80459). A flanged bowl, also from 80844 is probably early second century and residual, while a small Black-burnished ware sherd also from 80844 may have acute lattice and be 2nd century. Both are omitted from the chart above.

The samian poses a problem. In common with the other three pieces from elsewhere on the site it is restricted to two bowl forms, 31 and the decorated 37. It may simply be indicative of Antonine occupation nearby, apparently of a very different character to that of the 80527 occupation. However, in this case, one would have expected to see more certainly second century coarseware present. Could it be that these are antique and perhaps second-hand vessels still in use in the mid-late third century (cf.Wild 2013 for the repair and recycling of samian) and another indicator of the unusual character of the pottery in this area?

Sources of Roman pottery

A review of sources for pottery must be similarly tentative, even if we can here increase the numbers reviewed (to approximately 48) by including a number of body sherds. These are shown below, starting with sources most distant from the site and ending with the more local.

Source	*Minimum number of vessels*
Samian: Central Gaulish	8
East Gaulish	1
Oxford (colour coats)	3
?Crambeck	1
Mancetter-Hartshill	1
Cheshire	1
Wroxeter (Mortarium)	1
Dorset (Black Burnished)	20
Misc. Reduced	4
Misc oxidised	7
Total	**47**

Among the Roman material, the predominance of Black Burnished Ware, the quintessential cooking ware, is evident (20 vessels or over 42%) . If one takes the site as a whole, fine wares are present and in not unreasonable quantities (9 samian and 3 Oxford vessels or over 25%). This does not appear to be the product of purely subsistence farming. Neither, however, does it suggest the activity of the comparatively wealthy, although one might note that the amount of samian normally found on rural sites is low. Our 9 bowls (about 19% of all vessels) might indicate the location nearby of something other than a rural farm although another possibility is suggested above. Certainly, if we exclude the samian, fineware is noticeably scarce.

In terms of trading connections, the collection is not unexpected for the region from which it came. The far reaching nature of Roman trade is evident as is the way in which North Wales drew from both northern and southern Britain in the later Roman period. One may, however, note the total absence of amphora, while comparison with the sources supplying Segontium (Casey, Davies & Evans 1993, 252-3) shows how selective the Parc Cybi residents were in their choice of available pottery.

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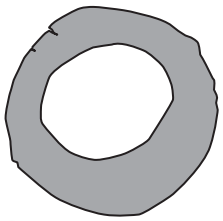
1629

samian ware

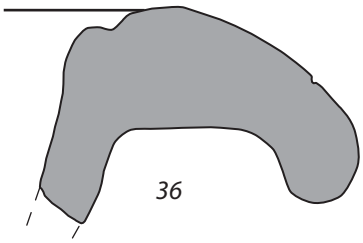
6045

sketch of dolphin design



0 50mm

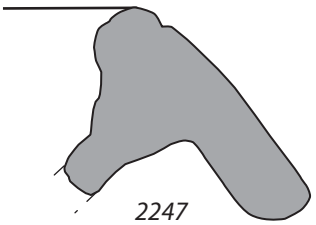
949



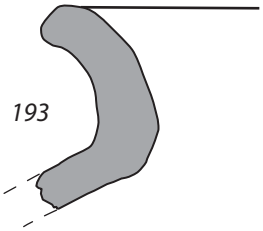
36

mortaria: top of rim

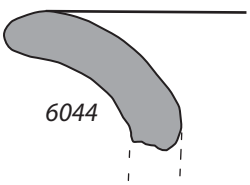
Fig II.1: Roman pottery from Parc Cybi



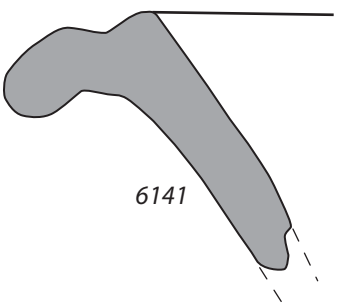
2247



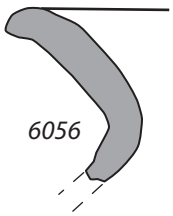
193



6044



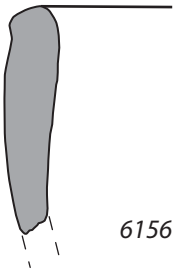
6141



6056

rims of Black Burnished ware

0 50mm



6156

Catalogue of decorated and other significant pieces

Fig II.1

Vessels are listed in ascending order of context number

Context

12004 (SF 36). Mortarium in light orange-red fabric shading to a grey core and with signs of a paler surface. The fabric includes fine quartz-like grits. This is Wroxeter Oxidised Ware (cf. Tomber & Dore 1998, 178), similar to the Wroxeter 'Raetian' mortaria but without the red slip; cf. Casey & Davies 1993, Fig.17.31, 18 for a similar example from NE Wales. Mid 2nd century.

31291 (SF 949). Flagon neck in a light red to grey somewhat sandy fabric. There is a red slip on the lower neck. Above a cordon, the extant surface is scored, probably as keying for a projection of handle. The most likely reconstruction is as a flanged flagon, a common mid 3rd to 4th century type (cf. Young 1977, C8-10).

80002 (SF 1629). Form 37, Central Gaulish. A fragment of winding scroll shows the vine leaf, Rogers 1974, H13 used by Sissus II and Cinnamus; cf. S&S, Pl.77, 1, Pl.161, 53. Two small details beneath the leaf are too abraded to determine.
c.A.D.140-170.

80142 (SF 6156). Straight sided dish in grey fabric with a smoothed surface, Possibly a Crambeck product as Corder 1928, Pl.3, 50 and thus 4th century.

80821 (SF 6044). The flaring rim of a jar in Black Burnished Ware; cf. Gillam 1976, types 12-14. Fourth century.

80900 (SF 6056). Jar rim in Black Burnished Ware of the same general type as that from 80821 above. 4th century.

80956 (SF 6141). Flanged and grooved bowl in Black Burnished Ware; Gillam 1976, type 44. Mid-late 3rd century.

90300 (SF 193). Rim of a jar in Black Burnished Ware with wavy line decoration; cf. Gillam 1976, type 3. Mid-late 2nd century.

70000 (Unstratified) (SF 6045). Samian, Form 37, Central Gaulish. A fragment of panel decoration shows a double medallion containing the dolphin, O.2382. The extant panel border is roped. The dolphin is used by a large number of mainly Antonine potters. Of the potters using both the dolphin and roped borders, Iullinus and Paternus II are the most probable.
Antonine.

Roman pottery from the initial evaluations (initial report by Jeremy Evans).

Context

1303 SF 2247
Site 42, Trench B13
A Mancetter-Hartshill mortarium rim sherd with slightly defined bead and straight flange; cf. Cracknell & Mahany 1994, Fig.63, 24 (late 2nd to early 3rd century).
Three oxidised mortarium body sherds and a broken and battered rim sherd. The latter would seem to be from a straight flanged type, perhaps a Raetian form. The fabric is oxidised with common sand temper, c.0.3-0.5mm in a clean matrix; the tiruration grits are translucent quartz, micaceous sandstone and brown stone c.2-3mm. Probably Wilderpool. 2nd century, possibly Antonine.

1315 SF 2248
Site 42 Trench B13
A broken fragment from a large crucible with a reduced core and oxidised exterior with some angular white quartz inclusions (up to 2mm) and occasional angular stone inclusions (up to 5mm), in the soft oxidised clay on the exterior. The crucible is heavily burnt from the interior, the reduced crucible being sintered with many bubbles. The soft oxidised exterior may well be clay over-plastering used on the last occasion that the reduced crucible was used.

2601 SF 2249
Site 39 Trench A26
A jar rim fragment in grey fabric, probably burnt and eroded Black Burnished Ware, cf. Gillam 1976, no.4 (late 2nd century). The fabric has a grey core, margins and surfaces with common to abundant temper.

2601 SF 2250
Site 39 Trench A26
Samian bowl, Form 37, Central Gaulish. Two adjoining sherds in poor condition, displaying a fragment of Rogers 1974, ovolo B263 above a horizontal bead row (his A2) as used by Cettus. This potter was working at Les Martres-de-Veyre in the period c.A.D.135-160.

Table II.1: Full Catalogue of Roman Pottery

SF No.	Context	Comment	Date
12	90002	Pink-buff wheel-thrown base. There is a trace of what may be glaze in an external interstice. Probably Medieval	?Medieval
22	02064	Dark grey wheel thrown jar	Roman
25	02064	Folded rim in hard fabric. Probably a modern flowerpot.	Modern
36	12004	Mortarium rim in orange with traces of a brown surface. Wroxeter. See report.	Mid 2nd century
56	90002	Handle in orange gritten fabric. There appears to be a black coating on the upper surface. Probably Post-Medieval.	Post-Med.
130	90299	Fired clay. No distinguishing characteristics for pottery.	
193	90300	4 fragments of Black burnished ware including a rim with wavy line decoration; Gillam 1976, 3.	Mid-late 2nd cent.
194	90300	Two fragments in a mixed red and cream. Possibly Buckley.	Post-Med.
406	90000	Prob. Coarse pottery. Probably not Roman	
408	91343	Thin-walled jar in light buff/brown.	Roman
520	91578	Grey with red ext. surface	?Roman
704	91158	Fired clay. ?burnt daub.	
706	91497	Fired clay. No distinguishing characteristics for pottery.	
949	31291	Flagon neck in light red to grey somewhat sandy fabric. There is a red slip on the lower neck. Above the cordon the surface is scored probably a keying for a projection and/or handle. The most likely reconstruction is a flanged flagon, a common mid 3rd 4th century type (Eg.Young 1977, C8-10)	Mid 3rd - 4th cent
1034	02070	Samian, probably Central Gaulish. Form 31	c.150-200
1093	21102	Rim of a large North Devon Gravel Tempered pan.	18th-early 19th c.
1331	13012	Coarse grey and red sherd	?Roman
1369	22139	Fired clay. No distinguishing characteristics for pottery.	
1629	80002	Samian. Form 37, Central Gaulish. See Report	c.140-170
2050	91738	small red fragment	?Roman
2247	1303	Mancetter mortarium and mortarium fragments, probably Wilderspool	LC2-EC3
2247	1303	Mortarium fragments, probably Wilderspool	2nd century
2248	1315	Crucible fragment	Roman?
2249	2601	Context unstratified. Eroded BB	Late 2nd cent
2250	2601	Samian, LMdV, probably Cettus. See report	c.135-160 AD
2251	5422	Oxidised bowl	?Medieval
4222	91654	Fired clay. No distinguishing characteristics for pottery.	
5519	80439	Pale buff gritty rim. Probably N.Devon Gravel Tempered Ware	Roman
5520	80439	A very degraded samian bowl, probably Central Gaulish. There are	c.AD 150-

SF No.	Context	Comment	Date
		fragments of a rim suggesting that this was of Form 31	200
5701	80459	Sherd in bright orange with traces of a smooth orange surface Possibly Oxford colour coat.	?mid 3rd - 4th c.
6007	80834	Samian bowl sherd, probably Central Gaulish	2nd cent.
6008	80834	Samian bowl, East Gaulish. Probably form 31 or similar	c.AD 160-220.
6009	80834	Black burnished jar fragment	2nd-4th cent.
6010	80834	Black burnished jar fragment	2nd-4th cent.
6011	80844	Flanged bowl in orange fabric with a grey surface.	1st-2nd cent.
6015	80844	Black burnished sherds & crumbs. Possible acute lattice	?2nd cent.
6016	80844	very degraded sherd with quartz-like grits embedded on one face. Probably an Oxford mortarium	Mid 3rd - late 4th
6020	80833	?jar in orange with grey surface.	Roman
6025	80833	Black burnished jar broken at the neck	2nd-4th cent.
6026	80847	Black burnished jar fragment.	Prob. LC3-4cent.
6030	80849	Fragment from near the base of a Black burnished ware jar 3 fragments	Prob. 3rd-4th cent
6040	80834	?jar in orange fabric	Roman
6041	80834	Black burnished ware jar wall with obtuse angled lattice.	Late 3rd- 4th cent
6044	80821	Black burnished jar rim. Gillam 1976, 12-14. very flared.	4th cent.
6045	70000	Samian. Form 37, Central Gaulish. See Report	140-180
6053	80884	Orange ?jar with grey surface.	Roman
6055	80870	Pale pink/buff wall sherd from a jar or flagon	Roman
6056	80900	Black burnished ware jar rim; Gillam 1976, 12-14.	4th cent.
6057	80900	Jar base in black fabric with plentiful quartz-like grits. Probably a Black burnished ware derivative.	
6058	80900	Redware	?Modern
6059	80893	Samian, probably Central Gaulish. Form 37 rim.	2nd cent.
6062	80901	Redware ?bowl rim	?Roman
6063	80899	Black burnished jar fragment	2nd-4th cent.
6072	80879	Redware jar. 4 sherds	Roman
6128	80821	Grey and burnished jar	Roman
6131	80937	Heavily sooted Black burnished jar. Lattice appears to be right angled.	Prob. 3rd cent.
6141	80956	Flanged and grooved bowl in Black burnished ware; Gillam 1976, 44.	Mid-late 3rd cent.
6145	80939	2 Black-burnished ware jar sherds.	Prob. 3rd-4th cent
6146	80939	Black burnished jar sherd with iron rivets. Cf.81042.	Prob. 3rd-4th cent
6147	80937	Black burnished ware jar with lattice just on the obtuse side of right angled.	Prob. 3rd cent.
6151	80849	Black burnished ware jar. Iron acretion, possibly a rivet.	Roman
6152	80849	Black burnished jar fragments	2nd-4th cent.
6155	81042	6 Black burnished ware jar sherds including obtuse angled lattice decoration below a horizontal line.	Late 3rd - 4th cent
6156	81042	Straight sided dish in grey with smoothed surface but no decoration. Possibly a Crambeck product; cf. Corder 1928, Pl.3, 50	4th cent.
6157	81042	Black burnished jar sherd with an obtuse angled lattice. There is an iron rivet. Cf.80939	Late 3rd- 4th cent
6159	81043	Black burnished ware jar sherd	2nd-4th cent.
6161	80937	Sooted/burnt Black burnished ware jar with obtuse angled lattice	Late 3rd- 4th cent
6164	80526	Smooth grey bowl base.	Roman?

SF No.	Context	Comment	Date
6165	81074	Samian bowl, form 31. Degraded but probably Central Gaulish.	c.A.D.150-200
6168	81042	Black burnished ware jar fragment with faint lattice decoration probably obtuse angled. 3 fragments	Late 3rd- 4th cent
6169	81042	Dark grey sherd with raised line	Roman
6170	80849	Dark grey fabric, probably Black burnished ware	2nd-4th cent.
6174	81100	9 fragments of Black burnished jar. Lattice slightly obtuse	Prob.3rd cent.
6178	81171	Probably burnt daub with stone inclusion	
6188	80936	Jar, probably Black burnished. Heavily sooted.	2nd-4th cent.
6248	80978	Rounded burnt clay, probably daub	
6249	81234	Probably burnt daub with stone inclusion	
6260	80978	Probably burnt daub with stone inclusion	
6351	81223	Straight sided dish in Black burnished ware. No clear dec.	2nd-4th cent.
6385	70537	Black burnished jar with acute angled lattice	2nd cent.
6399	70000	BB. Open lattice.	Prob. 3rd cent.
6407	70537	Redware	Roman
6408	70537	Black burnished dish	?2nd century
6449	81042	Small Black Burnished Ware fragment	2nd to 4th cent.
6457	81100	Greyware	Roman

Part III: medieval and post medieval ceramics, clay pipes and glass

Jonathan Goodwin

Summary

Stoke-on-Trent Archaeology undertook the assessment of an assemblage of ceramics, clay pipes and glass excavated from Parc Cybi, Holyhead. The finds were divided into context groups and material types, and quantified by means of a sherd/fragment count. Most of the finds are post-medieval in date (principally late 17th-late 19th century), although a small quantity of earlier material, including a handful of medieval pottery sherds, are also present amongst the assemblage.

The material is of limited potential for further analysis. The assemblage comprises material derived from a large number of contexts, none of which are individually substantial enough to offer any conclusive evidence of the consumption of ceramics and other artefacts within the area during the late medieval and post-medieval periods. At least in terms of the ceramic material, the assemblage offers few surprises. The small number of medieval wares are probably indicative of sources relatively local to the area, whereas the post-medieval material, particularly the 18th- and 19th-century refined wares, largely represents a typical collection of mass produced, widely distributed ceramics that could be found in most households during the period. The material offers evidence of very broad activities such as general food preparation and storage, beverage consumption and formal dining, but provides little in terms of the specifics of these tasks.

Introduction and methodology

Stoke-on-Trent Archaeology was commissioned by Gwynedd Archaeological Trust to undertake an assessment of potential (in accordance with section 6 of English Heritage's *Management of Archaeological Projects*, 1991) on the medieval and post-medieval ceramics, clay pipes and glass recovered during the project. Artefacts were recovered from 119 contexts and one unstratified group. With the exception of a small number of medieval pottery sherds from contexts (01064), (90002), (90311) and (90422), which were viewed under a x20 microscope, all finds were examined macroscopically. The finds were sorted and catalogued by context group and material type, and quantified by means of a sherd or fragment count. A full catalogue of the finds from the site is provided in appendix III.1. A table of ceramic ware types by a is presented in appendix III.2, with a list of spot dates for stratified groups provided in appendix III.3.

The ceramic finds

(see appendices III.1a and 2)
Fig III.1

The assemblage was recovered from 90 contexts and comprises a mix of coarse and refined wares representative of ceramic material produced during the 13th-15th and 17th-20th centuries. The majority of the 295 sherds that make up the assemblage stem from ceramic vessels, the only possible exceptions being a group of sixteen buff-bodied sherds (some conjoining) from context (70594), which may represent a decorative architectural item, possibly a chimney pot, and a ceramic marble from (90002).

Medieval ceramics

Wares of medieval date form a small component (2.7%) of the overall assemblage and are present in three fabric types. The most common of these (recovered from contexts 90002, 90311 and 90422) is a sandy fabric with an abundance of well-sorted, rounded and sub-rounded quartz inclusions. Fabric colour is typically pale orange with a reduced grey core and interior surface where glaze is present. Glazes are green or brown. At least one bowl form with a glazed interior and a large jar with an applied thumbed strip below the rim on the exterior are present. The fabric has some affinities with wares produced from the fluvio-glacial clays of the Cheshire plain and north Clwyd (Courtney & Jones 1988, 10). Locally-produced quartz-tempered sandy redwares found in Montgomeryshire and Breconshire have a similar fabric composition and range of colours (Knight 1990/1, 8-9). These comparable wares were recovered from 13th-century contexts.

Two conjoining jug sherds (from 90002) are of a fine pinkish-white fabric with rare rounded quartz inclusions. A pale yellowish-green glaze is present on the exterior and interior surfaces, although coverage of the latter is patchy. This fabric appears similar to 13th- to 15th-century iron-poor, coal-measures clays with green to amber-yellow glazes identified from excavations in Powys. Coal measures fabric MD from Pool Road, Montgomery (Courtney & Jones 1988, 20) was thought to derive from Shropshire, with comparable wares (fabric B.9) recovered from Montgomery Castle attributed to a similar source (Knight 1990/91, 9). This latter fabric seems

to have had a wide distribution area which included Worcestershire, Staffordshire, Cheshire, Montgomeryshire, Flintshire and Gwynedd.

A third probable medieval fabric is represented by a single sherd from (01064). This has a fine, hard, sandy fabric; orange on the exterior surface of the vessel and a reduced grey on the interior. Angular quartz and ironstone inclusions occur infrequently in the clay body. A brown glaze is present on the vessel interior.

Post medieval ceramics

The post-medieval material is dominated by coarse earthenware vessels, which constitute 30.2% of the total assemblage. These appear in a limited range of vessel forms, most commonly pans or storage jars, typically with hard, iron-rich bodies ranging in colour from orange to reddish-purple. A small number of examples, however, feature buff fabrics. Many of the iron-rich coarse earthenware fabrics are characterised by the presence of white or cream laminae within the ceramic body; a trait often attributed to 17th- and 18th-century coarsewares produced at the Buckley potteries in Flintshire (Davey 1987, 98). Similarly laminated fabrics were, however, produced in Prescot, south Lancashire (McNeil, 1982/83, 59; Davey 1987, 98). Both production centres were distributing their wares into north-west Wales by the 19th century (Davey 1987, 98).

Most of the iron-rich coarse earthenware fabrics from Parc Cybi have rich black or (less frequently) dark brown lead glazes, although three sherds from (02015), (08057) and (19031) feature clear glazes. These latter sherds, representing two pans and a dish, are the only coarse earthenwares within the group to feature applied decoration, in the form of bands of trailed white slip. Clear lead glazes are also present on the buff fabrics.

The date range for the coarse earthenwares is potentially quite wide, as the ware was produced in a relatively static range of utilitarian forms from the 17th to 20th centuries. Variations in the appearance and quality of the fabric may offer some assistance in determining earlier from later examples, but this is by no means certain. Laminated bodies, for example, may be evidential of poor clay preparation in comparison to the more homogeneous fabrics in the group. This may not in itself, however, be evidential of an early production date and could equally, as discussed above, be indicative of the ware's place of origin. A small number of dense, highly-fired sherds (from 09013, 18068, 20017 and 80188) have some affinities with Midlands Purple ware and may represent transitional 17th-century wares. Similarly, the buff coarse earthenwares are comparable in terms of fabric colour and consistency with some of the late 17th- to early 18th-century slipwares from the assemblage.

Other post-medieval coarsewares (constituting 19.8% of the total) within the assemblage include a possible transitional Cistercian/blackware cup sherd from (90309), perhaps of mid 17th-century date and a single mid-late 17th-century blackware fragment from (90004), again from a cup. A larger number of sherds, such as those from (07026) and (08057) may represent blackwares, but also have some similarities with coarse earthenwares in terms of fabric and form (principally large hollow wares). Fragments of a 17th-century Midlands Purple ware jar are present in (08057). Late 17th- to early 18th-century press-moulded slipware dishes feature in (03031) and (90109) with a cup or jug present in (21019). Mottled wares of a similar date appear as bowls and a possible mug from (90213), (90261) and (90043). A buff-bodied, slip-coated ware bowl with white trailed slip features in (01037) and dates from the first half of the 18th century. A small hand-rolled marble (from 90002) in a pinkish-buff earthenware of 18th- or 19th-century date can also be included within this category, as can an assortment of mid-late 19th-century stoneware ink and blacking bottles and preserve jars from multiple contexts. A collection of unglazed pale buff-bodied sherds (some conjoining) from (70594) may represent an octagonal coarseware (horticultural?) vessel, but it is perhaps more likely that they constitute part of a decorative architectural feature such as a chimney pot, presumably of 19th-century date.

Eighteenth and 19th-century refined wares are well-represented within the assemblage and constitute 47.3% of the total. Single examples of early to mid 18th-century dipped and white salt-glazed stonewares feature in contexts (90044) and (90043) respectively. Mid 18th-century redwares with applied slip are present in (70594) and (90585). Undecorated creamwares appear in several contexts in a limited range of tea and tableware forms, and, in the main, date to the early 19th century. Pearlwares and white-bodied earthenwares are, however, by far the most common refined wares in the assemblage. Pearlwares, with their distinctive bluish lead glaze and white ceramic body were produced throughout the late 18th to the mid 19th centuries, although all the Parc Cybi examples seemingly belong to the latter part of this period. Tea and tableware forms (saucers, bowls, plates etc) are present, most of which feature either under-glaze transfer-printed or painted decoration. A few wash basin sherds also feature, but as only the bases of these vessels survive, it is not clear if they were originally decorated.

Whitewares, characterised by their clear lead glazes and dense white fabrics, were produced from the second quarter of the 19th century onwards. The ware represents the final stage in the development of a durable white

ceramic body that had earlier led to the production of creamware and pearlware. Given the gradual evolution of the ware, early whitewares can be practically indistinguishable from pearlwares and even late creamwares. The difference between the wares would certainly have had no relevance to a 19th-century consumer; by this time ceramics were defined by their decoration rather than their fabric type (Miller 1980, 2). Whitewares appear in a number of contexts from Parc Cybi and display a range of decorative techniques, including under-glaze transfer printing, painting, sponge-applied colour and applied slip. Examples of over-glaze painting and gilding also feature in conjunction with under-glaze transfer-printed designs. Tea ware forms predominate, with cups, bowls and saucers present. Table ware forms are mostly plates, whereas toilet wares are represented by single sherds of a wash basin and a possible ewer.

Only a few mid-late 19th-century bone china sherds are present, typically representing cups or saucers. Two examples, both cups, are decorated; one, from (03031), has an applied 'Chelsea' sprig, whereas the other, from (20040), has an over-glaze painted floral design. Yellow wares are few in number and are limited in their forms to bowls, a chamber pot and a dish. Decoration appears on only one bowl sherd from (91226) with slip banding. Two examples of mid-late 19th-century red earthenwares feature in the assemblage, one a teapot cover from (90067) with a slip coat, banding and encrusted decoration, and the other, a slip-banded bowl from (91135). Single sherds of a mid 19th-century blue-bodied earthenware saucer and a late 19th-century foliate-moulded majolica or coloured-glaze ware bowl are present in contexts (21008) and (19031) respectively.

The production source of the refined wares is difficult to pin-point with any certainty, as many centres produced such material in a standard range of forms and marketed their goods widely. North Staffordshire is perhaps the most obvious candidate for the wares, although Welsh potteries such as Swansea and the factories of Liverpool and Bristol could equally have been responsible for the material.

The clay pipes

(see Appendix III.1b)

Forty-one clay pipe fragments were recovered from 23 contexts. The majority of these are undecorated stem fragments, probably of 19th-century date. Of the two decorated stem fragments, one (from 80840) features a line and chevron design, while the other (from 90043) has indeterminate moulded decoration at its former junction with the bowl. Of the small number of bowls present, three are decorated, two of which, from contexts (03031) and (90002) have foliate moulding on their seams. The latter of these examples also features a moulded stag on the bowl body. The remaining decorated bowl (from 70000) is the most complete example within the assemblage and features a moulded harp and shamrock design. This motif was common during the late 19th century and although it may suggest an Irish production source, variations on the harp and shamrock design are known to have been produced in mainland Britain, possibly for Irish Republican supporters during the Home Rule debate of the late 19th and early 20th centuries (Green 1991 48-49).

The glass

(see Appendix III.1c)

Sixty-nine glass fragments were recovered from 42 contexts and one unstratified group. The assemblage comprises 45 bottle sherds, fifteen pieces of window pane, three vessel parts, two beads, one button and three undiagnostic items. Most of the material that is datable belongs to the 19th century, although a number of items may well be earlier. These include a small fragment of an apparently mould-blown green glass vessel with decorative bosses from (90255) that may be medieval or early post medieval, and two facetted glass beads from (40091) and (90002) on unknown date.

Evaluation of potential

The Parc Cybi material is of limited potential for further analysis. The assemblage is split over a large number of contexts, none of which are individually substantial enough to offer any conclusive evidence of the consumption of ceramics and other artefacts within the area during the late medieval and post-medieval periods. At least in terms of the ceramic material, the assemblage offers few surprises. The small number of medieval wares are probably indicative of sources relatively local to the area, whereas the post-medieval material, particularly the 18th- and 19th-century refined wares, represents a typical collection of largely mass produced, widely distributed ceramics that could be found in most households during the period. The material offers evidence of very broad activities such as general food preparation and storage, beverage consumption and formal dining, but provides little in terms of the specifics of these tasks.

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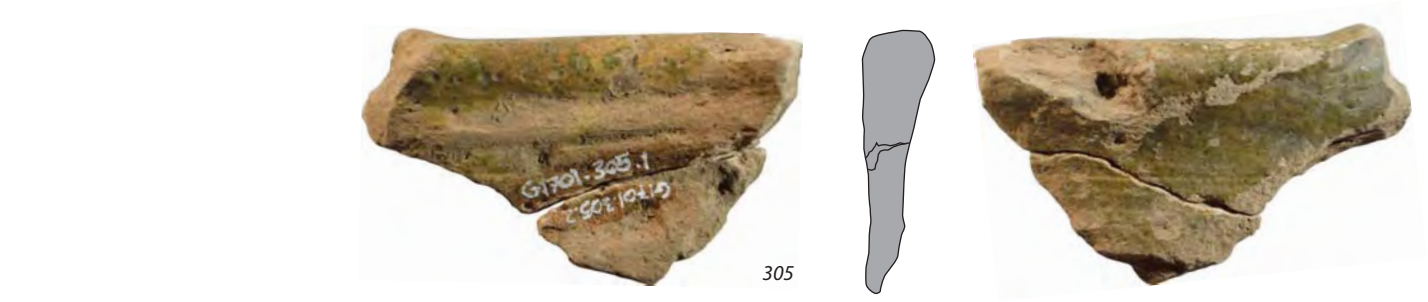

Fig III.1: Medieval and post-medieval ceramics from Parc Cybi

Appendix III.1a: Catalogue of ceramic vessel sherds from Parc Cybi.

context	ware/fabric description	surface decoration	dec in/on body	glzd	vessel form/ description	base	body	rim/edge	spout	handle	profile	no. shds	date	notes
01032	creamware			*	saucer	*						1	late C18	
01037	slip-coated ware	white trailed slip?	ribbed body	*	bowl	*	*					3	early-mid C18	Fine, hard buff fabric with black iron-rich slip (probably derived from a slip coat).
01067	fine sandy ware			*	bowl?		*					1	medieval?	Fine, hard fabric with oxidised exterior and reduced grey core/inner surface. Brown glaze on interior.
02015	pearlware?			*	flatware?	*						1	early-mid C19?	
	yellow ware			*	bowl?		*					1	mid-late C19	
	coarse e'ware	white trailed slip on interior		*	pan			*				1	C19	
	coarse e'ware?				small bowl/jar?			*				1	C19?	Fine, hard orange fabric.
03031	slipware	white trailed slip over black slip ground		*	dish	*						2	late C17-early C18	Press-moulded dish of orange/red fabric.
	pearlware/ WW	UGTP - blue		*	plate			*				1	mid C19	
	WW			*	bowl			*				1	mid-late C19	
	bone china	Floral 'Chelsea' sprig	moulded form	*	cup			*				1	mid-late C19	
	bone china			*	saucer		*					2	mid-late C19	
05060	pearlware	UGP - blue		*	hollow ware		*					1	early-mid C19	
	pearlware			*	plate	*						5	early-mid C19	

context	ware/fabric description	surface decoration	dec in/on body	glzd	vessel form/ description	base	body	rim/edge	spout	handle	profile	no. shds	date	notes
05060 (cont.)	coarse e'ware			*	pan		*					1	C18?	Hard red/orange fabric with white/cream laminae. Black iron-rich glaze on interior.
05062	coarse e'ware			*	pan	*	*					3	C18?	Hard red/orange fabric with white laminae. Black iron-rich lead glaze on interior.
	coarse e'ware			*	jug/jar		*					1	C19	Hard red/orange fabric with occasional white specks. Black iron-rich glaze on interior and exterior.
06036	creamware			*	plate	*		*				1	late C18-early C19	
	coarse e'ware			*	jar/pan?		*					1	C18?	Hard pale orange fabric with white laminae. Black iron-rich lead glaze on interior.
	coarse e'ware			*	jar		*					2	C18?	Hard orange fabric with white laminae. Black iron-rich glaze on interior and exterior.
06066	coarse e'ware			*	jar		*					1	C19	Hard orange fabric with black, slightly reduced iron-rich lead glaze on interior and exterior surfaces.
06069	coarse e'ware			*	jar		*					1	C19	Hard orange fabric with black iron-rich glaze on interior.
	coarse e'ware				jar			*				1	C19	Hard orange fabric.
06072	coarse e'ware			*	jar			*				1	C18?	Hard pale orange fabric with black iron-rich lead glaze on interior.
06074	creamware			*	hollow ware			*				1	early C19	
06086	pearlware	UGTP – blue		*	saucer			*				1	early-mid C19	Floral print.

context	ware/fabric description	surface decoration	dec in/on body	glzd	vessel form/ description	base	body	rim/edge	spout	handle	profile	no. shds	date	notes
06107	pearlware			*	flatware	*						1	mid C19	
	coarse e'ware (buff)			*	jar?	*						1	C17-C18?	Buff fabric with lead glaze on interior and exterior surfaces.
07026	blackware/ coarse e'ware?			*	bowl/jar			*				1	C18?	Fine, hard red/orange fabric. black iron-rich glaze on interior and exterior.
07044	pearlware	UGTP - blue		*	plate	*						1	mid C19	"Willow" design.
07064	coarse e'ware			*	jar	*						1	C19	Hard red/orange fabric with iron-rich lead glaze on interior and exterior surfaces.
08280	WW	UGTP - blue		*	plate			*				1	mid C19	"Willow" design
	pearlware/ WW	UGTP - blue		*	plate		*					1	mid C19	Marbled design.
	WW			*	hollow ware		*					1	mid-late C19	
08057	Midlands Purple ware			*	jar	*		*				2	mid C17-mid C18	Very hard purple fabric, reminiscent of Midlands Purple ware. black iron-rich lead glaze on interior. Hooked rim.
	blackware/ coarse e'ware?			*	hollowware		*					1	mid17-C18?	Fine, hard red/orange fabric with black iron-rich glaze on interior and exterior surfaces.
	blackware/ coarse e'ware?		ribbed body	*	jar		*					1	mid 17-C18?	Fine, hard orange fabric with black iron-rich glaze on interior and exterior surfaces.
	coarse e'ware	trailed white slip on rim		*	dish			*				1	C19?	Fine red/orange fabric with white/cream laminae. Clear lead glaze on interior and exterior.

context	ware/fabric description	surface decoration	dec in/on body	glzd	vessel form/ description	base	body	rim/edge	spout	handle	profile	no. shds	date	notes
	creamware			*	plate	*						3	late C18	
	pearlware	UGTP - blue		*	bowl			*				1	early-mid C19	Floral print.
	stoneware			*	ink bottle		*					1	C19	
08063	coarse e'ware			*	pan		*					1	C18?	Hard orange fabric with white laminae and white frequent specks. black iron-rich lead glaze on interior.
	pearlware	UGTP - blue		*	bowl/teapot?		*					4	early-mid C19	Floral print.
08065	pearlware	UGP - brown		*	saucer?		*					1	early C19	
08078	creamware			*	hollow ware		*					1	early C19	
08084	blackware/ coarse e'ware?			*	handled hollow ware?					*		1	late C17-mid C18?	Fine, hard orange fabric with black iron-rich lead glaze.
	coarse e'ware			*	jar?							1	C18?	Hard red/orange fabric with white laminae. Black iron-rich lead glaze on interior and exterior surfaces.
	coarse e'ware			*	pan	*						1	C18?	Hard orange fabric with frequent white specks. Black iron-rich lead glaze on interior surface.
	pearlware/ WW	UGTP - blue		*	saucer			*				1	mid C19	
	WW			*	undiagnostic		*					2	late C19?	Blue glaze.
08086	coarse e'ware			*	jar?		*					1	C18?	Hard orange fabric with white/cream laminae. Black iron-rich lead glaze on interior and exterior surfaces.
09013	coarse e'ware			*	jar?		*					1	late C17-C18?	Hard purple fabric with cream flecks. black iron-rich glaze on interior and exterior.

context	ware/fabric description	surface decoration	dec in/on body	glzd	vessel form/ description	base	body	rim/edge	spout	handle	profile	no. shds	date	notes
09018	pearlware	UGP - pc		*	teabowl	*						1	early C19	Floral design.
14016	coarse e'ware		horizontal ribbing on body	*	jar		*					1	C18?	Hard orange/purple fabric with faint white laminae and specks. Black iron-rich glaze on interior and exterior surfaces.
18009	coarse e'ware			*	jar?		*					1	C18/C19?	Hard red fabric with occasional white specks. Black iron-rich glaze on interior and exterior surfaces.
18068	coarse e'ware			*	pan/jar	*						1	late C17-C18?	Very hard red/purple fabric with black iron-rich glaze on interior.
	coarse e'ware			*	pan/jar		*					1	C19	Hard orange fabric with black iron-rich glaze on interior and exterior surfaces.
	pearlware	UGP - blue	turned horizontal lines	*	bowl		*					1	mid C19	
	pearlware			*	basin	*						1	mid C19	
19031	WW	UGP - pc		*	tureen cover?			*				1	late C19	
	bone china			*	cup		*					1	late C19	
	majolica/ coloured-glaze ware		foliate moulding	*	bowl?		*					1	late C19	White fabric, green glaze on exterior, yellow/orange glaze on interior.
	coarse e'ware	trailed slip		*	pan			*				1	C19	
	stoneware		vertical moulded reeding	*	preserve jar						*	2	late C19	
	stoneware			*	ink/blacking bottle			*				1		
19034	WW	UGTP - flow blue		*	plate			*				1	mid-late C19	Floral design.

context	ware/fabric description	surface decoration	dec in/on body	glzd	vessel form/ description	base	body	rim/edge	spout	handle	profile	no. shds	date	notes
	WW	UGTP - blue		*	plate	*						2	mid-late C19	"Asiatic Pheasants" print.
	WW	UGTP - blue		*	bowl?		*					1	mid-late C19	
	WW	UGTP - black		*	preserve jar			*				1	late C19	Printed - "MEDAL OF MERIT VIENNA…… S KEILER & SONS, DUNDEE, [MA]RMALADE".
19034 (cont.)	stoneware		vertical moulded reeding	*	preserve jar			*				1	late C19	
	stoneware		vertical moulded reeding	*	preserve jar			*				1	late C19	
	stoneware			*	ink/blacking jar	*	*					1	late C19	
	stoneware			*	bottle?		*					1	late C19?	
	coarse e'ware			*	pan		*					1	C19	Hard orange fabric with black iron-rich glaze on interior.
19036	pearlware/ WW	UGTP - blue		*	basin	*						1	mid C19	
	WW	UGTP - brown & UGP - green		*	basin		*					1	late C19	Transfer print of "..L HOTEL [H]OLYHEAD" on interior. Green painted bands on exterior body and interior rim.
	WW			*	cup	*						1	late C19	
	WW			*	hollow ware		*					1	late C19?	
	stoneware		moulded vertical reeding on body	*	preserve jar			*				1	late C19	
	stoneware			*	ink bottle						*	1	mid-late C19	

context	ware/fabric description	surface decoration	dec in/on body	glzd	vessel form/ description	base	body	rim/edge	spout	handle	profile	no. shds	date	notes
19039	coarse e'ware			*	pan		*					1	C19	Hard orange fabric with black iron-rich lead glaze on interior.
	stoneware		vertical moulded reeding	*	preserve jar	*	*					2	late C19	Impressed mark of W.P. Hartley on base.
	stoneware			*	ink bottle						*	1	late C19	
19039 (cont.)	stoneware			*	ink/blacking bottle			*				1	late C19	
19054	WW	UGTP - brown	moulded body	*	cup			*				1	mid-late C19	Floral print.
	WW	UGTP - black		*	platter			*				1	mid-late C19	
19056	pearlware/ WW	UGTP - blue		*	plate			*				1	mid C19	
20014	creamware			*	flatware?	*						1	early C19	
20017	coarse e'ware			*	jar	*						2	C17/C18?	Hard red/purple fabric with cream/white laminae. black iron-rich glaze on interior and exterior surfaces.
20029	coarse e'ware			*	jug?		*					1	C19	Hard orange fabric with black iron-rich lead glaze on interior and exterior.
20040	pearlware	UGTP - blue		*	saucer	*						1	mid C19	Oriental scene.
	pearlware			*	plate	*						1	mid C19	
	bone china	OGP - pc		*	cup			*				1	mid C19	Faint overglaze enamel painted floral design, banding on rim.
	coarse e'ware				pan?			*				1	C19?	Hard orange fabric.
20054	pearlware			*	plate		*					1	mid C19	
21008	creamware			*	hollow ware		*					1	early C19	
	pearlware	UGTP -		*	jug?					*		1	early-mid C19	

context	ware/fabric description	surface decoration	dec in/on body	glzd	vessel form/ description	base	body	rim/edge	spout	handle	profile	no. shds	date	notes
		blue												
	pearlware	UGP - blue	moulded rim - SE	*	plate						*	1	early-mid C19	Evenly scalloped and well moulded rim.
	pearlware	UGP - pc		*	teabowl	*	*					2	early C19 (c.1st quarter)	
	blue-bodied e'ware			*	saucer			*				1	mid C19	
21019	slipware	trailed and combed black slip		*	mug/jug?		*					1	late C17-early C18	
21160	coarse e'ware			*	pan?	*						1	C18/C19?	Hard red/orange fabric with black lead glaze on interior.
22073	pearlware/ WW	UGTP - blue		*	hollow ware		*					1	mid C19?	
	pearlware/ WW			*	flatware?		*					1	mid C19?	
22127	pearlware/ WW			*	hollow ware?		*					1	mid-late C19?	
	WW			*	hollow ware?		*					1	late C19?	
	bone china		moulded body	*	saucer		*					1	mid C19?	
	coarse e'ware?				undiagnostic		*					1	post med	Abraded sherd of orange fabric.
31183	pearlware	UGP - blue	moulded rim - SE	*	plate			*				1	early-mid C19	
	pearlware/ WW	UGTP - blue		*	teapot		*					1	mid C19	
	WW?	UGTP - black & OGP - green		*	cup			*				1	mid-late C19?	Reduced, pitted glaze.
	yellow ware			*	chamber pot			*				1	mid-late C19	

context	ware/fabric description	surface decoration	dec in/on body	glzd	vessel form/ description	base	body	rim/edge	spout	handle	profile	no. shds	date	notes
	coarse e'ware			*	jug/jar?		*					1	C19	Hard orange fabric with black iron-rich lead glaze on interior and exterior.
31181	creamware		turned decoration	*	cylindrical mug?	*						1	late C18	
	coarse e'ware			*	pan		*					1	C18	Very hard red/orange fabric with brownish lead glaze on interior.
	coarse e'ware			*	jar		*					1	C18?	Orange fabric with white laminae. black iron-rich lead glaze on interior and exterior surfaces.
31291	pearlware			*	large bowl/ basin	*						1	mid C19	
	WW	SD		*	plate			*				1	mid-late C19	Red and blue sponging applied randomly over interior surface - under glaze. Blue wash on underside of vessel.
31576	pearlware?			*	flatware?	*						1	mid C19?	
	pearlware/ WW	UGTP - blue		*	plate	*						1	mid C19	
	WW?	UGTP - blue		*	plate	*						1	mid C19?	
	WW	UGP - pc		*	bowl		*					1	mid-late C19	
	WW	slip - banding		*	mug/jug?		*					1	late C19	
	WW		moulded body	*	saucer?			*				1	mid C19?	
	bone china			*	hollow ware		*					1	late C19	
40026	WW			*	flatware?	*						1	mid-late C19	
40032/ 40035	WW	UGP - pc		*	bowl/cup?		*					1	mid-late C19	

context	ware/fabric description	surface decoration	dec in/on body	glzd	vessel form/ description	base	body	rim/edge	spout	handle	profile	no. shds	date	notes
	stoneware		moulded vertical reeding on body	*	preserve jar			*				1	mid-late C19	
40153	pearlware	UGTP - blue	moulded rim	*	plate			*				1	mid C19	
50352	WW			*	cup/bowl			*				1	mid C19	
	blackware/ coarse e'ware?			*	hollow ware		*					1	C17/C18?	Fine, hard red fabric with black iron-rich lead glaze on interior and exterior surfaces.
50435	creamware			*	hollow ware?		*					1	late C18-early C19	
50457	coarse e'ware			*	pan		*					1	C18?	Hard pale orange body with rare red laminae. Black iron-rich lead glaze on interior (exterior surface absent).
	coarse e'ware			*	pan		*					1	C18/C19	Very hard red fabric with black iron-rich glaze on interior.
	coarse e'ware			*	jar		*					1	C18?	Hard orange fabric with white and red laminae. Black iron-rich glaze on interior and exterior.
60205	coarse e'ware			*	jar	*						2	C18?	Hard pale orange fabric with white and red laminae. black iron-rich lead glaze on interior and exterior. Traces of glaze on exterior base.
70518	creamware			*	undiagnostic		*					1	late C18/ early C19	
70594	redware	white slip coat on interior		*	bowl?	*						2	mid C18	

context	ware/fabric description	surface decoration	dec in/on body	glzd	vessel form/ description	base	body	rim/edge	spout	handle	profile	no. shds	date	notes
	pearlware/WW	UGTP - blue	moulded rim	*	dish			*				1	mid C19	"Willow" pattern.
	blackware/ coarse e'ware?			*	handled bowl?		*					1	C17/C18?	Hard orange/red fabric with black iron-rich glaze on interior and (partial) exterior.
	coarse e'ware			*	jar		*					1	C18/C19?	Hard orange fabric with white laminae. black iron-rich lead glaze on interior and exterior.
	coarse e'ware			*	deep pan/jar		*	*				6	C19	Hard red/orange fabric with black iron-rich lead glaze on interior and exterior surfaces.
	coarse buff ware		moulded form (octagonal?)		architectural?		*					16	C19/C20?	
80012	coarse e'ware			*	hollow ware?		*					3	C18/C19?	
	pearlware/ WW	UGP - blue?		*	flatware	*						1	mid C19?	
80188	coarse e'ware			*	jar		*					2	late C17-C18?	Hard red/purple fabric with frequent white specks. Lead glaze on interior and exterior surfaces.
80840	WW?	UGTP - blue		*	undiagnostic		*					1	mid-late C19?	
	coarse e'ware			*	pan/jar?		*					1	C18/C19?	Hard red/orange fabric with white laminae. Black iron-rich lead glaze on exterior (interior surface absent).
80903	WW?			*	undiagnostic		*					1	mid-late C19?	

context	ware/fabric description	surface decoration	dec in/on body	glzd	vessel form/ description	base	body	rim/edge	spout	handle	profile	no. shds	date	notes
90002	sandy ware			*	bowl?		*					3	C13	Hard fabric with oxidised orange exterior surface and grey core/interior surface. Green glaze on interior. Abundant, well sorted sub-angular quartz inclusions.
	coal measures ware		horizontal turned lines below rim	*	jug			*				2	C13-C15	Fine, hard pinkish-white, iron-poor fabric with rare rounded quartz inclusions. Pale green glaze on exterior and interior (patchy on latter).
	pinkish-buff e'ware				marble						*	1	C18/C19?	Hand-rolled ceramic marble.
	coarse e'ware (buff)			*	dish		*	*				2	C17?	Buff fabric with clear lead glaze on interior. Squared rim.
90004	blackware		horizontal turned lines	*	cup		*					1	late C17-early C18	Fine, dense red/orange body with black brown lead glaze on exterior and interior.
90043	mottled ware			*	handled hollowware		*			*		2	late C17-early C18	
90043 (cont.)	white salt-glazed stoneware			*	teapot				*			1	mid-late C18	Octagonal teapot spout.
90044	dipped white salt-glazed stoneware			*	porringer?					*		1	early C18	
90067	red e'ware	slip coat on interior, slip banding on exterior, encrusted exterior		*	teapot			*				1	third quarter C19	Slip-decorated and encrusted redware.

context	ware/fabric description	surface decoration	dec in/on body	glzd	vessel form/ description	base	body	rim/edge	spout	handle	profile	no. shds	date	notes
	WW	UGTP- blue		*	saucer		*	*				3	third quarter C19	Floral print, slightly flown.
	coarse e'ware			*	jar?			*				1	C19	Dense orange fabric with black iron-rich lead glaze on interior. Rolled rim.
90068	pearlware	UGTP- blue		*	bowl?		*					1	mid C19	Floral print?
		UGTP- blue		*	plate?	*						1	mid C19	Oriental scene?
		UGP - blue		*	jug					*		1	mid C19	
		UGP - blue	moulded rim - SE	*	plate			*				2	mid C19	
	coarse e'ware			*	pan		*					1	C18?	Hard orange fabric with frequent white laminae. black iron-rich lead glaze on interior.
	coarse e'ware			*	hollow ware?	*						1	C19?	Hard orange fabric with occasional white specks. black iron-rich lead glaze on interior.
90070	creamware			*	plate			*				1	early C19	
	pearlware			*	bowl	*						1	early-mid C19	
90070 (cont.)	pearlware	UGTP - blue		*	teapot			*				1	early-mid C19	
	pearlware	UGTP - blue		*	jug?				*			1	early-mid C19	
	WW			*	bowl	*						1	mid C19	
	WW			*	hollow ware		*					1	mid-late C19?	
	yellow ware			*	bowl?		*					1	mid-late C19	
	coarse e'ware			*	jar	*	*	*				8	C18?	Hard orange fabric with white laminae and specks. Black iron-rich lead glaze on interior and upper part of exterior surface.

context	ware/fabric description	surface decoration	dec in/on body	glzd	vessel form/ description	base	body	rim/edge	spout	handle	profile	no. shds	date	notes
	coarse e'ware (buff)			*	pan/bowl		*					1	C18/C19?	Buff/orange fabric with clear lead glaze on interior and exterior surfaces.
	stoneware?			*	sanitary vessel?		*					1	C19?	
90097	coarse e'ware			*	deep pan/jar			*		*		1	C18/C19?	Hard orange fabric with white/cream laminae. Black iron-rich lead glaze on interior and exterior. Squared rim, horizontal strap handle.
90109	coarse e'ware			*	pan (deep)			*				1	C18/C19?	Hard orange fabric with cream/white laminae. Black iron-rich lead glaze on interior. Squared rim.
	coarse e'ware			*	jug?		*					7	C18/C19?	Hard orange fabric with occasional white specks and infrequent white laminae. Black iron-rich lead glaze on interior and exterior.
	slipware	joggled white, brown and black slip		*	dish		*					1	late C17-early C18	Press-moulded form. Dense buff/salmon pink fabric with frequent white specks.
90109 (cont.)	coarse e'ware (buff)?			*	hollow ware		*					1	post-med?	Hard buff fabric with good clear lead glaze coverage on exterior, but patchy on interior.
90213	mottled ware		turned lines on rim	*	porringer/ bowl?			*				1	late C17-early C18	Flattened rim.
90261	mottled ware			*	mug?		*					1	late C17-early C18	
	creamware			*	basin	1						1	late C18-early C19	

context	ware/fabric description	surface decoration	dec in/on body	glzd	vessel form/ description	base	body	rim/edge	spout	handle	profile	no. shds	date	notes
90309	Cistercian ware/ blackware			*	cup					*		1	C17	Small handle - possibly decorative, which may indicate a blackware rather than Cistercian ware vessel. Fabric is grey/buff in colour. Fine iron-rich lead glaze on interior and exterior.
90311	sandy ware		thumbed strip below rim		large jar			*				1	C13	Fabric is oxidised on the exterior and interior surfaces with a reduced grey core. The fabric has abundant, well sorted rounded and sub-rounded quartz inclusions. Rim has a lid seating. Possible trace of glaze interior.
93097	coarse e'ware			*	bowl			*				2	C18/C19	Hard orange/red fabric with occasional white specks. black iron-rich lead glaze on interior.
93098	WW	UGTP - black		*	plate			*				1	mid-late C19	
	WW	UGTP - blue & OGP		*	hollow ware		*					1	mid-late C19	
	stoneware			*	undiagnostic		*					1	C19	
90422	sandy ware			*	bowl?		*					1	C13	Oxidised exterior surface with grey core/interior surface. Traces of a reduced brown glaze on interior.
90429	coarse e'ware			*	jug?		*					1	C18/C19	Hard orange fabric with frequent white specks. black iron-rich lead glaze on interior and exterior.
90494	creamware			*	plate			*				1	early C19	

context	ware/fabric description	surface decoration	dec in/on body	glzd	vessel form/ description	base	body	rim/edge	spout	handle	profile	no. shds	date	notes
90585	redware	white slip on rim	turned horizontal lines	*	mug?			*				1	mid C18	
90873	stoneware		moulded vertical reeding	*	preserve jar			*				1	late C19	
90883	coarse e'ware			*	jar?		*					1	C19?	Hard orange body with black iron-rich glaze on interior.
91135	WW	UGTP - blue		*	plate			*				1	mid C19	"Willow" pattern.
	WW	UGTP - blue		*	undiagnostic		*					1	mid C19?	
	WW	UGTP - blue		*	hollow ware?		*					1	mid C19	Printed script, but unclear.
	WW	UGTP - blue		*	saucer		*					1	mid C19	"Broseley" pattern?
	redware	slip - banding		*	bowl		*					1	mid-late C19	
	yellow ware			*	dish?		*					1	mid-late C19	
91226	pearlware/ WW	UGTP - blue		*	plate			*				1	mid C19	"Willow" design.
	WW	UGP - pc		*	saucer		*					1	mid C19	
	WW	UGP - pc		*	cup/bowl			*				1	mid-late C19	Painted bands on interior and exterior.
	WW	OGP - pc	moulded body	*	cup		*					1	mid C19	
	WW	slip - ground & banding	moulded form	*	jug/ewer					*		1	mid C19	
	WW			*	saucer	*						1	mid-late C19	
91226 (cont.)	WW			*	ointment pot	*						1	late C19	
	yellow ware	slip - banding		*	bowl		*					1	mid-late C19	

context	ware/fabric description	surface decoration	dec in/on body	glzd	vessel form/ description	base	body	rim/edge	spout	handle	profile	no. shds	date	notes
	stoneware			*	jar		*					1	C18/C19?	
	coarse e'ware				pan?	*						1	C18/C19?	Hard orange fabric.
	coarse e'ware			*	pan/jar?		*					1	C19?	Hard orange/red fabric with black lead glaze on interior.
91303	creamware	OGP - pc		*	saucer			*				1	late C18	
	pearlware	UGTP - blue		*	saucer	*						1	mid C19	
	pearlware/ WW?	UGTP - green		*	bowl	*						1	mid C19	
	WW	UGTP - blue & OGG		*	jug?		*					1	mid C19	
	WW	slip - ground, banding & wormed		*	bowl		*					1	mid C19	
91397	WW			*	plate	*						1	mid-late C19	
	WW?			*	dish			*				1	C19?	Heavily reduced fabric and glaze.
91453	stoneware		turned horizontal lines	*	mug?		*					1	C19	
91641	coarse e'ware			*	jar	*						1	C17/C18?	Hard orange fabric with cream/white laminae. Black iron-rich lead glaze on interior and possible exterior surfaces.
	coarse e'ware			*	pan		*					1	C17/C18?	Soft orange fabric with brownish lead glaze on interior.
92598	bone china			*	hollow ware		*					1	late C19	

context	ware/fabric description	surface decoration	dec in/on body	glzd	vessel form/ description	base	body	rim/edge	spout	handle	profile	no. shds	date	notes
	coarse e'ware			*	bowl?			*				1	C19?	Hard red fabric with occasional white specks. Reduced lead glaze on interior and exterior.
						Total						**295**		

Key: WW – Whiteware; UGTP – Under-Glaze Transfer Printed; UGP – Under-Glaze Painted; OGP – Over-Glaze Painted; PC – Polychrome; OGG – Over-Glaze Gilded; SD – Sponge Decorated.

Appendix III.1b: Catalogue of clay pipes from Parc Cybi.

context	fabric description	decoration	stem	bowl	profile	total no. fragments	date	notes
03031	white pipe clay	Foliate moulding on seams	*	*		3	mid-late C19	Spurred bowl.
06086	white pipe clay		*			1	C19	
06089	white pipe clay			*		1	C18/C19?	Lower bowl fragment - spurred?
08057	white pipe clay		*			2	C19	
11020	white pipe clay		*			2	C19	
22127	white pipe clay		*			1	C19	
31138	white pipe clay		*			1	C19	
31291	white pipe clay		*			3	C19	
50415	white pipe clay		*			2	C19	
50435	white pipe clay		*			2	C19	
50457	white pipe clay		*			2	C19	
70000	white pipe clay	moulded seams, harp and shamrock on body		*		1	late C19	Upright bowl, no spur or heel.
80840	white pipe clay	incised chevron and line on one stem fragment	*			7	C19	
90002	white pipe clay		*			1	C19	
	white pipe clay	moulded oak leaf on seam, stag on body		*		1	C19	
90043	white pipe clay	moulded decoration - probably at connection with bowl	*			1	C19	
90070	white pipe clay		*			1	C19	
90109	white pipe clay		*			1	C19	
90331	white pipe clay		*			1	C19	
91226	white pipe clay		*			3	C19	
91303	white pipe clay		*			1	C19	
91397	white pipe clay		*			1	C19	
91524	white pipe clay		*			1	C19	
91727	white pipe clay		*			1	C19	
			Total			**41**		

Appendix III.1c: Catalogue of glass finds from Parc Cybi.

context	colour	decoration/ lettering	form/ description	base	body	edge	rim/neck	profile	total no. frags	date	notes
01026	green		bottle	*					1	early-mid C19	
06069	clear		bottle		*				1	C20	Cylindrical form.
09020	green		bottle		*				1	C19	
11020	green		window		*				1	C19	
	clear		window		*				1	C20	
	clear (frosted)		window		*				1	C20?	
19031	green	embossed on body - "J.H. KEEGAN HOLYHEAD"; on base - "N & Co. 3147"	bottle	*	*				1	late C19 (1881+)	Cylindrical form. Details relate to beer and soft drink bottling, wholesaling & retailing firm of Joseph Henry Keegan, established in 1881 (www.josephkeegan.co.uk).
19034	green	embossed on body - "J.H. KEEGAN HOLYHEAD"; on base - "N & Co. 3147"	bottle	*	*				1	late C19 (1881+)	Cylindrical form. Details relate to beer and soft drink bottling, wholesaling & retailing firm of Joseph Henry Keegan, established in 1881 (www.josephkeegan.co.uk).
	green	embossed on body - "G…….GE…."	bottle		*				1	late C19?	Cylindrical form.
19036	green	embossed on body - "P. [W]…HOLYHEAD" surrounding horse & rider design; on base - "C.S & Co. LD 4317"	bottle	*	*				1	mid-late C19	Cylindrical form. Clamped mould - no pontil mark.
	aqua		bottle					*	1	late C19	Cylindrical form. Continuous seam through body, neck & lip - one-piece mould. Cracked-off lip.
19039	green		bottle		*				1	C19	Cylindrical form.
	aqua	embossed "35325"(?) on base.	bottle					*	1	late C19	Square form moulded in one piece. Cracked-off rim.

context	colour	decoration/ lettering	form/ description	base	body	edge	rim/neck	profile	total no. frags	date	notes
19054	clear		bottle		*				1	late C19/C20	Oval form.
19056	aqua	embossed on body - "L…"	bottle		*				1	late C19/C20	
	clear		window		*				1	C20	
20038	green		bottle?		*				1	C19	
21032	green		bottle		*				1	C19	Cylindrical form.
21036	green		window		*				1	C18/C19?	
	blue		window		*				1	?	
22073	aqua	embossed 'E' on body(?).	bottle		*				1	C19	Square form?
22127	clear		bottle		*				1	late C19/C20	
31291	green		bottle		*				2	C19	Cylindrical form.
	brown		bottle		*				1	C19	Cylindrical form.
	clear		bottle		*				2	late C19/C20	Oval form?
40091	black (opaque)		bead					*	1	?	
40113	aqua		window		*				1	C19	
	clear		window		*				1	C20	
40118	clear		bottle?		*				1	late C19/C20?	
50118	clear (frosted)		drinking vessel?	*					1	C19/C20?	Possible base fragment of stemmed drinking glass.
50183	amber		undiagnostic		*				1	C19?	
50457	opaque		waste/heated fragment?		*				1	C18/C19?	Small fragment of misshapen glass.
70594	aqua		bottle				*		1	late C19-early C20	Applied or tooled lip. Square form?
80391	green		bottle		*				1	C19	
80439	green		bottle?		*				1	C19	Slightly frosted surfaces - decay?

context	colour	decoration/ lettering	form/ description	base	body	edge	rim/neck	profile	total no. frags	date	notes
80900	blue		?		*				1	?	
90002	aqua		bottle				*		1	mid-late C19	Applied lip.
	green		window?			*			1	C18/C19?	
	black (opaque)	star design	button					*	1	C19	Pressed form, shank missing.
	blue (opaque)		bead					*	1	?	
90043	green		bottle		*				1	C19	Cylindrical form?
90056	green		window		*				1	C18/C19?	
	green		bottle		*				1	C19	Cylindrical bottle.
90068	green		bottle		*				1	C19	Cylindrical form?
90101	green		window		*				1	C18/C19?	
90213	clear	embossed - body "….EY"	bottle		*				1	late C19	Square form?.
	clear		window		*				1	C19/C20	
90218	green		bottle		*				1	C19	Cylindrical form?
90255	green	moulded boss	vessel?		*				1	medieval/early post medieval?	Mould-blown but form and date unknown.
90410	green		window?		*				1	C18/C19?	Possible window fragment, although very thin - 1mm.
90878	green		bottle		*				3	C19	
91135	green		bottle	*	*		*		5	early-mid C19	Possibly free blown or dip moulded. Push-up base, applied lip.
	clear		window		*				1	C19	
91137	green		bottle		*				3	C19	
91226	green		bottle	*					1	early-mid C19	Push-up base.
91397	green		bottle		*				1	C19	
91653	green		window?		*				1	post-medieval?	

context	colour	decoration/ lettering	form/ description	base	body	edge	rim/neck	profile	total no. frags	date	notes
93099	clear		drinking vessel?	*					1	C19/ C20?	Octagonal form.
u/s	green		bottle?		*				1	C19?	
				Total					**69**		

Appendix III.2: Ceramic ware types by context.

Context	SNDW	CMW	FSNDW	SCW	CW/BW	BW	MPW	SW	MW	CEW	CEW/BW	DWSGSW	WSGSW	RW	CRW	PW	PW- UGTP	PW - UGP	PW/WW	PW/WW - UGTP	PW/WW- UGP	WW	WW- UGTP	WW-UGP	WW -OGP	WW-UGTP & UGP	WW-UGTP & OGP	WW-UGTP & OGG	WW - SD	WW - SLD	BC	BC-SPRIG	BC-OGP	REW-SLD	BBEW	YW	YW-SLD	MAJ/CGW	STW	CBW	PBEW
01032															1																											
01037				3																																						
01067			1																																						
02015										2						1																					1					
03031								2												1		1									2	1									
05060										1						5		1																							
05062										4																															
06036										3					1																										
06066										1																															
06069										2																															
06072										1																															
06074															1																										
06086																	1																								
06107										1						1																									
07026											1																														
07044																	1																								
07064										1																															
08280																				1		1	1																		
08057							2			1	2				3		1																							1		
08063										1							4																								
08065																		1																								

Context	SNDW	CMW	FSNDW	SCW	CW/BW	BW	MPW	SW	MW	CEW	CEW/BW	DWSGSW	WSGSW	RW	CRW	PW	PW- UGTP	PW - UGP	PW/WW	PW/WW - UGTP	PW/WW- UGP	WW	WW - UGTP	WW-UGP	WW -OGP	WW-UGTP & UGP	WW-UGTP & OGP	WW-UGTP & OGG	WW - SD	WW - SLD	BC	BC-SPRIG	BC-OGP	REW-SLD	BBEW	YW	YW-SLD	MAJ/CGW	STW	CBW	PBEW
08078															1																											
08084										2	1									1		2																				
08086										1																																
09013										1																																
09018																		1																								
14016										1																																
18009										1																																
18068										2						1		1																								
19031										1														1							1								1	3		
19034										1													5																	4		
19036																				1				2		1													2		
19039										1																													4		
19054																						2																			
19056																				1																					
20014															1																										
20017										2																															
20029										1																															
20040										1						1	1																	1							
20054																1																									
21008															1		1	3																		1						
21019								1																																	
21160										1																															

Context	SNDW	CMW	FSNDW	SCW	CW/BW	BW	MPW	SW	MW	CEW	CEW/BW	DWSGSW	WSGSW	RW	CRW	PW	PW- UGTP	PW - UGP	PW/WW	PW/WW - UGTP	PW/WW- UGP	WW	WW - UGTP	WW-UGP	WW -OGP	WW-UGTP & UGP	WW-UGTP & OGP	WW-UGTP & OGG	WW - SD	WW - SLD	BC	BC-SPRIG	BC-OGP	REW-SLD	BBEW	YW	YW-SLD	MAJ/CGW	STW	CBW	PBEW
22073																			1	1																						
22127										1									1			1									1											
31138										1								1		1							**1**										**1**					
31181										2					1																											
31291																1													1													
31576																1				1		1	1	1						1	1										
40026																						1																			
40032/ 40035																								1																	1		
40153																	1																									
50352											1											1																			
50435															1																										
50457										3																															
60205										2																															
70518															1																										
70594										7	1			2						1																					
80012										3											1																				
80188										2																															
80840										1													1																		
80903																						1																			
90002	3	2								2																														16	1
90004						1																																			

Context	SNDW	CMW	FSNDW	SCW	CW/BW	BW	MPW	SW	MW	CEW	CEW/BW	DWSGSW	WSGSW	RW	CRW	PW	PW- UGTP	PW - UGP	PW/WW	PW/WW - UGTP	PW/WW- UGP	WW	WW - UGTP	WW-UGP	WW -OGP	WW-UGTP & UGP	WW-UGTP & OGP	WW-UGTP & OGG	WW - SD	WW - SLD	BC	BC-SPRIG	BC-OGP	REW-SLD	BBEW	YW	YW-SLD	MAJ/CGW	STW	CBW	PBEW
90043									2				1																												
90044												1																														
90067										1													3												1							
90068										2							2	3																								
90070										9					1	1	2					2														1			1			
90097										1																																
90109								1		9																																
90213									1																																
90261									1						1																											
90309					1																																				
90311	1																																								
93097										2																																
93098																							1				1													1		
90422	1																																								
90429										1																																
90494															1																											
90585														1																												
90873																																								1		
90883										1																																
91135																							4												1		1					
91226										2										1		2		2	1					1								1		1		
91303															1		1			1								1		1												

Context	SNDW	CMW	FSNDW	SCW	CW/BW	BW	MPW	SW	MW	CEW	CEW/BW	DWSGSW	WSGSW	RW	CRW	PW	PW- UGTP	PW - UGP	PW/WW	PW/WW - UGTP	PW/WW- UGP	WW	WW- UGTP	WW-UGP	WW -OGP	WW-UGTP & UGP	WW-UGTP & OGP	WW-UGTP & OGG	WW - SD	WW - SLD	BC	BC-SPRIG	BC-OGP	REW-SLD	BBEW	YW	YW-SLD	MAJ/CGW	STW	CBW	PBEW
91397																						2																					
91453																																								1		
91641										2																																	
92598										1																					1											
Totals	**5**	**2**	**1**	**3**	**1**	**1**	**2**	**4**	**4**	**89**	**6**	**1**	**1**	**3**	**16**	**13**	**15**	**11**	**2**	**11**	**1**	**17**	**16**	**7**	**1**	**1**	**2**	**1**	**1**	**3**	**6**	**1**	**1**	**2**	**1**	**4**	**1**	**1**	**20**	**16**	**1**
% totals	**1.7**	**0.7**	**0.3**	**1.0**	**0.3**	**0.3**	**0.7**	**1.4**	**1.4**	**30.2**	**2.0**	**0.3**	**0.3**	**1.0**	**5.6**	**4.4**	**5.1**	**3.7**	**0.7**	**3.7**	**0.3**	**5.7**	**5.6**	**2.4**	**0.3**	**0.3**	**0.7**	**0.3**	**0.3**	**1.0**	**2.0**	**0.3**	**0.3**	**0.7**	**0.3**	**1.4**	**0.3**	**0.3**	**6.8**	**5.6**	**0.3**

Key: SNDW – Sandy Ware; CMW – Coal Measures Ware; FSNDW – Fine Sandy Ware; SCW – Slip-Coated Ware; CW/BW – Cistercian Ware/Blackware; BW – Blackware; MPW – Midlands Purple Ware; SW – Slipware; MW – Mottled Ware; CEW – Coarse Earthenware; CEW/BW – Coarse Earthenware/Blackware; DWSGSW – Dipped White Salt-Glazed Stoneware; WSGSW – White Salt-Glazed Stoneware; RW – Redware; CRW – Creamware; PW – Pearlware; WW – Whiteware; UGTP – Under-Glaze Transfer Printed; UGP – Under-Glaze Painted; OGP – Over-Glaze Painted; OGG – Over-Glaze Gilded; SD – Sponge Decorated; SLD – Slip Decorated; BC – Bone China; SPRIG – Sprigged; REW – Red Earthenware; BBEW – Blue-Bodied Earthenware; YW – Yellow ware; MAJ/CGW – Majolica/Coloured-Glaze Ware; STW – Stoneware; CBW – Coarse Buff Ware; PBEW – Pinkish-Buff Earthenware.

Appendix III.3: Table of spot dates for stratified contexts.

Context	Probable date/date range
01026	early-mid C19
01032	late C18
01037	early-mid C18
01067	medieval?
02015	mid-late C19
03031	Mid-late C19 with some residual late C17-early C18 material
05060	early-mid C19 with some possibly residual C18 material
05062	C18-C19
06036	late C18-early C19
06066	C19
06069	C19-C20
06072	C18?
06074	early C19
06086	early-mid C19
06089	C18/C19?
06107	mid C19 with some possibly residual C17-C18 material
07026	C18?
07044	mid C19
07064	C19
08280	mid-late C19
08057	mid C17-mid C19
08063	late C18-mid C19
08065	early C19
08078	early C19
08084	late C17-mid C19
08086	C18?
09013	late C17-C18?
09018	early C19
09020	C19
11020	C19-C20
14016	C18?
18009	C18/C19?
18068	mid C19 with some late C17-C18 residual material
19031	late C19
19034	mid-late C19
19036	mid-late C19
19039	late C19
19054	mid-late C19
19056	mid C19-C20
20014	early C19
20017	C17/C18?
20029	C19
20038	C19
20040	mid C19
20054	mid C19
21008	early-mid C19
21019	late C17-early C18
21032	C19
21036	C18/C19?
21160	C18/C19?
22073	mid C19?

Context	Probable date/date range
22127	mid-late C19?
31138	mid-late C19
31181	late C18
31291	mid-late C19
31576	mid-late C19
40026	mid-late C19
40032/40035	mid-late C19
40091	?
40113	C19/C20
40118	late C19-C20
40153	mid C19
50118	C19/C20?
50183	C19?
50352	C17/C18-mid C19
50415	C19
50435	late C18-early C19
50457	C18/C19?
60205	C18?
70000	late C19
70518	late C18-early C19
70594	C17-C20
80012	C18- mid C19?
80188	late C17-C18?
80391	C19
80439	C19
80840	C19 (mid-late?), but with possible residual C18 sherds
80900	?
80903	mid-late C19?
90002	C13-C15, C17-C19
90004	late C17-early C18
90043	late C17-C19
90044	early C18
90056	C19
90067	third quarter C19
90068	mid C19 with at least one possible C18 sherd
90070	C19 with possible C18 material
90097	C18/C19?
90101	C18/C19?
90109	late C17-C19
90213	late C17-early C18, but with some later (C19/C20) glass
90218	C19
90255	medieval/early post medieval?
90261	late C17-early C18
90309	C17
90311	C13
90331	C19
93097	C18/C19
93098	mid-late C19
90410	C18/C19?
90422	C13
90429	C18/C19
90494	early C19

Context	Probable date/date range
90585	mid C18
90873	late C19
90878	C19
90883	C19?
91135	mid-late C19
91137	C19
91226	mid-late C19, with some possibly C18 material
91303	late C18-mid C19
91397	mid-late C19
91453	C19
91524	C19
91641	C17/C18?
91653	post-medieval?
91727	C19
92598	late C19
93099	C19/C20?

Part IV: Roman Glass

The Glass from Parc Cybi, Holyhead (G1701)
H.E.M. Cool

Summary
Three fragments of vessel glass, four beads and one counter were recovered. The vessel glass can be broadly dated to the first to third centuries but each fragment shows re-working indicative of the pieces not having been used on site as vessels, but rather have being exploited at raw material. The beads include one frit melon bead of first to second century date and the counter is likely to be contemporary.

Methodology
The glass items that are most probably of late Iron Age or Roman date are catalogued here. It has not always been possible to be completely sure of the identifications as some of the fragments are minute, having been found in samples. These frequently preserve little diagnostic information other than their colour. SF 4153 is a classic example of this. The deep blue glass it is made from is typical of a number of bead types in use in the late Iron Age and Roman period and of vessel glass of the mid first century, but the state of preservation means that it is impossible to be sure whether it came from a vessel or a bead, though the latter might be more probable.

Results
Fig IV.1

Vessel glass
Three items of Roman vessel glass are present but it is doubtful in all cases whether they represent the use of glass vessels on this site. SF019 is a fragment of a blue/green prismatic bottle (Price and Cottam 1998,194-200). This was a very common type of glass container in use from the later first century to the earlier third century. This fragment is triangular and the short edge preserves a sharp cutting edge. The use of bottle fragments as raw material to be flaked like flint is a regular feature of Romano-British glass assemblages. This fragment does not show the careful flaking as often seen, but it could well have been present on the site as a result of this type of use rather than indicating commodities were arriving on the site in bottles. SF164 is a rim fragment of a blue/green vessel that had an out-turned folded rim. It is too small for a rim diameter to be calculated but it probably did not come from a vessel with a small rim diameter such as a jug, flask or bottle. It is more likely to have come from a jar or a bowl. The blue/green colour would indicate a first to third century date. The folding of the rim has left a small void running through the length of the piece. No deliberate evidence of cutting or flaking can be seen, but the piece is so regular that it might be surmised that this fragment has been re-used as a bead. Certainly the edge of the side is much smoother and much closer to the edge of the rim than is normally the case from an accidentally break.

The third fragment (SF016) is also a very regular rectangular body fragment that has been subject to heat so that all the edges are now fire-rounded. Again the combination of features is unusual on accidentally broken fragments, possibly suggesting that the fragment was being exploited here as raw material to manufacture other glass items such as beads. The re-use of blue/green vessel glass for the manufacture of such items has been suggested at Cefn Cwmwd on Anglesey where melted glass waste was also found (Cool 2012) and at Parc Bryn Cegin where only the blocks prepared for melting were recovered (Kenney 2008, 92).

Beads
Of the three deep blue beads, SF5388 is a small annular bead of an extremely long-lived type that occur in contexts dating from the sixth century BC into the eighth century AD (Guido 1978, 67 Group VIiva) so it could be contemporary with the proposed Iron Age date for the context. There are many problems dating minute beads such as SF1291 as they have only started to be found with the advent of regular environmental sampling, and of course being so small can easily be displaced in the soil by worm activity etc. They are sometimes found in Roman contexts. A range in a variety of colours was noted at Segontium in second to very late fourth century contexts at Segontium (Allen 1993, 227 no. 63). They were also encountered in some numbers in seventeenth century and later contexts at Chester where they could be interpreted as materials for beaded embroidery (Cool 2008a, 302 nos. 19-22). SF1291 came from the upper fill of a pit originally attributed to the Bronze Age. It seems highly unlikely that the bead is of such an early date because glass is an extremely rare find so early. Were this feature to have a secure Bronze Age date, this little bead would be of great interest.

SF6464 is a fragment from what was probably a globular beads. During the Roman period such beads are commonest in the fourth century, though they are occasionally found in the second and third centuries. It should be noted though that relatively undiagnostic globular beads have a long history appearing again in the late post medieval and modern periods so a fragment such as this cannot be assigned to the Roman period with total certainty.

The final bead (SF001), unfortunately found unstratified but located just south-east of roundhouse B, is the most closely dateable item to be considered here. It is a frit melon bead in use in Britain on Roman sites between the mid first and mid second century (see for example Crummy 1983, 30). On military sites of that date they are extremely common and such a site may well have been where this example originally came from. On a site such as Parc Cybi, of course, there is no way of knowing how long such an exotic item might have been curated. In my experience frit melon beads generally show high degrees of wear with much of the glaze worn off and sometimes only preserved in the spaces between the gadroons. Some of this 'wear' may be the result of adverse soil conditions, but it is rare to find a melon bead where the glaze is so well preserved as on SF001, suggesting that perhaps it was looked after more carefully than it would have been on most Roman sites.

Gaming counter

SF6175 is a plano-convex object with a smooth upper face and a pitted lower face. This is the shape of purpose made glass counters and these often have pitted bases like that of SF6175 (see for example Crummy 1983, 92 fig. 95). SF6175 was found within the roundhouse where there was evidence of high temperature industry and the suggestion has been made in the project design that this was a waste droplet. In my experience waste on glass working sites does not normally form this regular shape and so the item should probably be regarded as a finished object. Gaming counters are another artefact that is very common on military sites, but it seems unlikely that SF6175 was one of those and acquired in the same way as the melon bead was. Roman glass gaming counters tend to be larger. The set (or sets) found in a late first century cremation burial at Gloucester show the normal range of sizes (Cool 2008, 106, Table 5.2). As can be seen there, though small counters of 13mm diameter are known, the average diameter is 15-16mm. Not only is this 'counter' smaller than the normal gaming counters but it is also an unusual colour. It is made of translucent deep blue glass with a small amount of opaque white visible. Roman glass gaming counters of the first to second centuries are overwhelmingly either 'black' or white. The rare occurrences of other colours are made in opaque glass, not translucent as here.

It is uncertain whether the bichrome nature of the piece was deliberate as there is no attempt to make any decorative pattern and only a very small amount of white glass is present. The appearance might have come about if polychrome vessel glass was being re-used. The deep blue glass vessels decorated with opaque white marvered streaks and dots are which not uncommon in Claudio-Neronian or early Flavian assemblages might produce the effect seen here. It is very possible that this piece is of local manufacture, just as the similar 'counter' from Parc Bryn Cegin appears to be (Kenney 2008, 92). That too was unusual in being made of blue/green glass, though at 15mm its diameter falls more into the normal size range for Roman glass gaming counters. What these local 'counters' were used for is unknown, but SF6175 is certainly of a size and colour that would be appropriate for a setting in an item of jewellery.

Conclusions

Three fragments of vessel glass, four beads and one counter were recovered. The vessel glass can be broadly dated to the first to third centuries but each fragment shows re-working indicative of the pieces not having been used on site as vessels, but rather have being exploited at raw material. The beads include one frit melon bead of first to second century date and the counter is likely to be contemporary.

Though the quantity is not great, the small group has the potential to throw light on what the inhabitants found a use for amongst the range of Roman material culture available to them. As such it will contribute to broader synthetic studies of the interaction between native and 'Roman' in the region.

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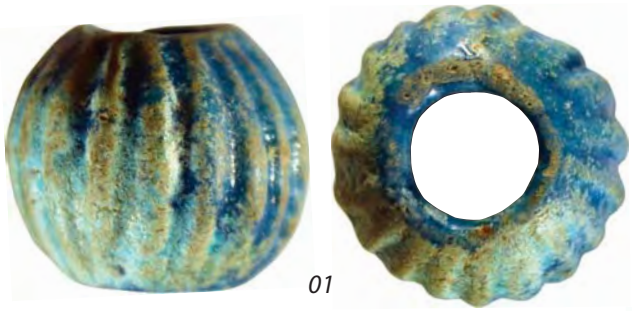
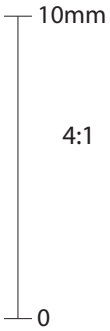
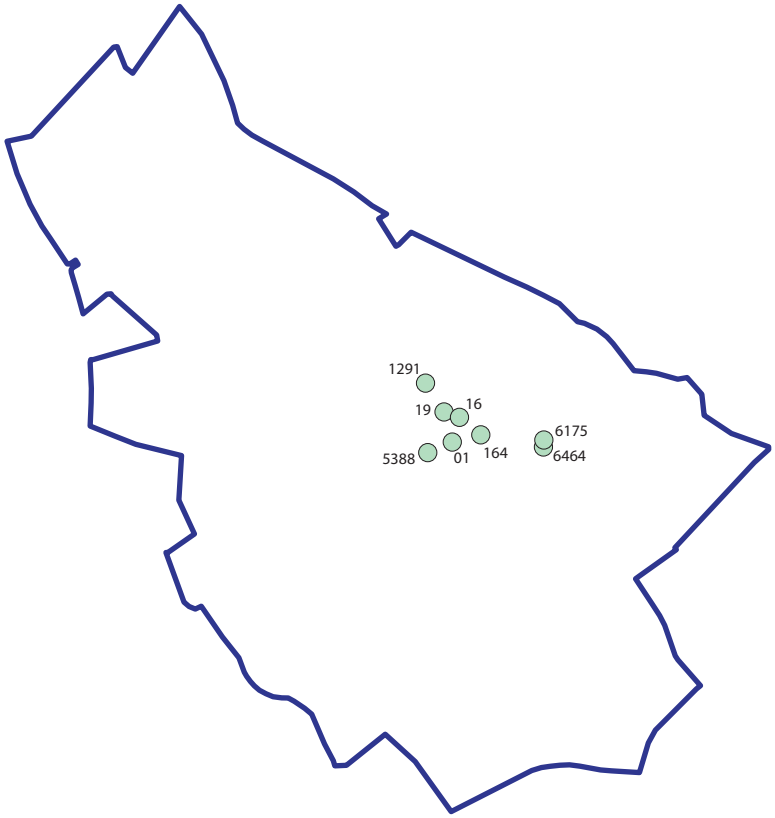
Catalogue of Roman and early glass

Find No.	Context	Area	Description	Dimensions
001	90002	B2	Melon bead. Frit preserving turquoise glaze in good condition, with wear on one side. Cylindrical perforation, even gadroons	Diameter 20mm, length 17.5mm.
016	90002	B2	Body fragment. Pale blue/green; Rectangular fragment, heat affected and edges rounded.	20 x 12.5mm, thickness 2mm.
019	90002	B2	Prismatic bottle; body fragment. Now triangular, short edge may have been deliberately converted to a sharp edge.	43 x 30mm, thickness 7mm
164	90424	B2	Rim fragment possibly re-used as a bead. Blue/green. Rim edge outbent, possibly horizontally, edge bent down and in with small void running through; side neatly broken at edge of rim. The whole now of an approximately square outline	10x9mm, maximum thickness 5.5mm
1291	10003	B1	Annular bead. Translucent deep blue glass.	Diameter 2mm, length 1mm, perforation diameter 1mm.
4153	70293	J2	Chip; deep blue translucent glass. One smooth surface	3.5 x 3 x 2mm
5388	92946	F1	Annular bead; approximately one quarter extant. Deep translucent blue glass. Irregular section.	Original diameter c. 8mm, maximum length 4mm, diameter 4mm.
6175	80859	K9b	Counter. Translucent deep blue glass with a streak and a fleck of opaque white glass flush with the surface, but not giving the appearance of having been separately applied and marvered smooth. Plano-convex with pitted base	Diameter 12 x 11mm, thickness 5.5
6464	80846	K9b	Bead; half extant. Translucent deep blue glass. Slightly squashed spherical.	Diameter 4mm, length 3mm, perforation diameter 1.5mm.







Location of glass objects within Parc Cybi

Fig IV.1: Roman glass from Parc Cybi

Part V: Knapped stone objects

Part V.1: Flint, Chert and Crystal Quartz Knapped Stone

George Smith
Figs V.1.1-V.1.9
For assessment report see Kenney *et al* 2011

Introduction

These knapped stone objects, comprising almost 2000 pieces, came from an extensive area of landscape, which excavation has shown includes numerous focuses of human activity in periods ranging from the Later Mesolithic to the 19th century AD. In order to approach this widespread material it is studied firstly, in terms of the field area within which it was found and secondly, within these areas, from identified layers or features that provide the possibility of meaningful assemblages, perhaps with associated pottery, other stone artefacts, environmental evidence and radiocarbon dating.

Raw material

The knapped stone raw material mainly consists of flint and black chert with smaller amounts of crystal quartz and grey chert, with a few flakes of vein quartz, quartzite and Graig Lwyd stone (Table V.1.1).

Table V.1.1 Numbers of recorded knapped lithic pieces by raw material

Material	***No. from hand excavation***	***No. from sieved collection***
Flint	628	375
Black chert	456	297
Grey chert	9	6
Crystal quartz	38	87
Vein Quartz	15	2
Quartzite	4	3
Graig Lwyd	8	8

Flint is available locally only as pebbles from the glacial drift or from residual deposits on beaches. Most are quite small and sub-rounded pebbles, which can only be worked by the anvil technique, which produces small, flat scalar flakes, often bipolar (with two impact points) as well as irregular waste fragments. Occasional larger pieces of only partially rolled nodules of flint also occur in the drift, with whitish cortex and therefore not much rolled, up to 3-4 inches diameter, as described by Greenly (1919, 777) as probably derived from sub-sea chalk beds between Anglesey and Lancashire, and these could be worked normally. The black chert varies in quality from quite fine to coarse, with most being coarse of poor flaking quality. Most of that used is from cobbles from the glacial drift or from beaches, probably originating in Ireland (ibid, 715). Greenly also said that on the northern coast, between Cemaes and Bull Bay are '... hard bands, an inch or so thick of clean black chert that breaks quite smooth and conchoidally' (ibid, 406) and this could also have been a source. Tabular black chert, but coarse and of poor flaking quality can also be obtained from *in situ* deposits exposed in the limestone cliffs around Benllech and Red Wharf Bay of south-east Anglesey. However, there was no shortage of pebbles and cobbles of black chert locally. The grey chert is of similar quality to the black chert and similarly derived from the glacial drift. The coarse chert is predominant and can only be worked by means of strong blows from a heavy hammer, producing irregular flakes with pronounced bulbs. Further working is generally limited to edge retouching of suitably sharp, if irregular flakes, there is no controlled working of cores. The availability of only poor raw material, with the need for anvil working of small flint pebbles and the irregular products of working the coarse chert means that the debitage is difficult to study and the resulting tools are mostly casual, and only occasionally classifiable and datable.

Methods

A considerable quantity of soil, particularly from pits, was processed by flotation for palaeobotanical remains. This also produced an enhanced collection of smaller lithic pieces. For instance, this explains the larger number of crystal quartz pieces from the sieved collection, since crystal quartz only occurs in very small sizes. It did not produce an enhanced collection of the smaller Later Mesolithic objects, showing that the hand collection generally here was a reliable record of knapped stone activity (Woodward 1978). The sieving did collect very small waste flakes or flake fragments of flint, mainly around maximum dimension of 5mm and recorded as microfragments, of which there were 538. They are distinguished from 'chips', which were waste flakes or flake

fragments of *c.* 10mm maximum dimensions. The microfragments were all studied at 10X magnification but were not recorded in any detail and are not quantified in tables, as their presence or absence was dependent on the sampling program and not otherwise meaningful. However, examination of the microfragments was useful in that it showed that no microburins were present, so did not suggest any more extensive Later Mesolithic presence. Most of the microfragments appeared to be the residue from secondary flaking during the production of retouched tools but some must have been just fragments from primary flaking. There were few microfragments of black chert, which is a tough material, not conducive to finer flaking but which tends to shatter, producing many irregular fragments.

The areas in which lithic and other objects were collected and recorded were those of former field boundaries and so of irregular size but provide a general view of the distribution of material (Table V.1.2). This shows that there was a low general distribution of knapped lithics but with concentrations in three areas, B2, E and H. As described below, Areas E and H both contained other clear evidence of activity related to the lithics, but Area B2 was most notable for an extensive Iron Age settlement. However, there were some stratigraphically earlier features in Area B2 and the presence there of numerous knapped lithics shows that this earlier activity was of some significance but difficult to interpret because of the amount of later disturbance.

Table V.1.2 General distribution of recorded lithics by area

Area	*Flint*	*Black chert*	*Grey chert*	*Crystal quartz*	*Vein quartz*	*Quartzite*	*Graig Lwyd*
B1	22	34		1		1	
B2	142	86	2	13	4		
B3	4	2					
D3	43	7		4		1	
E	206	41	2	9			
F	24	10		2		1	1
G	2						
H	279	444	8	74	4	1	12
1	51	11		4		2	
IA	46	23	1				
J1/J2	74	28	2				1
J3	19	12					
K1	13	13			1		1
K4		1					
K5	6	1		6			
K7	13	18					
K9	23	14					
L3	3	3		1			
M2	3	8			8		
M4	21	11				1	1

A cautionary view needs to be taken of the general distribution of knapped lithics because more must have originally existed as a surface scatter, incorporated into the topsoil, and much of that would have been removed during the initial soil removal prior to excavation. Most of what was recorded therefore was that within surviving soil layers or from pits and post-holes. The assemblages from such pits do not necessarily provide a full picture of the range of periods of activity present as shown by the comparison of flint surface scatters with assemblages from underlying Early Neolithic pits in Norfolk (Healy, 1983).

The records were added to an Access database, which had been created for the Assessment phase of the project. That had recorded general type, specific type and raw material. Further details were added as part of the full analysis from a standardised set of descriptive terms, such as colour, technology attributes, measurements and comments. The catalogue forming appendix V.1.1 below is generated from this database.

After recording the lithic pieces a selection was made of examples to illustrate, by photograph or drawing, and for further specialist study of use wear. The latter selection included examples of different retouched tool types and of different materials. It also included examples of unretouched pieces that had some possible evidence of utilisation in the form of microchipping or gloss, as well as a number of flakes that had no visible evidence of utilisation. The optical microscopic and Scanning Electron Microscope (SEM) use wear study (Debert, this volume, part V.2) provided a greater depth of evidence for interpretation of function. In some cases it showed that macro identification by form was not always correct. For instance, scraping is usually identified by typical

scraper forms with steep edge retouch. The use wear study showed that some sharper edges, recorded as cutting edges, had actually been used with a scraping motion. The study of unretouched flakes with no visible use wear showed that up to half of these had been utilised, mainly for cutting purposes. When projected to the whole site assemblages this extends dramatically the amount of activity represented. The use wear study also extended the interpretative possibilities by identifying the degree of hardness/softness of the material being worked on and so suggesting the types of material and activity, from hard materials such as bone or antler to soft materials such as meat or plants. The selection for use-wear analysis was of about 100 objects, so quite a small sample out of a total of some 2000 objects, but the results were valuable. The implications for interpretation are incorporated in the discussions, where relevant.

Later Mesolithic Activity (Fig. V.1.1)

Four or possibly five flint, narrow blade, microlithic points were recovered. Two are convex-backed pieces, sf947 and sf909, one, sf4534.2, is a lanceolate and one, sf4194, is a scalene triangle, all probably part of composite projectile points of a type that indicate a Later Mesolithic date, between *c*. 7500-4000 cal BC. The other, sf4439, a fragment only, is straight backed, retouched on one side and is not conclusively a microlithic point so is not necessarily Mesolithic. It came from the fill of a possibly Bronze Age ditch, below the structures of the Iron Age roundhouse settlement in Areas B2 and F1 and so an alternative identification is a possibility. sf4194 came from the fill of a Post-medieval ditch in Area B2. Object sf947 was found in cleaning the top of the gravelly subsoil in Area E, near to burnt mound activity area PRN 31582. The remaining two pieces, sf909, from Area E (Hollow) and sf4534.2, from Area H may have come from *in situ* contexts and deserve more attention.

Object sf909. Area E (Hollow). (Fig. V.1.1) This is a complete and perfectly made example, convex-backed with retouch on two sides, made from light grey-brown flint, 20mm long, 4mm wide and 2mm deep, probably made on the tip of a blade. It came from cleaning the subsoil surface beneath other deposits in Area E (Hollow). The same context, although extending over a wide area produced several other lithic pieces, comprising two pieces of worked black chert and 14 pieces of flint. The flint objects included the microlith (Fig. V.1.1), two thumbnail scrapers, an end scraper (sf853, Fig. V.1.5), a piercer, an utilised cutting piece and a core reject as well as flakes. These other objects are, typologically, unlikely to be associated with the microlith, which is therefore an isolated find, and if part of a projectile point could be a chance hunting loss. There was some additional slight evidence of further activity in this period, shown by a charred hazelnut shell in the fill of a small natural hollow, 31608, 7.5m to the north, which produced a radiocarbon date in the second half of the 5th millennium cal BC (SUERC-83278). The microlith was also examined microscopically for use wear, producing an interesting result. Cutting wear was identified along the long edge of the piece, indicating that it might have been mounted as part of a compound cutting tool, not a projectile. The wear type suggested use on medium or medium soft material, such as dry hide, grasses or other fibrous plants (Debert, this volume, part V.2).

Object sf4534.2, Area H. (Fig. V.1.1) This is an incomplete piece, made on the broken-off tip of a blade and is not certainly a Mesolithic point by type. The snap is not obviously an impact fracture, or a micro-burin snap. The fine, vertical edge-retouch serves only to shape the piece, creating a symmetric, lanceolate overall shape. It is of yellow-brown flint, incomplete length, 15mm, probably about 20mm long originally, 5mm wide and 2mm deep. It came from a short, shallow linear feature, 50412, near to the Early Neolithic building in Area H, but not stratigraphically related to it. The fill also contained a denticulate of black chert (4532, Fig. V.1.1) and a flint core from a pebble, 24mm long by 12mm wide by 8mm deep, which had produced at least two small blades. The presence of this small blade core together with the microlith does suggest that this may be a Mesolithic feature. Denticulates are also a common feature of Later Mesolithic assemblages, although not specifically so. The microlith was also studied microscopically for use wear, which identified scraping use of the steeply retouched edge (Fig. V.1.1) but only short term, so no material use could be suggested. It is possible that the scraping wear derived from the method of creation of the steep retouch, which, being a blunting retouch, probably served as backing for mounting the piece in a wooden haft.

Discussion

Mesolithic period lithics occur almost entirely as surface scatters, and so exist today in or immediately below the topsoil. In areas of agricultural use this lithic material will be incorporated into the ploughsoil. Area H was relatively well-preserved archaeologically and so it seems that the very small amount of evidence of Mesolithic activity there was representative of what was ever there. The same can be said for the evidence from Area E (Hollow), where there was an area of preserved old land surface. The occurrence of other isolated finds are in areas where the topsoil has been disturbed by agriculture and where we do not know how many lithics were present in the topsoil. On the whole though, from the very low occurrence of recognisable pieces it is probably unlikely that there was any more extensive surface scatter of Mesolithic flint and chert working. Mesolithic flint

scatters around the west coast of Britain are generally found in coastal locations (where flint pebbles could be obtained), often on prominent headlands, e.g. Nab Head, Pembrokeshire (David, 2007) and where streams or rivers debouch onto the coast e.g. Rhuddlan, Denbighshire (Quinnell and Blockley 1994). One radiocarbon date from a buried surface in Area B2 produced a radiocarbon date from a piece of probable birch bark of *c*. 8200-7800 cal BC (KIA40119). This might at least indicate that the area was birch woodland during this period and topographically not one where one would expect to find a focus of Mesolithic period activity, i.e. close to a fresh water supply or to a beach with a supply of flint. Pollen analysis of peat deposits from a bog close this location were analysed as part of the Trefignath chambered tomb excavation (Greig 1987). This showed that the late glacial flora was dominated by birch, willow and juniper, which was followed by a landscape of birch and grassland before developing into a forest maximum of oak and elm. It was this forest that would have been encountered by the first transient Mesolithic visitors to the area.

Area B1

This was an extensive linear area with very few archaeological features apart from one group of pits.

The lithic material is divided into those from firstly the General area: Unstratified material from the ploughsoil and scattered unassigned features, and secondly from Pit group PRN 31592: Stratified fills of pits.

B1 General area

The small number of objects are summarised in Table V.1.3. The most notable features are that scalar pieces are absent and that all three retouched pieces are thumbnail scrapers.

Table V.1.3 Knapped lithic objects from B1, General area

	Core/ fragment/ reject	*Core trimming flake*	*Flake*	*Flake fragment*	*Irregular fragment*	*Scalar piece*	*Retouched piece/fragment*	*Casually retouched piece*	*Utilised piece*	*Split pebble fragment*	*Pebble, unused*	*Burnt frag*	*Chip*
Flint	1	-	3	1	-	-	3	-	-	-	-	1	-
Black chert	1	-	3	4	1	-	-	-	-	1	-	-	-
Quartzite	-	-	-	-	-	-	-	-	-	1	-	-	-
Crystal quartz	-	-	-	-	-	-	-	-	-	-	-	-	1

Pit group PRN 31592

The small number of objects are summarised in Table V.1.4.

Table V.1.4 Knapped lithic objects from B1, PRN 31592

	Core/ fragment/ reject	*Core trimming flake*	*Flake*	*Flake fragment*	*Irregular fragment*	*Scalar piece*	*Retouched piece/fragment*	*Casually retouched piece*	*Utilised piece*	*Split pebble fragment*	*Pebble, unused*	*Burnt frag*	*Chip*
Flint	1	-	-	2	2	3	1	1	-	-	-	-	-
Black chert	-	1	1	2	-	-	-	-	-	1	-	-	-

Discussion

The fills of these pits included amounts of charcoal and some metalworking debris, considered to be possibly intrusive. The pits might therefore be prehistoric, as represented by the presence of the lithics. The scatter of lithic objects from the general area may also be associated with the activity represented by the pits. There is

nothing easily diagnostic of period within the lithic objects from the general area or pits. Flint and chert were used in similar quantities. The cores from the general area comprised one scalar of flint and one of tabular chert. That from the pit fill is of flint and scalar. The objects were scattered thinly through all the pits and show that a small amount of secondary working was taking place. The pits produced only two worked pieces, a flint thumbnail scraper made on a split pebble and a casually retouched piece, a cutting tool made by fine inverse retouch on one sharp edge of a flat, scalar flint flake. The lithic material from the wider area is very slight considering the large size of the area. The three retouched pieces are all thumbnail scrapers made on small flint split pebbles. The few complete flakes of both flint and chert are all broad (Length/Breadth less than 1:1). Broad flakes and the presence only of thumbnail scrapers, suggest that the scatter in this area is all of post-Neolithic origin. The presence of several scrapers would normally suggest domestic, settled activity but the small amount of lithic material overall seems more likely to be from transitory activity. In fact radiocarbon dates from three of the pits in this group have produced calibrated dates centred on the first century BC to first century AD suggesting that the small amount of lithic material is only residual in these contexts.

Areas B2 and F1 Stone-walled roundhouse settlement (Fig. V.1.9)

B2 General area, East area, Laneside and Pen-y-lon

These finds, summarised in Table V.1.5, are aggregated from four widespread areas, all regarded as of mainly post-medieval activity. Nevertheless, there is a substantial number of lithic finds and the immediate indication is that somewhere here was a focus of prehistoric activity, as well as perhaps a more widespread scatter. Most notable is the presence of numerous retouched pieces but very little waste material. This is surprising because there are several cores. There are relatively few objects of black chert and very few scalar pieces, which suggests a relatively late period of activity, when some better quality flint had been sourced, in contrast to the Early Neolithic assemblages from Trefignath (Smith and Lynch 1987) and the building in Area H at Parc Cybi (see below). The cores, summarised in Table V.1.6, however, are small and could only have produced small flakes.

Table V.1.5 Summary of lithics from B2 General area, East area, Laneside and Pen-y-lon

	Core/ fragment/ reject	*Core trimming flake*	*Flake*	*Flake fragment*	*Irregular fragment*	*Scalar piece*	*Retouched piece/fragment*	*Casually retouched piece*	*Utilised piece*	*Split pebble fragment*	*Pebble, unused*	*Burnt frag*	*Chip*
Flint	2	-	9	4	5	1	19	1	1	2	1	-	1
Black chert	5	-	8	2	3	-	3	-	-	3	-	-	-
Crystal quartz	-	-	-	-	-	-	-	-	-	-	-	-	1

Table V.1.6 Cores from B2 General area

	Single direction	**Two direction**	**Bifacial, Flat**	**Prismatic**	**Irregular**	**Scalar**	**Fragment**	**Reject**
Flint	-	-	-	-	-	1	-	1
Black chert	1	1	-	-	2	-	-	1

Table V.1.7 Retouched pieces from B2 General area

	Scraper, end	Scraper, side	Scraper thumbnail	Edge –retouched knife	Narrow blade microlith	Spurred piece	Nosed piece	Unclassified	Casually retouched unclassified	Utilised piece, cutting
Flint	2	-	2	1	1	2	-	1	1	1
Black chert	-	1	-	1	-	-	1	-	-	-

The retouched pieces and utilised pieces are summarised in Table V.1.7. Although scrapers are the most numerous (e.g. sf643) there is a variety of types, including two edge-retouched knives, one of flint (sf307) and one of black chert (sf554), indicating a domestic settlement area with a variety of tasks being performed. Both sf307 and sf554, as well as a spurred piece, sf309 were studied for use-wear (Debert, this volume, part V.2). Surprisingly this suggested a different use for each of these than that suggested by form alone. All three had edges identified as having scraping wear, sf307 with use on medium or medium hard material and sf554 on hard material. The spurred piece was recorded with use on medium or medium soft material. None of these pieces are properly diagnostic of period by type apart from the narrow-blade microlith sf4194 (Fig. V.1.1), of Later Mesolithic type. This seems to have been an isolated casual loss as there is no evidence of other objects that might be of that period amongst the rest of the assemblage. All of the complete flakes of flint and chert are broad, none of blade or narrow blade proportions. That, and the low proportion of chert used and of few scalar pieces, shows a later period of activity than the Early Neolithic material below the Trefignath chambered tomb (Healey 1987) and from the similar period activity at the building in area H at Parc Cybi (see below). A small number of lithic pieces have also been found in a stratified context beneath the Iron Age settlement within Area B2 (Phase 1, see below) and a Bronze Age date has been suggested for that activity but no pottery has been found to confirm that.

B2 Pre- Roundhouse settlement contexts: Phase 1

Table V.1.8 Summary of lithics from Pre-Roundhouse settlement Phase 1

	Core/ fragment/ reject	*Core trimming flake*	*Flake*	*Flake fragment*	*Irregular fragment*	*Scalar piece*	*Retouched piece/fragment*	*Casually retouched piece*	*Utilised piece*	*Split pebble fragment*	*Pebble, unused*	*Burnt frag*	*Chip*
Flint	1	-	1	-	-	2	4	-	1	1	-	-	3
Black chert	2	-	-	3	-	-	1	-	-	3	-	-	-

Table V.1.8 summarises the few lithic pieces that were stratified below the floors or structure of roundhouses A, B, C and D and therefore regarded as belonging to a separate and earlier phase of activity, being recorded as Phase 1. This activity, associated with several shallow ditches, has been interpreted as possibly of the Later Bronze Age on the basis of the find of a gold hair ring of that period. However, three radiocarbon dates from the old ground surface are widely differing, being from the Later Mesolithic, Later Neolithic and Early Bronze Age, inferring that there was some activity here at various periods.

The three cores comprise a core fragment of flint and a two rejects of black chert. The retouched pieces of flint comprise an obliquely blunted piece, a thumbnail scraper (sf507, Fig. V.1.9), a spurred piece and a fragment of a probable serrated piece. The one chert piece is an end scraper. The one flint utilised piece is a cutting tool. This small group compares well in character with the more widespread lithics from the general area described above, with a high proportion of retouched to waste pieces. This shows that some particular tasks were taking place in this area rather than it being just a lithic knapping area. Overall, the lithic pieces are not usefully diagnostic as to the period of activity represented, apart from the one Later Mesolithic piece. These objects can be compared to some of those from the adjoining area F1, which were also recorded as Phase 1 (see below).

B2 Roundhouse settlement Iron Age contexts

Table V.1.9 Summary of lithics from Iron Age occupation contexts

	Core/ fragment/ reject	*Core trimming flake*	*Flake*	*Flake fragment*	*Irregular fragment*	*Scalar piece*	*Retouched piece/fragment*	*Casually retouched piece*	*Utilised piece*	*Split pebble fragment*	*Pebble, unused*	*Burnt frag*	*Chip*
Flint	4	-	3	18	13	3	4	-	2	4	-	5	2
Black chert	2	-	9	3	11	-	1	2	1	5	2	-	-
Grey Chert	1	-	-	-	1	-	-	-	-	-	-	-	-

The assemblage is summarised in Table V.1.9. The cores all rejects or fragments. There are very few complete waste flakes compared to fragments and this can probably be put down to the residual nature of the pieces and the resulting trample damage. Of the few complete flakes all but two are broad and only two are of blade proportions. The four flint retouched pieces are all small thumbnail scrapers e.g. sf352, sf550 and sf643 (Fig. V.1.9), while the one of black chert is a denticulate. The two casually retouched black chert pieces are a denticulate and an unclassified piece. The two utilised pieces of flint are both cutting tools and the one of black chert is unclassified.

In general, this small assemblage is of a domestic nature with very little evidence of on-site lithic working. There are no unusual features that might suggest later use or re-use as part of the Iron Age settlement. Neither are there any pieces that allow close dating. It is similar to the assemblage from the wider area here and probably part of a low intensity spread of activity related to the focus of activity in Area E although, as described above, because of some differences in the assemblage, it might be of a different and perhaps later phase.

Area F1 (Fig. V.1.9)

This area contained pits and post-holes without pottery, but considered as belonging to activity associated with the Iron Age roundhouse settlement. The area is considered in two parts, firstly, those objects residual in clearly later contexts and secondly, objects recorded as predating the round house settlement and therefore probably *in situ* and equivalent to Phase 1 in Area B2.

Residual in later contexts

Table V.1.10 Knapped lithic objects from F1 residual in later contexts

	Core/ fragment/ reject	*Core trimming flake*	*Flake*	*Flake fragment*	*Irregular fragment*	*Scalar piece*	*Retouched piece/fragment*	*Casually retouched piece*	*Utilised piece*	*Split pebble fragment*	*Pebble, unused*	*Burnt frag*	*Chip*
Flint	-	-	1	3	1	1	4	1	2	1	-	-	-
Black chert	1	-	2	2	1	-	-	-	-	1	1	-	-
Crystal quartz	-	-	-	1	-	-	-	-	-	-	-	-	-

These are summarised in Table V.1.10. The retouched pieces comprise a convex scraper neatly made on the end of a large snapped blade (sf798), a thumbnail scraper on a small split pebble and two spurred pieces e.g. sf2348, which is made on a scalar flake. There was also one casually retouched piece, which is a small flake with irregular alternate retouch. The two utilised pieces are both cutting tools. One is an unusually large and fine flake with microchipping and gloss on a sharp edge, sf807, the other is a blade mid segment with microchipping

and gloss on a sharp edge. There was also one flake from a polished axe of Graig Lwyd stone, sf4338 (Fig. V.1.2). It is quite large, 58mm long, with facets retaining original polished axe surface. From its shape it is possibly the blade of an axe snapped-off in use, rather than being a flake from a re-worked axe.

Lithics from the Pre-Iron Age roundhouse Phase 1

Table V.1.11 Knapped lithic objects from F1/FW Phase 1 contexts

	Core/ fragment/ reject	*Core trimming flake*	*Flake*	*Flake fragment*	*Irregular fragment*	*Scalar piece*	*Retouched piece/fragment*	*Casually retouched piece*	*Utilised piece*	*Split pebble fragment*	*Pebble, unused*	*Burnt frag*	*Chip*
Flint	-	-	-	-	-	-	3	-	1	-	-	-	1
Black chert	-	-	-	1	-	-	-	-	-	-	-	-	-
Graig Lwyd	-	-	1	-	-	-	-	-	-	-	-	-	-

Although this is a very small assemblage it has several retouched and utilised pieces despite a lack of waste pieces. The three retouched pieces include a possible narrow-blade microlithic point, sf4439 (Fig. V.1.1), straight backed and retouched only on one side. The larger pieces comprise a convex end scraper and a thumbnail scraper. The convex scraper is made on finer than usual flint and very fresh, with no wear evidence. It is of a slightly extended shape, which can be characteristic of Mesolithic scrapers. The thumbnail scraper is made on a split pebble. The utilised piece is a possible scraper, consisting of microchipping on a steep edge of a scalar piece, but could be just trample damage.

D3 Pit group PRN 31574 (Fig. V.1.6)

This comprised a pit group and hearth with Later Neolithic Grooved Ware pottery, possibly representing the remains of a small settlement area, of which the structural evidence is lost.

Table V.1.12 Summary of lithics from Pit group PRN 31574

	Core/ fragment/ reject	*Core trimming flake*	*Flake*	*Flake fragment*	*Irregular fragment*	*Scalar piece*	*Retouched piece/fragment*	*Casually retouched piece*	*Utilised piece*	*Split pebble fragment*	*Pebble, unused*	*Burnt frag*	*Chip*
Flint	2	-	6	7	4	-	5	-	3	1	-	1	5
Black chert	-	-	1	4	1	-	-	-	-	-	-	-	-

The waste pieces are predominantly of flint (flint to chert ratio 29:6), which is mainly a mid-grey colour. One core is scalar and one just a fragment.

There are five retouched pieces, which is a high proportion of retouched to waste pieces (*c.* 1:6) and these are mainly of a domestic nature, two scrapers, one edge retouched knife (sf1652) and one piercer (sf4452.1). Similarly there are three utilised pieces, which are all cutting tools. The exception is the possible butt of a chisel-shaped arrowhead, a thick fragment with steep retouch along one straight blunt edge (sf1963.8). This and three of the other retouched pieces are made on scalar flakes showing the small size of the flint raw material available. The longest piece is only 36mm. Nevertheless, there are some narrow flakes showing quite controlled working. If sf1963.8 is from a chisel arrowhead it is a type that is found over a considerable period from Grooved Ware contexts (Green 1984, 33) through to Beaker contexts, e.g. at Bryn yr Hen Bobl, Anglesey (Hemp 1935) and fits with the pottery and the early third millennium Cal BC radiocarbon dates from the pit group here. It is interesting that the flint tools here used only poor, locally available raw material, whereas better quality,

imported flint, from England, was found in Middle and Later Neolithic contexts at Parc Bryn Cegin, Bangor, only 30km away from Parc Cybi (Kenney, *et al*, 2008, 46-7). However, the predominantly mid-grey colour of the flint provides a contrast with the flint used in areas E and H, which is predominantly yellow-brown, and suggests that there may have been different sources of drift material in different periods. That could have occurred as coastal exposures changed due to erosion.

This is a small assemblage, but from discrete and dated contexts. It is mainly a domestic assemblage which fits with the identification of one of the pits as a hearth and the presence in one of a rubbing or grinding stone. Five pieces were selected for use wear study (Debert, this volume, part V.2). Two, including the edge retouched knife sf1652, had no use wear. The object recorded as a piercer, sf4452, was identified as a fragment of a larger piece that had a scraping wear on medium to medium soft material, such wood, dry hide or fibrous plants. Two objects recorded as utilised flakes were both identified as used for cutting, both with some polish. Only one had identifiable material of use, that being medium soft, such as dry hide or fibrous plants.

Area E (Hollow) PRN 18406, Neolithic open settlement area (Fig. V.1.5)

A few lithic pieces were found in unstratified or post-medieval contexts in the general area here. These were all flint comprising four flakes or fragments, one scalar core, one retouched piece, a combined spurred piece and cutting tool (sf916.1) and two utilised pieces, both cutting tools. The main lithic assemblage, however, came from an extensive hollow that preserved an old land surface or relict soil, in which were pits, hearths, post-holes and stake-holes. Some of the latter formed arcs and probably represent structures. That area of activity has been interpreted as a well-used or re-visited temporary settlement site. Considerable quantities of flints and pottery were present in the relict soil. More pottery was found in the pits, but relatively few lithics. The pottery is mainly of Early Neolithic type but some is probably Beaker. In addition one pit produced a Later Mesolithic radiocarbon date and from elsewhere nearby came one Later Mesolithic convex-backed microlith (See Later Mesolithic Activity, above). Three radiocarbon dates of *c*. 3700-3400 Cal BC, give a good reference for a main period of Early Neolithic activity while a single date from pit 31509 of *c*. 2300-2000 Cal BC would fit with a Beaker period of activity. There were only 14-16 sherds of Beaker pottery, mainly from the relict soil (31025). Only two cut features produce Beaker pottery and these did not contain any lithics. It is clear then that this is assemblage is predominantly of a single period. However, this will be considered in three parts: 1. Objects from within discrete features, 2. Objects from the relict soil and 3. Objects from cleaning over the surface of the subsoil. In addition there were a few unstratified pieces of flint and black chert from the ploughsoil in the general area, which included two utilised flake cutting tools.

1. Objects from discrete features

Of the numerous features, of varying types, including natural hollows, hearths, and probable small post-holes and stake-holes only a few produced lithics and these are summarised in Table V.1.13. Only one feature, pit 31595, an unusual, vee-section, elongated feature produced a significant number of lithics and these will be described separately.

a. Miscellaneous small features within and close to the relict soil hollow

Table V.1.13 Summary of lithics from small features within and close to the relict soil hollow

	Core/ fragment/ reject	*Core trimming flake*	*Flake*	*Flake fragment*	*Irregular fragment*	*Scalar piece*	*Retouched piece/fragment*	*Casually retouched piece*	*Utilised piece*	*Split pebble fragment*	*Pebble, unused*	*Burnt frag*	*Chip*
Flint	2	-	4	4	2	1	5	-	1	3	-	1	-
Black chert	-	-	4	1	1	-	-	-	-	-	-	-	-
Grey chert	-	-	-	-	1	-	-	-	-	-	-	-	-

There are two cores, one bidirectional and one irregular. The retouched pieces comprise two thumbnail scrapers, two edge-retouched knives and cutting tool. The one utilised piece is also a cutting tool. One of the edge-retouched knives (sf5373) is a fragment, which joins with another piece (sf5364) found in the relict soil into

which some of these features were cut. This unusually long flint blade has use wear and gloss on the cutting edge (Fig. V.1.5). There is also another large edge-retouched piece (sf5374.1), found in a stake-hole, which appears to have been made from the same, light grey, rolled flint nodule as sf5364/5373.

Although a small assemblage this is notable for the high proportion of flint retouched and utilised pieces to flint waste, *c*. 1:3 and although there is some chert, the absence of any secondarily worked chert pieces. These objects, overall, indicate a living area, with a range of domestic tool types, but that very little actual lithic working took place on-site.

b. Lithics from Pit 31595

Table V.1.14 Summary of lithics from Pit 31595

	Core/ fragment/ reject	*Core trimming flake*	*Flake*	*Flake fragment*	*Irregular fragment*	*Scalar piece*	*Retouched piece/fragment*	*Casually retouched piece*	*Utilised piece*	*Split pebble fragment*	*pebble, unused*	*Burnt frag*	*Chip*
Flint	-	-	4	6	3	3	1	-	-	3	-	1	2
Black chert	-	-	1	1	2	-	-	-	-	-	-	-	-
Crystal quartz	-	-	-	-	2	-	-	-	-	-	-	-	1

The only retouched piece here (Table V.1.14) is a cutting tool. Although there are several pieces from this single, discrete feature the assemblage is not helpful in dating or interpreting the feature. It seems likely to be material incorporated by chance in a feature of domestic use in an area of varied activity.

2. Objects from the relict soil, Contexts 603 and 31025

Table V.1.15 Summary of lithics from the relict soil

	Core/ fragment/ reject	*Core trimming flake*	*Flake*	*Flake fragment*	*Irregular fragment*	*Scalar piece*	*Retouched piece/fragment*	*Casually retouched piece*	*Utilised piece*	*Split pebble fragment*	*Pebble, unused*	*Burnt frag*	*Chip*
Flint	4	2	24	25	8	12	8	1	12	9	-	1	-
Black chert	-	-	2	-	2	-	-	-	-	2	-	-	-
Grey chert	1	-	-	-	-	-	-	-	-	-	-	-	-
Crystal quartz	1		3	1	-	-	-	-	1	-	-	-	-

This context produced a significant number of lithic pieces and the bulk of the assemblage from this area (Table V.1.15). The flint cores comprise three irregular and one fragment. The one grey chert core is scalar and the crystal quartz core is a reject.

Only 8 of the 24 complete flint flakes can be classified as blades, i.e. over 2.0 length/breadth proportions, while 8 are predominantly 'broad', i.e. under 1.0 length/breadth proportions (Table V.1.16). This is somewhat different to what might be expected, since Earlier Neolithic assemblages are characterised by narrower flakes than later assemblages. This can perhaps be put down to the small size and quality of the available raw material. It is also likely that the objects in the relict soil may have been damaged by the amount of later activity, and longer flakes are more vulnerable to such damage, reducing their apparent presence. However, this is

contradicted by the fact that the proportion of complete flakes to flake fragments is the same that as in the single period assemblage from the Early Neolithic building in Area H (see below).

Table V.1.16 Length/Breadth index for all complete waste flint flakes from the relict soil 31025

L/B index	*Number*
<0.5	0
0.6-1.0	8
1.1-1.5	5
1.6-2.0	3
2.1-2.5	4
2.6+	4
Total	24

The retouched pieces are all of flint and comprise four edge-retouched knives, two piercers, one end scraper and one possible transverse arrowhead fragment. There is also one flint casually retouched piece, a cutting tool.
The utilised pieces are unusually numerous, mainly of flint, comprising 9 cutting tools, 2 piercers, 1 angle, plus one probable cutting tool of crystal quartz.

Discussion
This assemblage is distinctive for the near absence of chert pieces. In this it contrasts sharply with the lithic assemblage from Early Neolithic building in area H and with that from the Early Neolithic activity at the Trefignath chambered tomb, nearby, where, at both areas, chert predominates numerically. That is unexpected when the pottery from area E was mainly of Early Neolithic type perhaps indicating more than one phase of activity in that period. There is more evidence of flint working on site with four cores and a fair number of waste pieces, but still quite a high proportion of retouched and utilised pieces, and most notably a large number of utilised pieces. The knapping is also distinguished by a high proportion of scalar worked pieces and in this it is similar to the assemblages from the Early Neolithic activity in Area H and at the Trefignath chambered tomb. The retouched pieces are dominated by cutting tools, whereas scrapers usually dominate most domestic lithic assemblages. This may have some bearing on the activities within this area, for instance fibre and net-making or as opposed to animal hide preparation. The four edge-retouched knives are made on quite large flint flakes, which suggest that a different source of raw material may have been known than the locally available small pebbles. Similarly, the one casually retouched piece is a cutting tool, also made on a large flake. It has inverse sharpening retouch along one slightly concave sharp edge (sf860, Fig. V.1.5). The retouched flakes are random shapes, but each has a chance long sharp edge, that was minimally retouched. Object sf2269, came from the general relict soil and has a markedly convex edge. Object sf5364 was a fragment of an unusually long, blade-like, but thick flake edge-retouched knife, and has a fairly straight edge. The larger part, sf5373, was found in the fill of a possible post-hole cut into the relict soil (see 1a, above). These larger pieces are made from a light grey flint, rather different to the more usual yellow-brown or mid grey pebble flint found here, but they could all have come from one large nodule. The piercers are neatly made, but again made with minimal trimming on suitably chance pointed flakes, e.g. sf5146 and sf5003. The utilised pieces make use of various sized flakes with suitably chance sharp edges, for example sf5263 or, in one case, a sharp angle, sf977. There is also one fragment, 3mm thick, of a possible transverse, chisel or oblique arrow-head, sf5256, which is too small to confidently identify. It could also be the tip of an edge-retouched knife or even a truncated blade. If it were a chisel arrow-head, such pieces occur over a long time span, from *c*. 3500-2250 Cal BC (Green, 1984, 19).

3. Objects from cleaning the subsoil surface
Several numbers were given to this general context, which although described as subsoil, produced several pieces of lithics, summarised in Table V.1.17, probably intrusive from the relict soil layer (31025).

Table V.1.17 Lithic objects from cleaning the subsoil surface

	Core/ fragment/ reject	*Core trimming flake*	*Flake*	*Flake fragment*	*Irregular fragment*	*Scalar piece*	*Retouched piece/fragment*	*Casually retouched piece*	*Utilised piece*	*Split pebble fragment*	*Pebble, unused*	*Burnt frag*
Flint	2	-	6	4	2	-	6	-	1	2	-	-

Black chert	1	-	-	2	-	-	-	-	-	-	-	-

The flint cores consist of one irregular and one reject. The black chert core is irregular.

The retouched pieces are all of flint and consist of one narrow blade microlith, two thumbnail scrapers, one end scraper, one hollow scraper and one piercer. The one flint utilised piece is a cutting tool.

Like those from the relict soil above, these pieces are dominated by flint and again with a high proportion of retouched and utilised pieces to waste. These are, in contrast, dominated by scrapers rather than cutting tools. One of the scrapers (sf853, Fig. V.1.5) is a large, convex end scraper, quite different from the small, thumbnail scrapers found in Area B2, and made from a mottled grey, good quality flint that may well be a deliberately imported material. There is also one Later Mesolithic style narrow-blade microlith, sf909 (Fig. V.1.1) which may be related to the find from a small natural hollow, 31608, 7.5m to the north, of a charred hazelnut shell, which produced a radiocarbon date of mid to late 5th millennium cal BC (SUERC-83278), indicating that there was some activity here in that period.

Use Wear

Twenty six pieces from Area E were examined for use wear, 16 by optical microscope and 10 by SEM (Debert, this volume, part V.2), eleven of flint, three of crystal quartz and two of black chert. Of the plain (unretouched) flakes two had not been utilised, two, both of black chert, had been utilised, one for cutting and one, on two edges, for both cutting and scraping. One of the crystal quartz flakes (sf5267, Fig. V.1.8) was also identified (by SEM) as used for cutting, although the type of material on which it had been used could not be determined. Several flakes had been identified as possible utilised pieces, such as sf977 and sf5263, both being confirmed by the use wear study as cutting tools. The majority of the use wear identifications supported the initial recording but with a few exceptions. One piece previously identified as probably utilised (as a piercer) was not utilised. Four pieces previously identified as cutting tools actually showed scraping wear, for example sf2269 and sf5374. The suggested materials on which the studied objects had been used were varied. Three scrapers and four cutting tools had been used on medium soft to soft materials (such as dry hide, fresh hide, meat, fibrous or non-fibrous plants), one scraper on medium to medium hard material (such as wood, reeds or fresh antler) and one cutting tool on medium soft to medium hard material. The long cutting tool sf5364/5373 showed SEM evidence of wear gloss probably derived from cutting grasses but with no evidence of hafting. The use wear study provided evidence that even very small sharp scalar flint flakes and flakes of crystal quartz had been utilised for cutting. Several thumbnail scrapers occur here and although common their small size and probable impossibility of hafting makes their function uncertain. Larger convex end scrapers, like sf853, have good parallels in North American historic use for hide preparation for which smaller scrapers would be unfit (e.g. Whittaker 1994, 287-8). Actual thumb nails come into use in cleaning stripped stems during preparation of cordage from tree barks or fibrous plants, such as nettles (Edholm and Wilder 1995) and it is possible that thumbnail scrapers provided a desirable replacement for that task and one which would not require hafting. The one thumbnail scraper examined for use wear by SEM showed bidirectional scraping on medium soft to soft material, which would include the possible use of fibrous or softer plants, providing some support for their use in fibre cordage making.

Area E Burnt Mounds

This part of Area E contained four areas of features, PRNs 31582, 31583, 31584 and 31585, interpreted as belonging to Burnt Mound type activity. They lie at some distance from the main ‘hollow’ of relict soil in Area E and are described separately except for PRN 31584 which produced no lithics.

Summary of assemblage

Table V.1.18 Knapped lithic objects from Area E Burnt mounds

		Core/ fragment/ reject	*Core trimming flake*	*Flake*	*Flake fragment*	*Irregular fragment*	*Scalar piece*	*Retouched piece/fragment*	*Casually retouched piece*	*Utilised piece*	*Split pebble fragment*	*Pebble, unused*	*Burnt frag*	*Chip*
31582	Flint	1	-	-	-	-	1	2	-	-	-	-	-	-
	Black chert	-	-	-	-	-	-	-	-	-	-	-	-	-
31583	Flint	-	-	1	-	-	-	1	-	-	-	-	-	-
	Black chert	1	-	3	1	1	-	-	-	-	-	-	-	-
31585	Flint	1	-	-	-	-	-	-	-	-	-	-	-	-
	Black chert	-	-	-	-	-	-	-	-	-	2	-	-	-

Burnt mound area PRN 31582 produce only two waste pieces, an unclassifiable flint core fragment and a flint scalar fragment. One of the two retouched pieces was a flint thumbnail scraper, made on a scalar flake. It came from a pit and could be regarded as contemporary with the burnt mound. The other piece was a Later Mesolithic narrow blade microlithic point, sf947 (Fig. V.1.1), which came from cleaning the subsoil a few metres away from the burnt mound and so was almost certainly unrelated.

The small burnt mound PRN 31583 was associated with two pits, 31008 and 31124. These were possibly troughs or pit ovens and had been cut into a layer described as a 'heat-altered relict soil'. Within this, and therefore pre-dating the burnt mound activity, were a few waste pieces and one notable retouched piece, a large, leaf-shaped arrow-head, sf912 (Fig. V.1.5). Use wear examination of this object by SEM (Debert, this volume, part V.2) confirmed it as a projectile, identifying hafting wear and possible traces of resin hafting cement. Leaf-shaped arrow-heads are mainly an Early Neolithic type, but do also occur in Middle Neolithic contexts. In Wales leaf-shaped arrow-heads tend to be small, probably because of the small size and poor quality of the locally available raw material. The large size of this arrow-head therefore is exceptional and suggests that it is an imported object or one manufactured from imported flint. It falls within Green's classification of leaf-shaped arrow-heads as 1A, large and squat (Green 1984, 20-24). Large leaf-shaped arrow-heads are a notable component of Middle Neolithic burials in Yorkshire (Bradley and Edmonds 1993, 181). The indication is that they are non-utilitarian 'fine' objects, destined for special placement, such as with a burial. Its presence here is therefore hard to explain as it was not in a pit or with any other associated objects of note. There was also no indication of heat alteration of the arrow-head, despite being in a 'heat-altered' soil and so its presence there is unexplained.

Area H Early Neolithic Building (PRN 31570)

The overall assemblage is summarised in Table V.1.19, including objects collected by hand from general excavation of the layers overlying the floors of the building and from within cut features such as pits and post-holes. Some objects were also collected from soil sampling and sieve flotation. The latter process produced a considerable number of micro fragments, pieces of around 5mm maximum dimension. The possible significance of those objects compared to those hand collected will be considered in the discussion at the end.

Raw material

The assemblage consists of 725 pieces, of which 422 were black chert and 226 were flint. The black chert is of variable quality, mostly coarse but a small proportion is quite fine with good conchoidal fracture. The chert is easily available locally as pebbles and cobbles in the glacial drift and eroded out on beaches. It is discussed in more detail in the general Introduction, above. A few pieces of grey chert are also present, also from pebbles. All the flint, where cortex is recognisable, comes from relatively small pebbles, apart from one piece that came from a larger, part- rolled nodule. The small, wholly-rolled pebbles must be quite ancient but Greenly (1919, 777) says that chalk flints, only partly rolled are quite common in the eastern drifts. The assemblage also includes a small number of pieces of worked crystal quartz. Although very difficult to work, there are sufficient pieces present to show that it was being worked, but for what purpose is less certain, because the pieces are very

small and do not show regular conchoidal fracture. Only two pieces appear to have been secondarily worked, see 'Use Wear, below).

Table V.1.19 Summary of overall lithic assemblage from Area H

	Core/ fragment/ reject	*Core trimming flake*	*Flake*	*Flake fragment*	*Irregular fragment*	*Scalar piece*	*Retouched piece/fragment*	*Casually retouched piece*	*Utilised piece*	*Split pebble fragment*	*Pebble, unused*	*Burnt frag*	*Chip*
Flint	10	1	46	47	25	17	15	3	27	5	1	16	13
Black chert	16	4	115	120	82	-	24	13	35	7	-	1	6
Grey chert	-	-	2	2	3	-	-	-	-	-	-	-	-
Crystal quartz	-	-	11	11	26	-	1	1	1	-	-	-	19

Technology

The flint and chert were used quite differently. The flint originated as small pebbles, which were mainly worked initially by splitting on an anvil, producing 'bipolar' flakes, and scalar pieces. However, most flakes and flake fragments are not bipolar or scalar so, where available, larger pebbles must have been split to produce a striking platform and then flakes removed in a normal manner. The small size of most of the available flint raw material and the manner of its working seems to have affected the products in that an Early Neolithic assemblage, where good quality flint is available would have a bias towards narrow, blade-like flakes (Smith 1965; Pitts and Jacobi 1979), but that is not the case here. The majority of the complete flint flakes are of the middle range of length/breadth proportions (Table V.1.20).

Table V.1.20 Length/Breadth index for all complete waste flint flakes from PRN 31570

L/B index	*Number*
<0.5	1
0.6-1.0	14
1.1-1.5	21
1.6-2.0	8
2.1-2.5	1
2.6+	3
Total	48

The black chert is very variable in quality although more easily available than flint and in larger pieces. Most came from pebbles from the drift, but some was tabular and may have been sourced from *in situ* deposits on Anglesey. Greenly also noted that banded chert occurs in the glacial drift and said that this chert could be matched closely near Dublin. The chert varies in texture from fine to coarse, the finest being flaked almost as well as flint but this is rare and the majority is coarse. This can only be worked by heavy impact, and then often breaks in an uncontrolled way, which results in many irregular waste pieces. Subsequent working is restricted to choosing flakes with suitable sharp edges, which are then edge-retouched, rather than used to create particular tool shapes. Examples of both chert and flint were examined for use wear but it proved difficult to classify the material of use on the coarser chert specimens (Debert, this volume, part V.2).

Table V.1.21 Summary of core types from Area H

	Single direction	*Irregular*	*Scalar*	*Fragment*	*Reject*
Flint	2	-	3	4	1
Chert	-	4	1	8	3

There are surprisingly few cores (Table V.1.21) compared to the quantity of waste, which suggests that most primary working did not take place within the building. Similarly there are relatively few irregular fragments. The flint cores are very small, reflecting the size of available pebbles, the longest being only 40mm.

Nevertheless, two of these, one 30mm long, and one 24mm long, had produced blades in a systematic manner. The latter, however was found outside the building in a shallow feature that also contained a narrow-blade microlith (see Later Mesolithic Activity, above). The chert cores, are either part worked pebbles or irregular blocks, the largest 71mm long. One small chert core, however, had produced some blades. Another chert core worked from a large pebble had been struck several times in attempts at flaking and then rejected although the resulting object could have been used as a chopping tool.

Retouched and utilised pieces (Figs V.1.3 and V.1.4)

The assemblage is dominated by edge-retouched knives and scrapers (Table V.1.22). All but one of the edge-retouched knives are made from black chert. These are not specially shaped knives, but simply that have one suitable sharp edge, usually slightly convex, that has been sharpened by light edge retouch (e.g. sf124, sf1000, sf1019 and sf1087) (Fig V.1.3). In some studies these are just classified as casually retouched pieces but seem worth identifying as to function. The scrapers are made on both flint and chert. Five of the flint scrapers are standard convex end scrapers (e.g. sf1549) and one is a small, thumbnail scraper. The black chert scrapers, however, are chance thick flakes that have been edge retouched with a steep edge, two on the side, one on the end and one a hollow (sf1712.1). There are also piercers of flint (e.g. sf4539), and chert (e.g. sf4105.2), nosed pieces (e.g. sf5964.2, of flint and sf1308-1, of chert (Figs V.1.4 and 3)), spurred pieces and one serrated piece (sf1203.2) made on a small flint flake, with inverse retouch. The most distinctive piece, sf1117, is an ovate form, 40mm long, classified as a bifacially retouched knife, made on a broad flint flake with partly bifacial invasive flaking (Fig V.1.3). It could be a blank for an unfinished leaf-shaped arrowhead, rather than a knife but either would fit with an Early Neolithic assemblage. Interestingly, use wear study produced different evidence (see Use Wear, below).There is also one fragment of an unclassified, thin, bifacially retouched piece of flint, which could be the tip of an ovate knife (sf4412). One other piece deserves mention, an utilised flake of crystal quartz, sf3066 (Fig. V.1.8) from Hearth 50133 within the building. This was a larger than usual flake of crystal quartz, a short, broad triangular flake, with microchipping on one edge and around its point. Another flake of crystal quartz (sf1198, Fig.V.1.8) was examined for use wear and shown to have been used for scraping.

The one narrow-blade microlith, sf4534, was found outside the building in a shallow linear hollow, which also contained a flint small blade core and a chert denticulate, but is contextually unrelated to the building (see Later Mesolithic Activity, above).

Table V.1.22 Summary of retouched lithic pieces from Area H

	Laurel leaf point	*Denticulate*	*Nosed piece*	*Scraper*	*Scraper thumbnail*	*Edge –retouched knife*	*Piercer*	*Microlith , narrow blade*	*Serrated piece*	*Spurred piece*	*Unclassified*
Flint	1	-	1	5	1	1	1	1	1	2	1
Black chert	-	1	1	4	-	10	3	-	-	2	3

The casually retouched and utilised pieces (Table V.1.23), of both flint and chert, form a significant element of the assemblage and are more numerous than retouched pieces (78:39). Identification of utilisation in the hand specimen relates just to the visible presence of microchipping and sometimes polish. Microscopic study of some examples showed more conclusive evidence of use and showed that other flakes had also been used (see Use Wear, below). The great majority of pieces, overall, were cutting tools (e.g. sf5991.1, of chert (Fig V.1.3)).

Table V.1.23 Summary of casually retouched and utilised lithic types from Area H

	Casually retouched pieces						*Utilised pieces*			
	Cutting	*Piercing*	*Angle*	*Scraping*	*Denticulate*	*Unclassified*	*Cutting*	*Nosed piece*	*Angle*	*Spurred piece*
Flint	-	1	1	1	-	1	27	-	-	-
Black chert	7	-	-	-	1	4	33	1	-	1
Crystal quartz	2	-	-	-	-	-	-	-	1	-

Axe fragments

No stone axes were found in or around the building but twelve flakes or fragments of probable axes were found, ten of Graig Lwyd rock, one of grey chert and one of flint (Table V.1.24). These were mainly distinguished by the presence of facets with grinding/polishing striations and were quite small flakes and not transverse, axe re-sharpening flakes. There was no evidence that they had been chipped from the edge of an intact axe, so more likely were the result of taking flakes from a broken axe or axes. Two of the flakes showed possible utilisation. The flint piece also appeared to have been utilised. It has three very small facets with striations, two of which showing that the object that it came from had two ground surfaces at an oblique angle (sf1671.1, Fig. V.1.2). This angle makes it difficult to interpret these facets as part of an axe or other tool. The object is made from a better quality flint than most of the knapped flint assemblage, which included one other flake of very similar material, but which did not have any polishing striations.

Table V.1.24 Stone axe fragments from the Early Neolithic building

Material	***Flake from axe with grinding striations***	***Flake probably from axe but without striations***	***Flake probably from pebble***
Graig Lwyd	8	2	2
Grey chert	1	-	-
Flint	1	-	-

Discussion

The predominance of chert and the use of small flint pebbles parallel the assemblage from the nearby Trefignath chambered tomb. That consisted of 421 pieces of flint and chert, of which 131 came from the Period 1 old land surface, regarded as belonging to an activity phase pre-dating the tomb, a horizon that produced an Early Neolithic radiocarbon date. The similarity extends to the near absence of finer secondary working and the use of chance irregular flakes. This use of chance shapes and of casual retouch and frequent utilisation of flakes shows how utilitarian the Parc Cybi assemblage is. It is also certainly domestic in nature, with a variety of tool types. Unusually, such assemblages are usually expected to be dominated by scrapers, as it was at Trefignath Period 1, with 8 scrapers out of 14 retouched pieces (Healey 19, 57-9). Here, the low number of scrapers compared to numerous cutting tools, which were rare in the Trefignath assemblage, suggests some difference in the type and range of activities at each place. Serrated pieces are characteristic of Early Neolithic assemblages, but here there is only one, although functionally their place may have been taken by the edge-retouched knives. The assemblages are quite similar in the use of flint and chert, 1:1.4 at Trefignath and 1:1.9 at the building in Area H, the proportions of retouched pieces to the rest is quite different. At Trefignath, retouched and utilised pieces make up 27% of the whole flint assemblage and 8% of the chert assemblage. At the Parc Cybi building retouched and utilised pieces make up 18% of the flint assemblage and 17% of the chert assemblage. Overall, combining flint and chert, the proportions of retouched and utilised pieces to all objects is almost the same but at Trefignath there were very few chert retouched pieces, despite the predominance of chert pieces overall. One could say that there was a bias towards use of flint at Trefignath, or that chert began to be used more efficiently at the building. The intractability of the chert and its irregular fracture leads to a proportionately larger amount

of unusable waste fragments. In general terms, what is notable about both assemblages is the lack of arrow points, with none at Parc Cybi and only one at Trefignath, emphasising the domestic nature of the activities.

Use Wear

Use wear study could provide better understanding of the activities being carried out at the building and 58 pieces were selected for study (Debert, this volume, part V.2). This included objects of flint, black chert, crystal quartz and Graig Lwyd stone, examples of retouched and utilised pieces as well as a number of flakes with no visible use wear. A selection is shown in Fig. V.1.4. Of the examples of flakes with no visible use wear, three of flint, two of black chert and two of Graig Lwyd stone showed no use wear. However, two flint, four black chert, one crystal quartz (sf1198, Fig. V.1.8) and one Graig Lwyd stone (sf1013, Fig. V.1.2) did show use wear. Of these, all but one were sharp-edged flakes used for cutting, e.g. sf1724.1. Although this is a small sample, it suggests that around half of all unretouched flakes of reasonable size but with no visible signs of utilisation, such as polish or microchipping, were utilised, mainly for cutting purposes. This adds to the numerical predominance of cutting tools in the assemblage, with implications for interpretation of the activities being carried out. Where the quality of material of use could be recognised the use wear study showed that most cutting tools were used on medium soft to soft materials, which could include dry or fresh hide, meat, or silica-rich soft or fibrous plants. A smaller number were used on harder materials which could include antler, bone or wood. One distinctively large cutting tool (sf124, Fig. V.1.3) showed polish development and some gloss on both edges, suggesting use on medium to medium soft material, soft wood, reeds, dry hide or coarse plants. The shape of this object suggests it would have been hafted but no hafting wear was found.

Scraping was the next most common use wear identified both amongst the macro identification and those examined for use wear. Several of these were not standard scraper forms, did not have steep 'scraping' retouch and had initially been identified as cutting tools, (e.g. sf1019 and sf1087, Fig. V.1.3 and sf5964.2, Fig. V.1.4). One of these was the invasively retouched thin ovate form (sf1117). Its sharp convex edge showed evidence of bidirectional scraping on medium to medium soft material such as soft wood, dry hide or fibrous plants. Several pieces with scraping wear were 'expedient' tools on suitable flakes and with only short term use, which did not allow identification of material of use. Wear on other examples showed that a range of other materials were being worked, from hard to soft. The one typical convex scraper studied (sf4318), a type believed to represent hide preparation had evidence of prolonged use on medium soft to soft material which could include fresh hide, as well meat or plants. Overall, though, the small number of scrapers suggests that little hide preparation was being carried out. Amongst the tools of other stone, only one heavy chopping tool was found and no spindle whorls, suggesting that there was little use of animal products at all. The lack of projectile points, the predominance of cutting tools, and the types of wear found on them could accord with an emphasis on processing of plant products such as reeds or willow for basketry or fish traps, or of fibrous plants for cordage for fishing or thatching.

Area I

Unstratified

One irregular flint core and one flint thumbnail scraper.

Isolated pits

a. Pit 18059

Table V.1.25 Summary of knapped lithic objects from Pit 18059

	Core/ fragment/ reject	*Flake*	*Flake fragment*	*Irregular fragment*	*Retouched piece/fragment fraament*
Flint	-	3	1	1	-
Black chert	1	3	-	1	1
Crystal quartz	-	-	-	2	-
Quartzite	-	-	1	-	-

This pit is interpreted as a hearth but surprisingly contains quite a few lithic objects (Table V.1.25). The objects are not burnt so perhaps were backfilled into the pit after it was abandoned. The flint and chert are present in similar proportions with mainly waste pieces including one chert irregular core, representing some knapping close by. The one retouched piece is a hollow scraper of chert, which is not a type diagnostic of date, nor is there anything diagnostic about the technology, although an earlier Neolithic date is likely. The proportions of flint and chert are similar to that at the building in Area H. The presence of a single isolated hearth-pit suggests it belonged to a small, temporary camp-site.

b. Pit 19075

Table V.1.26 Summary of knapped lithic objects from Pit 19075

	Core/ fragment/ reject	*Flake*	*Flake fragment*	*Irregular fragment*	*Scalar piece*
Flint	2	3	1	3	1

This is small, shallow pit contained also two sherds of Later Neolithic Fengate Ware, charcoal and some animal bone suggesting a small cooking pit backfilled with rubbish. The lithic pieces are mainly waste, with two cores, one irregular and one scalar. There is nothing diagnostic of date but the sole use of flint, would accord with the pit belonging to activity of a different and probably more recent date than the nearby Early Neolithic settlement.

c. Pit 21037

Table V.1.27 Summary of knapped lithic objects from Pit 21037

	Flake	*Flake fragment*	*Irregular fragment*	*Scalar piece*	*Utilised piece*	*Chip*
Flint	1	3	1	1	1	1

This was a small, shallow pit with a very few lithic pieces, all of waste apart from one utilised cutting flake of flint (sf2169.1, Fig. V.1.6). The use only of flint may suggest a more recent period than the widespread Early Neolithic activity nearby, perhaps representing a small, temporary camp-site.

d. Pit 50112

Table V.1.28 Summary of knapped lithic objects from Pit 50112

	Flake	*Flake fragment*	*Irregular fragment*	*Scalar piece*	*Utilised piece*	*Split pebble fragment*
Flint	2	9	6	3	-	1
Black chert	1	-	-	-	1	-

This is a small assemblage, mainly of flint and mainly of waste apart from one chert utilised flake cutting tool. The pit seems to have been a cooking hearth and the lithics may have been incorporated during an abandonment back-filling phase. There is nothing diagnostic of period or function but from a single isolated pit presumably represents just a small, temporary camp-site.

Area Ia: Pit Group PRN 31572

This consists of a discrete group of pits and post-holes with Mid-Neolithic dates, *c*. 3300-2900 Cal BC, Fengate pottery and a stone mace-head. It produced a considerable assemblage of knapped lithics, summarised in Table V.1.29.

Table V.1.29 Summary of knapped lithic objects from Pit group PRN 31572

	Core/ fragment/ reject	*Flake*	*Flake fragment*	*Irregular fragment*	*Scalar piece*	*Retouched piece/fragment fragment*	*Casually retouched piece*	*Utilised piece*	*Split pebble fragment*	*Burnt frag*	*Chip*
Flint	1	6	7	10	3	1	2	1	1	4	6
Black chert	-	8	1	6	-	-	1	1	-	-	-
Grey chert	-	-	1	-	-	-	-	-	-	-	-

The raw material used was all locally obtainable with flint being favoured. There is only one core, a scalar, anvil-struck flint pebble and only one retouched piece, a fragment of a thin flake with neat, steep retouch on one straight edge, possibly part of a transverse type of arrow-head, perhaps an oblique form (sf1565.1, Fig. V.1.6), but could be a fragment of some other tool type. The casually retouched and utilised pieces are predominant with three cutting tools (e.g. sf1164.1, of flint, Fig. V.1.6), one hollow scraper of chert (sf 1165.1, Fig. V.1.6) and one unclassified piece, probably just a reject.

These retouched pieces are not usefully diagnostic of period although if there is a fragment of a transverse arrow-head it would accord with the period demonstrated by the pottery and dates. Much more flint is used than chert and there is relatively little waste although there was definitely some knapping taking place on site. There are very small amounts in each pit, suggesting that the pieces were chance, not deliberate inclusions. The exception is Pit 21221 which had 36 out of the total 53 pieces and this included the one retouched piece and three casually retouched pieces. The pit also contained pottery and fire cracked stones and may have been a focus of the activity, with perhaps a final deliberate deposit. The absence of convex scrapers, usually taken to be an indicator of domestic activity, with the presence of several cutting tools, a hollow scraper and a possible arrowhead could indicate that the pits were mainly hearth pits forming the focus of a short term camp-site rather than a longer term settlement.

Area J1/J2/J3 Pit and post-hole groups

Unstratified, residual or isolated contexts

Table V.1.30 Summary of objects from area J unstratified, residual or isolated contexts

	Core/ fragment/ reject	*Flake*	*Flake fragment*	*Irregular fragment*	*Retouched piece/fragment*	*Casually retouched piece*	*Utilised piece*	*Split pebble fragment*	*Burnt frag*	*Chip*
Flint	-	4	1	2	1	1	-	3	2	1
Black chert	1	1	1	2	-	1	1	1	-	-

These few pieces (Table V.1.30) came from various unrelated and scattered contexts. There are no individual pieces of interest, identifying period or function. The one retouched piece is flint and unclassified. The casually retouched pieces consist of one unclassified, of flint, and one cutting tool of chert (sf6395, V.1.7), plus an utilised flake cutting tool of chert (sf6378, Fig. V.1.6). This piece was examined for use wear and was shown to have good use wear showing use on medium soft to soft material, such as dry or fresh hide, meat, or silica-rich soft or fibrous plants.

Pit Group PRN 31576

This group of pits produced no dating evidence and only four pieces of lithics with no definite features identifying period or function (Table V.1.31). The one retouched piece is a convex end scraper of flint (sf6377, Fig. V.1.7).

Table V.1.31 Summary of objects from Pit Group PRN 31576

	Flake	*Retouched piece/fragment*	*Pebble, unused*
Flint	-	1	-
Black chert	2	-	1

Pit Group PRN 74831

These pits contained pieces of Fengate Ware pottery associated with radiocarbon dates of between *c.* 2900-2600 cal BC and a small knapped stone assemblage (Table V.1.32).

Table V.1.32 Summary of knapped lithic objects from Pit group PRN 74831

	Flake	*Flake fragment*	*Irregular fragment*	*Retouched piece/fragment*	*Casually retouched piece*	*Utilised piece*	*Split pebble fragment*	*Burnt frag*
Flint	3	5	7	-	-	2	-	5
Black chert	4	3	4	-	-	-	-	-
Grey chert	1	-	-	-	-	-	-	-
Graig Lwyd	-	-	-	axe frag	-	-	-	-

The most significant object here is part of a stone axe. This is the mid part of a large, thin flake from a polished axe of Graig Lwyd rock (not illus.). One facet retains the polishing striations of the axe outer surface. Use wear examination (Debert, this volume, part V.2) showed that it had been re-used as a cutting tool. The knapped flint and chert retouched pieces consist entirely of cutting tools and one of the utilised pieces, sf1853.1, Fig. V.1.6) also examined for use wear, was also a cutting tool, with polish on both surfaces although no material of use could be recognised. Such simple tools are not a period-specific style, although commonly found at Early Neolithic settlements, such as the Briar Hill causewayed Camp, Northamptonshire (Bamford 1985) and associated with Middle Neolithic pottery, beneath the henge bank at Durrington Walls, Wiltshire, whereas later deposits were associated with more sophisticated shapes and bifacial working (Wainwright and Longworth 1971, 157). The lack of scrapers, normally the most frequent type on a home-site, suggests that a different type of activity may be represented here, of a non-domestic type. Also, the unusually high proportion of retouched to waste pieces, together with presence of a single piece of flaked polished axe is unusual and could suggest some kind of special deposition. The presence of the pottery and the radiocarbon dates from these pits provide a reliable time period for use (or re-use) of the axe and accompanying flint and chert objects.

Pit Group PRN 74832
These pits contained pieces of Later Neolithic Grooved Ware pottery.

Table V.1.33 Summary of knapped lithic objects from Pit group PRN 74832

	Flake	*Irregular fragment*	*Retouched piece/fragment*	*Casually retouched piece*	*Utilised piece*	*Split pebble fragment*
Flint	8	-	1	-	1	-
Black chert	1	1	1	1	-	1

This is a small assemblage with no definite features identifying period or function although there are sufficient pieces to suggest that they are not just residual in a pit of later date. Flint and chert are both present and all four tools are cutting tools indicating that the pits may have been associated with a specific type of activity.

Pit Group PRN 70294
These pits produced only three lithic pieces all of flint, two flakes and an irregular fragment with no features identifying period or function. There were no associated artefacts or dating evidence.

Pit Group PRN 31582
These pits produced radiocarbon dates of the Later Mesolithic, Early Neolithic and Middle Bronze Age periods, the latest date presumed to be relate to the pits' use, the earlier dates presumed to be residual.

Table V.1.34 Summary of objects from Pit group PRN 31582

	Core/ fragment/ reject	*Flake*	*Flake fragment*	*Irregular fragment*
Flint	-	-	1	1
Black chert	1	2	3	1

This is a very small assemblage with no diagnostic tool types or technology to help identify their period or function. There is such a small amount of lithic material that it may be residual from elsewhere.

Pit Group PRN 31581
These pits have produced Early Bronze Age radiocarbon dates and only three pieces of knapped lithics, all waste pieces and so few that they could be residual. These were a flint flake fragment, a flint split pebble and a black chert irregular fragment, none diagnostic of date or function.

Area K1

Timber roundhouse PRN 31588
The roundhouse is believed, on style, to be of Bronze Age date. Although there were a number of post-holes the only lithic find came from a small patch of charcoal-rich silt, 18156, within the area of the roundhouse. This was a flint utilised cutting tool on a small scalar flake with microchipping and gloss on sharp distal edge and not in any way diagnostic of period.

Other Features
There were a few scattered groups of pits in the general area of the roundhouse and possibly associated with it. Three of the pits produced Bronze Age pottery and two, interpreted as fire-pits, produced radiocarbon dates in

the second millennium Cal BC. Although there were numerous features they produced very few lithic pieces. A corn dryer (PRN 31603) produced only a few fragments and split pebbles of black chert, which were probably all accidentally broken. A few of the features close to the timber building, included in PRN 31588, produced a small number of knapped lithics, summarised in Table V.1.35.

Table V.1.35 Summary of knapped lithic assemblage from PRN 31588

	Flake	*Flake fragment*	*Irregular fragment*	*Retouched piece/fragment*	*Utilised piece*	*Split pebble fragment*
Flint	-	2	1	1	1	1
Black chert	2	-	-	1	-	1

The small number of pieces and the lack of cores or much waste suggests that the pits, in general, were not associated either with lithic preparation or much in the way of activities related to lithic use. One retouched piece was a small flint flake with some microlithic style fine retouch and unclassifiable as to use. The other was a piercer made on thick chert core-trimming fragment with a retouched point (sf1032, Fig. V.1.7). Neither object can be assigned to a particular period.

Areas K4, K5 and K7

These large areas had few features but all were identified as of Iron Age or more recent date. However, they did produce a few scattered knapped lithic pieces.

Area K4 produced only one black chert flake. Area K5 produce three flint flakes and one black chert flake as well as a flint split pebble fragment, a flint hollow scraper and one flint utilised piece piercer.

Area K7 produced seven pieces of flint and sixteen pieces of black chert (Table V.1.36) suggesting that there was a focus of activity there. However, the chert fragments and burnt pieces may have been accidentally shattered. The lithic pieces were concentrated around the summit of the small knoll here and just below it to the north-east and this would be a natural point for a small camp site or even just a temporary working area. The one core is irregular. The one retouched piece, of chert, is a spurred piece and the one utilised piece, of flint, is a cutting tool. These lithics do not give any real indication of what period or type of activity that might be apart from suggesting it is post-Mesolithic in character and lacking any kind of points is not a hunting camp.

Table V.1.36 Summary of lithics from Area K7

	Core/ fragment/ reject	*Flake fragment*	*Irregular fragment*	*Retouched piece/fragment*	*Utilised piece*	*Split pebble fragment*	*Pebble, unused*	*Burnt frag*	*Chip*
Flint	1	1	1	-	1	1	1	1	-
Black chert	-	6	-	1	-	1	-	5	3

Areas K9A and K9B

PRN 31596 , a Romano-British period settlement, Area K9b

The contexts belonging to the Roman-British settlement produced a few pieces of lithics, summarised in Table V.1.37.

Table V.1.37 Summary of lithic assemblage from PRN 31596

	Flake	*Irregular fragment*	*Scalar piece*	*Retouched piece/fragment*	*Split pebble fragment*
Flint	2	-	1	3	-
Black chert	3	6	-	-	2

These pieces were all in soil layers or within features belonging to the Romano-British settlement and can be presumed to be residual from earlier activity in the same area. The three flint retouched pieces comprise a thumbnail scraper on a small split pebble, a possible piercer on the snapped-off tip of a triangular section flake and a bifacially retouched knife (sf6148, Fig. V.1.9). Both the latter were examined for use wear (Debert, this volume, part V.2). The piercer was shown to have only been used briefly but for scraping not piercing, on the two longer edges. The knife is made on a thin blade, only 39mm long, with fine invasive flaking to thin and shape it, plus steeper edge retouch on the non-bulbar face. It also has a small amount of fine invasive flaking on the bulbar face to thin the tip. The careful thinning could have been done to facilitate hafting as part of a composite cutting tool. The use wear study showed it to have been used for cutting on the two lateral edges, probably on medium soft material such as grasses or cereals, with some development of gloss, which would support it interpretation as part of a harvesting sickle. The knife is of interest because it was found in the floor layer of one of the round-houses and shows no signs of damage as might be expected if it was residual. It is possible that it was a found piece that had been collected from elsewhere and brought into the house as an attractive souvenir or even for use, flint being harder and sharper than iron. Its invasive flaking sets it apart from most of the Early Neolithic flint retouched cutting pieces from the building in area H so would fit best with some of the Later Neolithic activity in Area J. Although finely worked it does seem to have been made from locally available flint.

PRN 31573, a pit group in area K9A

These pits lay some way to the north of, and separated from the Romano-British roundhouse settlement of Area K9B. The pits produced a few lithics, summarised in Table V.1.38, as well as some Middle Neolithic pottery and three radiocarbon dates of *c*. 3350-3050 Cal BC.

Table V.1.38 Summary of assemblage from PRN 31573

	Core/ fragment/ reject	*Flake*	*Irregular fragment*	*Scalar piece*	*Retouched piece/fragment*	*Split pebble fragment*	*Chip*
Flint	1	5	3	2	2	2	1
Black chert	-	-	1	-	-	-	-

This group of lithics is notable for it being almost entirely of flint. The one core is just a reject pebble, 45mm long, from which a few flakes have been removed. The two retouched pieces are a piercer, made using a chance pointed flake, the tip of which has been improved by alternate retouch (sf5731, Fig. V.1.6). This came from pit 80686, which produced two later 4th millennium radiocarbon dates. The other piece is a convex end scraper, made on a split pebble. None of the five complete flakes are blades, i.e. over 2.0 length/breadth index, the longest being only 36mm, and all broad in relation to length and in that, similar to the assemblage from PRN 31570, the Early Neolithic building.

Area L3 PRN 31593, Circular post-hole feature plus other pits and ovens

There was no dating evidence for these features but they were regarded as probably prehistoric and associated with the Iron Age settlement to the south-east. There were only three lithic pieces, just waste fragments, two of flint and one of black chert, all likely to be residual from a surface scatter from the widespread earlier activity in the area.

Areas M2 and M4

Early Neolithic pits and post-holes: PRN 31571; Bronze Age ritual complex: Multi-cist barrow PRN 31589, Ring ditch PRN 319590, D-shaped Enclosure PRN 31591

Early Neolithic pits and post-holes: PRN 31571

Table V.1.39 Summary of knapped lithics from PRN 31571

	Flake fragment	*Irregular fragment*	*Retouched piece/fragment*	*Utilised piece*	*Split pebble fragment*	*Burnt frag*	*Chip*
Flint	4	2	1	1	-	4	-
Black chert	-	-	-	-	1	-	-
Crystal quartz	-	-	-	-	-	-	1

These pits and post-holes produced a number of pieces of Early Neolithic pottery in fresh condition, indicating that they were not residual and so showing that these features comprised an area of possibly minor settlement activity pre-dating the Bronze Age ceremonial activity within which it was found. The few lithic pieces are not informative of period, but at least supportive of the suggestion of some domestic activity here. The one retouched piece, of flint, is a fire shattered fragment of a larger flake tool with fine invasive sharpening retouch along one straight edge, possibly an edge-retouched knife. The one utilised piece, of flint, is a cutting tool, a broad flake with microchipping and gloss along one sharp, slightly convex edge (sf1413, Fig. V.1.4). This was examined for use wear, which showed that it had considerable use for cutting on medium soft material, such as dry hide or fibrous plants.

Ring ditch PRN 31590

Summary of assemblage

Four pieces, notably all of black chert: 2 irregular fragments, 1 scalar piece and one split pebble fragment.

These pieces come from the fill of the ring ditch of a small barrow, and probably silted in over a considerable time. They are all waste pieces. None are diagnostic of date and are present in such low numbers that there is no suggestion that they form a special placed deposit so are likely to belong with a wider scatter of material belonging with domestic activity predating the digging of the ring ditch, represented by pit and post-hole scatter PRN 31571, described above.

D-shaped enclosure PRN 31591
Summary of assemblage
Table V.1.40 Summary of knapped lithics from PRN 31591

	Core/ fragment/ reject	*Flake fragment*	*Irregular fragment*	*Utilised piece*	*Split pebble fragment*	*Pebble, unused*	*Chip*
Black chert	1	1	2	1	3	-	-
Crystal quartz	-	-	-	-	-	-	1

The only group of material found that is entirely of black chert (apart from one micro fragment of flint). These pieces were scattered within the ditch fill. Only one has been utilised, a cutting piece. Two pieces came from a pit, cut into the ditch fill of this enclosure, perhaps representing a secondary burial or deposit. The few knapped pieces, mainly waste pieces apart from the utilised cutting piece, probably derive from the previous Early Neolithic activity in the area. The exceptions to this are numerous small white quartz pebbles that occurred in both the primary and secondary ditch fills and probably originated from a special deposit on a destroyed mound or mounds within the ditched enclosure (see Other Stone report, below).

Multi-Cist barrow PRN 31589
Summary of assemblage
Table V.1.41 Summary of knapped lithics from PRN 31589

	Flake fragment	*Irregular fragment*	*Scalar piece*	*Retouched piece/fragment*	*Pebble, unused*	*Chip*
Flint	-	-	1	1	1	1
Black chert	1	4	-	-	-	-
Crystal quartz	-	-	-	-	-	2

These few pieces are intriguing because they came from the burial cists and so thus from well-sealed contexts and so could have been deliberately placed. Six of the eight cists have some lithic objects. However, all but one of the objects are small, undistinguished waste pieces, which seem more likely to have been residual inclusions. The one possible exception, which might be a burial deposit, is the one retouched piece, a flint edge-retouched knife, (sf4500, Fig. V.1.7), found in the basal fill of cist 5. The knife is a broken fragment, missing one end. One convex side edge has fine, partly invasive shaping.

Another feature, a slight hollow, 40107, within the area of the cists, contained two black chert irregular fragments and one piece of Graig Lwyd stone, a flake from a stone axe. This has two polished facets, the angles of which suggest that one might be an axe side facet and the other a face. Use wear study (Debert, this volume, part V.2) showed that it had not been re-used in any way. Any flake from a stone axe is potentially of special interest, but its presence in this hollow, which might be no more than a natural hollow that has preserved some undisturbed early soil, seems fortuitous but whatever, is likely to belong with the Early Neolithic activity in this area.

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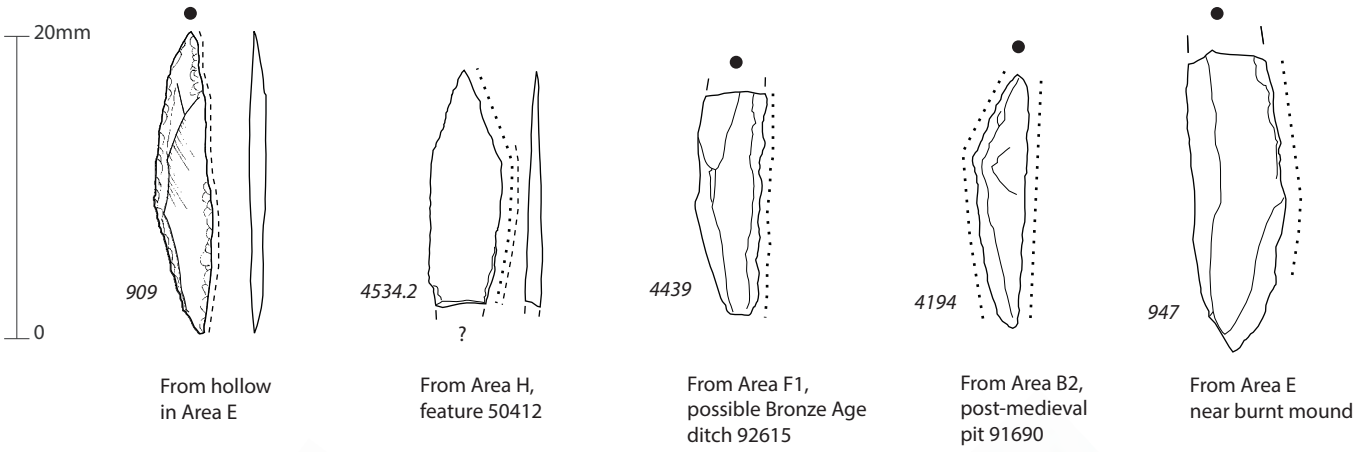


From hollow in Area E

From Area H, feature 50412

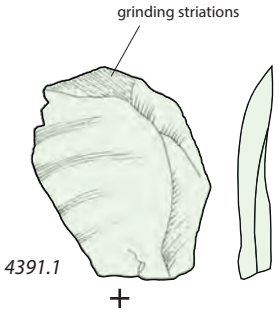
From Area F1, possible Bronze Age ditch 92615

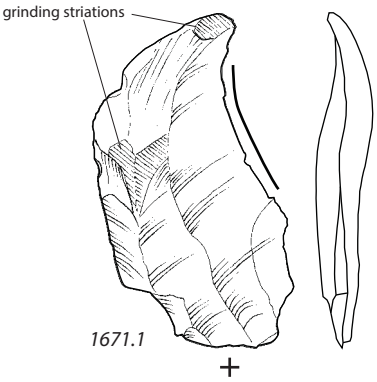
From Area B2, post-medieval pit 91690

From Area E near burnt mound

Denticulate from Area H, feature 50412

Fig V.1.1: Mesolithic artefacts (sf4532 is chert and the rest are flint)

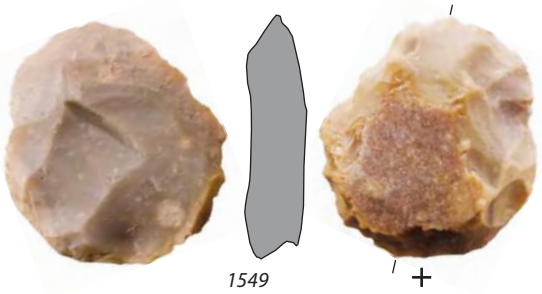


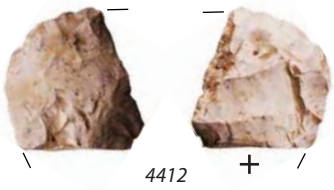


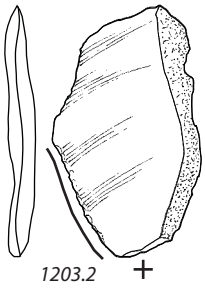
Key

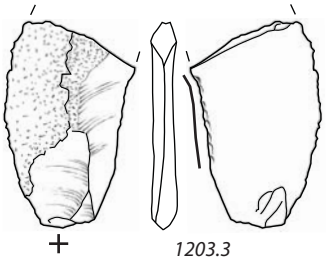
- point of percussion present
- direction of missing point of percussion
- probable direction of missing point of percussion
- retouch not visible on drawing
- gloss/microchipping
- microscopic usewear
- Group VII stone

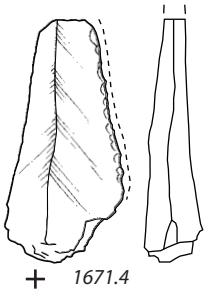
Fig V.1.2: Flakes from polished stone axes (sf1671.1 is flint and the rest are Group VII stone; sf4338 is from Area B2 and the rest are from the Early Neolithic Building in Area H)

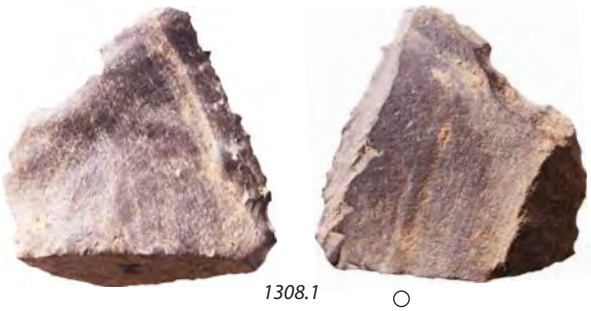


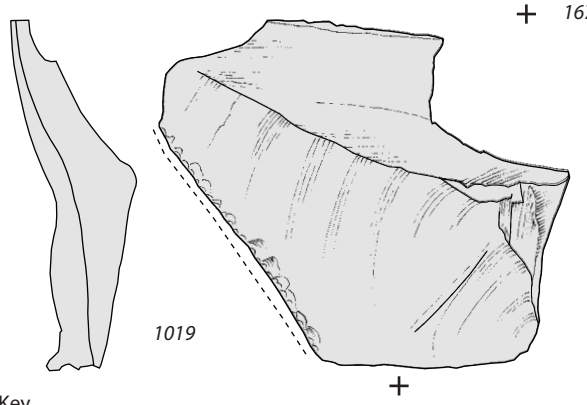


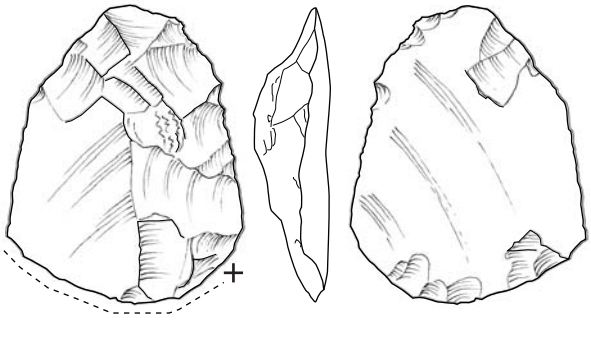








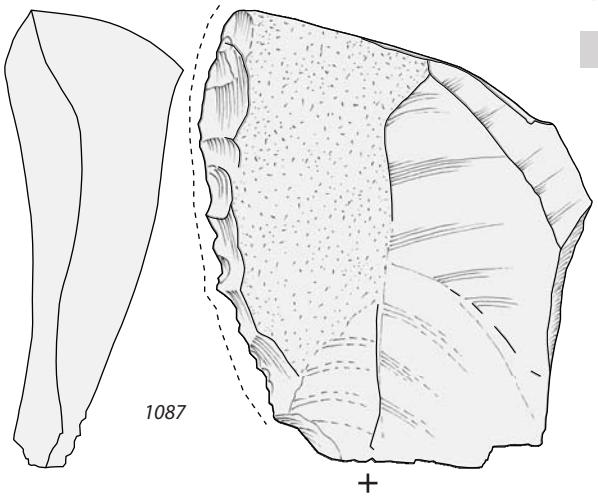




Key

- point of percussion present
- direction of missing point of percussion
- probable direction of missing point of percussion
- retouch not visible in drawing
- gloss/microchipping
- microscopic usewear
- chert

0 50mm



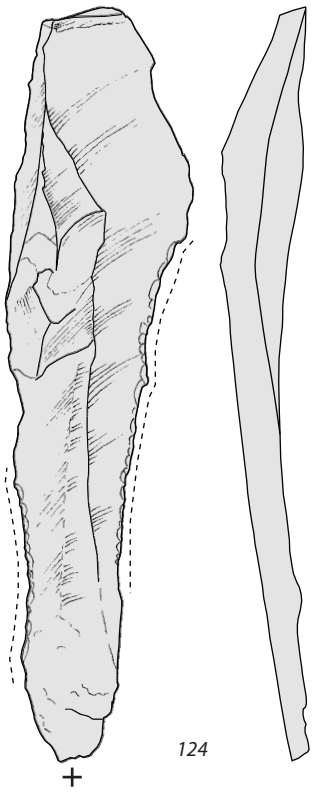


Fig V.1.3: Knapped stone artefacts from the Early Neolithic timber building
(Chert: sf124, 1019, 1087, 1308.1, 5991.1, 1000; Flint: sf1117, 1203.2, 1203.3, 1413, 1549, 1671.4, 4412)

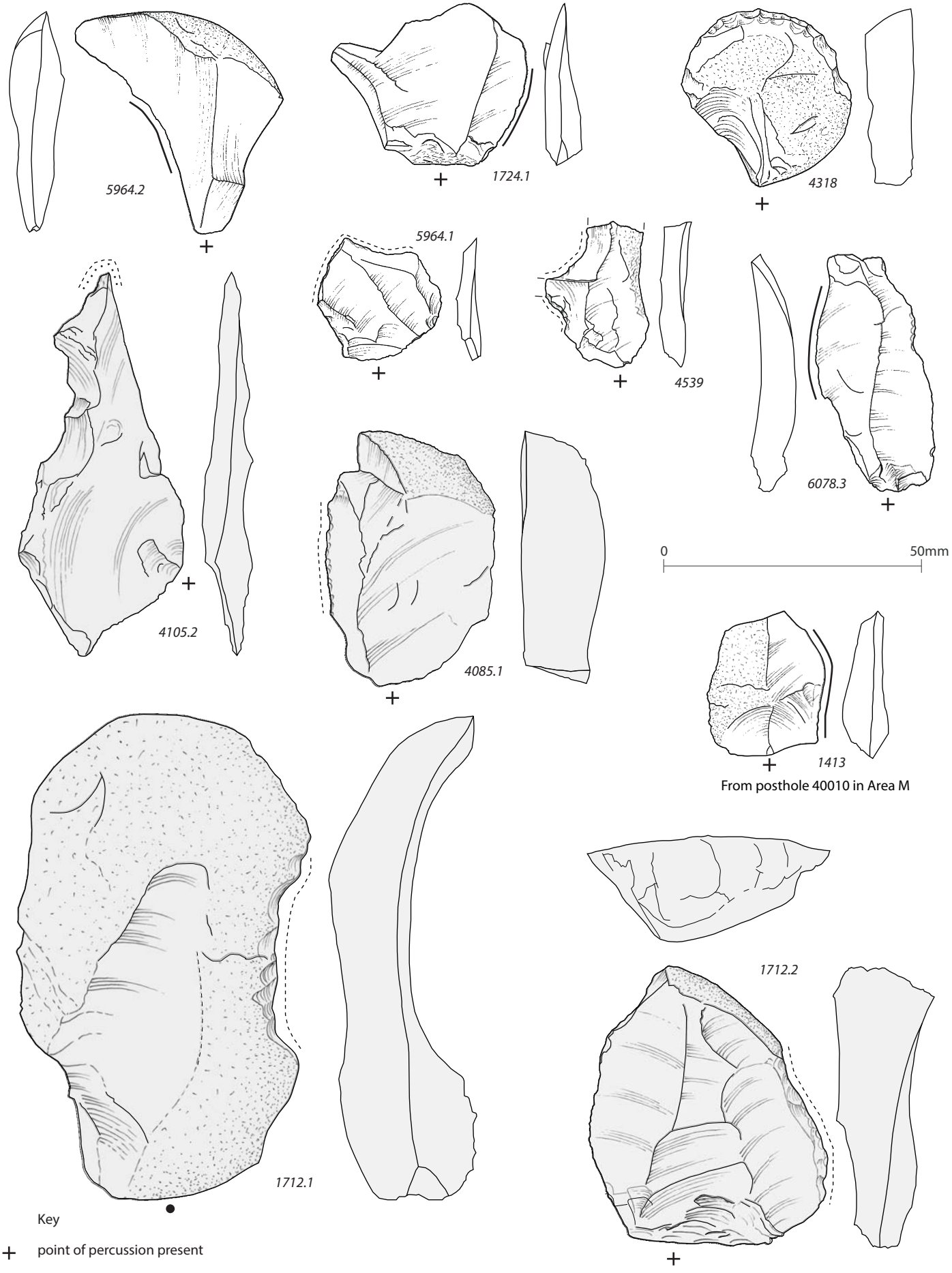


Fig V.1.4: Knapped stone artefacts from the Early Neolithic timber building, with sf1413 from the Early Neolithic activity in Area M
(Chert: sf1712.1, sf1712.2, 1724.1, 4085.1, 4105.2; Flint: sf4318, 4539, 5964.1, 5964.2, 6078.3)

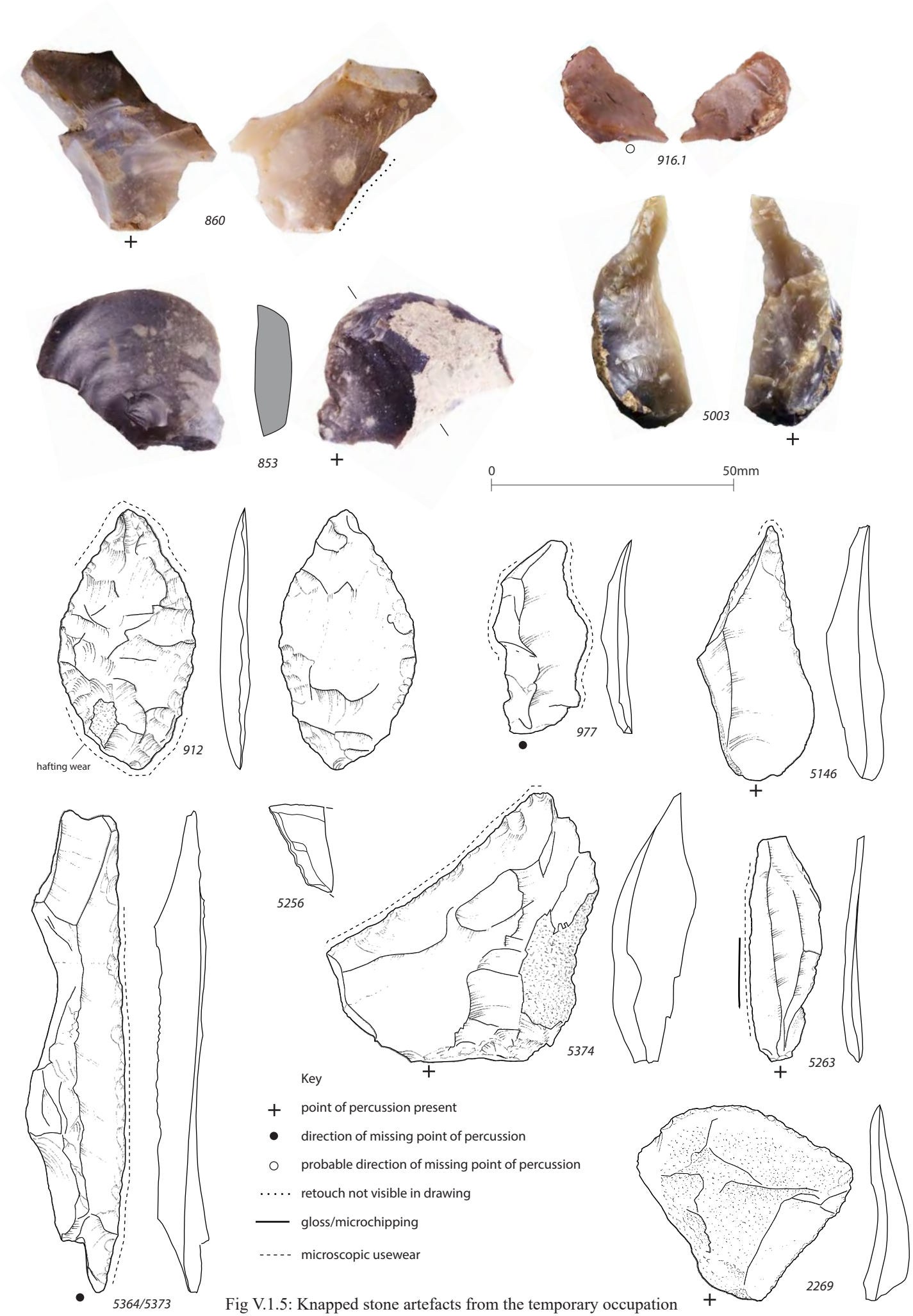


Fig V.1.5: Knapped stone artefacts from the temporary occupation in Area E (all objects are made on flint)

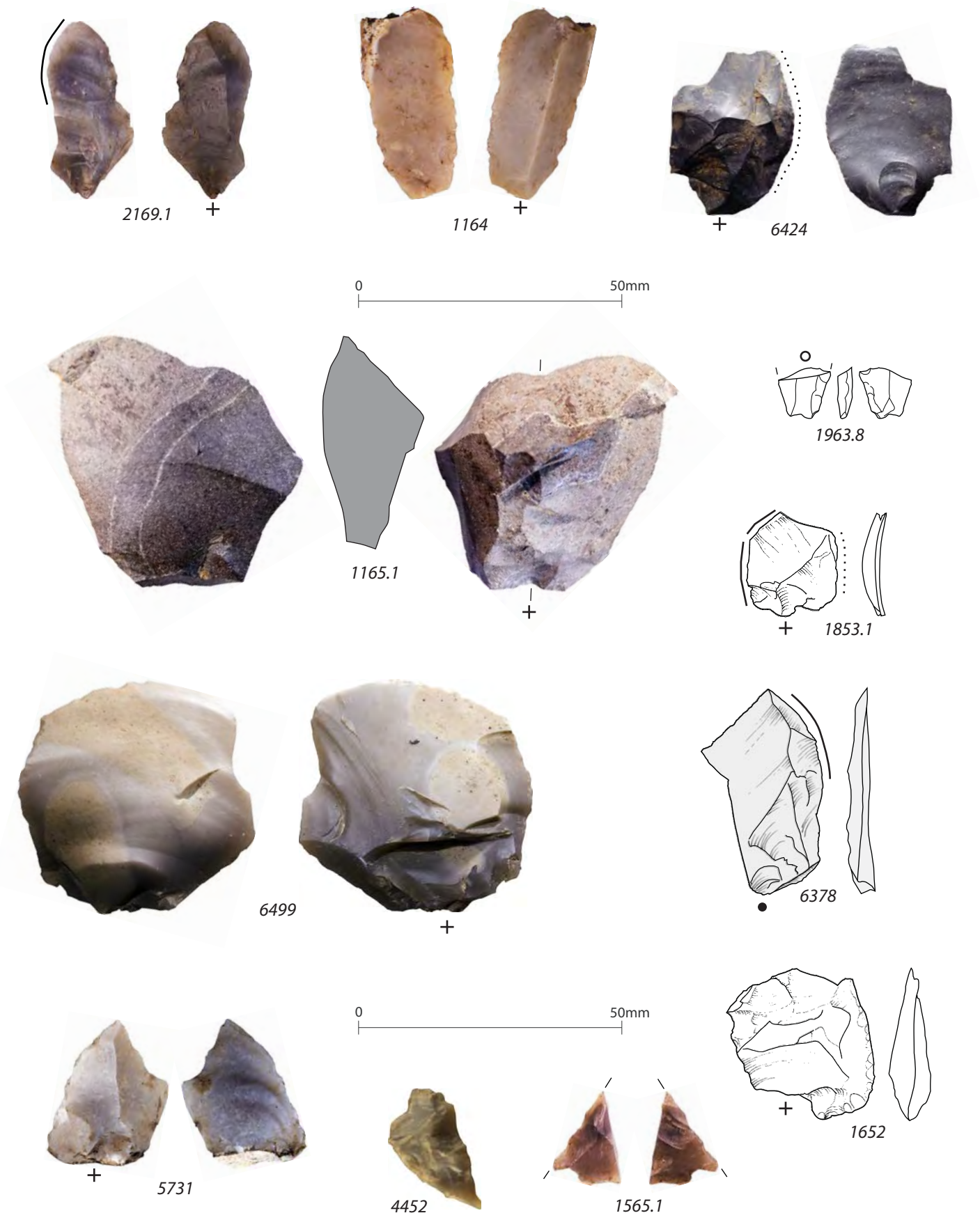


Fig V.1.6: Knapped stone artefacts from later Neolithic features (Chert: sf1165.1, 6378, 6424; Flint: sf1164, 1565.1, 1652, 1853.1, 1963.8, 2169.1, 4452, 5731, 6499)

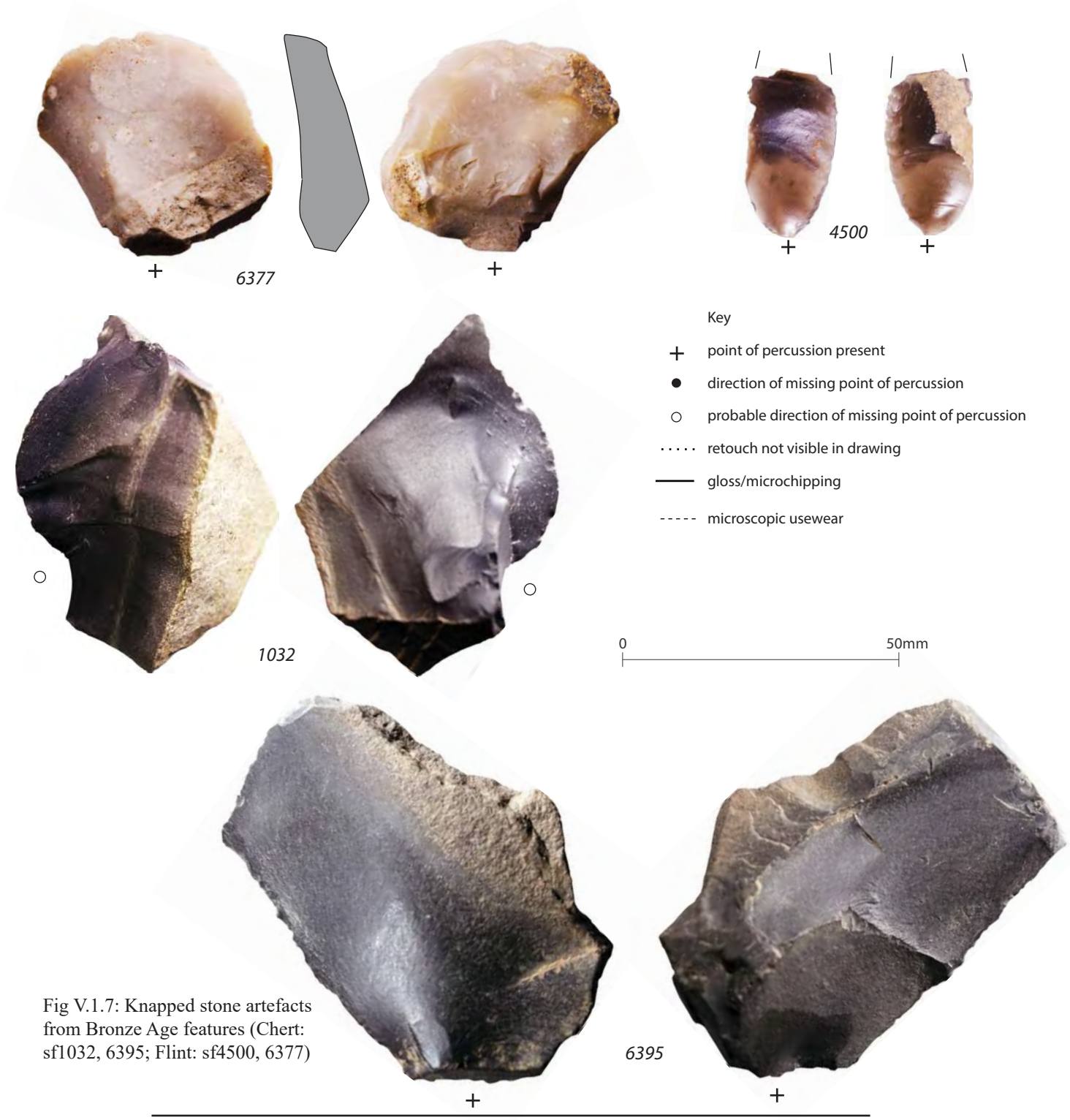
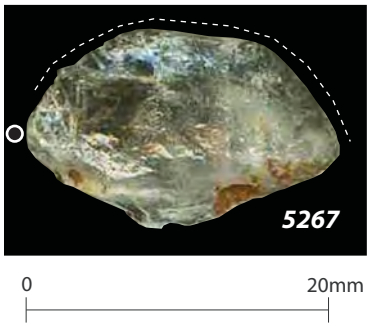
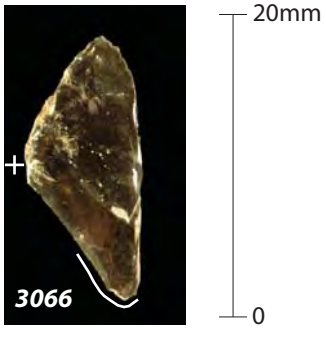


Fig V.1.7: Knapped stone artefacts from Bronze Age features (Chert: sf1032, 6395; Flint: sf4500, 6377)





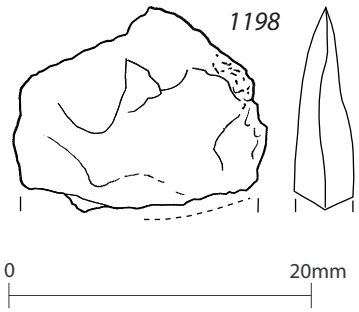


Fig V.1.8: Knapped crystal quartz pieces (sf1198 and 3066 from the Early Neolithic Building; sf5267 from occupation activity in Area E)

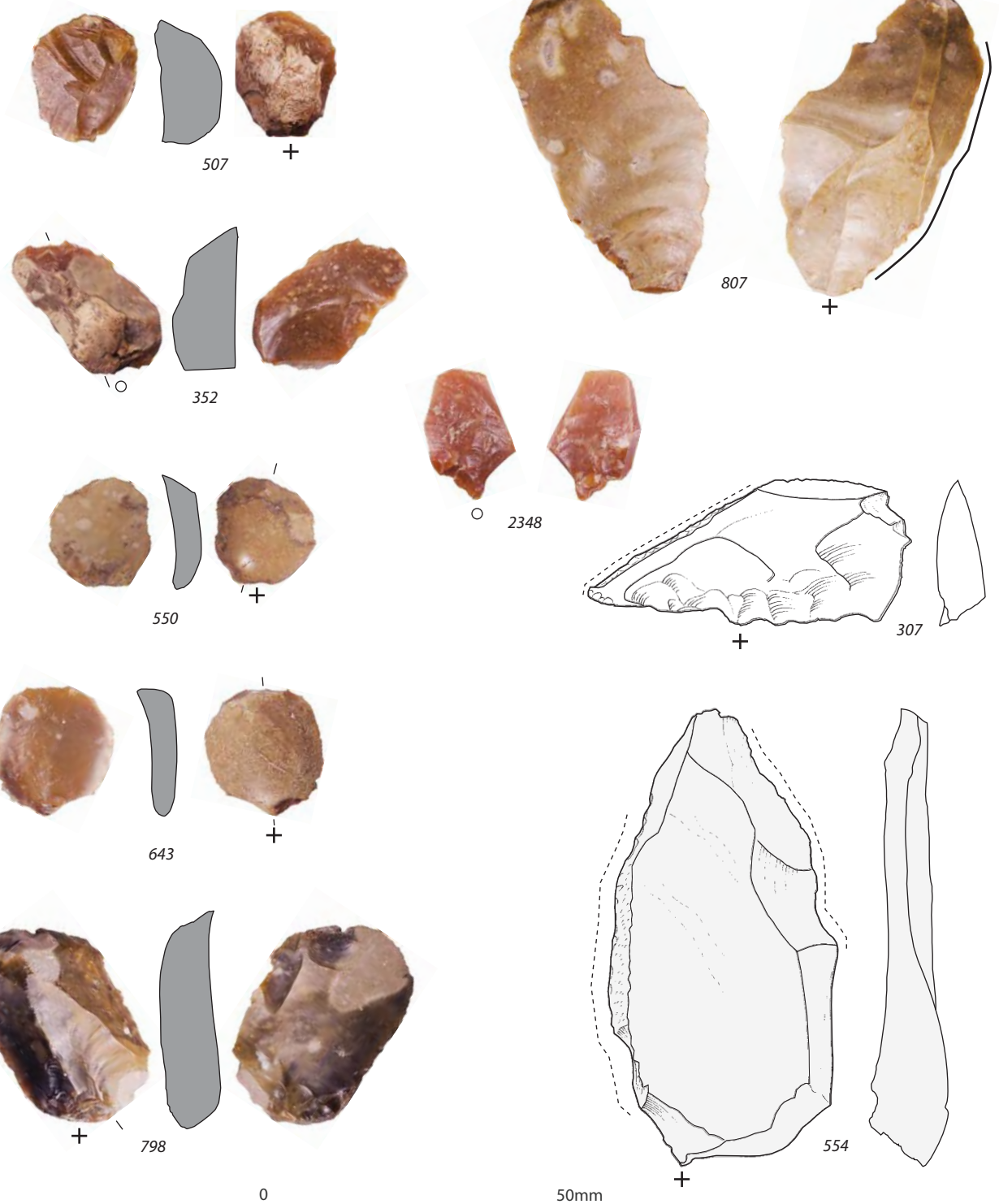
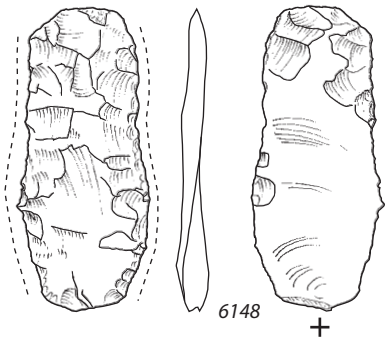


Fig V.1.9: Knapped stone artefacts from the area of the roundhouse settlement in Areas B2 and F1, with sf6148 from Area K9
(sf554 is chert, the rest are flint)



From structure 80527 in Area K9

Appendix V.1.1: catalogue of knapped stone

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
		20000		20	0	retouched piece	nosed piece	flint	Large blade segment with retouched notch and utilised sharp edge microch and gloss. ?Imported mid brown flint	mid brown	0	0	0	0	1	3	3	0		52	25	0	6	0
B1		2064		17	0	fragment		flint		yellow red	0	0	0	1	1	2	0	0	36	0	30	0	8	0
B1		2064		40	0	flake fragment		flint		light grey	0	0	0	0	0	3	0	0		32	0	13	0	8
B1		2064		43	0	core	core reject	black chert	Cobble of tabular chert with 2 irreg removals	black	0	0	0	0	0	0	0	0	82	0	68	0	49	0
B1		2064		39	1	split pebble frag		black chert	Large cobble with several irregular removals	black	0	0	0	0	0	0	0	0	103	0	79	0	33	0
B1		2064		44	0	fragment		black chert	Large primary flake from a subang cobble	black	0	0	0	1	2	2	0	1	45	0	59	0	16	0
B1		2064		41	0	retouched piece	scraper thumbnail	flint	Split pebble	yellow brown	0	0	0	1	0	0	0	0	18	0	19	0	11	0
B1		2064		21	2	core	core reject	flint	Scalar struck pebble core frag	mid brown	0	0	0	0	0	0	0	0		0	0	0	0	0
B1		2064		14	0	retouched piece	scraper thumbnail	flint	Split pebble	light grey	0	0	0	1	0	0	0	0	17	0	19	0	7	0
B1		2064		39	2	fragment		black chert		black	0	0	0	0	0	0	0	0	44	0	39	0	12	0
B1		2064		39	3	flake fragment		black chert		black	0	0	0	0	0	0	0	0		32	0	22	0	8
B1		2064		23	0	fragment		black chert		black	0	0	0	1	2	2	0	0	28	0	39	0	11	0
B1		2064		21	1	natural piece		flint	Gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0
B1		3014		2177	0	fragment		flint		dark pink	0	0	0	0	0	3	0	1	16	0	12	0	10	0
B1		4001	4002	4280	0	chip		crystal quartz		transparent	0	0	0	0	0	3	0	0		6	0	0	0	0
B1		6121	6120	1272	1	flake fragment		black chert		black	0	0	0	0	0	3	0	0		32	13	0	7	0
B1		7056	7057	1486	0	natural piece		flint	Gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0
B1		10501		2352	0	retouched piece	scraper thumbnail	flint	Scalar flake with steep trimming and probable wear alomg one convex edge	mid grey	0	0	0	0	0	3	0	0	18	0	19	0	3	0
B1		13005	13002	2346	0	irregular fragment		black chert	Probably accidental fracture	black	0	0	0	0	0	0	0	0		23	0	15	0	10
B1		13005	13002	2231	0	flake fragment		black chert		black	0	0	0	0	0	0	0	0		13	0	9	0	3
B1		13008	13007	1453	2	natural piece		black chert	Small, accidental fracture	black	0	0	0	0	0	0	0	0		0	0	0	0	0
B1		13008	13007	1453	3	natural piece		black chert		x	0	0	0	0	0	0	0	0		0	0	0	0	0
B1		13008	13007	1453	1	natural piece		black chert	Small, accidental fracture	black	0	0	0	0	0	0	0	0		0	0	0	0	0
B1		13009	4003	1231	0	burnt frag		flint		buff/cream	0	0	0	0	0	0	0	0		10	0	10	4	0
B1		14005	14004	1246	0	flake fragment		black chert		black	0	0	0	0	0	3	1	0		15	0	13	0	6
B1		14016	14015	85	0	fragment		flint		mid grey	0	0	0	0	5	3	0	1	25	0	14	0	5	0
B1		14050	14049	2197	0	split pebble frag		quartzite	Possibly core reject frag	mid grey	1	0	0	0	0	0	0	0		33	0	30	0	13
B1	31592	1044	4011	2173	0	casually retouched frag	utilised cutting flake	flint	flat scalar flake with a small area of irregular inverse retouch on one sharp side edge	light grey	0	0	0	0	3	3	0	0		20	21	0	4	0
B1	31592	2064		47	3	irregular fragment		flint		mid grey	0	0	0	0	0	0	0	0		20	0	15	0	10
B1	31592	2064		47	2	irregular fragment		flint	Burning discoloured	red brown	1	0	0	0	0	0	0	0		24	0	15	0	6
B1	31592	2064		28	0	retouched piece	scraper thumbnail	flint	Pebble-backed	yellow brown	0	0	0	1	3	2	0	0	24	0	21	0	10	0
B1	31592	2064		47	1	core	core scalar/bipolar	flint		mid grey	0	0	0	1	0	0	0	0	30	0	26	0	13	0
B1	31592	2064		48	0	ecaille piece		flint	Bipolar primary flake from pebble	yellow brown	0	0	0	0	3	1	0	0	25	0	20	0	0	4
B1	31592	5027	5026	29	0	fragment		black chert		black	0	0	0	1	2	1	0	0	29	0	41	0	12	0

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
B1	31592	5052	5053	2195	2	natural piece		flint	Gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0
B1	31592	5052	5053	2195	1	split pebble frag		black chert		black	0	0	0	0	0	1	0	0		45	0	30	0	6
B1	31592	5067	3020	55	0	fragment	core trimming flake	black chert	Large thick secondary flake frag	black	0	0	0	0	0	2	0	0		45	0	43	0	19
B1	31592	6033	6032	5684	0	natural piece		other material	Metal-working debris	metallic	0	0	0	0	0	0	0	0		0	0	0	0	0
B1	31592	8046	8047	2213	0	flake fragment		black chert		black	0	0	0	0	2	3	0	0		16	0	30	0	7
B1	31592	8088	3015	26	0	ecaille piece		flint	Bipolar, discoloured by burning	red brown	0	0	0	1	0	2	0	0	22	0	19	0	6	0
B1	31592	10002	10001	1353	0	flake fragment		black chert		black	0	0	0	0	0	3	0	0		21	14	0	5	0
B1	31592	10013	10012	4393	0	ecaille piece		flint		mid grey	0	0	0	0	3	3	0	0		19	0	9	0	4
B1	31592	11018	11017	2210	0	split pebble frag		other stone	Sandstone? Poss heat fracture	dark brown	0	0	0	0	0	0	0	0		45	0	28	0	20
B1	31592	13012	13011	1332	0	flake fragment		flint	Part of same knap as 1325	mid grey	0	0	0	0	0	0	0	0		15	0	1	0	3
B1	31592	13012	13011	1325	0	flake fragment		flint		mid grey	0	0	0	0	0	2	0	0		16	0	10	0	4
B2	14588	90002		93	0	fragment		black chert	Banded chert, probably quarried	black	0	0	0	0	2	0	0	1	21	0	36	0	9	0
B2	14588	90002		92	0	retouched piece	scraper thumbnail	flint	Flat pebble frag with steep trimming on one thick edge	yellow brown	0	0	0	0	0	0	0	0	28	0	19	0	12	0
B2	14588	90002		94	0	irregular fragment		flint		yellow brown	0	0	0	1	0	0	0	0	18	0	12	0	10	0
B2	14588	90002		137	0	core	core bidirectional	black chert	Subangular cobble	black	0	0	0	0	0	0	0	0	55	0	37	0	27	0
B2	14588	90002		173	0	natural piece		flint	Gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0
B2	14588	90002		181	0	ecaille piece		flint	Scalar chip	yellow brown	0	0	0	0	0	3	0	0	14	0	16	0	3	0
B2	14588	90002		128	0	flake fragment		flint		yellow brown	0	0	0	1	0	1	0	0		23	16	0	5	0
B2	14588	90002		183	0	core	core reject	flint	Either an abandoned core or denticulate	yellow brown	0	0	0	1	0	0	0	0	34	0	27	0	17	0
B2	14588	90121		110	0	irregular fragment		flint		yellow brown	0	0	0	1	0	2	0	0		17	0	11	0	5
B2	14588	90232		126	0	split pebble frag		black chert		black	0	0	0	0	0	0	0	0		35	0	24	0	5
B2	14588	90248	90247	4287	0	microflake		flint		x	0	0	0	0	0	3	0	0	5	0	5	0	1	0
B2	14599	701		2262	0	utilised piece?	utilised cutting flake	flint	A small split pebble frag with microchipping along one chisel-like edge.	yellow brown	0	0	0	1	0	2	0	0	25	0	14	0	7	0
B2	14599	801		2293	0	fragment		flint		yellow brown	0	0	0	1	3	2	0	0	19	0	17	0	5	0
B2	14599	2601		2265	0	natural piece		flint	Gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0
B2	14599	90000		782	0	fragment		black chert	Frag of polishing stone?	black	0	0	0	0	2	3	0	1	47	0	38	0	12	0
B2	14599	90000		6097	0	irregular fragment		flint		yellow brown	0	0	0	0	0	3	0	0		14	0	11	0	3
B2	14599	90000		2176	0	split pebble		flint		light grey	0	0	0	1	0	0	0	0	25	0	20	0	5	0
B2	14599	90002		307	0	retouched piece	edge-retouched knife	flint	Fresh, more so than rest of assemblage. Fine, probably imported flint, material similar to Late neo at Llandygai	mid grey	0	0	0	0	1	3	0	1	22	0	46	0	6	0
B2	14599	90002		783	0	flake fragment		flint		yellow brown	0	0	0	0	0	3	0	0		8	0	0	0	0
B2	14599	90002		186	0	core	core irregular	black chert	Large subang cobble with several flake removals	black	0	0	0	0	0	0	0	0	57	0	49	0	37	0
B2	14599	90002		72	0	irregular fragment		black chert		black	0	0	0	1	2	2	0	0	32	0	42	0	11	0
B2	14599	90002		367	0	retouched piece frag	scraper thumbnail	flint	On a flake	red brown	0	0	0	0	0	3	0	0		14	24	0	3	0
B2	14599	90002		176	0	flake fragment		black chert	Probably quarried	black	0	0	0	4	0	2	0	1		36	38	0	12	0
B2	14599	90002		133	0	fragment		flint		mottled mid	0	0	1	1	2	2	0	2	46	0	32	0	15	0

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
										grey/black														
B2	14599	90002		116	0	irregular fragment		flint		red brown	0	0	0	0	0	0	0	0		17	0	15	0	6
B2	14599	90002		309	0	retouched piece	spurred piece	flint	Thick scalar piece with alternate retouch to form a spur	yellow brown	0	0	0	0	3	0	0	0	21	0	15	0	6	0
B2	14599	90002		73	0	fragment		flint		yellow brown	0	0	0	1	0	2	0	2	35	0	22	0	7	0
B2	14599	90002		236	0	core	core single directional	black chert	Tabular chert	black	0	0	0	0	0	0	0	0	44	0	34	0	24	0
B2	14599	90002		63	0	fragment		black chert		black	0	0	0	0	2	3	0	1	59	0	35	0	13	0
B2	14599	90002		785	0	retouched piece	scraper thumbnail	flint	Part pebble-backed	yellow brown	0	0	0	1		2	0	0	21	0	20	0	6	0
B2	14599	90002		327	0	natural piece		flint	Gravel	yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0
B2	14599	90002		148	0	fragment		flint		yellow brown	0	0	0	1	0	2	0	2	13	0	15	0	3	0
B2	14599	90002		331	0	retouched piece frag	scraper end	flint	Snapped off scraper edge, on flake	yellow brown	0	0	0	0	0	3	0	0		22	29	0	8	0
B2	14599	90002		311	0	flake fragment		black chert		black	0	0	0	0	0	3	2	0		15	0	13	3	0
B2	14599	90002		182	0	fragment		flint		yellow brown	0	0	0	1	1	2	0	1	13	0	24	0	7	0
B2	14599	90002		101	0	split pebble frag		black chert		black	0	0	0	1	0	2	0	0	30	0	15	0	11	0
B2	14599	90002		109	0	fragment		flint		yellow brown	0	0	0	1	0	2	0	2	10	0	10	0	3	0
B2	14599	90002		267	0	microflake		flint		yellow brown	0	0	0	0	0	3	0	0	4	0	5	0	2	0
B2	14599	90002		83	0	casually retouched frag	unclassified	flint	Tip of thin flake with untidy retouch along one long side	yellow brown	0	0	0	1	0	2	2	0		20	18	0	4	0
B2	14599	90002		518	0	irregular fragment		flint		yellow brown	0	0	0	1	0	2	0	0		21	0	14	0	11
B2	14599	90002		131	1	retouched piece	unclassified	flint	Scalar piece with abrupt edge retouch	owst	0	0	0	0	0	0	0	0		0	0	0	0	0
B2	14599	90002		308	0	fragment		flint		yellow brown	0	0	0	1	1	2	0	2	20	0	19	0	4	0
B2	14599	90002		188	0	retouched piece	scraper thumbnail	flint	Steep ret on butt end of a thick primary pebble flake	yellow brown	0	0	0	1	1	1	0	0	28	0	25	0	7	0
B2	14599	90002		306	0	pebble unused		flint	Core-sized pebble	mottled grey	0	0	0	0	0	0	0	0		0	0	0	0	0
B2	14599	90002		24	0	split pebble		flint	Anvil struck	grey brown	0	0	0	1	0	0	0	0	25	0	21	0	5	0
B2	14599	90002		645	0	retouched piece	scraper thumbnail	flint		yellow brown	0	0	0	1	0	0	0	0	16	0	23	0	7	0
B2	14599	90002		90	0	fragment		flint	Bipolar struck pebble primary flake	yellow brown	0	0	0	1	3	1	0	2	28	0	19	0	4	0
B2	14599	90002		75	0	fragment		black chert		black	0	0	0	1	2	2	0	2	33	0	36	0	10	0
B2	14599	90002		151	0	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		19	0	17	4	0
B2	14599	90002		70	0	natural piece		flint	Gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0
B2	14599	90002		2215	0	split pebble frag		black chert	Banded chert, could be accidental fracture	black	0	0	0	0	0	0	0	0	47	0	37	0	14	0
B2	14599	90002		508	0	chip		flint	Chip	yellow brown	0	0	0	0	0	3	0	0	10	0	9	0	2	0
B2	31594	90002		143	0	retouched piece	scraper end	flint	Split pebble with irregular steep retouch on convex end. Scraper or denticulate or just core reject?	yellow brown	0	0	0	1	3	2	0	2	29	0	31	0	14	0
B2	14599	90135		5768	0	chip		crystal quartz	Micro flake	transparent	0	0	0	0	0	3	0	0		5	0	0	0	0
B2	14599	90178		117	0	retouched piece	obliquely truncated piece	flint	Small pebble-backed probably anvil-struck flake butt with distal retouched truncation	yellow brown	0	0	0	0	0	0	0	0	15	0	13	0	4	0
B2	31612	90187	90215	138	0	fragment		black chert	Thick, broad, heavily struck primary flake	black	0	0	0	1	2	1	0	0	50	0	56	0	20	0
B2	14599	90475		354	0	core	core scalar/bipolar	flint		yellow brown	0	0	0	1	4	2	0	0	29	0	27	0	10	0
B2	14599	90475		216	0	split pebble frag		black chert		black	0	0	0	1	0	0	0	0		20	0	20	0	13

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
B2 E area	14599	91579		766	0			pot	Pottery	pot	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 E area	14599	91675		554	1	retouched piece	edge-retouched knife	black chert	Large flake with fine trimming along one edge and two shaping flakeson opposite edge, although with one recent damage facet	black	0	0	0	1	0	2	0	0	77	0	37	0	12	0
B2 E Area	14599	91874	91875	4337	0	natural piece		black chert		x	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 E area	14599	91969		5981	0	retouched piece	scraper side	black chert	Neat marginal retouch. Also has a possibly deliberate spur.	black	0	0	0	0	0	0	0	0	55	0	45	0	14	0
B2 E area	14599	91970		1955	1	retouched piece	scraper end	black chert	Pebble back. Rather square so could be a 'gunflint'.	black	0	0	0	0	0	0	0	0	24	0	24	0	6	0
B2 E area	14599	92129		636	0	ecaille piece		flint	Anvil struck	buff/brown	0	0	0	1	0	0	0	0	23	0	21	0	6	0
B2 E area	14599	92129		635	0	chip		flint		grey brown	0	0	0	0	0	0	0	0	11	0	14	0	6	0
B2 E area	14599	92345	92344	727	0	retouched piece	spurred piece	flint	Snapped off frag of thin flake with partly accidental, partly retouched sharp angled point. Fine flint of unsual, for here, translucent mid-brown with possible nodular cortex. Imported?	mid brown	0	0	0	3	0	2	0	0		24	28	0	4	0
B2 E area	14599	92539		2193	2	split pebble frag		black chert		black	0	0	0	1	0	0	0	0		50	0	26	0	16
B2 E area	14599	92539		2193	3	split pebble frag		black chert		black	0	0	0	1	0	0	0	0		25	0	0	0	0
B2 E area	14599	92539		2193	1	core	core reject	black chert	Pebble with one broad flake removed	black	0	0	0	1	0	0	0	0	36	0	32	0	33	0
B2 E area	14599	92539		4226	0	chip		flint		yellow brown	0	0	0	1	0	0	0	0		12	0	8	0	4
B2 Laneside	14599	90300		2170	0	flake fragment		flint		yellow brown	0	0	0	1	5	2	2	0		18	7	0	4	0
B2 Laneside	14599	90300		187	0	core	core reject	black chert	Pebble with 2 flake facets, one to produce a platform	black	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 Laneside	14599	90300		192	0	fragment	core trimming flake	black chert	Large thick flake	black	0	0	0	0	2	3	0	1	55	0	60	0	25	0
B2 Laneside	14599	90300		167	0	flake fragment	core trimming flake	flint	Quite heavily patinated suggesting it is more ancient than most of rest of material here. It has also had quite a bit of more recent damage	yellow brown	0	2	2	0	0	3	2	1		43	13	0	6	0
B2 Laneside	14599	90441	90454	286	0	retouched piece frag	unclassified	flint	Thin, scalar flake frag with microlithic style retouch on alternate convex edges. Possibly was a crude imitation of a leaf-shaped arrowhead	yellow brown	0	0	0	0	3	3	0	0		16	14	0	2	0
B2 Laneside	14599	90501		2233	2	fragment		black chert		black	0	0	0	1	1	2	0	0	21	0	22	0	5	0
B2 Laneside	14599	90501		251	1	natural piece		flint	Gravel	yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 Laneside	14599	90501		2233	1	fragment	core trimming flake	black chert		black	0	0	0	0	0	0	0	0		38	0	22	0	10
B2 Laneside	14599	90501		224	0	core	core irregular	black chert	Large subang cobble	black	0	0	0	0	0	0	0	0	53	0	51	0	47	0
B2 Laneside	14599	90501		251	3	natural piece		flint	Gravel	yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 Laneside	14599	90501		251	2	natural piece		flint	Gravel	yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 Laneside	14599	90548		266	0	microflake		flint		yellow brown	0	0	0	0	0	3	0	0	9	0	6	0	2	0
B2 Laneside	14599	90645		262	0	fragment		flint		yellow brown	0	0	0	1	5	2	0	2	19	0	14	0	3	0
B2 NW area	14599	92434	92433	4336	0	natural piece		flint	Ancient rolled flake.	x	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 passage-way	14599	90009		287	0	core	core reject	black chert	Subangular rolled cobble with two flakes removed	black	0	0	0	0	0	0	0	0	92	0	74	0	42	0
B2 passage-way	14599	90794		679	0	irregular fragment		flint		red brown	0	0	0	1	0	2	0	0		21	0	17	0	13
B2 passage-way	14599	91059		351	1	split pebble		black chert	Banded chert	dark grey	0	0	0	1	0	1	0	0		86	0	55	0	25
B2 passage-way	14599	91233	91206	393	0	utilised piece frag?	utilised cutting flake	flint	Tip of fine, thin sharp blade with hint of marginal gloss	yellow brown	0	0	0	0	0	3	1	0		17	12	0	2	0
B2 passage-way	14599	91319	91478	624	2	irregular fragment		black chert		black	0	0	0	0	0	0	0	0	17	0	11	0	11	0
B2 passage-way	14599	91319	91478	624	3	irregular fragment		black chert		black	0	0	0	0	0	0	0	0	20	0	8	0	4	0

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
B2 passage-way	14599	91319	91478	624	1	irregular fragment		black chert		black	0	0	0	0	0	0	0	0	32	0	23	0	15	0
B2 passage-way	14599	91502	91498	4150	0	microflake		flint		red brown	0	0	0	1	5	2	2	0		4	5	0	1	0
B2 passage-way	14599	91503	91498	3083	0	natural piece		slate		x	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 passage-way	14599	91503	91498	1979	0	irregular fragment		black chert		black	0	0	0	1	0	0	0	0	21	0	10	0	10	0
B2 passage-way	14599	91546	91547	3090	0	split pebble frag		black chert	Possibly natural and accidental fracture	black	0	0	0	0	0	2	0	0	38	0	24	0	12	0
B2 passage-way	14599	91759	91767	559	0	split pebble frag		black chert	Large ?trimming flake	black	0	0	0	0	0	0	0	0	29	0	92	0	20	0
B2 passage-way	14599	91792	91783	714	0	flake fragment		black chert	Narrow splinter, of narrow blade microlith shape but probably that is just accidental	black	0	0	0	0	0	0	0	0	12.5	0	4	0	2	0
B2 passage-way	14599	91812	92189	733	0	core	core reject	black chert	Irreg pebble with several attempts at flaking	black	0	0	0	0	0	0	0	0	47	0	33	0	27	0
B2 passage-way	14599	92057		643	0	retouched piece	scraper thumbnail	flint		yellow brown	0	0	0	1	0	0	0	0	21	0	19	0	5	0
B2 passage-way	14599	92073		3046	0	utilised piece?	unclassified	black chert	Some light edge chipping	clay	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 passage-way	14599	92283		4145	0	natural piece		crystal quartz	Gravel	transparent	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 passage-way	14599	92390		1765	0	chip		flint		buff/cream	0	0	0	0	3	3	0	0	8	0	13	0	5	0
B2 passage-way	14599	92390		1777	0	flake fragment		black chert		black	0	0	0	0	0	3	0	1		14	10	0	4	0
B2 passage-way	14599	92412	91445	4141	0	natural piece		crystal quartz	Gravel	transparent	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 passage-way	14599	92493	92475	4182	0	natural piece		crystal quartz	Gravel	transparent	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 Pen y Lôn	14588	90295	90294	2225	2	irregular fragment		black chert		black	0	0	0	4	2	2	0	0		38	0	26	0	9
B2 Pen y Lôn	14588	90295	90294	2225	1	retouched piece	nosed piece	black chert	Very large flake with retouch creating a 'nose'.	black	0	0	0	1	2	2	0	0	81	0	51	0	19	0
B2 Pen y Lôn	14588	90304		1974	0	natural piece		crystal quartz	Gravel	transparent	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 Pen y Lôn	14588	91691	91690	4194	0	retouched piece	narrow blade microlith	flint	Scalene ret 3 sides	buff/cream	0	0	0	0	0	3	0	0	17	0	4	0	2	0
B2 RHA	14599	90021		196	0	fragment		quartz	No indication of striking direction	light grey	0	0	0	0	0	0	0	0	46	0	24	0	4	0
B2 RHA	14599	90477		203	0	irregular fragment		flint		yellow brown	0	0	0	0	0	3	0	0		17	0	13	0	10
B2 RHA	14599	90477		207	0	irregular fragment		flint		yellow brown	0	0	0	1	0	2	0	0		21	0	15	0	7
B2 RHA	14599	90478	90507	204	0	natural piece		flint	Gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHA	14599	90576		4161	0	natural piece		crystal quartz	Gravel	transparent	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHA	14599	90577		2022	0	fragment		flint		grey brown	0	0	0	0	1	3	0	0	10	0	8	0	1	0

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
B2 RHA	14599	90590	90591	488	0	split pebble frag		black chert		black	0	0	0	0	0	0	0	0	21	0	13	0	12	0
B2 RHA	14599	90596	90597	625	0	natural piece		flint	Gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHA	14599	90608		553	0	fragment	core trimming flake	flint		yellow brown	0	0	0	1	0	0	0	0	30	0	19	0	11	0
B2 RHA	14599	90619	90591	2033	1	irregular fragment		quartz	Gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHA	14599	90619	90591	2033	0	natural piece		flint	Gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHA	14599	90619	90591	2033	2	natural piece		crystal quartz	Gravel	transparent	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHA	14599	90632		337	0	flake fragment		black chert		black	0	0	0	0	0	0	0	0		22	28	0	6	0
B2 RHA	14599	90638	90509	333	0	fragment		black chert	One edge recent damage, not retouch	black	0	0	0	1	0	1	0	0	43	0	23	0	8	0
B2 RHA	14599	90638	90509	485	0	natural piece		black chert	Rolled small pebble	x	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHA	14599	90638	90509	334	0	irregular fragment		black chert	Large split tabular piece	black	0	0	0	4	0	0	0	0		58	0	31	0	18
B2 RHA	14599	90653		274	0	natural piece		black chert	Thermoclastic potlid fracture	x	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHA	14599	90656	90655	530	0	flake fragment		flint		lgy	0	0	0	1	0	2	1	0		19	11	0	3	0
B2 RHA	14599	90656	90655	4398	0	natural piece		crystal quartz	Gravel	transparent	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHA	14599	90657		276	0	retouched piece	denticulate	black chert	Thick primary flake with irreg ret on a steep edge. Difficult to say if this is a genuine worked piece or merely damage on edges	black	0	0	0	1	2	2	0	0	36	0	39	0	16	0
B2 RHA	14599	90657		277	0	irregular fragment		flint		grey brown	0	0	0	1	0	2	0	0		31	0	18	0	12
B2 RHA	14599	90818		336	0	fragment		flint		yellow brown	0	0	0	1	0	1	0	2	34	0	22	0	11	0
B2 RHA	14599	90818		640	0	split pebble		flint		yellow brown	0	0	0	0	0	0	0	0	20	0	12	0	10	0
B2 RHA	14599	90818		359	0	ecaille piece		flint	Anvil struck	yellow brown	0	0	0	1	0	2	0	0	21	0	20	0	6	0
B2 RHA	14599	90833		671	0	natural piece		crystal quartz	Gravel	transparent	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHA	14599	90961		4155	2	split pebble frag		black chert		black	0	0	0	0	0	0	0	0	31	0	32	0	15	0
B2 RHA	14599	90961		4155	1	core	core reject	black chert	Rolled tabular chert with one flake removed	black	0	0	0	0	0	0	0	0	70	0	54	0	19	0
B2 RHA	14599	90967	90966	2073	0	chip		flint		yellow brown	0	0	0	0	0	0	0	0		12	0	6	0	3
B2 RHA	14599	91004		4232	0	flake fragment		flint		grey brown	0	0	0	1	0	2	1	0		20	10	0	4	0
B2 RHA	14599	91011		1779	1	split pebble frag		black chert		black	0	0	0	0	0	0	0	0		19	0	13	0	10
B2 RHA	14599	91011		2005	1	flake fragment		flint		brown	0	0	0	1	0	1	0	0		15	13	0	4	0
B2 RHA	14599	91011		2005	2	natural piece		flint	Gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHA	14599	91011		1779	2	irregular fragment		black chert		black	0	0	0	0	0	0	0	0		14	0	12	0	2
B2 RHA	14599	91011		1915	0	fragment		black chert		black	0	0	0	1	1	1	0	2	14.5	0	10	0	4	0
B2 RHA	14599	91011		580	0	ecaille piece		flint		grey brown	0	0	0	1	0	0	0	0		18	0	16	0	4
B2 RHA	14599	91520	91519	4410	0	natural piece		crystal quartz	Gravel	transparent	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHA	14599	91520	91519	4411	0	burnt frag		flint		red brown	0	0	0	0	0	0	0	0		16	0	11	0	3
B2 RHA	14599	91662		583	0	utilised pebble		black chert	Banded chert. Light pecking on end suggests a small hammerstone or retoucher	black	0	0	0	0	0	0	0	0	45	0	28	0	24	0
B2 RHA	14599	91662		582	0	utilised pebble?		black chert	Possible burnisher	owst	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHA	14599	91933		575	0	flake fragment		flint	Reddened by burning	red brown	1	0	0	0	1	3	2	1	0	10	14	0	3	0

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
B2 RHA	14599	92024	92023	1733	2	irregular fragment		black chert		black	0	0	0	0	0	0	0	0		13	0	0	0	0
B2 RHA	14599	92024	92023	1733	1	core frag		black chert		black	0	0	0	0	0	0	0	0		19	0	12	0	11
B2 RHA/RHE	14599	90949		619	0	flake fragment		flint		mid grey	0	0	0	0	5	3	2	0		20	12	0	3	0
B2 RHA/RHE	14599	90949		5832	0	microflake		flint		yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHA/RHE	14599	90949		619	0	irregular fragment		flint		yellow brown	0	0	0	0	0	0	0	0		16	0	14	0	11
B2 RHB	14599	90508		297	0	utilised pebble	polished	black chert	Rectangular cobble with one face polished	black	0	0	0	0	0	0	0	0	85	0	46	0	33	0
B2 RHB	14599	90806		581	0	flake fragment		flint		lgy	2	0	0	1	0	2	3	0		15	0	10	0	4
B2 RHB	14599	90875		678	0	pebble unused		quartz	23mm long	owst	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHB	14599	90882		323	0	fragment		black chert		black	0	0	0	0	0	3	0	0	12	0	16	0	5	0
B2 RHB	14599	90883		324	0	core frag		flint		red grey	2	0	0	0	0	0	0	0		37	0	23	0	13
B2 RHB	14599	90922		585	0	natural piece		flint	Gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHB	14599	90956		725	0	microflake		flint		yellow brown	0	0	0	0	0	0	0	0		7	0	7	1	0
B2 RHB	14599	90956		543	0	irregular fragment		flint		yellow brown	1	0	0	0	0	0	0	0		17	0	8	0	4
B2 RHB	14599	90956		740	0	flake fragment		flint	Colour altered by burning	lgy	1	0	0	0	5	3	2	1		12	14	0	2	0
B2 RHB	14599	90956		535	0	irregular fragment		flint		yellow brown	0	0	0	1	0	1	0	0		20	0	11	0	10
B2 RHB	14599	90956		760	0	irregular fragment		flint		yellow brown	0	0	0	1	0	2	0	0		28	0	13	0	12
B2 RHB	14599	90956		2255	0	chip		flint		yellow brown	0	0	0	0	0	3	0	0		14	0	7	0	4
B2 RHB	14599	90956		545	1	fragment		bone		bone	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHB	14599	90956		745	0	retouched piece frag	scraper thumbnail	flint	A thin flake with most of retouched edge has been burnt off but just enough remaining to identify a scraper	mid grey	2	0	0	0	0	3	0	0	21	0	20	0	4	0
B2 RHB	14599	90990		514	0	microflake		flint	Micro flake	yellow brown	0	0	0	0	0	3	0	0		7	0	0	0	0
B2 RHB	14599	90990		500	0	irregular fragment		flint		yellow brown	0	0	0	0	0	0	0	0		26	0	29	0	10
B2 RHB	14599	90992		507	0	retouched piece	scraper thumbnail	flint	On an anvil-split pebble	yellow brown	0	0	0	1	0	0	0	0	20	0	16	0	11	0
B2 RHB	14599	90992		779	0	utilised piece	utilised cutting flake	flint	Microchipping and possible wear on one sharp convex edge	yellow brown	0	0	0	3	2	2	0	1	30	0	29	0	10	0
B2 RHB	14599	90992		498	0	retouched piece frag	serrated piece?	flint	Butt frag with irreg abrupt ret on one sharp side edge	yellow brown	0	0	0	0	1	3	2	1		25	17	0	4	0
B2 RHB	14599	91137	91136	352	0	retouched piece frag	scraper thumbnail	flint	Made on a small split pebble. Probable slight use wear	yellow brown	0	0	0	1	0	0	0	0		15	27	0	10	0
B2 RHB	14599	91158		628	0	natural piece		black chert	Gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHB	14599	91240	91252	4108	0	chip		flint	Chip	x	0	0	0	0	0	0	0	0		0	7	0	0	0
B2 RHB	14599	91382	91464	5472	0	fragment		black chert		black	0	0	0	0	0	3	0	0	18	0	25	0	6	0
B2 RHB	14599	91619		527	0	irregular fragment		flint		yellow brown	0	0	0	1	0	2	0	0		24	0	11	0	5
B2 RHB	14599	91620	91619	4096	0	burnt frag		flint		lgy	2	0	0	0	0	0	0	0		19	0	6	2	0
B2 RHB	14599	92064		597	1	casually retouched piece?	unclassified	black chert	Rolled? Nat? Tertiary flake with inverse retouch both edges but then worn by rolling	black	0	0	0	0	0	3	0	0		27	21	0	7	0

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B2 RHB	14599	92069		718	0	flake fragment		flint		yellow brown	0	0	0	0	0	0	0	0		8	0	12	0	2
B2 RHC	14599	90012	92489	5491	0	fragment		glass	Modern	x	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHC	14599	91160		1917	0	flake fragment		flint		yellow brown	0	0	0	0	0	3	2	0		9	9	0	1	0
B2 RHC	14599	91161		5467	0	natural piece		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHC	14599	91161		5514	0	irregular fragment		black chert		black	0	0	0	1	0	2	0	0		15	0	12	0	4
B2 RHC	14599	91267		731	0	split pebble frag		flint		yellow brown	0	0	0	1	0	0	0	0		33	0	17	0	12
B2 RHC	14599	91328		539	0	ecaille piece		flint	Scalar flake	yellow brown	0	0	0	0	3	3	0	0	27	0	14	0	4	0
B2 RHC	14599	91434	91433	4088	0	split pebble		flint		yellow brown	0	0	0	1	0	2	0	0	30	0	20	0	10	0
B2 RHC	14599	91532	91531	5975	0	split pebble frag		black chert		black	0	0	0	0	0	0	0	0	25	0	19	0	8	0
B2 RHC	14599	91601		3033	1	irregular fragment		quartz	Probably deliberately broken	light grey	0	0	0	0	0	3	0	0		17	0	16	0	7
B2 RHC	14599	91601		3033	2	natural piece		crystal quartz	Gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHC	14599	91624		5493	3	natural piece		black chert		x	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHC	14599	91624		5493	5	natural piece		black chert		x	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHC	14599	91624		5493	2	natural piece		black chert		x	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHC	14599	91624		5493	1	natural piece		black chert		x	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHC	14599	91624		5493	4	natural piece		black chert		x	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHC	14599	91624		5493	6	natural piece		black chert		x	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHC	14599	91624		5535	0	fragment		clay		black	0	0	0	1	2	1	0	0	27	0	47	0	5	0
B2 RHC	14599	91648		550	0	retouched piece	scraper thumbnail	flint	Pebble-backed	yellow brown	0	0	0	1	0	0	0	0	17	0	17	0	5	0
B2 RHC	14599	91667		4404	0	burnt frag		flint		yellow brown	1	0	0	1	0	0	0	0		9	0	97	0	3
B2 RHC	14599	91709		6111	0	split pebble		flint	Probably anvil split	yellow brown	0	0	0	0	0	0	0	0	28	0	16	0	7	0
B2 RHC	14599	91710		771	0	irregular fragment		flint		owst	1	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHC	14599	91711		570	0	burnt frag		flint	Reddened by burning	red brown	1	0	0	0	0	0	0	0	20	0	17	0	7	0
B2 RHC	14599	91734	91724	4073	2	irregular fragment		black chert		black	0	0	0	1	0	0	0	0		21	0	9	0	6
B2 RHC	14599	91734	91724	4073	1	split pebble frag		black chert		black	0	0	0	1	0	1	0	0		31	17	0	4	0
B2 RHC	14599	91734	91724	4073	3	natural piece		black chert	Gravel	black	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHC	14599	91750		4208	0	utilised piece frag?	utilised cutting flake	flint	Tip of narrow blade with marginal gloss one long edge	yellow brown	0	0	0	0	0	2	0	0		18	8	0	3	0
B2 RHC	14599	91849		1737	0	split pebble frag		flint	Seems too small to have been worth splitting. Anvil split.	grey brown	0	0	0	0	0	0	0	0	15	0	9	0	4	0
B2 RHC	14599	91926		747	0	flake fragment		flint		yellow brown	0	0	0	1	1	2	2	2		15	10	0	2	0
B2 RHC	14599	91996		1791	0	natural piece		flint	Gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHC	14599	92040		1905	0	fragment		flint		clay	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHC	14599	92042		588	0	core	core reject	flint	Pebble with one flake removed	yellow brown	0	0	0	0	0	0	0	0	45	0	30	0	28	0
B2 RHC	14599	92165		3023	0	flake fragment		black chert		black	0	0	0	0	0	3	0	0		16	0	9	0	4
B2 RHC	14599	92192		1916	0	fragment		black chert		black	0	0	0	1	1	2	0	0	15	0	16	0	5	0
B2 RHC	14599	92400		734	0	core frag		flint	Irregular frag. No cortex lft.	yellow brown	0	0	0	0	0	0	0	0		29	0	13	0	13
B2 RHC	14599	92514		1739	0	irregular fragment		black chert		black	0	0	0	0	0	0	0	0		18	0	10	0	3

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B2 RHC	14599	92517	92516	757	0	retouched piece	spurred piece	flint	Made on a scalar split pebble frag. Steep retouch to form a beaked spur.	yellow brown	0	0	0	0	3	0	0	0	20	0	14	0	5	0
B2 RHC	14599	92520		2007	0	fragment		black chert		black	0	0	0	0	0	3	0	0	30	0	14	0	4	0
B2 RHC	14599	92520		2010	0	natural piece		flint	Gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHC	14599	92561		770	0	core frag		flint		mid grey	0	0	0	0	0	0	0	0		38	0	32	0	19
B2 RHD	14588	90125	90789	302	0	fragment		flint		yellow brown	0	0	0	1	3	2	0	2	16	0	6	0	2	0
B2 RHD	14588	90125	90789	325	0	core frag		flint		yellow brown	0	0	0	1	0	0	0	0		31	0	21	0	16
B2 RHD	14599	90309		180	0	flake fragment		flint		red brown	0	0	0	0	3	3	0	0		15	0	20	3	0
B2 RHD	14599	90458		282	0	flake fragment		flint	Frag of a neat blade	red brown	0	0	0	0	5	3	2	0		17	11	0	3	0
B2 RHD	14599	90465		484	2	flake fragment		black chert	Frag of knapped pebble	black	0	0	0	1	0	0	0	0		20	25	0	9	0
B2 RHD	14599	90465		487	0	flake fragment		flint		yellow brown	0	0	0	0	0	3	1	0		5	8	0	1	0
B2 RHD	14599	90465		484	1	natural piece		black chert	Small pebble	x	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHD	14599	90473		259	0	natural piece		flint	Gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHD	14599	90473		268	0	retouched piece	spurred piece	flint	Irregular. Difficult to be certain it is a deliberate tool. Flint is good quality mottled similar to the imported material at Parc Bryn Cegin	mottled dark grey/black	0	0	0	0	0	3	0	0	28	0	20	0	6	0
B2 RHD	14599	90473		261	0	flake fragment		flint		yellow brown	0	0	0	1	1	2	1	0		29	17	0	6	0
B2 RHD	14599	90526		2171	0	ecaille piece		flint	Bipolar struck	grey brown	0	0	0	0	0	0	0	0	21	0	13	0	5	0
B2 RHD	14599	90634	90636	478	0	natural piece		flint	Gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHD	14599	90695	90694	281	0	flake fragment		flint	With patches of gloss probably from heat not use wear	yellow brown	0	0	0	0	0	3	0	0		15	11	0	3	0
B2 RHD	14599	90695	90694	4207	0	natural piece		crystal quartz	Gravel	transparent	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHD	14599	90874		315	0	casually retouched piece	denticulate?	black chert	Irregular inverse ret. Denticulate?	black	0	0	0	0	2	3	0	1	39	0	42	0	11	0
B2 RHD	14599	91039		708	0	natural piece		crystal quartz	Gravel	transparent	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHE	14599	90474		2208	0	natural piece		black chert	Heat fractured pebble frag	black	0	0	0	0	0	0	0	0	26	0	17	0	6	0
B2 RHE	14599	90539		411	0	fragment		black chert	Accidental?	black	0	0	0	0	0	1	0	0	54	0	35	0	12	0
B2 RHE	14599	91224	91223	383	1	core	core reject	greensand chert	Grey chert pebble frag	mid grey	0	0	0	0	0	0	0	0		32	20	0	20	0
B2 RHE	14599	91224	91223	383	2	burnt frag		flint	Small gravel pebble fractured by burning	grey brown	0	0	0	0	0	0	0	0	19	0	0	0	0	0
B2 RHE	14599	91297	91298	621	0	natural piece		flint	Rolled gravel	yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHE	14599	91297	91298	689	0	irregular fragment		flint		yellow brown	0	0	0	1	0	2	0	0		9	0	10	0	4
B2 RHE	14599	91299	91300	1753	0	irregular fragment		flint		lgy	0	0	0	1	0	2	0	0		18	0	9	0	4
B2 RHE	14599	91367	91366	414	0	irregular fragment		black chert		black	0	0	0	0	0	0	0	0		36	0	0	0	0
B2 RHE	14599	91367	91366	425	0	flake fragment		black chert		black	0	0	0	0	2	3	2	1		48	56	0	15	0
B2 RHE	14599	91407		623	0	irregular fragment		greensand chert	Grey chert, crushed frag, modern?	mid grey	0	0	0	0	0	3	0	0		18	0	15	0	12
B2 RHE	14599	91407		700	0	fragment		black chert		black	0	0	0	1	1	2	0	2	39	0	31	0	9	0
B2 RHE	14599	91543	91542	707	2	natural piece		other stone		x	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHE	14599	91543	91542	707	1	natural piece		other stone		x	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHE	14599	91722		738	0	utilised pebble?		other stone	Dense hard pebble with a few peck marks on tip	owst	0	0	0	0	0	0	0	0		0	0	0	0	0
B2 RHE	14599	91728		592	0	natural piece		flint	Gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0

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B2 RHE	14599	91735		427	0	flake fragment		flint	Tip, probably of a thin blade. Meso?	yellow brown	0	0	0	0	0	3	1	0		12	8	0	2	0
B2 RHE	14599	91735		712	0	chip		flint		grey brown	0	0	0	1	0	2	0	0		12	0	0	0	0
B2 RHE	14599	92378		2072	0	flake fragment		flint	Butt frag of probable small blade. Meso?	yellow brown	0	0	0	0	5	3	2	0		10	10	0	2	0
B2 RHE	14599	92432		761	0	flake fragment		flint		yellow brown	0	0	0	1	0	2	0	0		28	22	0	7	0
B3		2063		2267	0	ecaille piece		flint	Scalar flake	dark grey	0	0	0	1	3	1	0	0	23	0	25	0	5	0
B3	31594	2063		58	0	fragment		flint	Large thick flake with unrolled nodular cortex and of probably imported mottled brown flint simlar to that at Parc Bryn Cegin Lneo	mottled brown	0	0	0	3	2	2	0	1	52	0	38	0	11	0
B3	31594	2063		64	0	fragment		flint		mid grey	0	0	0	1	3	1	0	2	26	0	19	0	6	0
B3	31594	2063		45	0	flake fragment		flint		yellow brown	0	0	0	1	1	2	1	0		38	20	0	8	0
B3	31594	2063		49	0	split pebble frag		black chert	Discarded	x	0	0	0	0	0	0	0	0		0	0	0	0	0
B3	31594	8070	8071	5592	0	chip		black chert		black	0	0	0	1	1	2	0	0		13	0	0	0	0
D3	31574	60092	60093	4452	1	retouched piece	piercer	flint	Flake with random sharp point with minor shaping and probable use wear	mid grey	0	0	0	0	5	3	0	0	25	0	13	0	5	0
D3	31574	60092	60093	4452	3	irregular fragment		flint	Burnt white	buff/cream	2	0	0	0	0	0	0	0		7	0	0	0	0
D3	31574	60092	60093	1925	0	core	core scalar/bipolar	flint		mid grey	0	0	0	0	0	0	0	0	20	0	13	0	8	0
D3	31574	60092	60093	5831	0	microflake		flint	Small chips showing secondary working	mid grey	0	0	0	0	0	0	0	0		0	0	0	0	0
D3	31574	60092	60093	4038	0	microflake		flint	Chips under 10mm. Similar colour. Indicates some secondary working here.	yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0
D3	31574	60092	60093	4452	2	fragment		flint		mid grey	0	0	0	1	5	2	0	1	10	0	11	0	2	0
D3	31574	60092	60093	4039	0	natural piece		crystal quartz	Gravel	transparent	0	0	0	0	0	0	0	0		0	0	0	0	0
D3	31574	60092	60093	1944	0	natural piece		crystal quartz	Gravel	transparent	0	0	0	0	0	0	0	0		0	0	0	0	0
D3	31574	60092	60093	4429	1	utilised pebble		other stone	Burnt pebble frags with scratches. Joins with 1957. Rubber/grinder upper stone	dark grey	0	0	0	0	0	0	0	0		0	0	0	0	0
D3	31574	60100	60093	1652	0	retouched piece	edge-retouched knife	flint	Scalar core piece with one retouched sharp edge and a separate retouched spur	mid grey	0	0	0	0	3	3	0	0	32	0	26	0	7	0
D3	31574	60100	60093	4048	0	microflake		flint		grey brown	0	0	0	0	0	0	0	0		0	0	0	0	0
D3	31574	60100	60093	1957	1	utilised pebble		other stone	Part of 4429. Rubbing/grinding upper stone	dark grey	0	0	0	0	0	0	0	0		37	0	0	0	0
D3	31574	60100	60093	5829	0	microflake		flint	Small chips showing secondary working	mid grey	0	0	0	0	0	0	0	0		0	0	0	0	0
D3	31574	60100	60093	1654	2	utilised piece?	utilised cutting flake	flint	Possible gloss on sharp edge	mid grey	0	0	0	0	0	3	2	0		21	11	0	4	0
D3	31574	60100	60093	1654	3	flake fragment		flint		mid grey	0	0	0	0	0	3	0	0		10	0	16	2	0
D3	31574	60100	60093	1967	1	utilised piece?	utilised cutting flake	flint	Possible microchipping on sharp edge	mid grey	0	0	0	1	2	2	0	2	29	0	14	0	5	0
D3	31574	60100	60093	1967	2	fragment		flint		mid grey	0	0	0	0	1	3	0	1	11	0	11	0	2	0
D3	31574	60100	60093	5961	0	irregular fragment		black chert		black	0	0	0	0	0	0	0	0		18	0	25	0	4
D3	31574	60100	60093	1654	1	utilised piece?	utilised cutting flake	flint	Very fresh, sharp edged flake on better quality flint	mid grey	0	0	0	0	1	3	0	1	36	0	19	0	6	0
D3	31574	60100	60093	3038	0	burnt frag		flint	Heat fractured pebble frag	yellow brown	0	0	0	0	0	0	0	0		18	0	0	0	0
D3	31574	60100	60093	1992	1	fragment		black chert		black	0	0	0	1	1	1	0	0	22	0	13	0	5	0
D3	31574	60100	60093	1992	2	natural piece		black chert	Gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0
D3	31574	60100	60093	4361	0	microflake		flint	Small thin flakes, indicating secondary working here	mid grey	0	0	0	0	0	0	0	0		0	0	0	0	0
D3	31574	60100	60093	4361	0	flake fragment		flint		mid grey	0	0	0	1	1	2	0	1	16	0	9	0	2	0
D3	31574	60101		1937	2	flake fragment		black chert		black	0	0	0	0	0	3	0	0		7	0	18	0	2

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
D3	31574	60101		1937	1	flake fragment		black chert		black	0	0	0	1	1	1	0	0		20	16	0	7	0
D3	31574	60102	60093	5583	2	fragment		flint		mid grey	0	0	0	1	1	1	0	0	15	0	6	0	2	0
D3	31574	60102	60093	5827	0	microflake		flint	Small chips showing secondary working	mid grey	0	0	0	0	0	0	0	0		0	0	0	0	0
D3	31574	60102	60093	5827	0	fragment		flint		mid grey	0	0	0	0	0	3	0	1	13	0	5	0	2	0
D3	31574	60102	60093	5583	1	core frag		flint	Scalar core remnant	light grey	0	0	0	0	0	0	0	0	20	0	15	0	9	0
D3	31574	60124	60125	1964	0	flake fragment		flint		lgy	1	0	0	0	0	0	0	0		0	0	0	0	0
D3	31574	60124	60125	4010	0	natural piece		crystal quartz	Gravel	transparent	0	0	0	0	0	0	0	0		0	0	0	0	0
D3	31574	60124	60125	4009	0	microflake		flint		grey brown	0	0	0	0	0	0	0	0		0	0	0	0	0
D3	31574	60136	60135	1973	0	natural piece		crystal quartz	Gravel	transparent	0	0	0	0	0	0	0	0		0	0	0	0	0
D3	31574	60136	60135	1843	0	irregular fragment		flint		mid grey	0	0	0	1	0	2	0	0		13	0	0	0	0
D3	31574	60163	60162	1963	8	retouched piece frag?	arrow-head chisel?	flint	Poss butt of a chisel a-head. Thick ?scalar frag with steep retouch along one straight blunt edge	mid grey	0	0	0	0	0	0	0	0	10	0	10	3	0	0
D3	31574	60163	60162	1817	5	chip		flint		mid grey	0	0	0	0	0	0	0	6		9	0	2	0	0
D3	31574	60163	60162	1817	4	flake fragment		flint		mid grey	0	0	0	0	5	3	2	0		11	7	0	1	0
D3	31574	60163	60162	1817	3	irregular fragment		flint		mid grey	0	0	0	0	0	0	0	0		0	0	0	0	0
D3	31574	60163	60162	1817	2	chip		flint		mid grey	0	0	0	0	0	3	0	0	8	0	9	0	2	0
D3	31574	60163	60162	1857	2	flake fragment		black chert		black	0	0	0	0	0	0	0	0	12	0	9	0	4	0
D3	31574	60163	60162	1857	1	flake fragment		black chert		black	0	0	0	0	0	0	0	0	14	11	0	4	0	0
D3	31574	60163	60162	1963	3	fragment		flint		mid grey	0	0	0	0	3	3	0	0	25	0	19	0	4	0
D3	31574	60163	60162	1817	7	chip		flint		mid grey	0	0	0	0	0	0	0	0		11	0	0	0	0
D3	31574	60163	60162	1963	0	microflake		flint	Small (under 5mm L, mainly broad chips from edge retouching, not from microlith manuf.	mid grey	0	0	0	0	0	0	0	0		0	0	0	0	0
D3	31574	60163	60162	1963	9	chip		flint		mid grey	0	0	0	0	0	3	0	0	8	0	10	0	2	0
D3	31574	60163	60162	1817	6	irregular fragment		flint		mid grey	0	0	0	0	0	0	0	0		10	0	0	0	0
D3	31574	60163	60162	1817	1	fragment		flint		mid grey	0	0	0	0	5	3	0	0	29	0	7	0	3	0
D3	31574	60163	60162	1963	7	flake fragment		flint		mid grey	0	0	0	0	0	3	1	0		5	0	14	2	0
D3	31574	60163	60162	5828	0	microflake		flint	Small chips showing secondary working	mid grey	0	0	0	0	0	0	0	0		0	0	0	0	0
D3	31574	60163	60162	1963	6	flake fragment		flint		mid grey	1	0	0	0	0	3	0	0		15	0	0	0	0
D3	31574	60163	60162	1963	1	fragment		quartzite	Could it be Graig Llwyd?	mid grey	0	0	0	5	1	0	0	2	36	0	38	0	14	0
D3	31574	60163	60162	1963	2	split pebble frag		flint		yellow brown	0	0	0	0	0	0	0	0	32	0	34	0	12	0
D3	31574	60163	60162	1963	5	flake fragment		flint		yellow brown	0	0	0	1	1	1	2	2		13	0	22	5	0
D3	31574	60163	60162	1963	4	retouched piece	scraper/cutting flake?	flint	Scalar frag with steep retouch on one convex edge	mid grey	0	0	0	0	3	3	0	0		21	0	15	5	0
D3	31574	60163	60162	1818	0	retouched piece frag	scraper thumbnail	flint	On a flake with burnt face	mid grey	1	0	0	0	0	0	0	0	24	0	17	0	6	0
D3	31574	60163	60162	1963	10	chip		flint		mid grey	0	0	0	0	0	0	0	0	7	0	10	0	2	0
E		30002		5966	0	fragment		flint		yellow brown	0	0	0	1	3	1	0	0	30	0	16	0	5	0
E		31000		6096	0	flake fragment		flint		light grey	0	0	0	0	0	3	0	0		12	0	21	0	3
E		31000		2181	0	utilised piece?	utilised cutting flake	flint	Fine microchipping on one sharp straight edge of a large thin flake fragment.	light grey	0	0	0	0	0	3	0	0		27	0	20	3	0

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
E		31000		885	0	fragment		flint		yellow brown	0	0	0	1	1	1	0	2	22	0	15	0	7	0
E		31000		886	0	irregular fragment		flint		buff/cream	0	0	0	1	0	2	0	0		25	0	14	0	7
E	31585	31305	31306	5496	2	split pebble frag		black chert	Small, prob accidental. Discard	x	0	0	0	0	0	0	0	0		0	0	0	0	0
E	31585	31305	31306	5413	1	burnt split pebble		other stone	Quartzite	owst	0	0	0	0	0	0	0	0		0	0	0	0	0
E	31585	31305	31306	5506	0	core frag		flint	Pebble frag with flake removal facets	mid grey	0	0	0	1	0	3	0	0	32	0	22	0	14	0
E	31585	31305	31306	5413	2	burnt split pebble		other stone	Quartzite	owst	0	0	0	0	0	0	0	0		0	0	0	0	0
E	31585	31305	31306	5496	1	split pebble frag		black chert	Small, prob accidental. Discard	x	0	0	0	0	0	0	0	0		0	0	0	0	0
E	31585	31307	31306	961	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
E (BM)	31582	31021		947	0	retouched piece	narrow blade microlith	flint	Frag, convex backed ret 1 side.	yellow brown	0	0	0	0	0	3	0	0		19	6	0	2	0
E (BM)	31582	31370	31415	5202	0	natural piece		flint	Gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0
E (BM)	31582	31371	31413	985	0	retouched piece	scraper thumbnail	flint	On scalar flake, poss re-struck	yellow brown	0	0	0	1	3	2	0	0	22	0	25	0	8	0
E (BM)	31582	31371	31413	984	0	ecaille piece		flint	Scalar flaked split pebble frag	yellow brown	0	0	0	1	3	2	0	0	38	0	34	0	9	0
E (hollow)	18406	603		2269	0	retouched piece	edge-retouched knife	flint	Thick broad flake with shallow retouch along sharp convex distal edge	mid grey	0	0	0	1	2	2	0	0	37	0	40	0	8	0
E (hollow)	18406	603		2268	0	ecaille piece		flint	Scalar flake	yellow brown	0	0	0	0	0	3	0	0	11	0	11	0	2	0
E (hollow)	18406	603		2266	0	retouched piece	edge-retouched knife	flint	Large, thick flake with sharpening retouch along one sharp, slightly convex distal edge. Slightly incomplete.	mid grey	0	0	0	1	1	2	0	0	21	0	0	41	10	0
E (hollow)	18406	31000		1632	0	utilised piece?	utilised cutting flake	black chert	Small flake with poss util sharp edge	black	0	0	0	0	0	3	0	0	33	0	18	0	9	0
E (hollow)	18406	31001		853	0	retouched piece	scraper end	flint	Made on large flake. Mottled lgr/dgr. ?Imported flint	mottled dark grey	0	0	0	2	2	2	0	0	32	0	38	0	9	0
E (hollow)	18406	31001		909	0	retouched piece	narrow blade microlith	flint	Convex-backed ret 2 sides	light grey brown	0	0	0	0	0	0	0	0	20	0	4	0	2	0
E (hollow)	18406	31001		939	0	flake fragment		flint		bone	1	0	0	0	0	0	0	0		0	0	0	0	0
E (hollow)	18406	31001		5375	0	fragment		flint		yellow brown	0	0	0	0	0	3	0	0	13	0	8	0	2	0
E (hollow)	18406	31001		879	0	utilised piece?	utilised cutting flake	flint	Poss microch and gloss on a sharp edge	pot	0	0	0	0	0	0	0	0		0	0	0	0	0
E (hollow)	18406	31001		953	0	retouched piece	scraper thumbnail	flint	On a flake, not just a split pebble	mid grey	0	0	0	1	0	0	0	0	20	0	22	0	6	0
E (hollow)	18406	31001		878	0	flake fragment		black chert		black	0	0	0	1	0	2	0	2		34	18	0	8	0
E (hollow)	18406	31001		849	0	fragment		flint		buff/cream	0	0	0	0	0	3	0	0	39	0	16	0	6	0
E (hollow)	18406	31001		5014	0	retouched piece	piercer?	flint	Snapped-off tip of a long, narrow blade with minimal retouch and possiblle use wear around a chance sharp point.	mid grey	0	0	0	0	0	3	0	0		32	9	0	3	0
E (hollow)	18406	31001		946	0	retouched piece	scraper thumbnail	flint		mid grey	0	0	0	1	0	0	0	0	12	0	16	0	5	0
E (hollow)	18406	31001		877	0	core frag		black chert	Irregular	black	0	0	0	0	0	0	0	0	49	0	30	0	15	0
E (hollow)	18406	31001		847	0	core	core reject	flint	Large split pebble. Probably rejected because of irregular flaking	yellow brown	0	0	0	1	0	0	0	0	58	0	58	0	31	0
E (hollow)	18406	31001		846	0	retouched piece/up	scraper hollow	flint	Thick core-trimming flake with steep retouch and gloss	mid grey	0	0	0	0	0	3	0	0	38	0	35	0	15	0
E (hollow)	18406	31001		938	0	natural piece		flint	Gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0
E (hollow)	18406	31001		970	0	flake fragment		flint		mid grey	0	0	0	1	0	2	0	0		12	0	8	3	0
E (hollow)	18406	31001		5018	0	split pebble frag		flint	Too small to have produced flakes of useful size, but definitely split. Probably by anvil.	mid grey	0	0	0	1	0	0	0	0	20	0	14	0	8	0

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
E (hollow)	18406	31001		5376	0	irregular fragment		flint	Probably scalar frag	light grey	0	0	0	0	0	3	0	0		24	0	14	0	8
E (hollow)	18406	31001		5381	0	fragment		flint	Possibly heat-treated before working	light grey	1	0	0	1	1	1	0	2	54	0	49	0	15	0
E (hollow)	18406	31001		852	0	fragment		flint		yellow brown	0	0	0	0	0	3	0	0	23	0	12	0	2	0
E (hollow)	18406	31005		4546	0	flake fragment		flint		yellow brown	0	0	0	0	5	3	2	0		14	10	0	2	0
E (hollow)	18406	31011	31010	861	0	fragment		black chert		black	0	0	0	5	2	2	0	0	42	0	36	0	9	0
E (hollow)	18406	31014	31010	4561	0	split pebble frag		flint	Heat altered colour	light grey	1	0	0	1	0	0	0	0		14	20	0	6	0
E (hollow)	18406	31024	31082	5508	0	fragment		black chert		black	0	0	1	1	1	1	0	0	30	0	26	0	8	0
E (hollow)	18406	31024	31082	5471	0	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		21	0	10	0	9
E (hollow)	18406	31024	31082	5529	0	flake fragment		flint		grey brown	0	0	0	0	0	3	1	0		14	0	8	4	0
E (hollow)	18406	31025		860	0	casually retouched piece	utilised cutting flake	flint	Large flake with inverse sharpening retouch along one slightly concave sharp edge.	yellow brown	0	0	0	5	2	2	0	2	34	0	44	0	6	0
E (hollow)	18406	31025		5003	0	retouched piece	piercer	flint	Thick secondary flake from a pebble with a fortuitous point, then enhanced by retouched but tip snapped off, presumably during use	mid grey	0	0	0	1	3	2	0	0	48	0	18	0	9	0
E (hollow)	18406	31025		5364	0	retouched piece frag	edge-retouched knife	flint	Joins with 5373. Frag of thick flake with delicate sharpening retouch on one long edge. Heavy use wear.	light grey	0	0	0	0	0	3	0	0		34	20	0	10	0
E (hollow)	18406	31025		5146	0	retouched piece	piercer	flint	Thick, triangular-sectioned flake steeply trimmed on two converging edges to form a strong point	grey brown	0	0	0	1	2	2	0	2	54	0	24	0	12	0
E (hollow)	18406	31025		5256	0	retouched piece frag	arrow-head oblique?	flint	Transverse ah frag? Identification uncertain. Further study needed	light grey	0	0	0	0	0	0	0	0		20	0	10	3	0
E (hollow)	18406	31025		5263	0	utilised piece	utilised cutting flake	flint	Microch and gloss on a sharp edge of a long, thin blade	light grey	0	0	0	0	1	3	0	1	47	0	15	0	4	0
E (hollow)	18406	31025		977	0	utilised piece	utilised angle	flint	Thin blade, gloss on a sharp angle and possible use of other sharp edges	buff/cream	0	0	0	0	5	3	0	1	41	0	14	0	5	0
E (hollow)	18406	31025		5021	0	mace?		agate	Exceptional and unique material here of banded honey-coloured agate. Frag of an apparently neat ovoid object, polished, not a pebble, about 46mm diam. Perhaps a small mace-head or large bead.	yellow brown	0	0	0	0	0	0	0	0		43	0	23	0	15
E (hollow)	18406	31025		5171	0	ecaille piece		flint	Scalar flake	yellow brown	0	0	0	1	3	2	0	0	26	0	14	0	5	0
E (hollow)	18406	31025		5343	0	fragment		flint		buff/cream	0	0	0	1	0	2	0	0	24	0	19	0	6	0
E (hollow)	18406	31025		5015	0	ecaille piece		flint	Bipolar flake	yellow brown	0	0	0	1	3	2	0	0	18	0	21	0	6	0
E (hollow)	18406	31025		5000	0	utilised piece?	utilised cutting flake	flint	Large flake with recent edge damage and microchipping on one sharp edge	mid grey	0	0	1	1	1	2	0	0	55	0	38	0	15	0
E (hollow)	18406	31025		5265	0	fragment	core trimming flake	flint	From an unusually large pebble	light grey	0	0	0	1	1	2	0	0	79	0	26	0	13	0
E (hollow)	18406	31025		5147	1	flake fragment		flint		buff/cream	0	0	0	1	3	2	0	0	27	0	22	0	7	0
E (hollow)	18406	31025		5195	0	flake fragment		flint		mottled mid/light grey	0	0	0	0	0	3	1	0		14	0	10	0	5
E (hollow)	18406	31025		5261	0	core	core irregular	flint	Large rolled cobble from irregular nodule. Distinctive opaque light grey flint as other pieces from E hollow, eg 5373 and 5374	light grey	0	0	0	0	0	0	0	0	80	0	77	0	50	0
E (hollow)	18406	31025		5001	0	flake fragment		flint		light grey	0	0	0	0	5	3	0	0		16	12	0	6	0
E (hollow)	18406	31025		5065	0	utilised piece?	piercer	flint	angular scalar flake frag of which one sharp angle point appears to have been crushed by use	light grey	0	0	0	0	3	3	0	0		19	0	12	0	3
E (hollow)	18406	31025		5182	0	flake fragment		flint		light grey	0	0	0	0	0	3	0	0		14	0	8	2	0
E (hollow)	18406	31025		5123	0	fragment		flint	Very cherty light grey flint like the core 5261. Unusual material, not a pebble. Cortex shows heavily patinated old flake facets. Could be a re-worked palaeolith.	light grey	0	0	0	5	2	1	0	0	46	0	59	0	16	0
E (hollow)	18406	31025		5152	0	flake fragment		flint		light grey	0	0	0	0	0	3	1	0		21	14	0	3	0
E (hollow)	18406	31025		5310	0	fragment	core trimming flake	flint	Large, broad, thick flake	mid grey	0	0	0	1	2	2	0	1	36	0	43	0	14	0

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
E (hollow)	18406	31025		5348	0	utilised piece?	piercer	flint	Chance triangular fragment with microchipping around the point	yellow brown	0	0	0	1	1	2	0	0	22	0	19	0	5	0
E (hollow)	18406	31025		5336	0	flake fragment		flint		yellow brown	0	0	0	0	5	3	0	0		14	0	14	0	2
E (hollow)	18406	31025		5094	0	flake fragment		flint		mid grey	0	0	0	3	5	2	2	1		26	22	0	4	0
E (hollow)	18406	31025		5083	0	flake fragment		flint		light grey	0	0	0	1	0	2	0	0		14	0	14	0	2
E (hollow)	18406	31025		5237	0	irregular fragment		flint		mid grey	0	0	0	5	0	2	0	0		24	0	17	0	8
E (hollow)	18406	31025		5304	0	fragment		flint		mid grey	0	0	0	1	0	2	0	0	22	0	23	0	6	0
E (hollow)	18406	31025		5243	0	flake fragment		flint		light grey	0	0	0	0	1	3	2	0		19	26	0	6	0
E (hollow)	18406	31025		859	0	ecaille piece		flint	Small, bipolar split pebble	mid grey	0	0	0	1	3	1	0	0	26	0	18	0	7	0
E (hollow)	18406	31025		5168	0	ecaille piece		flint	Scalar frag from a pebble	mid grey	0	0	0	1	2	0	0	0		23	0	25	0	9
E (hollow)	18406	31025		5347	0	flake fragment		flint		light grey	0	0	0	0	0	3	1	0		28	19	0	4	0
E (hollow)	18406	31025		2351	0	fragment		crystal quartz	Neat blade. Found in assoc with pot and charcoal	transparent	0	0	0	0	5	3	0	0	14	0	5	0	1	0
E (hollow)	18406	31025		5119	0	core	core irregular	flint	Pebble, struck from various directions	mid grey	0	0	0	1	0	0	0	0	28	0	22	0	19	0
E (hollow)	18406	31025		5031	0	fragment		flint		mottled mid/light grey	0	0	0	1	3	1	0	0	19	0	19	0	3	0
E (hollow)	18406	31025		5016	0	ecaille piece		flint	Scalar flake frag	light grey	0	0	0	0	3	3	0	0		16	0	8	3	0
E (hollow)	18406	31025		5354	0	irregular fragment		flint	Unrolled, nodular cortex	yellow brown	0	0	0	3	0	2	0	0	41	0	15	0	8	0
E (hollow)	18406	31025		5027	0	ecaille piece		flint		light grey	0	0	0	0	3	3	0	0	19	0	15	0	4	0
E (hollow)	18406	31025		904	0	natural piece		flint	Very small broken pebble. Gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0
E (hollow)	18406	31025		5276	0	irregular fragment		black chert		black	0	0	0	5	0	2	0	0		37	0	27	0	6
E (hollow)	18406	31025		5127	0	split pebble frag		flint		mid grey	0	0	0	1	0	0	0	0		25	0	18	0	13
E (hollow)	18406	31025		4489	0	utilised piece?	utilised cutting flake	flint	Small blade with microch on one sharp edge	mid grey	0	0	0	0	5	3	0	4	25	0	9	0	3	0
E (hollow)	18406	31025		5339	0	fragment		flint		mid/light grey	0	0	0	1	3	2	0	0	30	0	24	0	6	0
E (hollow)	18406	31025		5133	0	flake fragment		flint		yellow brown	0	0	0	5	5	3	2	1		11	10	0	3	0
E (hollow)	18406	31025		5162	0	core frag		flint	Heavily burnt and reddened by heat. Joins with 5170	red brown	3	0	0	0	0	0	0	0	61	0	32	0	18	0
E (hollow)	18406	31025		5211	0	fragment		flint	Probably anvil struck	yellow brown	0	0	0	0	3	3	0	0	28	0	10	0	6	0
E (hollow)	18406	31025		5215	0	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		27	0	17	0	6
E (hollow)	18406	31025		5126	0	retouched piece	scraper end	flint	Pebble-backed	yellow brown	0	0	0	1	3	1	0	0	29	0	25	0	12	0
E (hollow)	18406	31025		5148	0	utilised piece frag?	utilised cutting flake	flint	Possible wear signs on sharp edge	mid grey	0	0	0	0	0	3	0	0		29	22	0	6	0
E (hollow)	18406	31025		5145	0	utilised piece?	utilised cutting flake	flint	Thick secondary flake with microch on a sharp edge and on steep, snapped end. Unusual cortex looks nodular	mid grey	0	0	0	3	1	2	0	0	21	0	20	0	8	0
E (hollow)	18406	31025		867	0	fragment		flint		yellow brown	0	0	0	1	3	2	0	0	25	0	19	0	5	0
E (hollow)	18406	31025		5170	0	flake fragment		flint	Thermoclastic flake from 5162	red brown	3	0	0	0	0	0	0	0		18	0	14	0	5
E (hollow)	18406	31025		5326	0	flake fragment		flint		light grey	0	0	0	0	0	3	0	0		13	21	0	4	0
E (hollow)	18406	31025		935	4	fragment		flint		buff/cream	0	0	0	0	3	0	0	0	19	0	6	0	3	0
E (hollow)	18406	31025		935	3	flake fragment		flint	Primary splnter from a pebble	yellow brown	0	0	0	1	1	0	0	0	17	0	7	0	2	0
E (hollow)	18406	31025		935	2	burnt frag		flint	Heat altered colour	red brown	0	0	0	0	0	3	0	0		18	0	10	0	4
E (hollow)	18406	31025		935	1	irregular		flint		yellow brown	0	0	0	0	0	3	0	0		19	0	16	0	12

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
						fragment																		
E (hollow)	18406	31025		5338	0	irregular fragment		flint		yellow brown	0	0	0	0	0	3	0	0		26	0	19	0	6
E (hollow)	18406	31025		5076	0	ecaille piece		flint	irregular scalar flake	yellow brown	0	0	0	1	3	2	0	0	24	0	17	0	6	0
E (hollow)	18406	31025		5161	0	fragment		flint		light grey	0	0	0	0	1	3	0	0	30	0	29	0	7	0
E (hollow)	18406	31025		975	0	fragment		flint	Split pebble flake	yellow brown	0	0	0	1	3	2	0	0	25	0	16	0	6	0
E (hollow)	18406	31025		895	0	core	core scalar/bipolar	greensand chert	Bipolar split cherty pebble	grey brown	0	0	0	0	0	0	0	0	35	0	31	0	5	0
E (hollow)	18406	31025		962	0	core frag	core irregular	flint		yellow brown	0	0	0	0	0	0	0	0	26	0	23	0	13	0
E (hollow)	18406	31025		899	0	fragment		flint		buff/cream	0	0	0	1	0	2	0	0	29	0	32	0	11	0
E (hollow)	18406	31025		892	0	microflake		flint	small chip	buff/cream	0	0	0	0	0	0	0	0		0	0	0	0	0
E (hollow)	18406	31025		5337	0	fragment		flint		yellow brown	0	0	0	0	0	3	0	0	13	0	7	0	2	0
E (hollow)	18406	31025		5153	0	split pebble frag		flint		mid grey	0	0	0	1	0	0	0	0	33	0	10	0	7	0
E (hollow)	18406	31025		5183	0	flake fragment		flint		pot	0	0	0	0	0	0	0	0		0	0	0	0	0
E (hollow)	18406	31025		902	0	flake fragment		flint	Broken and colour altered by heat	mid grey	0	0	0	0	1	3	0	0		22	0	21	5	0
E (hollow)	18406	31025		5024	0	irregular fragment		flint	heat altered colour	light grey	2	0	0	1	0	2	0	0		25	0	15	0	11
E (hollow)	18406	31025		5185	0	split pebble frag		flint		yellow brown	0	0	0	1	0	0	0	0		19	0	16	0	13
E (hollow)	18406	31025		5262	0	split pebble frag		flint		mottled mid/dark grey	0	0	0	1	0	0	0	0		32	0	12	0	12
E (hollow)	18406	31025		5327	0	fragment		flint		yellow brown	0	0	0	0	5	3	0	0	13	0	15	0	2	0
E (hollow)	18406	31025		4492	0	fragment		flint		light grey	0	0	0	0	5	3	0	0	20	0	8	0	2	0
E (hollow)	18406	31025		5233	0	core	core reject	crystal quartz	Chunk of rock crystal, possibly struck then abandoned as of poor crystal quality	transparent	0	0	0	0	0	0	0	0		24	0	18	0	10
E (hollow)	18406	31025		5139	0	split pebble frag		black chert		black	0	0	0	1	0	2	0	0		39	0	28	0	16
E (hollow)	18406	31025		5025	0	flake fragment		flint		missing	0	0	0	0	0	0	0	0		0	0	0	0	0
E (hollow)	18406	31025		5017	0	flake fragment		flint		light grey	0	0	0	0	1	3	0	0		28	19	0	3	0
E (hollow)	18406	31025		856	0	split pebble frag		black chert		black	0	0	0	1	0	0	0	0		16	0	27	0	10
E (hollow)	18406	31025		5087	0	fragment		flint		mid grey	1	0	0	1	0	1	0	1	28	0	16	0	6	0
E (hollow)	18406	31025		5189	0	flake fragment		flint	Butt segment of small blade with deep creamy patina or heat alteration, so could be earlier and residual on site	buff/cream	0	0	0	0	5	3	2	0		16	11	0	4	0
E (hollow)	18406	31025		5225	0	fragment		crystal quartz		transparent	0	0	0	0	0	0	0	0		0	0	0	0	0
E (hollow)	18406	31025		5107	0	split pebble		flint		pot	0	0	0	0	0	0	0	0		0	0	0	0	0
E (hollow)	18406	31025		5967	0	irregular fragment		flint		mid grey	1	0	0	1	0	2	0	0		18	0	9	0	5
E (hollow)	18406	31025		5267	0	fragment		crystal quartz	Has a probable impact bulb but face with Irregular fracture	transparent	0	0	0	0	0	2	0	0	21	0	13	0	4	0
E (hollow)	18406	31025		5245	0	fragment		black chert		black	0	0	0	1	1	2	0	2	15	0	21	0	5	0
E (hollow)	18406	31025		5258	0	fragment		flint		light grey	1	0	0	1	1	2	0	0	39	0	19	0	8	0
E (hollow)	18406	31025		5114	0	ecaille piece		flint		mid grey	0	0	0	0	3	3	0	0	18	0	20	0	4	0
E (hollow)	18406	31025		4491	0	flake fragment		flint		buff/cream	0	0	0	0	3	3	0	0		20	14	0	2	0
E (hollow)	18406	31025		5340	0	chip		flint		yellow brown	0	0	0	0	0	3	0	0	9	0	8	0	2	0
E (hollow)	18406	31025		987	0	split pebble frag		flint		mid grey	0	0	0	1	0	0	0	0		34	0	19	0	11

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
E (hollow)	18406	31025		4488	0	fragment		flint		yellow brown	0	0	0	1	3	1	0	0	43	0	21	0	5	0
E (hollow)	18406	31025		5329	0	fragment		flint		light grey	0	0	0	0	1	3	0	0	36	0	30	0	5	0
E (hollow)	18406	31025		960	0	utilised piece?	utilised cutting flake	flint	Broad flake with microch on three sharp edges	light/mid grey	0	0	0	0	2	3	0	0	42	0	32	0	10	0
E (hollow)	18406	31025		4490	0	retouched piece frag	edge-retouched knife	flint	Distal frag of a large flake with neat retouch on one sharp edge. Part of surface removed by burning. Possibly joins with another similar piece already recorded. Check back	mid grey	1	0	0	0	0	3	1	0		27	18	0	5	0
E (hollow)	18406	31025		5147	2	irregular fragment		flint		light grey	0	0	0	1	0	2	0	0		24	0	15	0	9
E (hollow)	18406	31025		978	0	flake fragment		flint		buff/cream	0	0	0	0	5	3	2	1		12	0	9	2	0
E (hollow)	18406	31025		982	0	fragment		flint	Broad flake. Heavy impact	mid grey	0	0	0	0	2	3	0	0	26	0	31	0	5	0
E (hollow)	18406	31025		5341	0	split pebble frag		flint		mid grey	0	0	0	1	0	2	0	0	41	0	38	0	14	0
E (hollow)	18406	31025		888	0	utilised piece?	utilised cutting flake	flint	Broad thin flake with irregular microch along one sharp edge	buff/brown	0	0	0	0	1	3	0	0	32	0	24	0	5	0
E (hollow)	18406	31025		2180	0	fragment		flint		light grey	0	0	0	0	0	3	0	0	20	0	23	0	4	0
E (hollow)	18406	31025		5194	0	flake fragment		flint		light grey	0	0	0	0	0	3	2	0		23	15	0	3	0
E (hollow)	18406	31025		5002	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
E (hollow)	18406	31025		5066	0	fragment		flint		mid grey	0	0	0	1	3	1	0	0	30	0	26	0	6	0
E (hollow)	18406	31025		5314	0	ecaille piece		flint	Scalar flake	yellow brown	0	0	0	1	3	1	0	0	24	0	14	0	2	0
E (hollow)	18406	31025		974	0	natural piece		flint	Gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0
E (hollow)	18406	31025		864	0	fragment		flint		yellow brown	0	0	0	1	3	2	0	0	31	0	14	0	5	0
E (hollow)	18406	31025		969	0	flake fragment		flint		yellow brown	0	0	0	0	5	3	2	0		20	9	0	3	0
E (hollow)	18406	31025		863	0	ecaille piece		flint	Bipolar scalar flake	yellow brown	0	0	0	1	3	2	0	2	27	0	17	0	2	0
E (hollow)	18406	31025		5362	0	utilised piece?	utilised cutting flake	flint	Possible wear signs on distal sharp edge	light grey	0	0	0	0	2	3	0	0	21	0	30	0	4	0
E (hollow)	18406	31025		5136	0	utilised piece?	utilised cutting flake	crystal quartz	Large flake. Possible microch on sharp side edge. Needs use wear study.	transparent	0	0	0	0	5	3	0	0	19	0	10	0	2	0
E (hollow)	18406	31025		5228	0	split pebble frag		flint	Heavily burnt	light grey	2	0	0	1	0	0	0	0	21	0	21	0	8	0
E (hollow)	18406	31036	31035	4378	1	microflake		flint		yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0
E (hollow)	18406	31036	31035	4378	2	microflake		flint		mid grey	0	0	0	0	0	0	0	0		0	0	0	0	0
E (hollow)	18406	31054	31055	4415	0	flake fragment		flint		mid grey	0	0	0	1	0	1	0	0		10	0	14	0	4
E (hollow)	18406	31064	31065	4418	0	flake fragment		flint	Microfrag	light grey	1	0	0	0	0	0	0	0		0	0	0	0	0
E (hollow)	18406	31092	31093	4414	0	retouched piece	scraper thumbnail	flint	Small split pebble	light grey	0	0	0	1	0	0	0	0	22	0	14	0	9	0
E (hollow)	18406	31092	31093	4422	0	irregular fragment		greensand chert		mid grey	0	0	0	0	0	3	0	0		19	0	9	0	6
E (hollow)	18406	31104	31105	913	0	utilised piece?	utilised cutting flake	flint	Microch on sharp edge	mid grey	0	0	0	0	5	3	0	4	24	0	13	0	5	0
E (hollow)	18406	31110		937	0	core frag	core irregular	flint		mid grey	0	0	0	1	0	0	0	0	31	0	24	0	14	0
E (hollow)	18406	31123		5103	0	fragment		flint		buff/cream	0	0	0	1	2	2	0	0	26	0	26	0	13	0
E (hollow)	18406	31123		5415	0	fragment		black chert	Large primary flake from a pebble	black	0	0	0	1	0	1	0	0	54	0	40	0	12	0
E (hollow)	18406	31123		936	0	irregular fragment		flint		light grey	0	0	0	1	2	0	0	0		15	0	9	0	6
E (hollow)	18406	31123		5105	0	split pebble frag		flint	Bipolar split pebble	light grey	0	0	0	1	0	0	0	0	44	0	35	0	27	0
E (hollow)	18406	31123		5063	0	flake fragment		flint		yellow brown	0	0	0	1	3	2	1	0		22	0	15	5	0
E (hollow)	18406	31123		5101	0	ecaille piece		flint	Scalar flake	mid grey	0	0	0	1	3	2	0	0	28	0	22	0	5	0

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
E (hollow)	18406	31123		5099	0	utilised piece?	utilised cutting flake	flint	Large thin flake with microch on one sharp concave edge	light grey	0	0	0	1	1	2	2	0		25	0	27	3	0
E (hollow)	18406	31123		5102	0	flake fragment		flint		light grey	0	0	0	0	0	3	3	0		15	23	0	4	0
E (hollow)	18406	31123		5420	0	flake fragment		crystal quartz		transparent	0	0	0	0	0	3	0	0		17	7	0	3	0
E (hollow)	18406	31123		5064	0	fragment		flint	Recent edge damage	buff/cream	0	0	1	1	1	2	0	0	43	0	42	0	12	0
E (hollow)	18406	31143	31144	5476	0	flake fragment		black chert		black	0	0	0	1	0	2	1	0		14	0	21	0	6
E (hollow)	18406	31148	31147	5470	0	fragment		black chert		black	0	0	0	1	0	1	0	0	16	0	10	0	5	0
E (hollow)	18406	31215		941	0	split pebble frag		flint		mid grey	0	0	0	1	0	2	0	0		32	0	31	0	19
E (hollow)	18406	31215		943	0	natural piece		flint	Gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0
E (hollow)	18406	31215		942	0	fragment		flint		light grey	0	0	0	0	3	3	0	0	16	0	14	0	2	0
E (hollow)	18406	31278		945	1	irregular fragment		flint		buff/cream	0	0	0	1	0	2	0	0		22	0	13	0	12
E (hollow)	18406	31278		945	2	flake fragment		flint		buff/cream	0	0	0	1	0	2	1	0		16	0	14	0	0
E (hollow)	18406	31278		4558	0	flake fragment		flint		mid grey	0	0	0	1	3	2	1	0		18	11	0	2	0
E (hollow)	18406	31374		5023	0	retouched piece frag	scraper thumbnail	flint	Pebble-backed flake with minute steep flaking on end. Maybe just utilisation or even damage	light grey	0	0	0	1	0	2	0	0		12	0	17	0	5
E (hollow)	18406	31374		973	0	flake fragment		flint		yellow brown	0	0	0	1	0	2	0	0		36	0	17	0	10
E (hollow)	18406	31410		986	0	fragment		flint		yellow brown	0	0	0	1	0	2	0	0	20	0	8	0	5	0
E (hollow)	18406	31510	31509	4560	0	retouched piece	scraper thumbnail	flint	On a flake. Edge wear	light grey	0	0	0	0	0	3	0	0	20	0	17	0	6	0
E (hollow)	18406	31527		5013	1	flake fragment		black chert		black	0	0	0	1	2	2	0	0		49	17	0	8	0
E (hollow)	18406	31554		5060	0	fragment		flint		light grey	0	0	0	1	5	2	0	0	27	0	11	0	3	0
E (hollow)	18406	31557	31556	5481	6	flake fragment		black chert		black	0	0	0	0	0	3	1	0		12	0	9	3	0
E (hollow)	18406	31557	31556	5481	3	irregular fragment		black chert		black	0	0	0	1	0	2	0	0		19	0	8	0	7
E (hollow)	18406	31557	31556	5481	4	natural piece		black chert	Gravel	black	0	0	0	0	0	0	0	0		0	0	0	0	0
E (hollow)	18406	31557	31556	5481	8	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		13	0	5	0	3
E (hollow)	18406	31557	31556	5478	0	split pebble frag		flint	Heavily patinated. Probably an ancient, accidental fragment	buff/cream	0	0	0	1	0	1	0	0	20	0	18	0	5	0
E (hollow)	18406	31557	31556	5481	5	fragment		black chert		black	0	0	0	1	0	3	0	0	14	0	14	0	3	0
E (hollow)	18406	31557	31556	5481	7	natural piece		black chert		black	0	0	0	0	0	3	0	0		0	0	0	0	0
E (hollow)	18406	31557	31556	5481	2	flake fragment		black chert		black	0	0	0	0	0	1	0	0		17	0	11	0	2
E (hollow)	18406	31557	31556	5524	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
E (hollow)	18406	31557	31556	5524	0	microflake		black chert		black	0	0	0	0	0	0	0	0		0	0	0	0	0
E (hollow)	18406	31557	31556	5481	1	burnt frag		black chert		black	0	0	0	0	0	3	0	0		20	0	16	0	1
E (hollow)	18406	31596	31595	5442	1	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		22	0	12	0	7
E (hollow)	18406	31596	31595	5422	2	ecaille piece		flint	Scalar flake frag	mid grey	0	0	0	1	3	2	0	0		12	0	19	4	0
E (hollow)	18406	31596	31595	5442	2	flake fragment		black chert		black	0	0	0	0	0	3	0	0		11	0	10	0	3
E (hollow)	18406	31596	31595	5422	1	irregular fragment		flint		mid grey	0	0	0	1	0	0	0	0		24	0	12	0	9
E (hollow)	18406	31596	31595	4541	4	chip		flint	Chip	yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0
E (hollow)	18406	31596	31595	4543	0	irregular fragment		crystal quartz	Small poss deliberately broken crystal	transparent	0	0	0	0	0	2	0	0		13	0	0	0	0

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
E (hollow)	18406	31596	31595	4556	3	irregular fragment		flint		yellow brown	0	0	0	1	0	2	0	0		20	0	10	0	4
E (hollow)	18406	31596	31595	4541	5	burnt frag		flint	Micro frag, heat altered colour	light grey	0	0	0	0	0	0	0	0		0	0	0	0	0
E (hollow)	18406	31596	31595	4557	0	fragment		black chert		black	0	0	0	1	1	2	0	2	24	0	22	0	5	0
E (hollow)	18406	31596	31595	5210	4	flake fragment		flint		mid grey	0	0	0	0	0	3	0	0		7	14	0	2	0
E (hollow)	18406	31596	31595	5210	3	ecaille piece		flint	Scalar flake	yellow brown	0	0	0	0	3	3	0	0	19	0	13	0	4	0
E (hollow)	18406	31596	31595	5210	1	split pebble frag		flint	Bipolar split pebble frag	mid grey	0	0	0	1	0	0	0	0	36	0	22	0	11	0
E (hollow)	18406	31596	31595	5210	5	chip		flint		mid grey	0	0	0	1	0	1	0	0	9	0	12	0	3	0
E (hollow)	18406	31596	31595	5442	3	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		8	0	7	0	1
E (hollow)	18406	31596	31595	4541	3	natural piece		flint	Anciently broken small pebble	x	0	0	0	0	0	0	0	0		0	0	0	0	0
E (hollow)	18406	31596	31595	5422	0	microflake		flint	Mainly retouch chips	x	0	0	0	0	0	0	0	0		0	0	0	0	0
E (hollow)	18406	31596	31595	2179	0	fragment		flint		yellow brown	0	0	0	1	3	2	0	0	22	0	21	0	7	0
E (hollow)	18406	31596	31595	5419	0	flake fragment		flint	Heat altered colour	light grey	2	0	0	0	0	3	0	0		18	0	15	0	2
E (hollow)	18406	31596	31595	5444	2	fragment		flint		light grey	0	0	0	0	0	3	0	0	9	0	11	0	2	0
E (hollow)	18406	31596	31595	5938	0	irregular fragment		crystal quartz	Angular chip	transparent	0	0	0	0	0	0	0	0		9	0	4	0	4
E (hollow)	18406	31596	31595	5422	3	flake fragment		flint		yellow brown	0	0	0	0	0	3	1	0		13	0	11	2	0
E (hollow)	18406	31596	31595	4549	0	ecaille piece		flint	Scalar flake	yellow brown	0	0	0	1	3	2	0	0	14	0	18	0	2	0
E (hollow)	18406	31596	31595	4556	2	split pebble frag		flint		yellow brown	0	0	0	1	0	0	0	0		23	0	15	0	10
E (hollow)	18406	31596	31595	5494	0	natural piece		black chert		x	0	0	0	0	0	0	0	0		0	0	0	0	0
E (hollow)	18406	31596	31595	5494	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
E (hollow)	18406	31596	31595	4556	1	split pebble frag		flint		mid grey	0	0	0	1	3	0	0	0		31	0	20	0	10
E (hollow)	18406	31596	31595	5906	0	chip		crystal quartz		transparent	0	0	0	0	0	1	0	0		6	0	0	0	0
E (hollow)	18406	31596	31595	4541	2	flake fragment		flint		yellow brown	0	0	0	0	0	3	2	0		8	8	0	2	0
E (hollow)	18406	31596	31595	4541	1	fragment		flint		light grey	0	0	0	0	0	3	0	0	13	0	9	0	2	0
E (hollow)	18406	31596	31595	5210	2	irregular fragment		flint		mid grey	0	0	0	1	0	0	0	0		19	0	18	0	5
E (hollow)	18406	31596	31595	4556	4	flake fragment		flint		light grey	1	0	0	0	0	3	3	0		11	0	7	0	3
E (hollow)	18406	31596	31595	5444	1	flake fragment		flint		yellow brown	0	0	0	0	3	3	0	0		14	0	7	3	0
E (hollow)	18406	31602	31595	5448	0	fragment		flint		mid grey	0	0	0	1	3	2	0	0	15	0	9	0	3	0
E (hollow)	18406	31602	31595	5448	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
E (hollow)	18406	31606	31605	5488	0	microflake		flint		yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0
E (hollow)	18406	31607	31595	5372	0	retouched piece frag	utilised cutting flake?	flint	Fine retouch on a sharp edge	light grey	0	0	0	1	2	2	0	0		35	34	0	15	0
E (hollow)	18406	31609	31608	5345	0	casually retouched piece	unclassified	flint	A very small amount of retouch on end and side. No evidence of use.	mid grey	0	0	0	0	0	3	0	0	29	0	14	0	5	0
E (hollow)	18406	31622	31621	5377	0	split pebble frag		flint	Creamy flint large part rolled nodule	light grey	0	0	0	0	0	0	0	0	52	0	40	0	38	0
E (hollow)	18406	31624	31623	5479	0	microflake		black chert		black	0	0	0	0	0	0	0	0		0	0	0	0	0
E (hollow)	18406	31624	31623	5479	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
E (hollow)	18406	31624	31623	5384	0	core	core irregular	flint	Unusual for large size and matt, buff-coloured flint	buff/cream	0	0	0	0	0	0	0	0	56	0	54	0	34	0
E (hollow)	18406	31628	31627	5366	0	ecaille piece		flint	Scalar flake	yellow brown	0	0	0	0	3	3	0	0	20	0	20	0	5	0

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
E (hollow)	18406	31630	31629	5373	0	retouched piece	edge-retouched knife	flint	Joins to 5364. Wear and gloss on one edge	light grey	0	0	0	0	0	3	0	0		66	22	0	9	0
E (hollow)	18406	31630	31629	5368	0	utilised piece?	utilised cutting flake	flint	Thick blade of cream flint with some microch on both sharp edges. NB looks similar to erk 5373	light grey	0	0	0	0	0	3	0	0	48	0	18	0	7	0
E (hollow)	18406	31632	31631	5367	1	fragment		flint		mottled mid/light grey	0	0	0	5	1	3	0	0	39	0	36	0	5	0
E (hollow)	18406	31632	31631	5367	2	fragment		flint		mottled mid/light grey	0	0	0	0	0	3	0	0	17	0	8	0	2	0
E (hollow)	18406	31641	31640	5374	1	retouched piece	edge-retouched knife	flint	Large broad, thick flake with sharpening retouch along one long, slightly convex edge. Similar technique to 5373	light grey	0	0	0	5	2	2	0	1	54	0	57	0	19	0
E (hollow)	18406	31641	31640	5374	2	irregular fragment		flint		mottled mid grey	0	0	0	0	0	2	0	0		22	0	10	0	15
E (hollow)	18406	31650	31652	5369	0	fragment		black chert	Sharp edged, discoidal shaped pebble backed flake. Could it have been utilised? Try use wear analysis	black	0	0	0	1	0	0	0	0	40	0	48	0	8	0
E (hollow)	18406	31651	31652	5434	0	flake fragment		black chert		black	0	0	0	0	0	3	3	0		13	0	16	3	0
E (hollow)	18406	31663	31666	5380	0	irregular fragment		flint		mid grey	0	0	0	1	0	2	0	0		17	0	13	0	5
E (hollow)	18406	31664	31666	5379	1	fragment		flint		light grey	0	0	0	0	0	3	0	0	19	0	18	0	4	0
E (hollow)	18406	31664	31666	5379	2	core	core bidirectional	flint		light grey	0	0	0	1	0	0	0	0	49	0	35	0	23	0
E (hollow)	18406	31667	31668	5382	0	split pebble frag		flint		buff/cream	0	0	0	1	0	0	0	0	42	0	30	0	17	0
E (hollow)	31583	31020		912	0	retouched piece	arrow-head leaf	flint	Large, leaf-shaped arrowhead made on a large flake, probably from a pebble. Nearly all the invasive, shaping retouch has been carried out on one, inverse face. A little additional normal retouch around the point and the slight tang.	light grey	0	0	0	0	0	0	0	0	54	0	27	0	6	0
E (hollow)	31583	31020		932	6	fragment		black chert		black	0	0	0	1	0	1	0	0	19	0	34	0	8	0
E (hollow)	31583	31020		932	1	fragment		black chert		black	0	0	0	1	2	1	0	0	44	0	54	0	19	0
E (hollow)	31583	31020		932	3	core frag		black chert		black	0	0	0	1	2	0	0	0		41	0	39	0	24
E (hollow)	31583	31020		932	2	flake fragment		black chert		black	0	0	0	1	2	1	0	0		34	43	0	12	0
E (hollow)	31583	31020		932	4	fragment		black chert		black	0	0	0	1	2	2	0	0		26	0	46	0	9
E (hollow)	31583	31020		932	7	natural piece		black chert	Gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0
E (hollow)	31583	31020		932	5	irregular fragment		black chert	Banded chert	black	0	0	0	0	0	2	0	0		40	0	19	0	12
E (hollow)	31583	31020		933	0	fragment		flint		light grey	0	0	0	0	0	3	0	0	19	0	7	0	3	0
E (hollow)	31585	31512	31513	5516	0	burnt frag		flint	Heat altered colour	light grey	1	0	0	0	0	0	0	0		15	0	12	0	10
E (PM)	18403	31170	31164	916	1	retouched piece	spurred piece/cutting fl	flint	Scalar pebble frag with spur and straight sharp edge retouch	mid grey	0	0	0	1	3	2	0	0	26	0	16	0	8	0
E (PM)	18403	31170	31164	916	2	utilised piece?	utilised cutting flake	flint	Thin scalar flake frag with microchipping and posible wear on one sharp edge	buff/cream	0	0	0	0	3	0	0	0		0	0	0	0	0
E (PM)	18403	31170	31164	916	3	flake fragment		flint	Burnt flake frag	red brown	2	0	0	0	0	0	0	0		16	0	0	0	0
E (PM)		31292	31294	950	0	core	core scalar/bipolar	flint		yellow brown	0	0	0	1	0	0	0	0	30	0	22	0	12	0
F1	14599	92616	92615	4338	0	axe flake		Graig Lwyd	3 facets with polish. Possibly blade of axe snapped off in use, rather than re-worked.	light grey	0	0	0	0	0	0	0	0		58	0	23	0	16
F1	14599	92616	92615	4439	0	retouched piece frag	narrow blade microlith	flint	Straight backed ret only 1 side. Unusual. Could be a drill point. Use wear analysis needed	yellow brown	0	0	0	0	0	3	0	0		14	4	0	2	0
F1	14599	92616	92615	4397	0	chip		flint		yellow brown	0	0	0	0	0	0	0	0		8	0	0	0	0
F1	14599	92787		798	0	retouched piece	scraper end	flint	Very fresh, no wear evidence. Finer than usual flint. Of a slightly extended shape.	dark grey brown	0	0	0	0	0	3	0	0	35	0	23	0	8	0
F1	14599	92787		800	1	flake fragment		black chert		black	0	0	0	0	0	3	1	0		20	13	0	4	0
F1	14599	92787		799	0	utilised piece	scraper?	flint	Microch on a steep edge of a scalar piece. Could be just damage. Use wear?	yellow brown	0	0	0	0	0	2	0	0		37	0	19	0	7

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
F1	14599	92862		828	0	retouched piece frag	scraper end	flint	Neat steep convex edge on a large snapped blade	yellow brown	0	0	0	0	0	3	1	0		19	30	0	5	0
F1	14599	92904		820	0	retouched piece	scraper thumbnail	flint	Pebble-backed	yellow brown	0	0	0	0	0	1	0	0	15	0	16	0	5	0
F1	14599	93018	93017	835	0	flake fragment		flint		mid grey	0	0	0	1	2	1	2	2		19	19	0	3	0
F1	14599	93082	93078	838	0	core	core irregular	black chert		black	0	0	0	0	0	0	0	0	34	0	26	0	18	0
F1	14599	93092		5459	0	retouched piece	scraper thumbnail	flint	On side of a small split peb.	red brown	0	0	0	0	0	0	0	0	18	0	16	0	4	0
F1	14599	93105	93107	855	0	retouched piece	scraper thumbnail	flint	Pebble-backed	missing	0	0	0	0	0	0	0	0		0	0	0	0	0
F1	14599	93106		844	0	casually retouched piece	unclassified	flint	Irreg ret on blade. Needs use wear analysis	grey brown	0	0	0	0	5	3	0	1	27	0	12	0	4	0
F1	14599	93234		5492	0	flake fragment		black chert		black	0	0	0	0	2	3	0	1	40	0	36	0	14	0
F1	14599	93256	93254	5399	2	utilised pebble?		quartzite	Small ovoid pebble. Some peck marks on tip	owst	0	0	0	0	0	0	0	0		0	0	0	0	0
F1	14599	93256	93254	5399	1	pebble unused		other stone	Flat ovoid pebble. No evidence of use	owst	0	0	0	0	0	0	0	0		0	0	0	0	0
F1	14599	93329		2348	0	retouched piece	spurred piece	flint	Made on a scalar piece	yellow brown	0	0	0	0	0	3	0	0	22	0	15	0	4	0
F1 RHG	14599	92612		791	0	fragment		black chert		black	0	0	0	0	5	3	0	0	14	0	8	0	2	0
F1 RHG	14599	92626		781	0	pebble unused		black chert	Chert banded with softer material, creating odd eroded shape. Possibly collected as an oddity	black	0	0	0	0	0	0	0	0		0	0	0	0	0
F1 RHG	14599	92634		807	0	utilised piece	utilised cutting flake	flint	Unusually large and fine flake with microchipping and gloss on one sharp edge	yellow/grey	0	0	0	0	1	3	0	0	53	0	27	0	6	0
F1 RHG	14599	92634		806	0	utilised piece?	utilised cutting flake	flint	Blade mid segment with microch and gloss on a sharp edge	mottled light/mid grey	0	0	0	0	0	3	0	0		17	14	0	3	0
F1 RHG	14599	92634		805	0	retouched piece	spurred piece	flint	Thin flake with retouch to form a spur. Possible use wear	mid grey	0	0	0	0	0	3	0	0	25	0	15	0	3	0
F1 RHG	14599	92638	92732	4416	1	irregular fragment		black chert		black	0	0	0	1	0	2	0	0		15	0	0	0	0
F1 RHG	14599	92638	92732	4416	0	natural piece		crystal quartz	Gravel	transparent	0	0	0	0	0	0	0	0		0	0	0	0	0
F1 RHG	14599	92661		790	0	fragment		flint		yellow brown	0	0	0	0	3	3	0	0	28	0	15	0	3	0
F1 RHH	14599	92873	92908	5823	0	flake fragment		crystal quartz		transparent	0	0	0	0	0	3	0	0		4	0	0	0	0
F1 RHI	14599	92859	92858	968	0	split pebble frag		black chert	Could be accidental fracture	black	0	0	0	0	1	1	0	0	32	0	28	0	7	0
F1 RHI	14599	92946		5455	0	casually retouched frag	unclassified	flint	Irreg alternate ret	mid grey	0	0	0	0	0	3	0	0		32	16	0	4	0
F1 RHI	14599	92957	92958	6112	0	pebble fragment		flint	Heat shattered. Too small to have been flaked.	mid grey	0	0	0	0	0	0	0	0		0	0	0	0	0
F1 RHI	14599	92963	92971	4171	0	irregular fragment		flint		mid grey	0	0	0	0	0	3	0	0		22	0	22	0	9
F1 RHI	14599	93138	93139	2227	0	natural piece		schist	Thin frag with edge damage	x	0	0	0	0	0	0	0	0		0	0	0	0	0
F1 RHI	14599	93163	93152	966	0	flake fragment		flint		yellow brown	0	0	0	0	5	3	1	0		11	11	0	3	0
F1 RHI	14599	93164	93152	965	0	fragment	ecaille piece	flint		yellow brown	0	0	0	0	3	3	0	0	15	0	18	0	5	0
F1 RHI	14599	93184	92858	5432	0	flake fragment		black chert		black	0	0	0	0	0	2	0	0		7	10	0	2	0
F1 RHI	14599	93198		5952	0	flake fragment		flint		red brown	0	0	0	0	0	3	0	0		11	5	0	2	0
F1 RHI	14599	93430	93428	5460	1	fragment		black chert		black	0	0	0	0	3	2	0	0	18	0	18	0	4	0
F1 RHI	14599	93435	93434	5807	0	flake fragment		flint		yellow brown	0	0	0	0	5	3	0	0		8	8	0	2	0
F1 RHI	14599	93581	93582	5868	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
F2	31609	21160	21161	1099	0	core	core irregular	black chert	On large subang cobble	black	0	0	0	0	0	0	0	0	58	0	43	0	31	0
F3	31609	25051		1101	1	retouched piece	scraper thumbnail	flint		yellow brown	0	0	0	1	3	1	0	0	14	0	15	0	6	0
G		3401		2272	1	retouched piece	scraper hollow	flint	Small, thick, broken blade with possibly deliberate inverse retouch along one concave edge	yellow brown	0	0	0	0	0	3	0	0		21	11	0	5	0

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
						frag?																		
G		3401		2272	2	flake fragment		flint		yellow brown	0	0	0	0	0	3	3	0		15	11	0	2	0
H		2070		6500	0	fragment		black chert		black	0	0	0	1	0	2	0	0	25	0	21	0	4	0
H		50000		4462	0	fragment		black chert	Large flake	black	0	0	0	1	2	2	0	0	46	0	62	0	19	0
H		50000		1069	0	utilised piece?	utilised cutting flake	flint	Small, thick bipolar flake with microch and possible gloss one one sharp convex edge	yellow brown	0	0	0	1	3	2	0	0	27	0	16	0	7	0
H		50000		5999	1	fragment		black chert	Thick, plunging, core-trimming flake	black	0	0	0	0	2	3	0	1	47	0	42	0	11	0
H		50000		5999	2	fragment		flint		mid grey	0	0	0	1	2	2	0	0	26	0	29	0	9	0
H		50000		5999	3	fragment		black chert		black	0	0	0	0	0	3	0	1	35	0	20	0	5	0
H		50321	50322	2291	0	fragment		flint	Anvil split pebble	yellow brown	0	0	0	1	0	1	0	0	26	0	18	0	3	0
H		50396	50397	5421	0	retouched piece	scraper thumbnail	flint	Very small pebble-backed thumbnail scraper, badly damaged by heat	light grey	2	0	0	1	0	2	0	0	18	0	18	0	6	0
H		50409	50408	4529	1	fragment		flint		yellow brown	0	0	0	0	1	3	0	0	25	0	17	0	4	0
H		50409	50408	4529	2	split pebble frag		flint	Anvil spllt	red brown	0	0	0	0	0	0	0	0	25	0	14	0	9	0
H		50455	50452	5427	3	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H		50455	50452	5427	2	split pebble frag		flint		grey brown	0	0	0	1	3	0	0	0	24	0	19	0	8	0
H		50455	50452	5427	1	irregular fragment		flint		mid grey	0	0	0	1	0	2	0	0		28	0	19	0	9
H	31570	2070		1000	0	retouched piece frag	edge-retouched knife	black chert	Frag of thick flake with ret on one sharp convex side edge	black	0	0	0	1	0	2	0	0	43	0	39	0	12	0
H	31570	2093		5991	1	casually retouched piece	utilised cutting flake	black chert	Thick core trimming flake with bifacial thinning one one sharp edge which appears heavily worn	black	0	0	0	0	0	0	0	0	36	0	39	0	12	0
H	31570	2093		1013	0	axe flake		Graig Lwyd?	Flake from ground axe, The platform and the non-bulbar face have polish. Micro chipping from possible re-use on one sharp edge.	light grey	0	0	0	1	0	0	0	0	74	34	53	0	32	0
H	31570	2093		6085	0	axe flake		Graig Lwyd	Some ground surface. Tip shows microflaking, poss use-wear. The platform may be an axe surface, but not a polished one.	mid grey	0	0	0	0	0	2	0	1	36	0	13	0	5	0
H	31570	50006	50005	1264	1	retouched piece	spurred piece	black chert	Thick flake with spur produced by 3 retouch removals on one side of a random projection. Could be an accidental	black	0	0	0	0	2	3	0	1	29	0	46	0	8	0
H	31570	50117	50120	1308	1	retouched piece	nosed piece	black chert	Thick,broad flake distal frag with casual retouch around two sides, creating a projecting nose	black	0	0	0	0	0	3	0	0		34	35	0	11	0
H	31570	50124	50133	3066	0	utilised piece		crystal quartz	Short, broad, trianglular shaped flake, larger than average for cq piece, with microch on one edge and around the point	transparent	0	0	0	0	0	3	0	0	7	0	17	0	2	0
H	31570	50132	50133	1399	0	core	core reject	black chert	Rounded large pebble from which have been struck several pieces and attempts at flaking. Could be used as a chopping tool.	black	0	0	0	0	0	0	0	0	71	0	72	0	40	0
H	31570	50171	50173	1549	0	retouched piece	scraper end	flint		mid grey	0	0	0	1	0	2	0	0	32	0	28	0	9	0
H	31570	2093		124	0	retouched piece	edge-retouched knife	black chert	Unusually long narrow, delicate flake with somewhat irregylar ret on both long side edges and gloss on one.	black	0	0	0	0	1	3	0	0	101	0	31	0	11	0
H	31570	2094	50046	1019	0	retouched piece	edge-retouched knife	black chert	Large, thick flake with neat retouch along one, slightly concave sharp side edge. No visible use-wear	black	0	0	0	0	0	3	0	0	50	0	54	0	13	0
H	31570	50017	50016	1203	2	utilised piece?	utilised cutting flake	flint	Small flake with microlithic retouch one sharp side edge	light grey	0	0	0	1	0	2	0	0	29	0	22	0	4	0
H	31570	50017	50016	1203	3	retouched piece frag	serrated piece	flint	Frag of small flake with serrated microlithic retouch and wear polish on one sharp side edge	mid grey	0	0	0	1	0	2	2	0		25	0	19	0	4
H	31570	50048	50047	1087	0	retouched piece	edge-retouched knife	black chert	A broad and very thick secondary flake of which one sharp side edge has been neatly retouched but in denticulate manner. No visible use-wear.	black	0	0	0	1	2	2	0	1	41	0	51	0	24	0
H	31570	50055	50054	1117	0	retouched piece	laurel leaf	flint	Small bifacial ovate made on a complete broad flake with minimal thinning. No visible use-wear, Some adhering flecks of wood tar or mastic.	light grey	0	0	0	0	0	3	0	0	40	0	31	0	11	0

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
H	31570	50108	50116	1198	0	casually retouched piece?	utilised cutting flake	crystal quartz	Poss fine retouch or utilisation microch on one edge	transparent	0	0	0	0	0	3	0	0		13	0	16	3	0
H	31570	50110	50116	5964	1	retouched piece	nosed piece	flint	Thin flake delicately edge retouched to a nose. No obvious use wear	mid grey	0	0	0	0	0	3	0	0	24	0	23	0	5	0
H	31570	50110	50116	5964	2	utilised piece	utilised cutting flake	flint	Thick irregular flake with microch and gloss on one sharp concave edge	mid grey	0	0	0	1	0	2	0	0	42	0	40	0	12	0
H	31570	50124	50133	6078	3	utilised piece?	utilised cutting flake	flint	Long, curving flake with microch on one sharp convex edge	yellow brown	0	0	0	1	0	2	0	0	44	0	22	0	5	0
H	31570	50148	50176	4318	0	retouched piece	scraper end	flint	Small, thick primary flake from a pebble with neat steep ret to form a semi-circular edge, which shows heavy use-wear	mid grey	0	0	0	1	1	0	0	0	34	0	33	0	9	0
H	31570	50161	50145	4085	1	retouched piece	scraper side	black chert	Thick primary flake with steep retouch on one steep, slightly convex side edge	black	0	0	0	0	0	1	0	0	44	0	32	0	16	0
H	31570	50183	50182	1712	1	retouched piece	scraper hollow	black chert	Large thick primary flake with coarse ret one concave side edge	black	0	0	0	1	0	2	0	0	91	0	51	0	24	0
H	31570	50183	50182	1712	2	retouched piece	scraper side	black chert	Large flake ret on most of its perimeter. One sharp edge prob also util	black	0	0	0	1	2	2	0	0	51	0	45	0	15	0
H	31570	50190	50179	4105	2	retouched piece	piercer	black chert	Chance point on a large flake enhanced by slight retouch. Poss wear signs, but needs confirming	black	0	0	0	0	2	3	0	0	73	0	30	0	7	0
H	31570	50190	50179	1671	1	axe flake?	utilised cutting flake	flint	Unusual good quality matt, light grey flint. Imported? Large flake with microch and gloss on one sharp, concave edge. Three small facets with polish striations suggests this may be from a re-worked polished axe.	light grey	0	0	0	0	5	3	0	0	44	0	24	0	6	0
H	31570	50190	50179	1671	4	retouched piece frag	edge-retouched knife	flint	Thick flake with neat steep retouch on one edge. Tip broken off. No obvious use wear.	light grey	0	0	0	0	0	3	0	0		31	15	0	8	0
H	31570	50213	50166	1724	1	utilised piece	utilised cutting flake	black chert	Microch and gloss on 2 edges	black	0	0	0	0	0	3	0	0	30	0	37	0	8	0
H	31570	50235	50232	4391	1	axe flake		Graig Lwyd	Secondary flake from re-working a polished axe, small facet with striations	light grey	0	0	0	0	0	0	0	0	28	0	24	0	4	0
H	31570	2070		1051	0	utilised piece frag?	utilised cutting flake?	flint	Small, thin flake with possible microchipping	light grey	0	0	0	0	0	3	0	0		24	19	0	3	0
H	31570	2070		1006	0	core frag		black chert	Small block from broken cobble, possible core reject frag.	black	0	0	0	1	0	0	0	0	32	0	27	0	24	0
H	31570	2070		1461	4	fragment	core trimming flake	black chert		black	0	0	0	3	0	0	0	0	49	0	35	0	15	0
H	31570	2070		1061	0	fragment		flint		yellow brown	0	0	0	1	0	2	0	0	31	0	13	0	5	0
H	31570	2070		1071	0	ecaille piece		flint	Scalar flake	yellow brown	0	0	0	1	3	2	0	0	20	0	11	0	4	0
H	31570	2070		1461	7	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		31	0	15	0	9
H	31570	2070		1077	1	flake fragment		black chert		black	0	0	0	0	0	3	0	0	36	0	17	0	8	0
H	31570	2070		1077	2	split pebble frag		black chert		black	0	0	0	1	0	2	0	0	24	0	21	0	17	0
H	31570	2070		1068	0	irregular fragment		flint		mid grey	0	0	0	0	0	3	0	0		21	0	11	0	5
H	31570	2070		1461	5	fragment	core trimming flake	black chert		black	0	0	0	0	0	0	0	0	50	0	42	0	15	0
H	31570	2070		1047	0	split pebble		flint	Bipolar split	mid grey	0	0	0	1	0	1	0	0	34	0	18	0	8	0
H	31570	2070		1461	6	core frag		black chert		black	0	0	0	1	0	0	0	0		51	0	30	0	17
H	31570	2070		1048	0	utilised piece?	utilised cutting flake?	flint	Small, thick flake with microch and possible polish on one sharp edge	mid grey	0	0	0	1	0	2	0	0	27	0	16	0	5	0
H	31570	2070		1063	0	fragment		flint	Coarse, cherty flint. Heat chamged colour	mid grey brown	1	0	0	1	0	2	0	0	22	0	27	0	9	0
H	31570	2070		1461	2	core frag		black chert		black	0	0	0	0	0	0	0	0		50	0	47	0	27
H	31570	2070		1045	0	ecaille piece		flint	Bipolar flake	mid grey	0	0	0	1	0	2	0	0	23	0	16	0	6	0
H	31570	2070		1461	1	core	core irregular	black chert		black	0	0	0	0	0	0	0	0	49	0	42	0	40	0
H	31570	2070		1009	0	retouched piece	spurred piece	black chert		missing	0	0	0	0	0	0	0	0		0	0	0	0	0

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
H	31570	2070		1461	3	core frag		black chert		black	0	0	0	0	0	0	0	0		69	0	34	0	21
H	31570	2070		1077	3	irregular fragment		black chert		black	0	0	0	1	0	2	0	0	12	0	12	0	11	0
H	31570	2070		1057	0	fragment		black chert		black	0	0	0	0	1	3	0	0	34	0	16	0	6	0
H	31570	2070		1077	4	flake fragment		black chert		black	0	0	0	0	0	3	0	0	15	0	10	0	3	0
H	31570	2070		1010	0	fragment		black chert		black	0	0	0	0	2	3	0	0	40	0	46	0	1	0
H	31570	2070		1005	0	core	core irregular	black chert	A block with irregular concave facets, none certainly flake facets. Possibly just a core reject.	black	0	0	0	0	0	0	0	0	44	0	43	0	16	0
H	31570	2070		1001	0	fragment		black chert	Thick core trimming flake	black	0	0	0	0	2	3	0	0	47	0	55	0	21	0
H	31570	2070		2174	0	irregular fragment		flint		buff/cream	0	0	0	0	0	3	0	0	24	0	15	0	9	0
H	31570	2070		1713	2	split pebble frag		black chert		black	0	0	0	1	0	2	0	0		22	0	18	0	13
H	31570	2070		1004	0	retouched piece frag	edge-retouched knife	black chert	Tip of a large, thin, flake with fine ret on one straight sharp edge	black	0	0	0	0	0	3	0	0		68	40	0	7	0
H	31570	2070		1714	0	fragment		black chert		black	0	0	0	0	0	3	0	0	32	0	15	0	4	0
H	31570	2070		1114	0	utilised piece	utilised cutting flake	black chert	Small blade with microch and gloss on one sharp edge	black	0	0	0	0	5	3	0	0	33	0	12	0	4	0
H	31570	2070		1062	0	utilised piece	utilised cutting flake	black chert	Large flake with microch and gloss on 2 sharp edges	black	0	0	0	0	1	3	0	0	50	0	39	0	10	0
H	31570	2070		1054	0	fragment		black chert		black	0	0	0	0	0	3	0	0	27	0	18	0	5	0
H	31570	2070		1003	0	fragment		black chert		black	0	0	0	0	2	3	0	1	40	0	28	0	8	0
H	31570	2070		1007	0	core	core reject	black chert	Part of a large cobble of rolled tabular chert with two struck facets	black	0	0	0	1	0	0	0	0	51	0	50	0	26	0
H	31570	2070		1713	1	split pebble frag		black chert		black	0	0	0	1	0	2	0	0		26	0	18	0	8
H	31570	2070		1056	0	ecaille piece		flint	Scalar flake frag	yellow brown	0	0	0	1	0	1	0	0	27	0	11	5	0	0
H	31570	2070		1086	0	pebble unused		flint		mid grey	0	0	0	0	0	0	0	0	42	0	37	0	23	0
H	31570	2070		1052	0	fragment		flint		yellow brown	0	0	0	1	0	1	0	0	27	0	22	0	6	0
H	31570	2070		1002	0	retouched piece frag	edge-retouched knife?	black chert	Flake frag with a small remaining length of sharp side edge which has some delicate retouch	black	0	0	0	1	2	2	2	2		19	0	31	8	0
H	31570	2070		1116	0	utilised piece	piercer	black chert	A chance pointed flake the point of which has been enhance by retouch. No visible use-wear.	black	0	0	0	0	0	3	0	0	32	0	30	0	10	0
H	31570	2093		2207	0	fragment		black chert		black	0	0	0	1	0	2	0	0	44	0	20	0	9	0
H	31570	2093		5898	0	chip		crystal quartz		transparent	0	0	0	0	0	3	0	0		0	0	0	0	0
H	31570	2093		1183	0	flake fragment		black chert		black	0	0	0	0	0	3	0	0		28	28	0	10	0
H	31570	2093		1585	1	fragment		black chert		black	0	0	0	0	0	3	0	0	33	0	28	0	4	0
H	31570	2093		1585	2	flake fragment		black chert		black	0	0	0	0	0	3	0	0		16	0	21	4	0
H	31570	2093		1585	3	irregular fragment		black chert		black	0	0	0	1	0	2	0	0		23	0	11	0	6
H	31570	2093		1585	4	irregular fragment		black chert		black	0	0	0	1	0	2	0	0		18	0	15	0	6
H	31570	2093		1585	5	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		19	0	6	0	6
H	31570	2093		1585	6	retouched piece frag	unclassified	black chert	Thin flake frag with fine retouch on a straight edge	black	0	0	0	0	0	3	0	0		10	0	8	2	0
H	31570	2093		1585	7	fragment		black chert		black	0	0	0	0	0	3	0	0	13	0	5	0	2	0
H	31570	2093		1585	8	flake fragment		black chert		black	0	0	0	0	0	3	0	0		9	0	5	0	2

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
H	31570	2093		1190	6	flake fragment		black chert		black	0	0	0	0	0	3	0	0		21	0	15	5	0
H	31570	2093		1018	0	core	core irregular	black chert	Part of a rolled cobble with several facets of removed flakes	black	0	0	0	1	0	0	0	0	42	0	42	0	22	0
H	31570	2093		1154	2	flake fragment		black chert		black	0	0	0	0	0	3	1	0		15	0	10	0	3
H	31570	2093		1175	0	fragment		black chert		black	0	0	0	1	0	2	0	0	37	0	35	0	9	0
H	31570	2093		1154	1	flake fragment		black chert		black	0	0	0	0	0	3	3	0		11	0	21	4	0
H	31570	2093		1155	0	flake fragment		black chert		black	0	0	0	1	0	1	0	0		21	29	0	5	0
H	31570	2093		1190	3	fragment		black chert		black	0	0	0	0	1	3	0	0	36	0	27	0	4	0
H	31570	2093		1190	5	flake fragment		black chert		black	0	0	0	1	0	2	0	0		18	0	18	5	0
H	31570	2093		1190	2	flake fragment		black chert		black	0	0	0	0	1	3	0	0		44	0	26	7	0
H	31570	2093		2216	0	utilised piece?	utilised cutting flake	black chert	A small amount of microch on one sharp side edge, but could be damage.	black	0	0	0	1	0	2	0	0	52	0	20	0	8	0
H	31570	2093		1012	0	core	core irregular	black chert	Rolled cobble with several broad flakes removed	black	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	2093		1190	1	retouched piece frag	denticulate?	black chert	Large thick flake with irreg distal retouch	black	0	0	0	0	1	3	0	0	46	0	35	0	15	0
H	31570	2093		1190	7	fragment		black chert		black	0	0	0	0	0	3	0	1	12	0	18	0	4	0
H	31570	2093		1174	2	flake fragment		black chert		black	0	0	0	0	0	3	0	0		14	0	31	4	0
H	31570	2093		1174	1	flake fragment		black chert		black	0	0	0	0	1	3	0	0		22	0	32	4	0
H	31570	2093		1190	8	flake fragment		black chert		black	0	0	0	0	0	3	0	0		13	0	9	2	0
H	31570	2093		1190	4	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		27	0	17	6	0
H	31570	2093		1564	0	chip		flint		mid grey	0	0	0	0	0	3	0	0	11	0	8	0	2	0
H	31570	2093		5991	12	flake fragment		black chert		black	0	0	0	1	0	2	2	0		22	0	17	4	0
H	31570	2093		5990	0	retouched piece	scraper end	flint	Pebble-backed	mottled grey/black	0	0	0	1	0	0	0	0	33	0	26	0	8	0
H	31570	2093		5991	11	flake fragment		black chert		black	0	0	0	0	0	3	2	0		14	23	0	5	0
H	31570	2093		5991	10	fragment		black chert		black	0	0	0	0	3	3	0	0	18	0	25	0	5	0
H	31570	2093		5991	9	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		30	0	15	0	5
H	31570	2093		5991	8	retouched piece frag	unclassified	black chert	Part of a broken thin flake with irregular retouch on one side edge	black	0	0	0	0	0	3	0	0		18	0	23	0	3
H	31570	2093		1156	0	flake fragment		black chert		black	0	0	0	0	0	3	2	0		23	17	0	7	0
H	31570	2093		5991	7	casually retouched piece	unclassified	black chert	Triangular section frag with irregular retouch on one side possibly to enhance a chance spur type point	black	0	0	0	0	0	3	0	0		37	0	20	0	10
H	31570	2093		1014	0	irregular fragment		flint		mid grey	0	0	0	1	0	2	0	0		23	0	13	0	8
H	31570	2093		5991	13	flake fragment		black chert		black	0	0	0	0	0	3	0	0		17	12	0	6	0
H	31570	2093		123	0	utilised piece?	utilised cutting flake?	black chert	Large, sharp-edged blade with poss wear on edge but not visible at macro level	black	0	0	0	4	0	2	0	0	49	0	29	0	10	0
H	31570	2093		5991	6	flake fragment		black chert		black	0	0	0	1	0	2	2	0		20	28	0	7	0
H	31570	2093		1583	0	fragment		crystal quartz	Conchoidal	transparent	0	0	0	0	0	2	0	0	9	0	5	0	1	0
H	31570	2093		5991	5	fragment		black chert		black	0	0	0	0	0	3	0	0	21	0	31	0	9	0
H	31570	2093		5991	4	fragment		black chert		black	0	0	0	1	0	2	0	0	24	0	30	0	6	0
H	31570	2093		5991	3	utilised piece?	utilised cutting	black chert	Possible microch and wear on one sharp edge	black	0	0	0	1	0	2	0	0	24	0	34	0	7	0

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
							flake																	
H	31570	2093		5991	2	casually retouched piece	utilised cutting flake?	black chert	Large flake with irreg ret one sharp convex edge	black	0	0	0	1	2	2	0	0	35	0	49	0	9	0
H	31570	2093		1016	0	utilised piece?	utilised cutting flake	black chert	Microch on one sharp edge. Could be just damage.	black	0	0	0	1	1	2	0	0	44	0	29	0	9	0
H	31570	2093		1584	3	irregular fragment		flint	Heat shattered	mid grey	1	0	0	1	0	0	0	0	12	0	8	0	3	0
H	31570	2093		5896	0	fragment		flint		mid grey	1	0	0	0	0	3	0	0	14	0	10	0	3	0
H	31570	2093		6093	2	fragment		flint		buff/cream	0	0	0	1	0	2	0	0	24	0	14	0	6	0
H	31570	2093		122	0	ecaille piece		flint	Scalar flake	yellow brown	0	0	0	1	3	2	0	0	20	0	21	0	3	0
H	31570	2093		6093	1	retouched piece?	unclassified	flint	Possibly deliberately truncated small thick flake producing a rectangular shape like a gunflint	mid grey	0	0	0	1	0	1	0	0	17	0	23	0	8	0
H	31570	2093		1191	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	2093		1472	0	flake fragment		flint		mid grey	0	0	0	0	3	3	1	0		17	0	14	3	0
H	31570	2093		5978	2	core frag		flint		light grey	0	0	0	1	0	0	0	0		30	0	17	0	10
H	31570	2093		1584	4	irregular fragment		flint		yellow brown	0	0	0	1	0	0	0	0	8	0	7	0	2	0
H	31570	2093		1582	0	flake fragment		flint	Heat altered colour	light grey	2	0	0	0	0	3	0	1		21	23	0	6	0
H	31570	2093		5991	14	flake fragment		black chert		black	0	0	0	0	0	3	1	0		12	0	16	4	0
H	31570	2093		1011	1	core	core reject	flint	Pebble with one flake removed	mid grey	0	0	0	0	0	0	0	0	40	0	26	0	26	0
H	31570	2093		6093	3	ecaille piece		flint	Scalar flake frag	light grey	0	0	0	1	0	2	0	0		10	0	19	0	3
H	31570	2093		1584	1	irregular fragment		flint	Possibly just heat shattered	mid grey	0	0	0	0	0	0	0	0	16	0	8	0	6	0
H	31570	2093		6093	4	retouched piece frag?	unclassified	flint	Frag of an unidentified object, broken by heat. Poss tang of an a-head. Imported flint.	dark grey	1	0	0	0	0	3	0	0		18	0	13	0	4
H	31570	2093		1584	2	irregular fragment		flint	Possibly just heat shattered	mid grey	0	0	0	0	0	0	0	0	21	0	7	0	6	0
H	31570	2093		1011	2	core	core scalar/bipolar	flint		mid grey	0	0	0	0	0	0	0	0	36	0	17	0	7	0
H	31570	2093		5991	15	fragment		black chert		black	0	0	0	0	0	3	0	0	14	0	11	0	4	0
H	31570	2093		5978	1	core frag		flint		light grey	1	0	0	1	0	0	0	0		16	0	25	0	21
H	31570	2094	50046	5869	0	flake fragment		crystal quartz		transparent	0	0	0	0	0	3	0	0		4	0	0	0	0
H	31570	2098	50059	1066	1	fragment		black chert		black	0	0	0	0	2	3	0	0	32	0	44	0	12	0
H	31570	2098	50059	1065	0	flake fragment		black chert		black	0	0	0	0	5	3	2	0		24	13	0	3	0
H	31570	2098	50059	1066	2	fragment		black chert		black	0	0	0	0	2	3	0	0	24	0	30	0	9	0
H	31570	2100	50044	2001	2	burnt frag		flint		pot	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	2100	50044	1142	2	flake fragment		black chert		black	0	0	0	0	0	3	1	0		14	0	22	4	0
H	31570	2100	50044	1142	1	utilised piece?	utilised cutting flake	black chert	Flake frag with possible wear polish on one slightly convex sharp edge.	black	0	0	0	0	0	3	0	0		18	0	33	7	0
H	31570	2100	50044	2001	3	burnt frag		flint		pot	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	2100	50044	2221	0	chip		flint	Frag with burnt potlid removals	light grey	1	0	0	0	0	3	0	0	11	0	13	0	1	0
H	31570	2100	50044	2001	1	flake fragment		flint		pot	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	2100	50044	2046	0	microflake		flint		x	1	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	2100	50044	1085	0	fragment		black chert	Large thick flake from a subang cobble	black	0	0	0	1	0	2	0	0	53	0	37	0	10	0
H	31570	2100	50044	2056	0	fragment		crystal		transparent	0	0	0	0	0	3	0	0	11	0	10	0	2	0

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
								quartz																
H	31570	2100	50044	1616	0	flake fragment		flint		yellow brown	0	0	0	0	0	3	0	0		17	11	0	2	0
H	31570	2101	50218	1027	0	fragment		black chert		black	0	0	0	1	1	2	0	0	37	0	30	0	7	0
H	31570	20048	20047	125	0	utilised piece?	utilised cutting flake?	black chert	Large flake of decorative, striped tabular chert with microch and poss wear polish on one sharp edge	black	0	0	0	0	2	3	0	0	59	0	30	0	6	0
H	31570	50006	50005	1323	0	irregular fragment		flint		yellow brown	0	0	0	1	0	2	0	0		20	0	10	0	6
H	31570	50006	50005	1264	2	fragment		black chert		black	0	0	0	0	2	3	0	0	24	0	25	0	5	0
H	31570	50006	50005	1261	0	retouched piece frag	unclassified	black chert	Small unclassifiable frag. Thick flake with retouch on one edge, possibly a piercer	black	0	0	0	0	3	0	0	0		14	0	10	0	4
H	31570	50011	50010	1076	1	fragment		black chert		black	0	0	0	0	0	3	0	0	21	0	20	0	4	0
H	31570	50011	50010	1223	0	irregular fragment		flint	Heat altered colour	light grey	2	0	0	0	0	3	0	0		26	0	22	0	0
H	31570	50011	50010	1076	2	flake fragment		black chert		black	0	0	0	0	0	3	0	0		9	0	10	2	0
H	31570	50017	50016	1203	1	casually retouched piece	piercer	flint	Small flake with chance point and probable util wear on one sharp edge	mid grey	0	0	0	0	0	3	0	0	30	0	17	0	7	0
H	31570	50026	50025	1075	0	fragment		black chert	Poss gloss on sharp edge	black	0	0	0	0	5	3	0	0	25	0	30	0	5	0
H	31570	50038	50037	1392	1	casually retouched piece	unclassified	black chert	Large thick flake with a small area of ret one edge. No obvious function.	black	0	0	0	0	2	3	0	0	67	0	57	0	16	0
H	31570	50038	50037	1392	2	flake fragment		black chert		black	0	0	0	0	0	3	0	0	34	0	20	0	5	0
H	31570	50040	50039	1084	0	casually retouched frag?	scraper?	black chert	A few retouch removals on a convex edge and possible use wear	black	0	0	0	0	0	3	0	0		26	0	22	7	0
H	31570	50040	50039	4553	0	irregular fragment		crystal quartz		transparent	0	0	0	0	0	2	0	0	7	0	0	0	0	0
H	31570	50040	50039	1078	0	flake fragment		greensand chert	Unusual light grey chert with small glassy inclusions. Possibly a local chert.	mid grey	0	0	0	1	0	2	0	0		24	29	0	10	0
H	31570	50040	50039	1081	0	fragment		black chert		black	0	0	0	0	0	3	0	1	32	0	42	0	9	0
H	31570	50040	50039	2220	0	irregular fragment		black chert	Poss heat fracture	black	0	0	0	2	0	0	0	0		29	0	19	0	7
H	31570	50045	50044	2023	1	flake fragment		black chert		black	0	0	0	0	0	3	3	0		9	9	0	1	0
H	31570	50045	50044	4104	0	flake fragment		flint		lgy	1	0	0	0	0	0	0	0		12	0	9	0	4
H	31570	50045	50044	2023	2	flake fragment		black chert		black	0	0	0	0	0	0	0	0		13	0	0	0	0
H	31570	50045	50044	2023	0	chip		black chert		black	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50045	50044	4115	0	irregular fragment		crystal quartz	Narrow, pointed frag. No visible wear signs but a suitable shape for a drill point. Could be a candidate for use-wear study.	transparent	0	0	0	0	0	0	0	0		12	0	4	0	3
H	31570	50045	50044	1143	0	chip		crystal quartz	Small chip	transparent	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50045	50044	5905	0	microflake		crystal quartz		transparent	0	0	0	0	5	3	0	0	9	0	5	0	1	0
H	31570	50045	50044	4015	0	ecaille piece		flint	Scalar flake	light grey	0	0	0	0	0	3	0	0	12	0	8	0	1	0
H	31570	50048	50047	1088	0	utilised piece?	utilised cutting flake	black chert	Possible microch on one sharp edge	black	0	0	0	0	2	3	0	0	40	0	2	0	6	0
H	31570	50052	50051	1109	0	utilised piece?	utilised cutting flake	black chert	Large, broken flake with one sharp edge poss utilised but no certain use-wear. Needs further study	black	0	0	0	0	0	3	0	0		51	46	0	11	0
H	31570	50052	50051	1108	0	fragment		black chert	Flake with 2 burnt off potlids and some recent edge damage	black	1	0	0	0	2	3	0	0	52	0	37	0	10	0

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
H	31570	50053	50051	6086	0	ecaille piece		flint	Scalar flake	light grey	0	0	0	1	0	2	0	0	16	0	10	0	2	0
H	31570	50053	50051	1641	0	microflake		quartz		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50055	50054	1126	5	irregular fragment		black chert		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50055	50054	1126	4	flake fragment		black chert		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50055	50054	1126	3	irregular fragment		black chert		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50055	50054	1126	2	fragment		black chert		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50055	50054	1126	1	fragment		black chert		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50055	50054	1126	6	axe flake		Graig Lwyd	Broken flake from surface of a ground axe with striations and remnants of ground-off shaping flake facets .	light grey	0	0	0	0	0	0	0	0		60	38	0	4	0
H	31570	50055	50054	1126	7	fragment		quartzite	A pebble frag with a smooth primary surface with no striations so not an axe fragment.	dark grey	0	0	0	0	0	0	0	0		41	28	0	6	0
H	31570	50055	50054	1120	0	fragment	core trimming flake	black chert		black	0	0	0	1	0	2	0	1	49	0	35	0	17	0
H	31570	50060	50059	4149	0	microflake		flint		yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50060	50059	4004	2	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		10	0	7	0	1
H	31570	50060	50059	1129	0	core	core single directional	flint	Pebble core	mid grey	0	0	0	1	0	0	0	0	29	0	36	0	27	0
H	31570	50060	50059	4004	1	flake fragment		black chert		black	0	0	0	0	0	3	1	0		45	13	0	6	0
H	31570	50060	50059	4008	1	utilised piece	utilised cutting flake	flint	Small, thin flake with gloss on sharp concave edge	yellow brown	0	0	0	1	3	2	0	0	25	0	19	0	5	0
H	31570	50060	50059	4008	2	utilised piece	utilised cutting flake	flint	Small, thin flake with gloss on one sharp edge and dentic ret (backing) on opposing edge	buff/cream	0	0	0	0	3	3	0	0	21	0	14	0	2	0
H	31570	50060	50059	4008	3	ecaille piece		flint	Scalar flake	light grey	0	0	0	1	3	2	0	0	16	0	8	0	5	0
H	31570	50060	50059	4008	4	fragment		flint		light grey	0	0	0	0	3	3	0	0	14	0	15	0	6	0
H	31570	50060	50059	1128	2	retouched piece frag?	piercer	black chert	Tip of a flake with a piercer type point created on the end by probably deliberate side trimming although the point shows no signs of use wear	black	0	0	0	4	2	0	0	0		26	13	0	6	0
H	31570	50060	50059	1128	1	fragment		black chert		black	0	0	0	0	1	3	0	0	47	0	34	0	8	0
H	31570	50061	50059	1132	0	fragment		flint		yellow brown	0	0	0	1	4	2	0	0	29	0	15	0	6	0
H	31570	50063	50062	2235	1	fragment		flint		yellow brown	0	0	0	0	0	3	0	0	10	0	7	0	1	0
H	31570	50063	50062	3059	0	fragment		black chert		black	0	0	0	0	0	3	0	0	12	0	21	0	4	0
H	31570	50063	50062	2235	2	burnt frag		flint	Small frag. Heavily burnt	buff/cream	0	0	0	0	0	0	0	0	13	0	9	0	4	0
H	31570	50064	50062	1307	0	fragment		black chert		black	0	0	0	0	0	3	0	0	14	0	23	0	7	0
H	31570	50064	50062	1158	0	fragment		black chert		black	0	0	0	0	0	3	0	1	29	0	23	0	5	0
H	31570	50068	50067	1932	1	irregular fragment		crystal quartz		transparent	0	0	0	0	0	3	0	0		17	0	5	0	3
H	31570	50068	50067	1932	2	irregular fragment		crystal quartz		transparent	0	0	0	0	0	0	0	0		10	0	6	0	3
H	31570	50068	50067	1159	0	core	core single directional	flint	Small, conventional conical core with prepared platform	light grey	0	0	0	1	0	0	0	0	30	0	26	0	23	0
H	31570	50076	50075	1122	0	fragment		flint		light grey	0	0	0	1	0	2	0	0	26	0	17	0	8	0
H	31570	50076	50075	1135	3	fragment		black chert		black	0	0	0	0	0	3	0	0	15	0	10	0	3	0
H	31570	50076	50075	1135	2	flake fragment		black chert		black	0	0	0	1	0	2	0	0		28	0	14	0	5

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
H	31570	50076	50075	1135	1	flake fragment		black chert		black	0	0	0	1	0	2	0	0		33	0	20	7	0
H	31570	50076	50075	2219	0	utilised piece?	utilised cutting flake	flint	Thick secondary flake with probable edge gloss on one sharp edge	mid grey	0	0	0	1	2	2	0	1	36	0	19	0	7	0
H	31570	50076	50075	1133	0	flake fragment		black chert	Large thick secondary flake from a large core	black	0	0	0	1	2	2	0	0		20	0	31	0	8
H	31570	50076	50075	1141	3	fragment		black chert		black	0	0	0	0	0	3	0	0	20	0	19	0	4	0
H	31570	50076	50075	1141	2	fragment		black chert		black	0	0	0	0	0	3	0	0	32	0	37	0	4	0
H	31570	50076	50075	1141	1	fragment		black chert		black	0	0	0	1	0	2	0	2	42	0	16	0	9	0
H	31570	50081	50080	5994	4	retouched piece frag	edge-retouched knife	black chert	Proximal frag of a broken thick blade with fine retouch along one sharp straight side edge	black	0	0	0	0	0	3	0	0		35	18	0	7	0
H	31570	50081	50080	5995	0	casually retouched piece	unclassified	flint	Small, irregular flake with a few casual edge chips on one sharp side edge	light grey	0	0	0	1	3	2	0	0	24	0	22	0	5	0
H	31570	50081	50080	5994	1	retouched piece?	edge-retouched knife?	black chert	A thin tabular piece with neat edge chipping on one convex sharp edge. The chipped edge has either been heavily used or rolled. If the latter then the ciping is just natural damage.	black	0	0	0	1	0	0	0	0		47	0	25	0	8
H	31570	50081	50080	5994	3	flake fragment		black chert		black	0	0	0	1	0	3	0	0		40	17	0	6	0
H	31570	50081	50080	5994	2	flake fragment		black chert		black	0	0	0	0	0	3	0	0		25	33	0	7	0
H	31570	50083	50084	1924	0	retouched piece?	piercer	black chert	Pointed flake with point emphasised by a single detach	black	0	0	0	0	0	3	0	0	25	0	13	0	5	0
H	31570	50083	50084	1455	0	fragment		black chert		black	0	0	0	0	0	3	0	0	21	0	30	0	5	0
H	31570	50083	50084	5996	0	fragment		black chert		black	0	0	0	0	2	3	0	0	40	0	37	0	11	0
H	31570	50090	50092	1373	0	utilised piece?	utilised cutting flake	black chert	Tip fragment from a flake with fine retouch or use wear microchipping along one sharp, side edge.	black	0	0	0	0	0	3	0	0		14	0	14	0	5
H	31570	50095	50096	1157	3	retouched piece	edge-retouched knife	black chert	Thick flake with neat edge retouch along one sharp side edge, some possible use-wear	black	0	0	0	1	2	2	0	2	40	0	28	0	1	0
H	31570	50095	50096	1157	1	fragment		black chert		black	0	0	0	0	0	3	0	1	54	0	41	0	10	0
H	31570	50095	50096	1157	2	fragment		black chert		black	0	0	0	0	0	3	0	1	32	0	39	0	5	0
H	31570	50098	50097	5979	0	flake fragment		black chert		black	0	0	0	1	2	1	0	0		22	39	0	11	0
H	31570	50099	50101	1180	0	flake fragment		black chert		black	1	0	0	0	0	3	0	0		26	0	26	5	0
H	31570	50099	50101	1179	0	flake fragment		black chert		black	0	0	0	1	0	2	0	0		31	0	33	6	0
H	31570	50099	50101	1180	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50102	50164	1513	3	utilised piece?	utilised cutting flake	black chert	Thick flake with Inverse microchipping along one sharp slightly concave side edge	black	0	0	0	1	0	2	0	0	43	0	28	0	10	0
H	31570	50102	50164	1513	4	flake fragment		black chert		black	0	0	0	0	0	3	0	0		37	22	0	7	0
H	31570	50102	50164	3063	2	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		9	0	7	2	0
H	31570	50102	50164	3063	3	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		12	0	7	2	0
H	31570	50102	50164	3063	4	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		9	0	5	3	0
H	31570	50102	50164	1797	2	flake fragment		black chert		black	0	0	0	0	1	3	2	0		15	0	25	3	0
H	31570	50102	50164	3063	1	fragment		black chert		black	0	0	0	0	3	3	0	0	15	0	15	0	2	0
H	31570	50102	50164	1807	2	fragment		black chert		black	0	0	0	0	0	3	0	0	33	0	31	0	11	0
H	31570	50102	50164	1511	1	fragment		crystal quartz		transparent	0	0	0	0	0	3	0	0	14	0	12	0	3	0
H	31570	50102	50164	1513	1	utilised piece?	utilised cutting flake	black chert	Thick flake with Inverse microchipping aloong one sharp convex side edge	black	0	0	0	0	0	3	0	0	45	0	24	0	13	0

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
H	31570	50102	50164	1513	9	flake fragment		black chert		black	0	0	0	0	0	3	0	0		14	0	11	0	2
H	31570	50102	50164	1513	2	fragment		black chert		black	0	0	0	1	0	2	0	0	29	0	33	0	8	0
H	31570	50102	50164	2194	2	ecaille piece		flint		mid grey	0	0	0	1	0	2	0	0		14	0	11	0	4
H	31570	50102	50164	2194	1	irregular fragment		flint		mid grey	0	0	0	1	0	2	0	0		22	0	14	0	8
H	31570	50102	50164	1513	7	fragment		black chert		black	0	0	0	0	0	3	0	0	15	0	16	0	4	0
H	31570	50102	50164	1511	2	irregular fragment		crystal quartz		transparent	0	0	0	0	0	0	0	0		10	0	6	0	2
H	31570	50102	50164	1807	1	core frag	core bidirectional	black chert	Small core, some quite fine blades struck from both directions.	black	0	0	0	0	0	0	0	0	26	0	30	0	14	0
H	31570	50102	50164	1513	8	fragment		black chert		black	0	0	0	0	0	3	0	0	14	0	15	0	2	0
H	31570	50102	50164	1513	5	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		26	0	22	0	12
H	31570	50102	50164	5781	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50102	50164	1513	6	flake fragment		black chert		black	0	0	0	0	0	3	0	0		25	0	19	0	5
H	31570	50102	50164	1797	1	flake fragment		black chert		black	0	0	0	1	0	1	1	0		23	39	0	9	0
H	31570	50103	50104	1184	0	retouched piece	scraper end	flint	Thick, pebble-backed flake with minimal retouch on one steep end. Probable wear rounding.	light grey	0	0	0	1	2	2	0	1	34	0	29	0	12	0
H	31570	50105	50139	5811	0	microflake		black chert		black	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50105	50139	3091	2	flake fragment		flint	Heat altered colour	light grey	1	0	0	0	0	3	0	0		10	0	5	0	1
H	31570	50105	50139	5815	0	chip		crystal quartz		transparent	0	0	0	0	3	0	0	0		8	0	0	0	0
H	31570	50105	50139	1390	4	flake fragment		black chert		black	0	0	0	0	0	3	0	0		15	0	10	2	0
H	31570	50105	50139	1390	3	flake fragment		black chert		black	0	0	0	0	0	3	0	0		14	0	14	3	0
H	31570	50105	50139	3091	1	flake fragment		flint	Heat altered colour	light grey	1	0	0	0	0	3	0	0		10	0	6	0	2
H	31570	50105	50139	5998	0	core frag	core scalar/bipolar	flint		mid grey	0	0	0	0	0	0	0	0		23	0	21	0	11
H	31570	50105	50139	1390	1	fragment		black chert		black	0	0	0	1	2	2	0	2	36	0	34	0	14	0
H	31570	50105	50139	1390	2	fragment		black chert		black	0	0	0	0	0	3	0	0	25	0	32	0	8	0
H	31570	50105	50139	1390	5	flake fragment		black chert		black	0	0	0	0	0	0	0	0		19	0	10	3	0
H	31570	50106	50107	1604	0	fragment		black chert		black	0	0	0	0	0	3	0	0	16	0	12	0	2	0
H	31570	50106	50107	1603	0	split pebble		flint	Very small pebble piece but possibly a platform preparation flake	yellow brown	0	0	0	0	1	0	0	0	20	0	12	0	8	0
H	31570	50106	50107	1520	0	flake fragment		black chert		black	0	0	0	0	0	3	3	0		17	0	10	3	0
H	31570	50108	50116	1537	0	microflake		black chert		black	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50108	50116	1539	6	irregular fragment		crystal quartz	Lost	transparent	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50108	50116	1195	6	fragment		black chert		black	0	0	0	0	5	3	0	0	17	0	20	0	4	0
H	31570	50108	50116	1195	3	fragment		black chert		black	0	0	0	1	1	2	0	0	26	0	15	0	6	0
H	31570	50108	50116	1195	5	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		15	0	15	6	0
H	31570	50108	50116	1195	1	fragment		black chert		black	0	0	0	0	0	3	0	0	22	0	32	0	7	0
H	31570	50108	50116	1539	5	flake fragment		crystal quartz		transparent	0	0	0	0	0	0	0	0		6	0	4	0	1
H	31570	50108	50116	1537	9	flake fragment		black chert		black	0	0	0	0	0	3	1	0		9	11	0	2	0
H	31570	50108	50116	1195	2	fragment		black chert		black	0	0	0	0	0	3	0	0	20	0	23	0	6	0
H	31570	50108	50116	1195	4	casually	unclassified	black chert	Frag of a small flake with some marginal edge ret.	black	0	0	0	0	0	3	0	0		19	20	0	4	0

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
						retouched piece																		
H	31570	50108	50116	1195	7	flake fragment		black chert		black	0	0	0	0	0	3	0	0		9	0	16	3	0
H	31570	50108	50116	1537	12	flake fragment		black chert		black	0	0	0	0	0	3	3	0		5	11	0	2	0
H	31570	50108	50116	1537	6	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		12	0	8	0	5
H	31570	50108	50116	1539	4	irregular fragment		crystal quartz		transparent	0	0	0	0	0	0	0	0		9	0	3	0	2
H	31570	50108	50116	1536	1	fragment		flint	A small flake appears to have been truncated by retouch but apparently with no reason.	buff/cream	0	0	0	0	5	3	0	0	15	0	10	0	3	0
H	31570	50108	50116	1536	2	burnt frag		flint		light grey	2	0	0	1	0	0	0	0	13	0	13	0	4	0
H	31570	50108	50116	1536	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50108	50116	1537	8	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		13	0	4	0	3
H	31570	50108	50116	1537	5	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		9	0	8	0	4
H	31570	50108	50116	1537	11	flake fragment		black chert		black	0	0	0	0	0	3	1	0		7	10	0	2	0
H	31570	50108	50116	1537	7	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		11	0	6	0	3
H	31570	50108	50116	1537	13	irregular fragment		flint	Heat altered colour	light grey	1	0	0	1	0	1	0	0		17	0	12	0	4
H	31570	50108	50116	1598	1	core frag		black chert		black	0	0	0	1	0	0	0	0	35	0	20	0	13	0
H	31570	50108	50116	1598	2	irregular fragment		black chert		black	0	0	0	0	0	3	0	0	29	0	20	0	1	0
H	31570	50108	50116	1598	3	fragment		black chert		black	0	0	0	0	0	3	0	0	25	0	19	0	8	0
H	31570	50108	50116	1598	4	irregular fragment		black chert		black	0	0	0	0	0	3	0	0	18	0	12	0	7	0
H	31570	50108	50116	1598	5	irregular fragment		black chert		black	0	0	0	0	0	3	0	0	15	0	14	0	6	0
H	31570	50108	50116	1598	6	flake fragment		black chert		black	0	0	0	0	0	0	1	0	7	0	27	0	3	0
H	31570	50108	50116	1537	10	flake fragment		black chert		black	0	0	0	0	0	3	1	0		11	9	0	2	0
H	31570	50108	50116	1537	3	irregular fragment		black chert		black	1	0	0	1	0	2	0	0		18	0	10	0	3
H	31570	50108	50116	1537	1	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		23	0	8	0	7
H	31570	50108	50116	1537	2	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		20	0	8	0	6
H	31570	50108	50116	1537	4	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		13	0	11	0	3
H	31570	50108	50116	1539	3	flake fragment		crystal quartz	Thin, flat, true flake frag. Probable mid-part	transparent	0	0	0	0	0	3	0	0		8	0	8	0	1
H	31570	50108	50116	1539	2	irregular fragment		crystal quartz		transparent	0	0	0	0	0	3	0	0		11	0	6	0	4
H	31570	50108	50116	1539	1	irregular fragment		crystal quartz		transparent	0	0	0	0	0	3	0	0		11	0	7	0	4
H	31570	50109	50140	1193	0	flake fragment		crystal quartz	Butt frag. Punch struck?	transparent	0	0	0	0	5	3	0	0		15	13	0	3	0

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
H	31570	50110	50116	1431	0	irregular fragment		flint	Heat altered colour	light grey	2	0	0	0	0	3	0	0		17	0	10	0	9
H	31570	50110	50116	1490	1	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		15	0	10	0	5
H	31570	50110	50116	1477	1	irregular fragment		flint		mid grey	0	0	0	1	0	2	0	0		13	0	6	0	3
H	31570	50110	50116	1408	1	microflake		black chert	Small frags, some are chips, some probably just heat fractured	black	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50110	50116	1477	2	irregular fragment		flint		yellow brown	0	0	0	1	0	2	0	0		11	0	4	0	2
H	31570	50110	50116	1197	13	utilised piece?	utilised cutting flake	black chert	Microch on one sharp convex edge	black	0	0	0	0	0	3	0	0	33	0	15	0	8	0
H	31570	50110	50116	1197	7	fragment		black chert		black	0	0	0	0	0	3	0	0	30	0	29	0	3	0
H	31570	50110	50116	1477	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50110	50116	1372	3	fragment		black chert		black	0	0	0	0	0	3	0	0	18	0	21	0	5	0
H	31570	50110	50116	1372	2	flake fragment		black chert		black	0	0	0	0	0	3	0	0		21	0	23	5	0
H	31570	50110	50116	1372	1	utilised piece?	utilised cutting flake	black chert	Broad, thin flake with microch on one sharp edge but no visible use-wear.	black	0	0	0	0	0	3	0	0	41	0	25	0	7	0
H	31570	50110	50116	1197	12	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		24	0	17	0	16
H	31570	50110	50116	1197	16	flake fragment		black chert		black	0	0	0	1	0	2	0	0		26	0	11	0	4
H	31570	50110	50116	5964	5	fragment		flint	Heat altered colour	light grey	1	0	0	0	0	3	0	0	12	0	10	0	2	0
H	31570	50110	50116	1197	10	flake fragment		black chert		black	0	0	0	0	0	3	0	0		17	20	0	5	0
H	31570	50110	50116	1197	9	irregular fragment		greensand chert		mid grey	0	0	0	0	0	3	0	0		34	17	0	10	0
H	31570	50110	50116	5964	3	irregular fragment		flint	Heat altered colour	red brown	1	0	0	0	0	3	0	0		28	0	18	0	8
H	31570	50110	50116	1197	8	flake fragment		black chert		black	0	0	0	0	0	3	0	0		39	25	0	3	0
H	31570	50110	50116	1197	11	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		34	0	17	0	9
H	31570	50110	50116	1408	2	fragment		quartz	Small frag, probably a heat shattered piece, not worked	transparent	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50110	50116	1197	1	utilised piece?	utilised cutting flake	black chert	No microch or gloss visible	black	0	0	0	0	2	3	0	0	87	0	32	0	10	0
H	31570	50110	50116	1197	14	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		25	0	14	0	5
H	31570	50110	50116	1197	3	casually retouched piece	unclassified	black chert	Random unifacial retouch, possibly just trample damage	black	0	0	0	0	2	3	0	0	26	0	38	0	8	0
H	31570	50110	50116	1197	2	utilised piece?	utilised cutting flake	black chert	No microch or gloss visible	black	0	0	0	0	0	3	0	0	0	43	0	24	0	5
H	31570	50110	50116	1490	2	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		12	0	8	0	3
H	31570	50110	50116	5964	4	fragment		flint		mid grey	0	0	0	1	0	1	0	0	14	0	16	0	5	0
H	31570	50110	50116	1197	15	axe flake?		greensand chert	Axe frag? Possible polish striations on platform	mid grey	0	0	0	0	0	3	0	0	22	0	17	0	7	0
H	31570	50110	50116	1197	4	utilised piece?	utilised cutting flake	black chert	Microch one sharp edge	black	0	0	0	0	2	3	0	0	38	0	28	0	10	0

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
H	31570	50110	50116	1197	6	flake fragment		black chert		black	0	0	0	0	0	3	0	0		43	19	0	7	0
H	31570	50110	50116	1407	5	chip		flint		buff/cream	0	0	0	1	0	1	0	0		14	0	8	0	0
H	31570	50110	50116	1370	3	irregular fragment		black chert		black	0	0	0	4	0	2	0	0		18	0	16	0	8
H	31570	50110	50116	1372	5	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		14	0	13	0	6
H	31570	50110	50116	1372	4	flake fragment		black chert		black	0	0	0	0	0	3	0	0		21	0	11	0	3
H	31570	50110	50116	1371	0	fragment		flint		mid grey	0	0	0	0	5	3	0	0	23	0	7	0	3	0
H	31570	50110	50116	1370	4	flake fragment		black chert		black	0	0	0	0	0	3	3	0		11	0	19	2	0
H	31570	50110	50116	1370	5	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		16	0	8	0	5
H	31570	50110	50116	1407	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50110	50116	1407	6	burnt frag		flint		light grey	1	0	0	0	0	3	0	0		15	0	8	0	3
H	31570	50110	50116	1370	2	fragment		black chert		black	0	0	0	0	0	3	0	0	24	0	12	0	2	0
H	31570	50110	50116	1370	1	fragment		black chert		black	0	0	0	1	0	2	0	0	33	0	35	0	9	0
H	31570	50110	50116	1407	4	flake fragment		flint		mid grey	0	0	0	0	0	3	0	0		17	10	0	1	0
H	31570	50110	50116	1406	4	irregular fragment		crystal quartz		transparent	0	0	0	0	0	0	0	0		6	0	0	0	0
H	31570	50110	50116	1407	3	chip		flint		light grey	0	0	0	0	0	3	0	0	9	0	15	0	5	0
H	31570	50110	50116	1406	3	flake fragment		crystal quartz		transparent	0	0	0	0	0	0	0	0		7	0	0	0	0
H	31570	50110	50116	1407	2	fragment		flint		grey brown	0	0	0	0	0	3	0	0	13	0	17	0	3	0
H	31570	50110	50116	1407	1	irregular fragment		flint		light grey	0	0	0	0	0	3	0	0		18	0	11	0	6
H	31570	50110	50116	1602	0	chip		crystal quartz		transparent	0	0	0	0	0	3	0	0		5	0	0	0	0
H	31570	50110	50116	1197	5	flake fragment		black chert		black	0	0	0	1	0	3	0	0		27	0	32	8	0
H	31570	50110	50116	1406	2	flake fragment		crystal quartz		transparent	0	0	0	0	0	0	0	0		8	0	0	0	0
H	31570	50110	50116	1407	7	burnt frag		flint		light grey	1	0	0	0	0	3	0	0		14	0	7	0	4
H	31570	50110	50116	1406	1	irregular fragment		crystal quartz		transparent	0	0	0	0	0	0	0	0		9	0	0	0	0
H	31570	50115	50116	1649	7	flake fragment		black chert		black	0	0	0	0	0	3	0	0		17	0	10	0	2
H	31570	50115	50116	1648	1	fragment	core trimming flake	flint		light grey	0	0	0	0	5	3	0	0	32	0	11	0	9	0
H	31570	50115	50116	1648	11	flake fragment		black chert		black	0	0	0	0	0	3	0	0		6	0	12	0	2
H	31570	50115	50116	1648	10	flake fragment		black chert		black	0	0	0	0	0	3		0		7	9	0	2	0
H	31570	50115	50116	1648	9	flake fragment		flint		mid grey	0	0	0	1	0	2	0	0		11	0	11	3	0
H	31570	50115	50116	1648	6	burnt frag		flint		light grey	0	0	0	1	0	0	0	0		16	0	13	0	3
H	31570	50115	50116	1649	3	axe flake?		Graig Lwyd?	No polished facets	light grey	0	0	0	0	0	3	0	0	20	0	21	0	4	0
H	31570	50115	50116	1649	9	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		12	0	9	0	3
H	31570	50115	50116	1648	8	flake fragment		flint		light grey	0	0	0	0	0	3	0	0		14	9	0	2	0

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
H	31570	50115	50116	1648	2	flake fragment		flint		yellow brown	0	0	0	1	0	1	0	0		13	0	19	5	0
H	31570	50115	50116	1649	8	flake fragment		black chert		black	0	0	0	0	0	3	0	0		14	0	6	0	2
H	31570	50115	50116	1649	10	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		13	0	5	0	2
H	31570	50115	50116	1649	6	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		15	0	10	0	4
H	31570	50115	50116	1649	2	flake fragment		black chert		black	0	0	0	0	0	3	1	0		17	0	23	0	3
H	31570	50115	50116	1649	5	axe flake?		Graig Lwyd	No polished facets	light grey	0	0	0	0	0	3	0	1	20	0	9	0	3	0
H	31570	50115	50116	1649	4	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		21	0	10	0	6
H	31570	50115	50116	1648	3	fragment		flint		yellow brown	0	0	0	1	0	2	0	0	21	0	13	0	4	0
H	31570	50115	50116	1649	1	flake fragment		black chert		black	0	0	0	0	0	3	2	0		26	0	22	0	3
H	31570	50115	50116	1648	4	burnt frag		flint		buff/cream	0	0	0	1	0	0	0	0		16	0	16	0	4
H	31570	50115	50116	1648	5	fragment		flint		yellow grey	0	0	0	1	0	2	0	0	16	0	15	0	2	0
H	31570	50115	50116	1648	7	ecaille piece		flint	Scalar flake frag	light grey	0	0	0	0	0	3	0	0		10	0	15	2	0
H	31570	50117	50120	1308	3	irregular fragment		black chert		black	0	0	0	0	0	3	0	0	15	0	10	0	2	0
H	31570	50117	50120	1607	2	irregular fragment		black chert		black	0	0	0	0	0	0	0	0	13	0	8	0	2	0
H	31570	50117	50120	1312	0	utilised piece	utilised cutting flake	flint	Microch and polish on one chance sharp edge	yellow grey	0	0	0	1	0	2	0	0	45	0	19	0	8	0
H	31570	50117	50120	1608	0	fragment		crystal quartz		transparent	0	0	0	0	0	0	0	0		12	0	7	0	2
H	31570	50117	50120	1606	1	irregular fragment		flint		yellow brown	0	0	0	1	0	1	0	0		35	0	16	0	9
H	31570	50117	50120	1606	2	flake fragment		flint	Anvil struck	black/buff	0	0	0	1	0	2	0	0		23	12	0	4	0
H	31570	50117	50120	1607	1	irregular fragment		black chert		black	0	0	0	0	0	0	0	0	42	0	19	0	13	0
H	31570	50117	50120	1308	2	fragment		black chert	One side has concretion that could be analysed, mastic? But probably more likely just iron pan.	black	0	0	0	0	1	3	0	0	53	0	26	0	6	0
H	31570	50122	50116	4064	2	burnt frag		black chert		missing	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50122	50116	4151	1	fragment		flint		mid grey	0	0	0	0	0	3	0	0	15	0	9	0	4	0
H	31570	50122	50116	4151	2	flake fragment		flint		light grey	0	0	0	1	0	2	1	0		9	0	8	2	0
H	31570	50122	50116	4064	1	fragment		black chert		missing	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50122	50116	1376	1	utilised piece?	utilised cutting flake	black chert	Large blade with possible use wear on one long sharp side edge. Needs micro analysis	black	0	0	0	4	2	3	0	0	79	0	29	0	14	0
H	31570	50122	50116	1376	2	retouched piece	edge-retouched knife	black chert	Mid part of a large, thick blade with irregular retouch on one sharp side edge	black	0	0	0	0	0	3	0	0		57	0	29	9	0
H	31570	50124	50133	3065	6	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		18	0	13	0	4
H	31570	50124	50133	4127	0	microflake		flint		x	1	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50124	50133	1382	6	utilised piece	utilised cutting flake	black chert	Flake of finer chert than most. Edge gloss and microchipping.	black	0	0	0	0	0	0	0	0	35	0	22	0	5	0
H	31570	50124	50133	1382	7	flake fragment		black chert		black	0	0	0	0	2	3	0	0		18	0	27	7	0
H	31570	50124	50133	1382	8	flake fragment		black chert		black	0	0	0	0	0	0	0	0	30	33	0	4	0	0
H	31570	50124	50133	3067	6	burnt frag		flint	Heat altered colour	buff/cream	0	0	0	0	0	3	0	0		13	0	12	0	2

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
H	31570	50124	50133	3067	5	burnt frag		flint	Heat altered colour	buff/cream	0	0	0	0	0	3	0	0		12	0	16	0	2
H	31570	50124	50133	3067	4	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		10	0	8	0	4
H	31570	50124	50133	3067	3	flake fragment		flint		yellow brown	0	0	0	1	0	2	0	0		13	0	10	0	4
H	31570	50124	50133	3067	2	flake fragment		flint		mid grey	0	0	0	0	0	3	0	0		16	0	10	0	2
H	31570	50124	50133	3065	1	fragment		black chert		black	0	0	0	0	0	3	0	0	41	0	19	0	10	0
H	31570	50124	50133	3065	2	fragment		black chert		black	0	0	0	1	0	1	0	0	28	0	23	0	4	0
H	31570	50124	50133	3065	4	fragment		black chert		black	0	0	0	0	0	3	0	0	24	0	15	0	4	0
H	31570	50124	50133	3067	1	utilised piece?	utilised cutting flake	flint	Possible edge gloss on one sharp side edge	yellow brown	0	0	0	1	0	2	0	0		26	17	0	5	0
H	31570	50124	50133	5963	1	retouched piece	scraper end	flint	Convex, on side of a thick bipolar flake	yellow brown	0	0	0	1	4	2	0	0	29	0	27	0	8	0
H	31570	50124	50133	6078	1	fragment		flint		mid grey	0	0	0	1	0	2	0	0	22	0	26	0	7	0
H	31570	50124	50133	6078	2	casually retouched piece	utilised angle	flint	Small flake with steep retouch on one side and around an angular point	mid grey	0	0	0	0	0	3	0	0	22	0	20	0	4	0
H	31570	50124	50133	6078	4	utilised piece?	utilised cutting flake	flint	Long, narrow flake with microch one one concave side edge	yellow brown	0	0	0	1	0	2	0	0	49	0	10	0	6	0
H	31570	50124	50133	6078	5	utilised piece?	utilised cutting flake	flint	Tip frag of a long flake with microch on one sharp side edge	yellow brown	0	0	0	0	0	3	0	0		29	0	19	0	7
H	31570	50124	50133	6078	6	utilised piece	utilised cutting flake	flint	Thin blade with microch and slight gloss on one sharp side edge	yellow brown	0	0	0	1	0	2	0	0	33	0	14	0	3	0
H	31570	50124	50133	1383	0	natural piece		schist	Small flat pebble part of natural gravel	dark grey	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50124	50133	4130	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50124	50133	1382	9	retouched piece frag	scraper end	black chert	Flake of finer chert than most. Snapped off end of a flake with neat steep retouch	black	0	0	0	0	0	0	0	0		7	0	12	0	6
H	31570	50124	50133	1382	10	axe flake?		Graig Lwyd	Tertiary flake. No cortex or polished surface so nothing to prove it was from a re-used polished axe.The platform looks more like pebble.	light grey	0	0	0	0	1	3	0	0	35	0	40	0	8	0
H	31570	50124	50133	4061	0	flake fragment		flint		yellow brown	1	0	0	0	0	3	0	0		7	0	9	0	2
H	31570	50124	50133	3065	5	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		13	0	14	0	17
H	31570	50124	50133	3065	3	fragment		black chert		black	0	0	0	0	0	3	0	0	20	0	28	0	6	0
H	31570	50124	50133	3065	7	flake fragment		black chert		black	0	0	0	0	0	3	0	0		8	0	11	0	3
H	31570	50124	50133	1382	5	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		13	0	11	0	5
H	31570	50124	50133	1382	4	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		24	0	17	0	6
H	31570	50124	50133	1382	3	fragment		black chert		black	0	0	0	0	2	3	0	1	25	0	35	0	7	0
H	31570	50124	50133	1382	1	fragment		black chert		black	0	0	0	1	2	3	0	2	37	0	40	0	10	0
H	31570	50124	50133	5963	2	fragment		flint		mid grey	0	0	0	1	0	1	0	0	30	0	19	0	5	0
H	31570	50124	50133	1382	2	fragment		black chert		black	0	0	0	0	1	3	0	1	39	0	31	0	9	0
H	31570	50124	50133	4129	0	chip		crystal quartz		transparent	0	0	0	0	0	3	0	0		4	0	0	0	0
H	31570	50127	50133	1980	0	irregular fragment		crystal quartz		transparent	0	0	0	0	0	3	0	0		7	0	0	0	0
H	31570	50127	50133	1386	3	flake fragment		black chert		black	0	0	0	0	0	3	0	0		21	0	10	0	4
H	31570	50127	50133	1386	2	burnt frag		flint		mid grey	0	0	0	1	0	0	0	0	30	0	22	0	6	0

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
H	31570	50127	50133	1386	1	casually retouched piece	utilised cutting flake	black chert	Thin blade with some fine inverse retouch on one sharp, convex edge	black	0	0	0	0	0	3	0	0	52	0	19	0	6	0
H	31570	50132	50133	2290	0	fragment		black chert		black	0	0	0	0	0	3	0	0	31	0	23	0	10	0
H	31570	50132	50133	4071	1	fragment		black chert		black	0	0	0	0	0	3	0	0	12	0	9	0	3	0
H	31570	50132	50133	2026	5	flake fragment		flint		mid grey	0	0	0	1	0	2	1	0		27	11	0	4	0
H	31570	50132	50133	2026	1	utilised piece?	utilised cutting flake	flint	Microch and possible gloss on one sharp convex edge	mid grey	0	0	0	1	0	2	0	0	38	0	29	0	15	0
H	31570	50132	50133	1402	0	casually retouched piece	utilised cutting flake	black chert	Small, thin flake with irregular, sharpening retouch along one sharp concave edge	black	0	0	0	0	2	3	0	0	33	0	21	0	5	0
H	31570	50132	50133	2026	10	flake fragment		flint		light grey	0	0	0	0	0	3	0	0		14	0	16	0	12
H	31570	50132	50133	2026	9	ecaille piece		flint	Scalar flake	yellow brown	0	0	0	0	0	3	0	0	15	0	12	0	3	0
H	31570	50132	50133	2026	8	flake fragment		flint		mid grey	0	0	0	0	0	3	2	0		13	15	0	3	0
H	31570	50132	50133	2026	7	flake fragment		flint		buff/cream	0	0	0	0	0	3	1	0		29	9	0	4	0
H	31570	50132	50133	2026	6	flake fragment		flint	Heat altered colour	light grey	2	0	0	0	0	3	0	0		19	14	0	5	0
H	31570	50132	50133	2026	3	utilised piece?	utilised cutting flake	flint	Small, thin flake with microch and slight gloss on one sharp edge	mid grey	0	0	0	1	0	2	0	0	17	0	25	0	6	0
H	31570	50132	50133	2026	4	ecaille piece		flint	Scalar flake	mid grey	0	0	0	0	0	3	0	0	24	0	17	0	4	0
H	31570	50132	50133	2026	2	fragment		flint	Heat altered colour	buff/cream	1	0	0	1	0	2	0	0	28	0	21	0	5	0
H	31570	50132	50133	2025	2	irregular fragment		crystal quartz		transparent	0	0	0	0	0	2	0	0		15	0	9	0	4
H	31570	50132	50133	1395	2	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		32	0	24	0	7
H	31570	50132	50133	1395	3	irregular fragment		quartz		buff/cream	0	0	0	0	0	3	0	0		30	0	32	0	13
H	31570	50132	50133	4071	2	fragment		black chert		black	0	0	0	0	0	3	0	0	10	0	11	0	2	0
H	31570	50132	50133	1395	4	fragment		black chert		black	0	0	0	0	0	3	0	0	34	0	37	0	8	0
H	31570	50132	50133	1395	5	fragment		black chert		black	0	0	0	0	0	3	0	0	20	0	25	0	4	0
H	31570	50132	50133	4071	3	irregular fragment		black chert		black	0	0	0	1	0	1	0	0		10	0	6	0	3
H	31570	50132	50133	1395	6	flake fragment		black chert		black	0	0	0	0	0	3	2	0		20	18	0	3	0
H	31570	50132	50133	1403	0	utilised pebble?		other stone	Small, flat oval pebble of soft sandstone. One face poss facetted from use as rubber/abrader	snd	0	0	0	0	0	0	0	0	41	0	35	0	8	0
H	31570	50132	50133	2025	1	fragment		glass	Accidental fracture of glassy slag	x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50132	50133	2018	1	fragment		black chert		black	0	0	0	1	0	2	0	0	38	0	25	0	9	0
H	31570	50132	50133	2018	2	utilised piece	utilised cutting flake	black chert	Small flake with microch and polish on one sharp side edge	black	0	0	0	0	0	3	0	0	28	0	23	0	5	0
H	31570	50132	50133	1395	1	fragment		black chert		black	0	0	0	1	0	2	0	0	36	0	28	0	9	0
H	31570	50135	50136	5765	1	ecaille piece frag		flint	Scalar flake	yellow brown	0	0	0	1	3	2	0	0		14	9	0	3	0
H	31570	50135	50136	5765	3	microflake		flint		yellow brown	0	0	0	1	0	0	0	0		0	0	0	0	0
H	31570	50135	50136	5567	0	irregular fragment		crystal quartz		transparent	0	0	0	0	0	3	0	0		13	0	7	0	5
H	31570	50135	50136	4467	0	flake fragment		flint		yellow brown	0	0	0	0	0	3	3	0		8	0	7	2	0
H	31570	50135	50136	5779	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50135	50136	5778	0	irregular		crystal		transparent	0	0	0	0	0	3	0	0		13	0	8	0	1

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
						fragment		quartz																
H	31570	50135	50136	5765	2	flake fragment		flint		yellow brown	1	0	0	0	0	3	0	0		9	6	0	2	0
H	31570	50137	50138	1416	0	utilised piece	utilised cutting flake	flint	Small flake with some microchipping and gloss on both sharp, convex side edges	buff/cream	0	0	0	0	0	3	0	0	36	0	19	0	7	0
H	31570	50137	50138	1415	0	flake fragment		crystal quartz	Flake shaped although not conchoidal	transparent	0	0	0	0	0	0	0	0	18	0	9	0	3	0
H	31570	50137	50138	1391	2	flake fragment		quartz		white	0	0	0	0	0	3	0	0		20	0	16	0	5
H	31570	50137	50138	1391	1	flake fragment		black chert		black	0	0	0	0	0	3	0	0		20	0	10	0	4
H	31570	50137	50138	4134	0	microflake		flint		yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50137	50138	6079	0	fragment		flint		mid grey	0	0	0	1	1	2	0	0	23	0	15	0	7	0
H	31570	50144	50143	1831	1	casually retouched piece	utilised cutting flake	black chert	Large, thick flake with irregular inverse retouch on one sharp convex side edge	black	0	0	0	0	2	3	0	0	57	0	37	0	13	0
H	31570	50144	50143	1398	1	irregular fragment		greensand chert	Grey chert	mid grey	0	0	0	1	0	2	0	0	40	0	19	0	8	0
H	31570	50144	50143	1396	1	utilised piece?	utilised cutting flake	black chert	Possible microch on one convex sharp edge.	black	0	0	0	1	2	2	0	0	26	0	41	0	10	0
H	31570	50144	50143	1831	5	natural piece		black chert	Gravel	black	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50144	50143	1396	2	fragment		black chert		black	0	0	0	0	0	3	0	0	28	0	24	0	5	0
H	31570	50144	50143	1831	2	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		21	0	11	0	5
H	31570	50144	50143	1870	0	microflake		flint		light grey	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50144	50143	1398	2	fragment		greensand chert	Grey chert	mid grey	0	0	0	0	0	3	0	0	22	0	17	0	3	0
H	31570	50144	50143	1831	4	chip		black chert		black	0	0	0	0	0	3	0	0		5	0	7	0	1
H	31570	50144	50143	1831	3	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		17	0	8	0	3
H	31570	50147	50145	1847	1	flake fragment		flint		light grey	0	0	0	0	0	3	2	0		15	12	0	3	0
H	31570	50147	50145	1847	2	chip		flint		light grey	0	0	0	0	0	3	0	0	7	0	10	0	1	0
H	31570	50147	50145	1460	4	utilised piece?	nosed piece	black chert	Small flake with a pointed tip that has been retouched or micro-chipped from use on one side and has possible use wear	black	0	0	0	0	2	3	0	0	38	0	17	0	6	0
H	31570	50147	50145	1847	3	chip		flint		light grey	0	0	0	0	0	3	0	0	7	0	9	0	1	0
H	31570	50147	50145	1848	0	fragment		black chert		black	0	0	0	0	0	3	0	0	18	0	11	0	4	0
H	31570	50147	50145	1460	2	fragment		black chert		black	0	0	0	0	2	3	0	0	45	0	34	0	6	0
H	31570	50147	50145	3082	1	irregular fragment		flint		mid grey	0	0	0	1	0	1	0	0		15	0	14	0	6
H	31570	50147	50145	3082	2	utilised piece?	utilised cutting flake?	flint	Possible slight edge gloss on sharp edge	mid grey	0	0	0	1	0	2	0	0	24	0	12	0	3	0
H	31570	50147	50145	1460	3	flake fragment		black chert		black	0	0	0	1	0	2	1	0		25	0	32	0	12
H	31570	50147	50145	1460	5	flake fragment		black chert		black	0	0	0	0	2	3	0	0		22	29	0	4	0
H	31570	50147	50145	1460	1	fragment		black chert		black	0	0	0	1	2	1	0	0	52	0	47	0	14	0
H	31570	50147	50145	5893	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50148	50176	5894	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50148	50176	1570	3	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		30	0	28	0	10

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
H	31570	50148	50176	1570	2	irregular fragment		black chert		black	0	0	0	1	0	2	0	0		35	0	25	0	6
H	31570	50148	50176	5568	1	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		7	0	11	1	0
H	31570	50148	50176	1840	0	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		27	0	12	0	7
H	31570	50148	50176	4381	0	microflake		flint		x	1	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50148	50176	4451	1	fragment		black chert		black	0	0	0	0	0	3	0	0	24	0	20	0	5	0
H	31570	50148	50176	4451	2	flake fragment		black chert		black	0	0	0	0	0	3	0	0		13	0	8	0	2
H	31570	50148	50176	5568	2	flake fragment		black chert		black	0	0	0	0	0	3	0	0		10	0	7	0	2
H	31570	50148	50176	4451	3	flake fragment		black chert		black	0	0	0	0	0	3	0	0		11	0	7	0	2
H	31570	50148	50176	1570	1	utilised piece	utilised cutting flake	black chert	Thin flake with some microch on one convex, sharp edge	black	0	0	0	0	0	3	0	0	42	0	28	0	6	0
H	31570	50148	50176	5530	0	irregular fragment		crystal quartz		transparent	0	0	0	0	0	3	0	0		10	0	10	0	3
H	31570	50148	50176	5569	0	burnt frag		flint		light grey	0	0	0	1	0	0	0	0		0	0	0	0	0
H	31570	50148	50176	5568	3	natural piece		black chert	Gravel	black	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50152	50151	4519	0	flake fragment		flint		mid grey	0	0	0	0	0	3	0	0		14	0	12	0	2
H	31570	50152	50151	1424	0	utilised piece	utilised cutting flake	flint	Thick flake with microch and slight gloss on one sharp, slightly concave side edgei	mottled mid grey brown	0	0	0	1	0	1	0	0	40	0	18	0	9	0
H	31570	50152	50151	1421	0	burnt frag		flint	Shattered pebble frag	light grey	2	0	0	0	0	0	0	0		28	0	13	0	12
H	31570	50153	50145	4033	0	microflake		flint	Microblade butt	yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50153	50145	4001	1	irregular fragment		flint	Heat altered colour	light grey	1	0	0	0	0	3	0	0		15	0	9	0	3
H	31570	50153	50145	4001	2	irregular fragment		flint	Heat altered colour	light grey	0	0	0	0	0	3	0	0		12	0	7	0	2
H	31570	50153	50145	4001	3	flake fragment		flint		light grey	0	0	0	0	0	0	0	0		9	8	0	1	0
H	31570	50154	50145	1458	0	flake fragment		crystal quartz	Has, probable previous flake facets and a probable bulb. Tip of flake broken off.	transparent	0	0	0	0	0	3	2	0		15	17	0	3	0
H	31570	50154	50145	3022	0	fragment		black chert		black	0	0	0	0	0	3	0	0	23	0	20	0	6	0
H	31570	50154	50145	3022	0	microflake		black chert		black	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50154	50145	5904	0	fragment		crystal quartz		transparent	0	0	0	0	0	0	0	0	9	0	6	0	1	0
H	31570	50154	50145	3010	1	axe flake		Graig Lwyd	Ground axe frag	mid grey	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50155	50156	5771	0	irregular fragment		crystal quartz	?Flake frag	transparent	0	0	0	0	0	0	0	0		3	0	0	0	0
H	31570	50158	50145	2020	0	flake fragment		black chert		black	0	0	0	0	0	3	0	0		29	0	11	0	3
H	31570	50158	50145	1510	0	split pebble frag		flint		mid grey	0	0	0	1	3	2	0	0		32	23	0	11	0
H	31570	50159	50164	1515	2	utilised piece?	utilised cutting flake	black chert	A small, thin flake with poss wear polish on sharp distal edge	black	0	0	0	0	0	3	0	0	22	0	29	0	3	0
H	31570	50159	50164	4014	0	chip		crystal quartz		transparent	0	0	0	0	0	3	0	0		4	0	0	0	0
H	31570	50159	50164	1515	1	utilised piece?	utilised cutting flake?	black chert	A thick blade with possible microch on one sharp side edge	black	0	0	0	1	0	2	0	0	43	0	17	0	7	0
H	31570	50159	50164	3073	3	flake fragment		flint		buff/cream	0	0	0	0	0	3	0	0		11	0	7	0	2

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
H	31570	50159	50164	6094	1	utilised piece	utilised cutting flake	flint	Thin, broad flake of fine translucent flint with a chance spur and microch and polish on two sharp edges	dark grey	0	0	0	0	3	3	0	0	20	0	40	0	5	0
H	31570	50159	50164	6094	2	fragment		flint		yellow brown	0	0	0	1	0	1	0	0	21	0	13	0	4	0
H	31570	50159	50164	3073	2	ecaille piece		flint	Scalar flake	mid grey	0	0	0	1	0	2	0	0		17	0	14	0	4
H	31570	50159	50164	3072	3	chip		black chert		black	0	0	0	0	0	3	0	0	7	0	11	0	1	0
H	31570	50159	50164	3072	2	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		27	0	11	0	6
H	31570	50159	50164	3072	1	fragment		black chert		black	0	0	0	0	0	3	0	0	21	0	15	0	3	0
H	31570	50159	50164	3073	1	flake fragment		flint	Possibly slightly burnt	yellow grey	0	0	0	0	0	3	0	0		19	0	13	0	5
H	31570	50159	50164	5757	0	microflake		black chert		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50159	50164	5865	0	microflake		flint		yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50159	50164	1515	3	flake fragment		black chert		black	0	0	0	0	0	3	1	0		18	0	11	0	4
H	31570	50159	50164	5757	2	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		11	0	9	2	0
H	31570	50159	50164	5757	1	flake fragment		black chert		black	0	0	0	0	0	3	0	0		11	0	8	2	0
H	31570	50159	50164	3073	0	microflake		flint		light grey	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50159	50164	5757	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50161	50145	2069	0	fragment		flint		yellow brown	0	0	0	1	0	2	0	2	9	0	10	0	2	0
H	31570	50161	50145	4475	3	flake fragment		flint		light grey	0	0	0	0	0	3	1	0		10	7	0	1	0
H	31570	50161	50145	4475	2	burnt frag		flint		buff/cream	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50161	50145	4475	4	flake fragment		flint		buff/cream	1	0	0	0	0	3	2	0		7	6	0	1	0
H	31570	50161	50145	4474	0	flake fragment		black chert		black	0	0	0	0	0	3	0	0		9	10	0	1	0
H	31570	50161	50145	1623	0	flake fragment		black chert		black	0	0	0	1	0	1	0	0		22	0	19	0	8
H	31570	50161	50145	4475	5	irregular fragment		other stone	Possibly granite or gabbro.	mid grey	0	0	0	0	0	3	0	0		9	0	6	0	1
H	31570	50161	50145	4085	2	flake fragment		black chert		black	0	0	0	0	0	3	1	0		15	0	12	0	4
H	31570	50161	50145	4475	1	fragment		flint		light grey	1	0	0	1	0	2	0	0	28	0	24	0	7	0
H	31570	50163	50145	4324	4	flake fragment		black chert		black	0	0	0	0	0	3	3	0		13	0	15	3	0
H	31570	50163	50145	1929	0	fragment		crystal quartz		transparent	0	0	0	0	5	3	0	0	7	0	5	0	1	0
H	31570	50163	50145	4324	2	flake fragment		black chert		black	0	0	0	0	0	3	0	0		23	0	27	4	0
H	31570	50163	50145	4324	3	fragment		black chert		black	0	0	0	0	0	3	0	0	13	0	19	0	3	0
H	31570	50163	50145	1928	0	irregular fragment		crystal quartz		transparent	0	0	0	0	0	0	0	0		3	0	0	0	0
H	31570	50163	50145	1886	0	microflake		flint		buff/cream	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50163	50145	4324	1	casually retouched piece	denticulate?	black chert	Thick flake frag with heavy, somewhat denticulate inverse retouch on one sharp edge	black	0	0	0	1	0	2	0	0		28	30	0	11	0
H	31570	50165	50166	1754	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50165	50166	1754	6	flake fragment		flint		mid grey	1	0	0	0	0	3	0	0		11	0	11	0	2
H	31570	50165	50166	2350	0	irregular fragment		crystal quartz		transparent	0	0	0	0	0	2	0	0		20	11	0	3	0
H	31570	50165	50166	1696	1	split pebble frag		black chert		black	0	0	0	2	0	0	0	0	37	0	36	0	12	0
H	31570	50165	50166	5980	5	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		15	0	8	0	4

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
H	31570	50165	50166	5980	0	microflake		black chert		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50165	50166	1546	4	utilised piece?	utilised cutting flake	black chert	Possible wear polish on one sharp side edge	black	0	0	0	0	1	3	0	0	38	0	21	0	5	0
H	31570	50165	50166	5980	1	flake fragment		black chert		black	0	0	0	0	1	3	2	0		13	0	25	0	5
H	31570	50165	50166	1546	3	core	core reject	black chert		black	0	0	0	0	0	0	0	0	49	0	40	0	8	0
H	31570	50165	50166	1546	2	core frag		black chert		black	0	0	0	0	0	0	0	0	52	0	44	0	23	0
H	31570	50165	50166	1799	1	fragment		flint		yellow brown	0	0	0	1	0	2	0	0	46	0	29	0	13	0
H	31570	50165	50166	1696	4	fragment		black chert		black	0	0	0	0	0	3	0	0	11	0	18	0	3	0
H	31570	50165	50166	1696	3	fragment		black chert		black	0	0	0	1	0	2	0	0	21	0	13	0	7	0
H	31570	50165	50166	1799	2	fragment		crystal quartz		transparent	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50165	50166	5980	2	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		21	0	15	0	5
H	31570	50165	50166	1754	5	flake fragment		flint		buff/cream	0	0	0	0	0	3	0	0		10	9	0	2	0
H	31570	50165	50166	1696	2	irregular fragment		black chert		black	0	0	0	2	0	2	0	0		23	0	18	0	7
H	31570	50165	50166	1546	1	burnt split pebble		black chert	Colour changed by burning	red brown	0	0	0	1	0	0	0	0	49	0	40	0	35	0
H	31570	50165	50166	1754	1	utilised piece?	utilised cutting flake?	flint	Thin flake with neat microchiiping or retouch on side of a projecting tip, which has broken off	yellow brown	0	0	0	0	0	3	0	0		21	19		4	0
H	31570	50165	50166	1754	2	irregular fragment		flint	Heat altered colour	red brown	1	0	0	1	0	1	0	0		20	0	10	0	7
H	31570	50165	50166	1754	3	fragment		flint	Small, invasive thinning flake	mid grey	0	0	0	0	0	3	0	0	16	0	10	0	1	0
H	31570	50165	50166	1754	4	fragment		flint		yellow brown	0	0	0	0	0	3	0	0	13	0	9	0	2	0
H	31570	50165	50166	5980	3	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		16	0	12	0	3
H	31570	50165	50166	5980	4	flake fragment		black chert		black	0	0	0	0	0	3	0	0		11	0	17	0	2
H	31570	50168	50167	1861	0	chip		crystal quartz	Clear impact bulb. ?punch	transparent	0	0	0	0	5	3	0	0	5	0	4	0	1	0
H	31570	50168	50167	1832	5	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		10	0	5	1	0
H	31570	50168	50167	5950	0	chip		flint	Scalar chip	light grey	0	0	0	1	0	2	0	0	11	0	10	0	3	0
H	31570	50168	50167	1873	1	irregular fragment		flint	Heat altered colour	light grey	1	0	0	0	0	3	0	0		8	0	6	0	4
H	31570	50168	50167	2211	0	flake fragment		black chert		black	0	0	0	0	0	3	3	0		13	0	16	0	2
H	31570	50168	50167	5816	0	chip		crystal quartz		transparent	0	0	0	0	0	2	0	0		12	0	6	0	2
H	31570	50168	50167	3077	0	microflake		flint		yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50168	50167	5871	0	irregular fragment		crystal quartz		transparent	0	0	0	0	0	2	0	0		6	0	0	0	0
H	31570	50168	50167	4213	0	irregular fragment		crystal quartz		transparent	0	0	0	0	0	3	0	0		7	0	0	0	0
H	31570	50168	50167	3031	0	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		23	0	12	0	4
H	31570	50168	50167	1832	4	irregular		black chert		black	0	0	0	0	0	3	0	0		22	0	5	2	0

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
						fragment																		
H	31570	50168	50167	1832	3	flake fragment		black chert		black	0	0	0	0	0	3	1	0		11	0	11	4	0
H	31570	50168	50167	1832	2	flake fragment		black chert		black	0	0	0	0	0	3	1	0		11	0	16	3	0
H	31570	50168	50167	1832	1	flake fragment		black chert		black	0	0	0	0	0	3	1	0		23	0	21	4	0
H	31570	50168	50167	4309	3	microflake		flint		yellow brown	0	0	0	1	0	0	0	0		0	0	0	0	0
H	31570	50168	50167	1889	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50168	50167	4309	2	irregular fragment		flint		light grey	0	0	0	1	0	2	0	0		14	0	14	0	4
H	31570	50168	50167	4309	1	ecaille piece		flint		dark grey	0	0	0	1	0	2	0	0	24	0	25	0	1	0
H	31570	50168	50167	4368	0	chip		crystal quartz		transparent	0	0	0	0	0	3	0	0		6	0	0	0	0
H	31570	50170	50145	1758	0	microflake		flint		mid grey	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50171	50173	4401	0	flake fragment		black chert		black	0	0	0	0	0	3	0	0		12	0	5	0	1
H	31570	50171	50173	1939	2	fragment		black chert		black	0	0	0	0	0	3	0	0	14	0	16	0	4	0
H	31570	50171	50173	2016	0	utilised piece?	utilised cutting flake	black chert	Some microch but could be just accidental damage	missing	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50171	50173	4043	0	microflake		black chert		black	0	0	0	0	0	3	0	0		0	0	0	0	0
H	31570	50171	50173	1939	1	fragment		black chert		black	0	0	0	0	0	3	0	0	20	0	19	0	4	0
H	31570	50171	50173	2015	2	fragment		flint		yellow brown	0	0	0	1	0	1	0	0	17	0	9	0	3	0
H	31570	50171	50173	1548	5	fragment		black chert		black	0	0	0	0	0	3	0	0	19	0	16	0	4	0
H	31570	50171	50173	4401	0	microflake		black chert		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50171	50173	1940	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50171	50173	4402	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50171	50173	4405	0	microflake		flint		light grey	1	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50171	50173	1548	6	fragment		black chert		black	0	0	0	0	0	3	0	0	21	0	17	0	4	0
H	31570	50171	50173	1548	7	flake fragment		black chert		black	0	0	0	1	0	2	0	0		11	0	20	0	5
H	31570	50171	50173	1548	8	flake fragment		black chert		black	0	0	0	0	0	3	3	0		17	0	14	0	3
H	31570	50171	50173	1548	9	flake fragment		black chert		black	0	0	0	0	0	3	2	0		16	10	0	3	0
H	31570	50171	50173	1548	10	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		15	0	14	0	7
H	31570	50171	50173	1548	11	flake fragment		black chert		black	0	0	0	0	0	3	0	0		19	0	11	0	6
H	31570	50171	50173	1548	12	flake fragment		black chert		black	0	0	0	0	0	3	1	0		11	0	14	0	3
H	31570	50171	50173	1548	4	irregular fragment		greensand chert		mid grey	0	0	0	0	0	3	0	0		25	0	18	0	1
H	31570	50171	50173	4046	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50171	50173	1548	3	fragment		black chert		black	0	0	0	1	0	1	0	0	33	0	18	0	5	0
H	31570	50171	50173	1548	2	split pebble frag		black chert		black	0	0	0	1	0	0	0	0	47	0	21	0	12	0
H	31570	50171	50173	1558	2	fragment		black chert		black	0	0	0	0	0	3	0	0	20	0	1	0	5	0
H	31570	50171	50173	1548	1	split pebble frag		black chert		black	0	0	0	1	0	0	0	0	26	0	33	0	13	0
H	31570	50171	50173	2017	1	axe flake		Graig Lwyd?	Irregular frag, probably a broken flake froma re-worked ground axe, with striations	mid grey	0	0	0	0	0	0	0	0		24	0	16	0	5
H	31570	50171	50173	4400	3	irregular fragment		crystal quartz		transparent	0	0	0	0	0	0	0	0		5	0	0	0	0

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
H	31570	50171	50173	2016	1	flake fragment		black chert		black	0	0	0	1	0	2	0	0		17	0	16	0	6
H	31570	50171	50173	2016	2	fragment		black chert		black	0	0	0	0	0	3	0	0	13	0	18	0	2	0
H	31570	50171	50173	2016	3	fragment		black chert		black	0	0	0	0	0	3	0	0	8	0	17	0	2	0
H	31570	50171	50173	4044	2	flake fragment		crystal quartz		transparent	0	0	0	0	0	0	0	0		4	0	0	0	0
H	31570	50171	50173	4400	2	chip		crystal quartz		transparent	0	0	0	0	0	0	0	0		6	0	0	0	0
H	31570	50171	50173	4044	1	fragment		crystal quartz		transparent	0	0	0	0	0	3	0	0	11	0	5	0	2	0
H	31570	50171	50173	2016	4	irregular fragment		black chert		black	0	0	0	1	0	0	0	0		12	0	10	0	6
H	31570	50171	50173	2289	0	fragment		flint		yellow brown	0	0	0	1	2	1	0	0	30	0	32	0	9	0
H	31570	50171	50173	4400	1	chip		crystal quartz		transparent	0	0	0	0	0	0	0	0		6	0	0	0	0
H	31570	50171	50173	1939	3	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		20	0	8	0	2
H	31570	50171	50173	1558	1	fragment		black chert		black	0	0	0	0	0	3	0	0	19	0	13	0	3	0
H	31570	50171	50173	2015	1	fragment		flint		light grey	0	0	0	0	0	3	0	0	11	0	15	0	3	0
H	31570	50172	50174	1626	2	fragment		black chert		black	0	0	0	1	0	2	0	0	14	0	20	0	5	0
H	31570	50172	50174	1626	0	microflake		black chert		black	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50172	50174	1625	5	chip		flint		light grey	0	0	0	0	0	3	0	0	9	0	6	0	2	0
H	31570	50172	50174	1625	6	fragment		black chert		black	0	0	0	0	0	3	0	0	9	0	13	0	3	0
H	31570	50172	50174	1551	0	utilised piece?	utilised cutting flake	flint	Broad flake with gloss on one sharp concave edge	mid grey	0	0	0	2	1	2	0	2	43	0	35	0	1	0
H	31570	50172	50174	1626	1	axe flake?		Graig Lwyd	small, tip frag of a broken flake. Surafce has no striations so could be just from a pebble.	mid grey	0	0	0	1	0	2	0	0		13	0	24	4	0
H	31570	50172	50174	1625	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50172	50174	1627	3	chip		crystal quartz	Clear impact bulb	transparent	0	0	0	0	0	3	0	0	5	0	10	0	1	0
H	31570	50172	50174	1625	1	chip		flint		mid grey	1	0	0	1	0	2	0	0	13	0	18	0	6	0
H	31570	50172	50174	1625	2	chip		flint		mid grey	0	0	0	0	0	3	0	0	11	0	16	0	3	0
H	31570	50172	50174	1904	0	irregular fragment		crystal quartz		transparent	0	0	0	0	0	2	0	0		15	0	13	0	6
H	31570	50172	50174	2065	1	fragment		crystal quartz		transparent	0	0	0	0	0	2	0	2	8	0	8	0	2	0
H	31570	50172	50174	1627	2	flake fragment		crystal quartz		transparent	0	0	0	0	0	3	1	0		8	9	0	4	0
H	31570	50172	50174	1627	1	fragment		crystal quartz	Thick ?core-trimming piece	transparent	0	0	0	0	0	3	0	0	17	0	9	0	3	0
H	31570	50172	50174	1625	3	chip		flint		mid grey	0	0	0	0	0	3	0	0	12	0	7	0	2	0
H	31570	50172	50174	1625	4	chip		flint		mid grey	0	0	0	0	0	2	0	0	12	0	7	0	1	0
H	31570	50172	50174	2065	2	flake fragment		crystal quartz		transparent	0	0	0	0	0	3	0	0		8	0	3	0	1
H	31570	50177	50178	4331	0	fragment		flint		dark grey	0	0	0	1	0	1	0	0	18	0	14	0	4	0
H	31570	50177	50178	1850	0	fragment		flint	Small, invasive thinning flake	mid grey	0	0	0	0	0	3	0	0	12	0	6	0	1	0
H	31570	50177	50178	1985	0	irregular		black chert		black	0	0	0	0	0	3	0	0		9	0	6	0	4

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
						fragment																		
H	31570	50177	50178	1574	0	burnt frag		flint	Small thermoclastic potlid	mid grey	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50183	50182	4144	0	fragment		crystal quartz		transparent	0	0	0	0	0	3	0	0	10	0	9	0	1	0
H	31570	50183	50182	1871	3	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		11	0	5	0	4
H	31570	50183	50182	4143	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50183	50182	1871	2	flake fragment		black chert		black	0	0	0	1	0	1	0	0		18	0	9	0	4
H	31570	50183	50182	1871	1	flake fragment		black chert		black	0	0	0	0	0	3	1	0		15	0	18	0	3
H	31570	50183	50182	1712	4	fragment		black chert		black	0	0	0	1	2	2	0	0	25	0	22	0	6	0
H	31570	50183	50182	1701	3	utilised piece frag?	utilised cutting flake	black chert	Tip of a small flake with microch on one sharp edge	black	0	0	0	0	0	3	0	0		17	0	20	0	4
H	31570	50183	50182	1712	3	core	core scalar/bipolar	black chert	Irregular piece with negative flake facets on both sides and a few edge chips from failed flake removals.	black	0	0	0	0	0	3	0	0	31	0	23	0	10	0
H	31570	50183	50182	1701	4	chip		black chert	Small, shaping or thinning flake	black	0	0	0	0	0	3	0	0	17	0	11	0	3	0
H	31570	50183	50182	1661	1	core frag	core scalar/bipolar	flint	Heat altered colour	light grey	1	0	0	1	0	0	0	0	40	0	21	0	12	0
H	31570	50183	50182	2192		flake fragment		black chert		black	0	0	0	0	0	3	0	0		11	0	15	0	3
H	31570	50183	50182	1881	0	flake fragment		flint		light grey	0	0	0	0	0	3	0	0		6	0	14	2	0
H	31570	50183	50182	5780	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50183	50182	1701	2	fragment		black chert		black	0	0	0	0	0	3	0	0	40	0	24	0	11	0
H	31570	50183	50182	1719	0	fragment	core trimming flake	black chert		black	0	0	0	4	1	2	0	0		33	0	25	0	9
H	31570	50183	50182	1661	3	fragment		flint		yellow brown	0	0	0	1	0	2	0	0	19	0	16	0	6	0
H	31570	50183	50182	1661	2	core	core scalar/bipolar	flint		mid grey	0	0	0	1	0	0	0	0	33	0	22	0	13	0
H	31570	50183	50182	1701	1	utilised piece?	utilised cutting flake	black chert	Small, thick flake with a small area of microch on one sharp edge	black	0	0	0	0	1	3	0	0	36	0	27	0	11	0
H	31570	50183	50182	1881	0	microflake		flint		buff/cream	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50184	50182	2081	5	flake fragment		black chert		black	0	0	0	0	0	3	0	0		10	0	5	0	2
H	31570	50184	50182	4013	2	irregular fragment		black chert		black	0	0	0	0	0	0	0	0		6	0	6	0	4
H	31570	50184	50182	4013	0	microflake		black chert		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50184	50182	1927	0	fragment		crystal quartz	Small chip	transparent	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50184	50182	2081	4	flake fragment		black chert		black	0	0	0	0	0	3	0	0		11	0	8	0	2
H	31570	50184	50182	4013	1	flake fragment		flint		mid grey	0	0	0	0	0	3	1	0		13	6	0	3	0
H	31570	50184	50182	2081	1	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		24	0	12	0	6
H	31570	50184	50182	2081	2	fragment		black chert		black	0	0	0	0	0	3	0	0	13	0	15	0	3	0
H	31570	50184	50182	1942	0	flake fragment		flint		mid grey	0	0	0	0	0	3	0	0		8	8	0	1	0
H	31570	50184	50182	3079	3	irregular fragment		crystal quartz		transparent	0	0	0	0	0	0	0	0		3	0	0	0	0
H	31570	50184	50182	4013	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50184	50182	1942	0	microflake		flint		x	2	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50184	50182	3079	2	irregular		crystal		transparent	0	0	0	0	0	0	0	0		4	0	0	0	0

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
						fragment		quartz																
H	31570	50184	50182	3079	1	chip		crystal quartz		transparent	0	0	0	0	0	3	0	0		4	0	0	0	0
H	31570	50184	50182	3079	4	irregular fragment		crystal quartz		transparent	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50184	50182	2081	3	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		18	0	10	0	6
H	31570	50184	50182	1946	0	flake fragment		black chert		black	0	0	0	0	0	3	1	0		18	13	0	3	0
H	31570	50184	50182	2082	0	flake fragment		flint		mid grey	0	0	0	0	0	3	3	0		7	9	0	2	0
H	31570	50188	50196	5759	0	microflake		black chert		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50188	50196	4501	0	microflake		flint		yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50188	50196	1662	0	flake fragment		flint		yellow brown	0	0	0	1	0	2	3	0		17	20	0	3	0
H	31570	50188	50196	5759	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50189	50179	1961	2	flake fragment		black chert		black	0	0	0	0	0	3	3	0		16	21	0	4	0
H	31570	50189	50179	1960	2	flake fragment		flint	Heat altered colour	red brown	2	0	0	1	0	1	0	0		22	0	19	0	6
H	31570	50189	50179	1961	3	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		13	0	10	0	4
H	31570	50189	50179	5770	0	chip		crystal quartz		transparent	0	0	0	0	0	3	0	0		6	0	0	0	0
H	31570	50189	50179	1961	1	fragment		black chert		black	0	0	0	0	0	3	0	0	30	0	21	0	2	0
H	31570	50189	50179	1960	3	ecaille piece		flint	Bipolar flake	yellow brown	0	0	0	1	0	2	0	0	16	0	11	0	4	0
H	31570	50189	50179	1668	2	fragment		black chert		black	0	0	0	0	0	3	0	0	42	0	33	0	8	0
H	31570	50189	50179	1668	1	core frag		black chert	Thick ctf with subsequent removal	black	0	0	0	0	0	3	0	0	47	0	43	0	16	0
H	31570	50189	50179	1960	1	fragment		flint		yellow brown	0	0	0	1	0	2	0	0	27	0	25	0	7	0
H	31570	50189	50179	2222	0	fragment		black chert		black	0	0	0	0	0	3	0	0	24	0	22	0	6	0
H	31570	50189	50179	3093	0	flake fragment		flint	Heat altered colour	light grey	2	0	0	0	0	3	1	0		11	0	12	0	2
H	31570	50190	50179	1887	1	fragment		flint		light grey	0	0	0	2	3	2	0	0	25	0	19	0	5	0
H	31570	50190	50179	5528	0	utilised piece?	utilised cutting flake	flint	Small thin flake with probable edge gloss?	yellow brown	0	0	0	0	0	3	0	0	27	0	14	0	2	0
H	31570	50190	50179	1887	2	fragment		flint		yellow brown	0	0	0	0	0	3	0	0	12	0	6	0	2	0
H	31570	50190	50179	4110	0	burnt frag		flint		light grey	2	0	0	0	0	0	0	0		10	0	5	0	3
H	31570	50190	50179	5533	0	fragment		black chert		black	0	0	0	0	1	3	0	1	26	0	24	0	3	0
H	31570	50190	50179	4105	1	flake fragment		black chert		black	0	0	0	0	0	3	0	0		75	49	0	13	0
H	31570	50190	50179	1846	1	utilised piece?	utilised cutting flake?	black chert	Some microch on one sharp edge. Could be just trample damage	black	0	0	0	0	1	3	0	0	36	0	29	0	4	0
H	31570	50190	50179	1846	2	flake fragment		black chert		black	0	0	0	0	0	3	0	0		12	0	13	0	3
H	31570	50190	50179	5819	1	flake fragment		flint		light grey	0	0	0	0	0	3	2	0		14	8	0	1	0
H	31570	50190	50179	4137	0	chip		crystal quartz		transparent	0	0	0	0	0	3	0	0		4	0	0	0	0
H	31570	50190	50179	5819	2	flake fragment		flint		light grey	0	0	0	0	0	3	2	0		7	9	0	2	0
H	31570	50190	50179	1671	2	utilised piece?	utilised cutting flake	flint	Probably same material as 1671.1. Flake with probable wear microch on one sharp convex edge	light grey	0	0	0	0	0	3	0	0	30	0	33	0	6	0
H	31570	50190	50179	1671	3	fragment		flint		yellow brown	0	0	0	0	5	3	0	0	22	0	23	0	4	0
H	31570	50190	50179	5821	0	microflake		glass		x	0	0	0	0	0	0	0	0		0	0	0	0	0

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
H	31570	50190	50179	1887	0	microflake		flint		x	1	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50191	50179	5965	0	flake fragment		flint		yellow brown	0	0	0	0	3	3	0	0		18	11	0	5	0
H	31570	50191	50179	1875	2	flake fragment		black chert		black	0	0	0	0	0	3	0	0		18	0	11	0	5
H	31570	50191	50179	1875	5	microflake		black chert		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50191	50179	1875	3	irregular fragment		black chert		black	0	0	0	1	0	2	0	0		12	0	7	0	3
H	31570	50191	50179	1875	1	flake fragment		black chert		black	0	0	0	0	0	3	2	0		15	15	0	5	0
H	31570	50191	50179	1875	4	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		11	0	8	0	4
H	31570	50191	50179	2054	0	microflake		black chert		black	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50191	50179	2055	0	flake fragment		flint		mid grey	0	0	0	1	0	2	0	0		15	0	8	2	0
H	31570	50193	50200	5439	0	chip		crystal quartz		transparent	0	0	0	0	0	0	0	0		5	0	2	0	1
H	31570	50194	50179	1935	4	chip		black chert		black	0	0	0	0	0	3	0	0	10	0	10	0	11	0
H	31570	50194	50179	1935	3	fragment		black chert		black	0	0	0	0	0	3	0	0	10	0	11	0	2	0
H	31570	50194	50179	1935	2	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		22	0	16	6	0
H	31570	50194	50179	3013	0	microflake		flint		light grey	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50194	50179	1935	1	fragment		black chert		black	0	0	0	0	0	3	0	0	15	0	16	0	3	0
H	31570	50194	50179	1669	0	utilised piece	utilised cutting flake	flint	Microch and polish on one slightly convex sharp side edge	light grey	0	0	0	1	1	2	0	0	27	0	24	0	5	0
H	31570	50197	50187	1675	0	utilised piece?	utilised cutting flake	flint	Small, thin flake with microch on end sharp edge	mid grey	0	0	0	0	0	3	0	0	15	0	18	0	4	0
H	31570	50198	50199	6114	1	fragment		flint		mid grey	0	0	0	1	0	2	0	2	28	0	18	0	8	0
H	31570	50198	50199	6114	2	irregular fragment		flint		mid grey	0	0	0	1	0	2	0	0		17	0	12	0	8
H	31570	50198	50199	6114	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50201	50179	5581	0	microflake		flint		yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50208	50209	1698	0	fragment		flint		yellow brown	0	0	0	1	3	2	0	0	19	0	33	0	9	0
H	31570	50211	50210	1691	1	flake fragment		black chert		black	0	0	0	0	5	3	2	0		24	17	0	5	0
H	31570	50211	50210	1684	0	fragment		black chert		black	0	0	0	0	0	3	0	0	14	0	13	0	3	0
H	31570	50211	50210	1683	0	flake fragment		flint		yellow brown	0	0	0	0	0	3	1	0		15	10	0	4	0
H	31570	50213	50166	5988	0	chip		flint		mid grey	0	0	0	0	0	3	0	0	10	0	6	0	2	0
H	31570	50213	50166	5526	0	microflake		black chert		black	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50213	50166	1724	2	flake fragment		black chert		black	0	0	0	0	0	3	1	0		18	17	0	3	0
H	31570	50213	50166	5777	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50216	50215	5523	0	microflake		flint		light grey	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50217	50218	1693	2	fragment		flint		mid grey	0	0	0	1	4	2	0	0	28	0	17	0	6	0
H	31570	50217	50218	1706	0	utilised piece?	utilised cutting flake?	black chert	Large, thick flake with possible wear along one long, sharp, convex side edge	black	0	0	0	0	2	3	0	0	47	0	38	0	14	0
H	31570	50217	50218	1693	1	fragment		flint		grey brown	0	0	0	1	1	1	0	2	31	0	31	0	7	0
H	31570	50220	50219	5806	0	chip		crystal quartz		transparent	0	0	0	0	0	3	0	0		6	0	0	0	0
H	31570	50229	50228	1704	0	fragment		black chert		black	0	0	0	0	0	3	0	0	38	0	24	0	7	0

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
H	31570	50233	50232	1709	0	fragment		black chert		black	0	0	0	1	0	2	0	2	36	0	24	0	7	0
H	31570	50233	50232	5580	1	flake fragment		greensand chert		mid grey	0	0	0	0	0	3	0	0		37	25	0	9	0
H	31570	50233	50232	5580	2	fragment		greensand chert		mid grey	0	0	0	0	0	3	0	0	17	0	23	0	5	0
H	31570	50233	50232	1874	0	natural piece		crystal quartz		transparent	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50233	50232	5580	3	irregular fragment		black chert		black	0	0	0	1	0	1	0	0		15	0	14	0	5
H	31570	50235	50232	4391	2	axe flake		Graig Lwyd	Proximal part of a broken primary flake from re-working of a polished axe.	light grey	0	0	0	0	0	0	0	0		15	28	0	3	0
H	31570	50235	50232	4392	0	fragment		flint	Microlithic size narrow bladelet	buff/cream	0	0	0	0	5	3	0	0	15	0	4	0	2	0
H	31570	50235	50232	1710	2	flake fragment		black chert		black	0	0	0	0	0	3	1	0		25	0	15	8	0
H	31570	50235	50232	1710	1	fragment		black chert		black	0	0	0	0	2	3	0	1	37	0	41	0	8	0
H	31570	50235	50232	4328	0	flake fragment		flint		light grey	1	0	0	0	0	3	0	0		16	0	21	3	0
H	31570	50238	50239	1715	0	utilised piece?	utilised cutting flake	flint	Small flake with very fine microch and possible polish on one straight sharp edge	buff/cream	0	0	0	1	0	2	0	0	26	0	20	0	7	0
H	31570	50246	50245	5874	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50246	50245	1842	0	fragment		black chert		black	0	0	0	1	0	2	0	0	27	0	18	0	5	0
H	31570	50246	50245	1716	1	casually retouched piece	utilised cutting flake	black chert	Small thick blade with a small area of light retouch on both sharp side edges	black	0	0	0	1	5	2	0	0	43	0	19	0	6	0
H	31570	50247	50248	5934	2	chip		crystal quartz		transparent	0	0	0	0	0	3	0	0		7	0	0	0	0
H	31570	50247	50248	1723	2	flake fragment		black chert		black	0	0	0	4	0	2	0	0		28	20	0	7	0
H	31570	50247	50248	4174	0	microflake		black chert		black	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50247	50248	5934	1	casually retouched piece	utilised cutting flake?	crystal quartz	Fine retouch on one straight edge	transparent	0	0	0	0	0	3	0	0		10	0	9	2	0
H	31570	50247	50248	1723	1	fragment		black chert		black	0	0	0	1	0	1	0	0	37	0	25	0	7	0
H	31570	50247	50248	5934	3	chip		crystal quartz		transparent	0	0	0	0	0	3	0	0		4	0	0	0	0
H	31570	50259	50260	3021	2	natural piece		black chert	Gravel	black	0	0	0	0	0	3	0	0		0	0	0	0	0
H	31570	50259	50260	3021	1	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		19	0	13	0	12
H	31570	50265	50264	4166	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50265	50264	3015	0	flake fragment		black chert		black	0	0	0	0	1	3	2	0		11	0	23	4	0
H	31570	50273	50272	4128	0	natural piece		crystal quartz	Gravel	transparent	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50273	50272	4140	0	fragment		flint		yellow brown	0	0	0	0	0	3	0	0	10	0	8	0	1	0
H	31570	50273	50272	4140	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50274		3016	5	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		17	0	9	0	8
H	31570	50274		3016	3	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		32	0	11	0	3
H	31570	50274		3016	4	irregular fragment		black chert		black	0	0	0	1	0	2	0	0		19	0	11	0	3
H	31570	50274		3016	6	flake fragment		black chert		black	0	0	0	0	0	3	2	0		14	0	14	4	0

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
H	31570	50274		3016	2	flake fragment		black chert		black	0	0	0	0	0	3	0	0		27	0	15	0	8
H	31570	50274		3018	2	flake fragment		flint		buff/cream	0	0	0	1	0	2	0	0		12	0	13	0	2
H	31570	50274		1795	1	utilised piece?	utilised cutting flake?	black chert	Large thick flake with some possible usewear microch on one sharp edge	black	0	0	0	0	0	3	0	0		51	33	0	11	0
H	31570	50274		3016	7	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		14	0	9	0	5
H	31570	50274		1795	2	flake fragment		black chert		black	0	0	0	1	0	2	0	0		30	23	0	8	0
H	31570	50274		3018	1	flake fragment		flint	Heat altered colour	light grey	1	0	0	0	0	3	0	0		19	16	0	5	0
H	31570	50274		3016	8	chip		black chert		black	0	0	0	0	0	3	0	0		10	0	12	0	2
H	31570	50274		3016	1	fragment		black chert		black	0	0	0	0	0	3	0	0	19	0	19	0	4	0
H	31570	50275	50276	2092	4	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		18	0	5	0	3
H	31570	50275	50276	2092	5	flake fragment		black chert		black	0	0	0	0	0	3	0	0		12	0	7	0	1
H	31570	50275	50276	2092	1	flake fragment		black chert		black	0	0	0	1	0	1	1	0		14	0	15	0	6
H	31570	50275	50276	2092	2	fragment		black chert		black	0	0	0	0	0	3	0	0		20	0	15	0	4
H	31570	50275	50276	2092	3	fragment		black chert		black	0	0	0	0	0	3	0	0	21	0	9	0	3	0
H	31570	50275	50276	2092	6	flake fragment		black chert		black	0	0	0	0	0	3	2	0		6	11	0	3	0
H	31570	50275	50276	2091	0	fragment		flint		mid grey	0	0	0	1	4	2	0	0	32	0	21	0	11	0
H	31570	50278		2083	0	flake fragment		black chert		black	0	0	0	0	0	3	0	0		25	0	17	0	4
H	31570	50278		5858	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
H	31570	50295	50167	2212	0	axe flake?		Graig Lwyd	Thin, very fresh, curving flake with a small area of smooth 'cortex. surface, no visible grinding striations, so possibly just from a pebble	mid grey	0	0	0	0	0	2	0	0	39	0	30	0	5	0
H	31627	50413	50412	4532	0	casually retouched piece	denticulate	black chert	A large. thick flake with a chance sharp, curved edge which has some casual retouch producing a denticulated edge. No visible use-wear but micro study needed.	black	0	0	0	0	0	3	0	0	43	0	33	0	15	0
H	31627	50413	50412	4534	2	retouched piece frag	narrow blade microlith	flint	Convex backed. Retouched 2 edges, one end broken off	yellow brown	0	0	0	0	0	0	0	0		16	5	0	2	0
H	31627	50457	50456	4539	0	retouched piece frag	piercer	flint	Small, thick flake of which a chance projection has been emphasised by retouch. The point has snapped off.	mid grey	0	0	0	1	0	2	0	0		26	0	21	0	6
H	31627	50413	50412	4534	1	core	core scalar/bipolar	flint	Very small core from which blades have been produced	yellow brown	0	0	0	1	0	0	0	0	24	0	12	0	8	0
H	31627	50429	50428	4531	0	ecaille piece		flint	Burnt scalar primary flake. Heat changed colour	red brown	1	0	0	1	3	1	0	0		15	0	14	4	0
H cable trench		50327	50328	4412	0	retouched piece frag	unclassified	flint	Bifacial invasive flaking, poss tip of an ovate knife. Heat changed colour	light grey	1	0	0	0	0	3	0	0		20	0	21	5	0
H cable trench		50356	50355	5962	0	irregular fragment		slate	Imported quarried roof slate. Modern	x	0	0	0	0	0	0	0	0		0	0	0	0	0
H4		5703		2271	0	split pebble frag		flint	Large pebble frag, split by burning	red brown	2	0	0	1	0	0	0	0	73	0	65	19	0	0
H4		6401		2273	2	ecaille piece		flint	Scalar flake	light grey	0	0	0	1	0	2	0	0		21	0	22	0	6
H4		6401		2273	1	retouched piece	spurred piece	black chert	Thick flake with probably deliberate accentuation of a point	black	0	0	0	0	0	2	0	0	41	0	30	0	12	0
I	76097	21038	21037	2169	1	utilised piece?	utilised cutting flake	flint	Scalar piece with microch and poss pol on one sharp edge	mid grey	0	0	0	0	3	3	0	0	33	0	16	0	4	0
I		61		2274	1	retouched piece	scraper thumbnail	flint	Small, split pebble flake	yellow brown	0	0	0	1	0	1	0	0	21	0	19	0	5	0
I		61		2274	2	casually retouched piece?	unclassified	flint	Small flake with some inverse irregular retouch, possibly just trample damage	yellow brown	0	0	0	0	0	3	0	0	24	0	14	0	4	0
I		2071		1106	0	utilised piece?	utilised cutting flake	black chert	Frag of a burnt flake,with microch and gloss on one sharp edge	black	0	0	0	0	3	0	0	0		42	0	17	0	10

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
I		2071		1107	2	ecaille piece		flint	Scalar flake	yellow brown	0	0	0	1	0	2	0	0	16	0	11	0	6	0
I		2071		1107	1	fragment		black chert	Small, thin, shaping or sharpening flake	black	0	0	0	0	0	3	0	0	15	0	10	0	3	0
I	76098	18060	18059	1237	0	microflake		black chert	Small chips under 10mm L	black	0	0	0	0	0	0	0	0		0	0	0	0	0
I	76098	18060	18059	1242	1	fragment		black chert		black	0	0	0	1	5	2	0	1	12	0	10	0	3	0
I	76098	18060	18059	1324	0	irregular fragment		flint		red brown	1	0	0	1	0	2	0	0		18	0	8	0	4
I	76098	18060	18059	2243	1	core	core irregular	black chert		black	0	0	0	1	0	0	0	0	36	0	31	0	24	0
I	76098	18060	18059	1216	0	fragment		flint		lgrbr	0	0	0	0	5	3	0	0	19	0	8	0	3	0
I	76098	18060	18059	1243	2	irregular fragment		crystal quartz	Angular fragment	transparent	0	0	0	0	0	0	0	0		4	0	3	0	3
I	76098	18060	18059	2178	0	fragment		flint		mid grey	0	0	0	1	3	2	0	0	39	0	26	0	6	0
I	76098	18060	18059	2243	2	fragment		black chert		black	0	0	0	0	5	3	0	1	26	0	15	0	4	0
I	76098	18060	18059	2196	3	fragment		black chert		black	0	0	0	0	5	3	0	1	15	0	8	0	3	0
I	76098	18060	18059	2196	1	retouched piece	scraper hollow	black chert	Retouched concave edge	black	0	0	0	0	2	3	0	0	27	0	2	0	4	0
I	76098	18060	18059	2196	2	irregular fragment		black chert		black	0	0	0	1	0	2	0	0		22	0	20	0	7
I	76098	18060	18059	1242	2	flake fragment		flint		yellow brown	0	0	0	1	0	2	0	0		13	0	7	0	3
I	76098	18060	18059	2191	0	flake fragment		quartzite	Check material against GL sample	light grey	0	0	0	0	0	3	0	0		25	28	0	7	0
I	76098	18060	18059	2172	0	fragment		flint		yellow brown	0	0	0	1	1	2	0	0	27	0	24	0	3	0
I	76098	18060	18059	1243	1	irregular fragment		crystal quartz	Angular fragment	transparent	0	0	0	0	0	0	0	0		6	0	5	0	4
I	76099	19076	19075	1217	2	irregular fragment		flint		mid grey	0	0	0	1	0	2	0	0		14	0	12	0	5
I	76099	19076	19075	1235	4	fragment		flint		yellow brown	0	0	0	0	1	3	0	1	15	0	13	0	2	0
I	76099	19076	19075	1217	1	fragment		flint		yellow brown	0	0	0	1	1	1	0	0	12	0	15	0	3	0
I	76099	19076	19075	1235	5	flake fragment		flint		lgrbr	0	0	0	0	0	3	1	0		17	7	0	2	0
I	76099	19076	19075	4136	2	irregular fragment		flint		light grey	0	0	0	0	0	3	0	0		12	0	5	0	2
I	76099	19076	19075	1217	3	ecaille piece		flint		yellow brown	0	0	0	1	0	2	0	0		18	0	6	0	3
I	76099	19076	19075	1235	1	core frag		flint		mid grey	0	0	0	1	1	0	0	0	25	0	22	0	14	0
I	76099	19076	19075	4136	0	microflake		flint	Under 10mm L, mainly scalar	x	0	0	0	0	0	0	0	0		0	0	0	0	0
I	76099	19076	19075	1217	0	microflake		flint	Scalar chips	yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0
I	76099	19076	19075	1235	2	core	core scalar/bipolar	flint		mid grey	0	0	0	0	1	0	0	0	32	0	17	0	11	0
I	76099	19076	19075	1235	3	fragment		flint		yellow brown	0	0	0	1	1	2	0	0	19	0	11	0	3	0
I	76099	19076	19075	4136	1	irregular fragment		flint		yellow brown	0	0	0	1	0	2	0	0		13	0	8	0	3
I	31598	19085	19084	4246	0	natural piece		crystal quartz	Gravel	transparent	0	0	0	0	0	0	0	0		0	0	0	0	0
I	76097	21038	21037	2169	4	flake fragment		flint		yellow brown	0	0	0	1	1	1	0	0		13	0	12	0	3
I	76097	21038	21037	2169	2	ecaille piece		flint		yellow brown	0	0	0	1	3	2	0	0	25	0	17	0	4	0
I	76097	21038	21037	1035	0	flake fragment		flint		grey brown	0	0	0	1	0	2	0	0		20	0	6	0	3
I	76097	21038	21037	2169	3	fragment		flint		mid grey	0	0	0	1	1	2	0	2	32	0	10	0	6	0
I	76097	21038	21037	2169	5	flake fragment		flint		mid grey	0	0	0	0	0	3	1	0		23	0	7	2	0

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
I	76097	21038	21037	2169	6	chip		flint		mid grey	0	0	0	0	0	0	0	0	9	0	0	0	0	0
I	76097	21038	21037	5752	0	irregular fragment		flint		yellow brown	0	0	0	0	0	3	0	0		17	0	11	0	4
I	31599	22003		1036	0	split pebble frag		flint		owst	0	0	0	0	0	0	0	0		0	0	0	0	0
I	31598	22009	18085	1302	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
I		50111	50112	1435	6	ecaille piece		flint	Scalar flake	yellow brown	1	0	0	1	3	1	0	0	14	0	14	0	2	0
I		50111	50112	1435	2	irregular fragment		flint		yellow brown	1	0	0	1	0	0	0	0	19	0	18	0	10	0
I		50111	50112	1435	3	irregular fragment		flint		yellow brown	1	0	0	0	0	0	0	0	21	0	15	0	8	0
I		50111	50112	1435	5	fragment		flint		yellow brown	1	0	0	1	3	1	0	0	12	0	18	0	5	0
I		50111	50112	1435	1	irregular fragment		flint	6 pieces of debitage from same pebble. Broken by direct impact, scalar, probably by anvil, subsequently surface altered by slight burning and adhesion of black ?wood tar.	yellow brown	1	0	0	1	0	0	0	0	29	0	17	0	9	0
I		50111	50112	1541	5	irregular fragment		flint		yellow brown	0	0	0	1	2	0	0	0		13	0	10	0	4
I		50111	50112	1435	4	irregular fragment		flint		yellow brown	1	0	0	0	0	0	0	0	18	0	12	0	7	0
I		50111	50112	1541	10	flake fragment		flint	Heat altered colour	mid grey	1	0	0	0	0	3	0	0		11	0	9	0	2
I		50111	50112	1540	0	natural piece		crystal quartz		transparent	0	0	0	0	0	0	0	0		0	0	0	0	0
I		50111	50112	1215	1	utilised piece	utilised cutting flake	black chert	Thin, sharp flake with microch and possible polish on one convex edge	black	0	0	0	0	0	3	0	0	38	0	27	0	3	0
I		50111	50112	1215	2	fragment		black chert		black	0	0	0	0	0	3	0	0	30	0	9	0	4	0
I		50111	50112	1427	0	fragment		quartzite?	From small pebble, probably reject raw material	cream	0	0	0	0	0	0	0	0	36	0	26	0	7	0
I		50111	50112	1541	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
I		50111	50112	1541	14	fragment		flint		mid grey	0	0	0	0	0	3	0	0	12	0	4	0	1	0
I		50111	50112	1541	3	flake fragment		flint		dark grey	0	0	0	0	0	3	0	0		12	10	0	2	0
I		50111	50112	1541	11	flake fragment		flint	Heat altered colour	mid grey	1	0	0	0	0	3	0	0		9	0	12	0	3
I		50111	50112	1541	1	flake fragment		flint		mid grey	0	0	0	0	0	3	0	0		13	0	10	2	0
I		50111	50112	1541	9	irregular fragment		flint		yellow brown	0	0	0	0	0	3	0	0		12	0	9	0	4
I		50111	50112	1541	8	ecaille piece		flint	Scalar flake	mid grey	0	0	0	0	3	3	0	0		10	0	8	0	1
I		50111	50112	1541	7	flake fragment		flint		mid grey	0	0	0	0	3	3	2	0		9	0	12	1	0
I		50111	50112	1541	6	flake fragment		flint		mid grey	0	0	0	0	0	3	0	0		8	0	11	0	1
I		50111	50112	1541	13	flake fragment		flint	Heat altered colour	yellow brown	1	0	0	1	0	1	0	0		12	0	5	0	3
I		50111	50112	1541	4	ecaille piece		flint	Scalar flake	mid grey	0	0	0	0	3	3	0	0		14	0	8	0	1
I		50111	50112	1541	2	flake fragment		flint		mid grey	0	0	0	1	0	2	0	0		15	0	10	0	3
I		50111	50112	1541	12	flake fragment		flint	Heat altered colour	mid grey	1	0	0	0	0	3	0	0		10	0	7	0	2
Ia	31572	21222	21221	1565	1	retouched piece frag	arrow head?	flint	Broken triangular piece with neat, steep retouch on one straight edge. Possible frag of erk	dark grey	0	0	0	0	0	3	0	0		18	0	13	4	0
Ia	31572	21222	21221	1165	1	casually retouched piece	scraper hollow	black chert	Thick flake with some ret on concave sharp edge	black	0	0	0	0	2	3	0	0	44	0	41	0	20	0
Ia	31572	21222	21221	1164	1	casually retouched piece	utilised cutting flake	flint	Alternate and irregular retouch along one sharp side edge	yellow grey	0	0	0	1	1	2	0	0	35	0	17	0	8	0

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
Ia	31572	18064	18063	3071	2	irregular fragment		dolerite?	Poss shattered by heat	black	0	0	0	0	0	0	0	0		26	0	22	0	19
Ia	31572	18064	18063	4221	1	fragment		flint		light grey	0	0	0	0	0	3	0	0	12	0	10	0	2	0
Ia	31572	18064	18063	4221	2	chip		flint		mid grey	0	0	0	0	3	3	0	0		12	0	8	1	0
Ia	31572	18064	18063	4221	3	irregular fragment		flint		light grey	0	0	0	1	0	2	0	0		9	0	5	0	4
Ia	31572	18064	18063	4118	0	chip		flint		mid grey	0	0	0	1	0	2	0	0	8	0	0	0	0	0
Ia	31572	18064	18063	3011	0	flake fragment		greensand chert	Could be just a very cherty flint	light brow	0	0	0	0	0	3	2	0		22	13	0	3	0
Ia	31572	18064	18063	3071	1	irregular fragment		dolerite?	Poss shattered by heat	black	0	0	0	0	0	0	0	0		83	0	25	0	16
Ia	31572	18064	18063	3071	3	fragment		black chert		black	0	0	0	0	0	3	0	0	13	0	9	0	2	0
Ia	31572	18064	18063	5584	1	irregular fragment		flint		mid grey	0	0	0	1	0	2	0	0		16	0	1	0	5
Ia	31572	18064	18063	5584	3	irregular fragment		flint		mid grey	0	0	0	0	0	0	0	0		11	0	6	0	3
Ia	31572	18064	18063	5584	0	microflake		flint		light grey	0	0	0	0	0	3	0	0		7	0	0	0	0
Ia	31572	18064	18063	5584	2	burnt frag		flint		buff/cream	0	0	0	1	0	2	0	0		9	0	6	0	2
Ia	31572	21213	21212	1503	0	flake fragment		flint		yellow brown	0	0	0	0	3	3	0	0		15	0	13	0	2
Ia	31572	21213	21212	1236	0	flake fragment		flint		yellow brown	0	0	0	0	0	3	1	0		13	7	0	3	0
Ia	31572	21214	21212	1233	0	fragment		black chert		black	0	0	0	0	1	3	0	1	36	0	19	0	8	0
Ia	31572	21216	21215	1229	1	fragment		flint		yellow brown	0	0	0	0	5	3	0	1	25	0	15	0	4	0
Ia	31572	21216	21215	1229	2	fragment		flint		mid grey	0	0	0	0	5	3	0	0	21	0	11	0	3	0
Ia	31572	21216	21215	1729	2	microflake		flint		light grey	0	0	0	0	0	0	0	0		0	0	0	0	0
Ia	31572	21216	21215	1729	1	microflake		flint		yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0
Ia	31572	21218	21217	1234	1	utilised piece?	utilised cutting flake	flint	Microch and gloss on sharp edge	lgy	0	0	0	0	3	3	0	0		14	19	0	3	0
Ia	31572	21218	21217	1234	3	irregular fragment		flint		lgy	0	0	0	0	0	0	0	0		0	0	0	0	0
Ia	31572	21218	21217	1234	2	irregular fragment		flint		yellow brown	0	0	0	0	0	3	0	0		0	12	0	6	0
Ia	31572	21222	21221	1620	7	irregular fragment		flint		red brown	0	0	0	0	0	3	0	0		14	0	3	0	2
Ia	31572	21222	21221	1566	3	irregular fragment		black chert		black	0	0	0	0	0	0	0	0		19	0	11	0	7
Ia	31572	21222	21221	1593	3	flake fragment		flint		mid grey	0	0	0	0	0	3	0	0		10	0	10	3	0
Ia	31572	21222	21221	1619	1	fragment		black chert		black	0	0	0	1	2	2	0	0		40	0	54	0	19
Ia	31572	21222	21221	1594	0	burnt frag		flint		missing	0	0	0	0	0	0	0	0		0	0	0	0	0
Ia	31572	21222	21221	1566	7	natural piece		black chert		x	0	0	0	0	0	0	0	0		0	0	0	0	0
Ia	31572	21222	21221	1619	2	natural piece		other stone	Small pebble frag	x	0	0	0	0	0	0	0	0		0	0	0	0	0
Ia	31572	21222	21221	1593	4	chip		flint		yellow brown	0	0	0	1	0	1	0	0		10	0	7	0	3
Ia	31572	21222	21221	1593	5	flake fragment		black chert	Narrow blade butt frag. Possible microlith manuf by-product	black	0	0	0	0	5	3	2	0		6	7	0	2	0
Ia	31572	21222	21221	1566	4	irregular fragment		black chert		black	0	0	0	0	0	0	0	0		12	0	9	0	2

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
Ia	31572	21222	21221	1619	3	natural piece		black chert	Small pebble frag	x	0	0	0	0	0	0	0	0		0	0	0	0	0
Ia	31572	21222	21221	1165	2	irregular fragment		black chert		black	0	0	0	1	0	2	0	0		38	0	33	0	14
Ia	31572	21222	21221	1619	4	fragment		black chert		black	0	0	0	0	2	3	0	0	13	0	16	0	4	0
Ia	31572	21222	21221	1593	6	chip		flint		light grey	0	0	0	0	0	3	0	0		5	0	9	0	2
Ia	31572	21222	21221	1565	2	irregular fragment		flint		yellow brown	0	0	0	0	0	3	0	0		21	0	13	0	8
Ia	31572	21222	21221	1620	6	flake fragment		flint		light grey	0	0	0	0	0	3	0	0		18	0	8	0	4
Ia	31572	21222	21221	1566	1	fragment		black chert	Pebble cortex	black	0	0	0	1	0	2	0	0	17	0	18	0	4	0
Ia	31572	21222	21221	1566	2	natural piece		black chert	Small broken pebble - gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0
Ia	31572	21222	21221	1164	2	irregular fragment		flint		light grey	0	0	0	1	1	2	0	0		15	0	14	0	5
Ia	31572	21222	21221	1619	5	fragment		black chert		black	0	0	0	0	0	3	0	0	16	0	10	0	2	0
Ia	31572	21222	21221	1566	5	irregular fragment		black chert		black	0	0	0	0	0	0	0	0		11	0	8	0	3
Ia	31572	21222	21221	5989	0	chip		flint	Scalar chip	yellow brown	0	0	0	1	0	1	0	0		20	0	15	0	3
Ia	31572	21222	21221	2012	2	ecaille piece		flint		mid grey	1	0	0	0	3	3	0	0		17	0	14	3	0
Ia	31572	21222	21221	2012	1	casually retouched piece	unclassified	flint	Notch made in one sharp side edge	light grey	0	0	0	0	1	3	1	0		30	0	19	3	
Ia	31572	21222	21221	1620	4	flake fragment		flint		light grey	0	0	0	1	0	2	0	0		16	12	0	4	0
Ia	31572	21222	21221	1620	3	core frag	core scalar/bipolar	flint	Bipolar pebble core frag	yellow brown	0	0	0	1	0	2	0	0		21	0	8	0	4
Ia	31572	21222	21221	1620	2	irregular fragment		flint		light grey	1	0	0	0	0	0	0	0		0	0	0	0	0
Ia	31572	21222	21221	1620	1	split pebble frag		flint		light grey	0	0	0	1	0	0	0	0		23	0	13	0	8
Ia	31572	21222	21221	1565	3	ecaille piece		flint		yellow brown	0	0	0	0	3	3	0	0	11	0	12	0	2	0
Ia	31572	21222	21221	4180	0	ecaille piece		flint	Scalar frag	mid grey	0	0	0	1	0	2	0	0		12	0	5	0	2
Ia	31572	21222	21221	1404	0	fragment		black chert		black	0	0	0	0	5	3	0	4	14	0	16	0	2	0
Ia	31572	21222	21221	1171	0	fragment		flint	Probably anvil struck	yellow brown	0	0	0	1	1	2	0	0	37	0	25	0	7	0
Ia	31572	21222	21221	1620	5	flake fragment		flint		light grey	0	0	0	1	0	2	0	0		18	0	10	0	3
Ia	31572	21222	21221	1619	6	natural piece		other stone		x	0	0	0	0	0	0	0	0		0	0	0	0	0
Ia	31572	21222	21221	1593	1	fragment		flint	Anvil struck	lgy	0	0	0	0	0	3	0	0	31	0	17	0	7	0
Ia	31572	21222	21221	4396	0	irregular fragment		flint		light grey	0	0	0	1	0	2	0	0		11	0	10	0	5
Ia	31572	21222	21221	1593	2	flake fragment		flint		light grey	0	0	0	1	1	1	0	0		17	0	1	0	4
Ia	31572	21222	21221	1620	8	burnt frag		flint		buff/cream	0	0	0	0	0	0	0	0		12	0	4	0	2
Ia	31572	21222	21221	1759	2	fragment		flint		light grey	0	0	0	0	0	3	0	0	12	0	5	0	1	0
Ia	31572	21222	21221	1619	7	natural piece		black chert		x	0	0	0	0	0	0	0	0		0	0	0	0	0
Ia	31572	21222	21221	1759	1	chip		flint		light grey	0	0	0	1	0	2	0	0		0	0	0	0	0
Ia	31572	21222	21221	1619	8	irregular fragment		black chert		black	0	0	0	1	0	2	0	0		11	0	5	0	5
Ia	31572	21222	21221	1565	4	burnt frag		flint		light grey	0	0	0	1	0	0	0	0		13	0	7	0	3
Ia	31572	21222	21221	1566	6	natural piece		black chert		x	0	0	0	0	0	0	0	0		0	0	0	0	0
Ia	31572	21222	21221	1151	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
Ia	31572	21224	21219	1447	0	natural piece		black chert	Small pebble, accidental fracture	black	0	0	0	0	0	0	0	0		0	0	0	0	0
Ia	31572	25053	25054	1152	0	utilised piece?	utilised cutting flake	black chert	Microch one sharp edge. Could be just trample damage	black	0	0	0	1	1	1	0	0	41	0	25	0	10	0
Ia	31572	25053	25054	1169	2	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		56	0	26	0	11
Ia	31572	25053	25054	1169	1	fragment		black chert		black	0	0	0	0	2	3	0	0	37	0	61	0	14	0
J		70218	70219	1896	0	fragment		black chert		black	0	0	0	1	0	1	0	0	33	0	29	0	8	0
J1/J2		70000		6378	0	utilised piece?	utilised cutting flake	black chert	Good quality chert with microch one sharp edge	black	0	0	0	0	0	3	0	0	39	0	24	0	6	0
J1/J2	74831	70172	70173	1853	1	utilised piece?	utilised cutting flake	flint	Microchipping and polish on one sharp edge	dark grey	0	0	0	0	0	3	0	0		20	17	0	3	0
J1/J2		70000		6046	0	fragment		black chert		black	0	0	0	0	2	2	0	0	39	0	48	0	10	0
J1/J2		70000		1631	0	split pebble frag		black chert		black	0	0	0	1	0	2	0	0		60	0	48	0	18
J1/J2		70001		1657	0	casually retouched piece	unclassified	flint	Inverse retouch on a long, delicate blade. Possibly microlith waste product/reject. Needs further study. The irregular retouch looks as though it could be recent.	yellow brown	0	0	0	0	5	3	0	0	39	0	11	0	3	0
J1/J2	31578	70036	70037	1781	0	irregular fragment		greensand chert		mid grey	0	0	0	0	0	3	0	0		21	0	12	0	6
J1/J2	31578	70038	70039	1785	0	fragment		flint		light grey	0	0	0	1	3	1	0	0	22	0	23	0	6	0
J1/J2	31580	70053	70146	1950	0	ecaille piece		flint	Bipolar split pebble	light grey	0	0	0	1	0	2	0	0		24	0	20	0	8
J1/J2	31580	70055	70054	1841	1	fragment		black chert		black	0	0	0	0	2	3	0	1	24	0	34	0	10	0
J1/J2	31580	70055	70054	1884	0	flake fragment		black chert		black	0	0	0	0	2	3	2	0		18	0	20	5	0
J1/J2	31580	70055	70054	1841	2	flake fragment		black chert		black	0	0	0	0	0	3	0	0		30	0	16	0	6
J1/J2	31580	70055	70054	4029	0	irregular fragment		flint		yellow brown	0	0	0	1	3	2	0	0		13	0	10	0	4
J1/J2	31578	70061	70062	1834	1	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		12	0	10	0	7
J1/J2	31578	70061	70062	1834	2	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		10	0	8	0	5
J1/J2	31578	70067	70068	4054	0	core frag		black chert		black	0	0	0	0	0	0	0	0		30	0	22	0	15
J1/J2	31580	70088	70087	5802	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	31577	70093	70092	1952	0	core frag		black chert		black	0	0	0	1	0	2	0	0		32	0	23	0	14
J1/J2	31577	70093	70092	1679	3	fragment		flint		yellow brown	0	0	0	0	0	3	0	0	20	0	11	0	2	0
J1/J2	31577	70093	70092	1679	2	fragment		flint		dark grey	0	0	0	0	5	3	0	0	12	0	14	0	4	0
J1/J2	31577	70093	70092	1679	1	retouched piece frag	unclassified	flint	Heat fractured flake frag. Appears to have been finely retouched along one straight edge after it had been heat fractured. Impossibe to say what might have been intended,	mid grey	1	0	0	0	0	3	0	0		15	0	19	0	3
J1/J2	31580	70127	70126	1890	0	fragment		black chert		black	0	0	0	1	1	1	0	0	32	0	27	0	11	0
J1/J2	31580	70127	70126	1997	0	microflake		flint		yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	31580	70127	70126	4373	0	microflake		flint		yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	31580	70129	70128	4513	0	flake fragment		flint		light grey	0	0	0	0	5	3	2	1		14	0	15	4	0
J1/J2	31580	70129	70128	5801	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	31580	70129	70128	1898	0	flake fragment		black chert		black	0	0	0	1	0	1	0	0		21	0	13	0	3
J1/J2	31580	70139	70138	5793	0	microflake		black chert		black	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70171	70173	1856	1	flake fragment		flint		yellow brown	0	0	0	1	0	1	2	0		13	0	17	4	0
J1/J2	74831	70171	70173	1856	2	microflake		flint		yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
J1/J2	74831	70171	70173	1845	2	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		25	0	13	0	11
J1/J2	74831	70171	70173	5789	0	fragment		black chert		black	0	0	0	0	5	3	0	0	9	0	7	0	1	0
J1/J2	74831	70171	70173	1844	5	burnt frag		flint		white	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70171	70173	1823	1	axe flake		Graig Lwyd	Mid part frag of a large, thin flake from a polished axe, with one facet with striations	light grey	0	0	0	0	0	0	0	0		34	33	0	5	0
J1/J2	74831	70171	70173	1844	4	irregular fragment		flint		yellow brown	0	0	0	0	0	3	0	0		16	0	7	0	3
J1/J2	74831	70171	70173	1844	2	flake fragment		flint		dark grey	0	0	0	0	3	3	0	0		17	11	0	2	0
J1/J2	74831	70171	70173	1844	1	fragment		flint		yellow brown	0	0	0	1	0	2	0	0	16	0	10	0	3	0
J1/J2	74831	70171	70173	5788	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70171	70173	1821	1	microflake		flint		yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70171	70173	1844	5	microflake		flint		yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70171	70173	1825	0	microflake		flint		yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70171	70173	4188	0	microflake		flint	Mmainly ybr	x	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70171	70173	1965	0	fragment		black chert		black	0	0	0	1	0	2	0	0	42	0	16	0	6	0
J1/J2	74831	70171	70173	1990	2	flake fragment		flint		light grey	0	0	0	2	5	2	2	1		6	7	0	2	0
J1/J2	74831	70171	70173	1819	1	fragment		greensand chert	Very unusual fine grey chert or possibly tuff?	mid grey	0	0	0	0	1	3	0	0	28	0	23	0	6	0
J1/J2	74831	70171	70173	1821	2	microflake		flint		light grey	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70171	70173	1821	3	microflake		flint		dark grey	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70171	70173	1814	2	microflake		flint		yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70171	70173	1814	3	microflake		flint		light grey	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70171	70173	1828	0	flake fragment		black chert		black	0	0	0	0	0	3	0	0		12	0	12	3	0
J1/J2	74831	70171	70173	1990	1	irregular fragment		flint		yellow brown	0	0	0	1	0	2	0	0		10	0	9	0	4
J1/J2	74831	70171	70173	1844	3	irregular fragment		flint		yellow brown	0	0	0	1	0	2	0	0		12	0	7	0	7
J1/J2	74831	70171	70173	1845	3	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		20	0	12	0	8
J1/J2	74831	70171	70173	1821	4	microflake		flint		mid grey	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70171	70173	1821	5	microflake		flint		red brown	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70171	70173	1819	2	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		15	0	7	0	4
J1/J2	74831	70171	70173	1845	1	flake fragment		black chert		black	0	0	0	0	0	3	0	0		22	0	22	0	6
J1/J2	74831	70171	70173	1814	4	burnt frag		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70171	70173	1814	1	utilised piece frag?	utilised cutting flake	flint	Snapped off butt of a broad flake with microch on 2 sharp edges	dark grey	0	0	0	0	5	3	2	0		18	0	19	5	0
J1/J2	74831	70172	70173	1853	5	microflake		flint		mid grey	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70172	70173	2062	1	chip		flint		mid grey	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70172	70173	1858	1	fragment		black chert		black	0	0	0	0	0	3	0	0	20	0	19	0	4	0
J1/J2	74831	70172	70173	5791	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70172	70173	1829	1	irregular fragment		flint		yellow brown	0	0	0	1	0	2	0	0		15	0	8	0	4
J1/J2	74831	70172	70173	1858	2	chip		flint		light grey	0	0	0	1	0	1	0	0	11	0	6	0	1	0

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
J1/J2	74831	70172	70173	1853	6	microflake		flint		yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70172	70173	5803	0	flake fragment		black chert		black	0	0	0	0	0	0	0	0		11	0	5	0	2
J1/J2	74831	70172	70173	1826	1	irregular fragment		black chert		black	0	0	0	1	0	1	0	0		17	0	9	0	5
J1/J2	74831	70172	70173	1853	4	burnt frag		flint		white	2	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70172	70173	2047	0	microflake		flint		mid grey	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70172	70173	1826	2	microflake		black chert		black	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70172	70173	1853	3	irregular fragment		flint		yellow brown	0	0	0	1	3	2	0	0		13	0	10	0	2
J1/J2	74831	70172	70173	1853	2	flake fragment		flint		light grey	0	0	0	0	5	3	2	0		12	10	0	3	0
J1/J2	74831	70172	70173	1829	2	microflake		flint		yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70180	70150	1811	0	flake fragment		flint		light grey	0	0	0	0	0	3	0	0		12	0	7	1	0
J1/J2	74831	70182	70181	1869	1	fragment		flint		yellow brown	0	0	0	1	0	2	0	0	9	0	16	0	3	0
J1/J2	74831	70182	70181	1869	3	irregular fragment		flint		yellow brown	0	0	0	1	0	2	0	0		12	0	5	0	4
J1/J2	74831	70182	70181	1909	2	microflake		flint		mid grey	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70182	70181	1869	2	fragment		flint		yellow brown	0	0	0	1	0	1	0	0	12	0	9	0	1	0
J1/J2	74831	70182	70181	1869	6	microflake		flint		yellow brown	0	0	0	0	0	3	0	0		0	0	0	0	0
J1/J2	74831	70182	70181	3096	2	microflake		flint		pink	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70182	70181	1835	1	microflake		flint		yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70182	70181	3044	0	fragment		black chert		black	0	0	0	1	2	2	0	0	39	0	26	0	6	0
J1/J2	74831	70182	70181	1909	1	microflake		flint		yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70182	70181	3096	3	microflake		flint		dark grey	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70182	70181	1880	0	microflake		flint		yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70182	70181	1860	1	microflake		flint		mid grey	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70182	70181	1835	2	microflake		flint		mid grey	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70182	70181	1835	3	microflake		flint		dark grey	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70182	70181	1835	4	microflake		flint		white	1	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70182	70181	4183	1	microflake		flint		yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70182	70181	3096	1	microflake		flint		yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70182	70181	3097	1	split pebble frag		pink granite	Heat fractured joins 2. Exterior seems too polished for just a pebble so could be a frag of a mace-head. Speckled pink granite, probably Scottish is decorative.	pink	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70182	70181	1860	2	microflake		flint		yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70182	70181	5796	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70182	70181	1860	3	burnt frag		flint		white	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70182	70181	3097	2	split pebble frag		pink granite	Heat fractured micro frag. Exterior seems too polished for just a pebble so could be a frag of a mace-head. Speckled pink granite, probably Scottish is decorative. Microwear analysis might show if deliberately polished.	pink	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70182	70181	1869	4	irregular fragment		flint		mid grey	0	0	0	1	0	1	0	0		11	0	5	0	4
J1/J2	74831	70182	70181	4183	2	burnt frag		flint		dark grey	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	74831	70182	70181	1869	5	microflake		flint		yellow brown	0	0	0	0	0	3	0	0		0	0	0	0	0
J1/J2	31580	70201	70202	1838	0	irregular		black chert		mid grey	0	0	0	0	0	3	0	0		27	0	13	0	7

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
						fragment																		
J1/J2	31580	70222	70223	1804	0	core frag		black chert		black	0	0	0	0	0	0	0	0		56	0	36	0	13
J1/J2	31577	70227	70226	5795	0	microflake		flint		light grey	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	31580	70251	70252	1803	0	natural piece		black chert	Natural broken rock frag	x	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	31579	70293	70294	1941	0	irregular fragment		flint		white	1	0	0	1	0	1	0	0		20	0	15	0	6
J1/J2	31579	70298	70297	5790	0	fragment		flint	Fresh	light grey	0	0	0	0	5	3	0	0	12	0	5	0	1	0
J1/J2	31579	70298	70297	5790	0	microflake		flint	All heavily corticated	buff/cream	0	0	0	0	0	0	0	0		0	0	0	0	0
J1/J2	31579	70301	70303	4049	0	fragment		flint	Thin shaping flake	buff/cream	0	0	0	0	0	3	0	0	10	0	6	0	1	0
J3	31576	70437		6377	0	retouched piece	scraper end	flint	Large convex scraper but still on pebble flint	light grey	0	0	0	1	2	2	0	0	37	0	44	0	12	0
J3	74832	70479	70480	6424	0	retouched piece	utilised cutting flake	black chert	Better quality chert. Light ret on one sharp convex edge and around a slight spur	black	0	0	0	0	0	3	0	1	32	0	23	0	6	0
J3	74832	70528	70529	6499	0	retouched piece	edge-retouched knife	flint	Retouched on 2 edges one sharp convex, one an angle	mottled dark grey	0	0	0	0	2	3	0	0	43	0	44	0	11	0
J3	31597	70591		6395	0	casually retouched piece	edge-retouched knife	black chert	Large, thick flake with inverse trimming on one sharp side edge	black	0	0	0	1	2	2	0	1	66	0	67	0	19	0
J3	31576	70331	70332	6035	2	fragment		black chert		black	0	0	0	1	2	2	0	0	37	0	55	0	14	0
J3	31576	70331	70332	6036	0	utilised pebble?		black chert	Smooth rod-shaped pebble no hammering, possible polisher	black	0	0	0	0	0	0	0	0		0	0	0	0	0
J3	31576	70331	70332	6035	1	fragment		black chert		black	0	0	0	1	2	1	0	2	32	0	65	0	15	0
J3	13929	70429	70428	6446	0	flake fragment		black chert		black	0	0	0	0	2	3	0	0		20	0	38	0	9
J3	31581	70451	70452	6379	0	split pebble		flint	Scalar split pebble, battered on edges.	mid grey brown	0	0	0	1	3	1	0	0	26	0	29	0	7	0
J3	31577	70461	70462	6425	0	flake fragment		flint	Thin shaping flake	mid grey	0	0	0	0	0	3	1	0		10	0	7	1	0
J3	31581	70483	70484	6415	0	flake fragment		flint		light grey	0	0	0	1	0	2	2	0		11	0	10	2	0
J3	13929	70492	70491	6382	0	fragment		black chert		black	0	0	0	1	2	1	0	0	41	0	48	0	13	0
J3	13929	70497	70491	6416	0	chip	unclassified	flint	Could be accidental fracture	yellow brown	0	0	0	1	0	2	0	0		10	0	12	0	5
J3	74832	70502	70503	6411	0	fragment		flint		light grey	0	0	0	1	0	2	0	0	34	0	13	0	4	0
J3	74832	70502	70503	6401	2	fragment		flint		yellow brown	0	0	0	1	1	1	0	0	18	0	13	0	4	0
J3	74832	70502	70503	6403	0	casually retouched piece	utilised cutting flake	black chert	Light Inverse ret one long sharp side edge	mid grey	0	0	0	1	5	2	0	0	36	0	21	0	5	0
J3	74832	70502	70503	6423	0	irregular fragment		black chert	Could be accidental fracture	black	0	0	0	1	0	0	0	0		31	0	26	0	14
J3	74832	70502	70503	6401	1	fragment		flint		lgy	0	0	0	0	3	3	0	0	23	0	14	0	5	0
J3	31581	70512	70513	6418	0	irregular fragment		black chert		black	0	0	0	1	0	2	0	0		19	0	10	0	9
J3	74832	70519	70503	6422	0	split pebble frag		black chert	Small pebble, prob accidental fracture	black	0	0	0	1	0	0	0	0		28	0	18	0	10
J3	74832	70519	70503	6412	0	fragment		flint		mid grey	0	0	0	0	2	3	0	1	26	0	16	0	4	0
J3	74832	70528	70529	6387	0	fragment		flint	Mottled flint with probably only partly rolled cortex	mottled mid/dark grey	0	0	0	3	2	2	0	0		31	0	39	0	15
J3	74832	70528	70529	6386	0	utilised piece frag?	utilised cutting flake	flint	Thin, broken flake of fine dark flint. Possible import. Microch and poss gloss on 2 sharp edges	dark grey	0	0	0	0	0	3	0	0	13	0	21	0	2	0
J3	74832	70528	70529	6388	0	fragment		black chert		black	0	0	0	0	2	2	0	0	39	0	50	0	14	0
J3	74832	70536	70529	6414	3	fragment		flint		dark grey	0	0	0	0	3	3	0	0	10	0	9	0	2	0
J3	74832	70536	70529	6430	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
J3	74832	70536	70529	6414	1	fragment		flint	Cortex not obviously pebble or rolled	dark grey	0	0	0	5	0	2	0	0	12	0	10	0	2	0

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
J3	74832	70536	70529	6414	2	fragment		flint		dark grey	0	0	0	0	3	3	0	0	14	0	9	0	2	0
J3	13929	70717	70718	1996	1	microflake		flint		yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0
J3	13929	70717	70718	1996	2	microflake		flint		mid grey	0	0	0	0	0	0	0	0		0	0	0	0	0
J3	13929	70717	70718	1996	3	microflake		flint		light grey	0	0	0	0	0	0	0	0		0	0	0	0	0
K1	31588	2164	2165	1032	0	retouched piece	piercer	black chert	Thick ctf with ret point	black	0	0	0	0	2	2	0	0	50	0	41	0	24	0
K1	31588	18125	18124	1336	0	natural piece		flint	Gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0
K1	31588	18157	18156	2175	0	utilised piece	utilised cutting flake	flint	Small scalar flake with microch and gloss on sharp distal edge	yellow grey	0	0	0	1	0	2	0	0	16	0	16	0	3	0
K1	31588	18173	18172	1281	2	fragment		black chert?		dark grey	0	0	0	0	0	3	0	0	34	0	22	0	5	0
K1	31588	18173	18172	1281	1	flake fragment		Graig Lwyd?	Struck from a pebble. Flat external surface with no striations visible.	light grey	0	0	0	0	0	3	0	0		36	0	28	6	0
K1	31588	19108	19109	1521	4	natural piece		flint	Gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0
K1	31588	19108	19109	1521	3	natural piece		flint	Gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0
K1	31588	19108	19109	1521	2	natural piece		flint	Gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0
K1	31588	19108	19109	1521	1	retouched piece frag	unclassified	flint	Some microlithic style fine retouch. Not obviously meaningful	light grey	0	0	0	0	0	3	1	0		8	6	0	1	0
K1	31588	19110	20081	2064	0	flake fragment		flint		mid grey	0	0	0	0	0	3	1	0		8	10	0	2	0
K1	31588	19118	19117	2347	0	fragment		black chert		black	0	0	0	1	0	1	0	0	36	0	24	0	7	0
K1	31588	21025	21024	2182	0	split pebble		flint	Coarse flint. Not usual	buff/cream	0	0	0	1	0	0	0	0	50	0	43	0	18	0
K1	31603	21052	21051	1218	4	chip		black chert	Probably accidental fracture	x	0	0	0	0	0	0	0	0		0	0	0	0	0
K1	31603	21052	21051	1218	3	split pebble frag		black chert	Small, probably natural	x	0	0	0	0	0	0	0	0		0	0	0	0	0
K1	31603	21052	21051	1218	2	split pebble frag		black chert	Small, probably natural	x	0	0	0	0	0	0	0	0		0	0	0	0	0
K1	31603	21052	21051	1218	1	split pebble frag		black chert	Small, probably natural	x	0	0	0	0	0	0	0	0		0	0	0	0	0
K1	31603	21053	21051	1314	2	natural piece		quartz	Gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0
K1	31603	21053	21051	1314	1	burnt frag		flint		lgy	2	0	0	0	0	0	0	0		12	0	9	0	4
K1	31603	21053	21051	2234	1	split pebble frag		black chert	Could be accidental fracture	black	0	0	0	0	0	0	0	0	31	0	25	0	17	0
K1	31603	21053	21051	2234	2	irregular fragment		black chert	Could be accidental fracture	black	0	0	0	0	0	0	0	0	32	0	12	0	11	0
K1	31603	21053	21051	2234	3	irregular fragment		black chert	Could be accidental fracture	black	0	0	0	0	0	0	0	0	17	0	14	0	6	0
K1	31603	21053	21051	1267	0	natural piece		flint	Gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0
K1	31603	21053	21051	2292	0	fragment		black chert		black	0	0	0	1	0	1	0	0	17	0	30	0	7	0
K1	31588	22018		5782	0	microflake		flint		red brown	0	0	0	0	0	3	0	0		0	4	0	0	0
K1	31588	22038	22039	1044	0	irregular fragment		flint		yellow brown	0	0	0	0	0	3	0	0		32	0	14	0	10
K1	31588	23012	23013	2209	0	natural piece		black chert	Natural pebble frag with some chance damage	black	0	0	0	0	0	0	0	0		0	0	0	0	0
K1	31588	23016	23017	1506	0	flake fragment		flint		light grey	1	0	0	1	0	2	0	0		22	0	12	0	3
K1	31588	23020	23021	2229	0	split pebble frag		black chert	Could be accidental fracture	owst	0	0	0	0	0	0	0	0		0	0	0	0	0
K4		91056	91055	2218	0	fragment		black chert		black	0	0	0	1	2	1	0	1	32	0	44	0	5	0
K5		1101		2263	0	retouched piece	scraper hollow	flint	Small, thick, split-pebble frag with steep retouch on one concave side edge	yellow brown	0	0	0	0	0	3	0	0	30	0	17	0	7	0
K5		1305		2264	0	split pebble frag		flint		mid grey	0	0	0	1	0	0	0	0		33	0	31	0	22
K5		1313		2214	0	fragment		black chert	Probably accidental fracture	owst	0	0	0	0	0	0	0	0		0	0	0	0	0
K5		2401		2304	0	irregular		flint		red brown	0	0	0	1	0	0	0	0		23	0	21	0	14

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
						fragment																		
K5		5407		2256	0	utilised piece?	piercer	flint	Elongated flake frag with microchipping around a narrow pointed, but not sharp tip.	mid grey	0	0	0	0	0	3	0	0	31	0	13	0	4	0
K5		5407		2256	0	fragment		flint	Pebble, probably slightly heat treated. Impact pronounced but very defined. Possibly a hard punch?	yellow brown	1	0	1	1	2	2	0	0	31	0	41	0	12	0
K5		7401		2353	0	fragment		flint		mid grey	0	0	0	0	0	3	0	1	20	0	16	0	3	0
K7	31595	80270		4379	1	retouched piece	spurred piece	black chert		black	0	0	0	0	0	3	0	0	32	0	33	0	9	0
K7		80002		5722	0	utilised pebble?		flint	flint pebble. Possible polish on one flattish surface	yellow brown	0	0	0	0	0	0	0	0	37	0	31	0	27	0
K7		80002		5707	2	chip		black chert		black	0	0	0	0	2	3	0	0		16	0	27	0	4
K7		80002		5461	0	irregular fragment		slate	Modern. Discard.	x	0	0	0	0	0	0	0	0		0	0	0	0	0
K7		80002		5707	1	split pebble		black chert	Large flat thermo flake from a large cobble	black	0	0	0	0	0	0	0	0		124	0	44	0	13
K7	31600	80002		1636	0	utilised piece?	utilised cutting flake	flint	Microch one long sharp side edge	light grey	0	0	0	1	0	2	2	0		40	21	0	7	0
K7	31600	80015	80068	5585	0	natural piece		crystal quartz	Gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0
K7	31600	80018	80078	5601	0	natural piece		crystal quartz	Gravel	transparent	0	0	0	0	0	0	0	0		0	0	0	0	0
K7	31600	80018	80078	3014	0	natural piece		flint	Gravel	yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0
K7	31600	80035	80083	5783	0	microflake		flint		mid grey	0	0	0	0	0	0	0	0		0	0	0	0	0
K7	31600	80054	80055	823	0	flake fragment		black chert		black	0	0	0	2	0	2	0	0		12	17	0	5	0
K7	31600	80076	80086	4505	0	irregular fragment		flint		mid grey	0	0	0	0	0	3	0	0		17	0	10	0	8
K7	31600	80076	80086	4445	0	flake fragment		black chert		black	0	0	0	0	2	3	0	0		7	0	14	0	4
K7	31600	80102	80101	4417	0	natural piece		flint	Gravel	mid grey	0	0	0	0	0	0	0	0		0	0	0	0	0
K7	31600	80115	80116	5852	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
K7	31601	80125	80056	5926	0	burnt frag		flint		light grey	2	0	0	0	0	0	0	0		10	0	8	0	3
K7	31602	80139	80137	5588	0	natural piece		crystal quartz	Gravel	transparent	0	0	0	0	0	0	0	0		0	0	0	0	0
K7	31602	80142	80137	5586	0	natural piece		crystal quartz	Gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0
K7	31600	80144	80143	5859	0	flake fragment		flint		buff/cream	0	0	0	0	1	3	2	1		9	0	13	0	2
K7	31595	80187	80186	4249	0	core	core irregular	flint		yellow brown	0	0	0	0	0	0	0	0	44	0	22	0	20	0
K7	31595	80187	80186	5590	0	natural piece		crystal quartz	Gravel	transparent	0	0	0	0	0	0	0	0		0	0	0	0	0
K7	31595	80197		4385	4	chip		black chert	Probably accidental fracture	black	0	0	0	0	0	0	0	0		0	0	0	0	0
K7	31595	80197		4385	3	chip		black chert	Probably accidental fracture	black	0	0	0	0	0	0	0	0		0	0	0	0	0
K7	31595	80197		4385	2	natural piece		black chert	Gravel	black	0	0	0	0	0	0	0	0		0	0	0	0	0
K7	31595	80197		4385	1	flake fragment		black chert		black	0	0	0	1	2	1	1	2		19	33	0	9	0
K7	31595	80203	80186	4390	0	pebble unused		ochre	Small flat pebble. Soft, fragile. No obvious use wear such as worn facet. Probably natural.	orange red	0	0	0	0	0	0	0	0	32	0	19	0	10	0
K7	31595	80263		4425	0	split pebble frag		flint		yellow brown	0	0	0	0	0	0	0	0		25	0	23	0	10
K7	31595	80268		5536	1	natural piece		other stone?		x	0	0	0	0	0	0	0	0		0	0	0	0	0
K7	31595	80270		4379	0	microflake		flint		x	0	0	0	0	0	0	0	0		0	0	0	0	0
K7	31595	80270		4379	4	flake fragment		black chert		black	0	0	0	0	0	0	0	0		13	0	5	0	4
K7	31595	80270		4379	2	flake fragment		black chert		black	0	0	0	0	0	3	0	0		17	0	9	0	4

Area	PRN	context	Cut no	Find no	sub find no	general type	specific type	material	comment	colour	burning	patina	damage	cortex	primary impact	reduction class	fragmentation	platform	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)
K7	31595	80270		4379	3	natural piece		black chert	Gravel	black	0	0	0	0	0	0	0	0		0	0	0	0	0
K7	31595	80351	80352	5786	0	natural piece		crystal quartz	Gravel	transparent	0	0	0	0	0	0	0	0		0	0	0	0	0
K7	31595	80366	80288	5784	0	microflake		flint		yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0
K7	31595	80378	80371	5474	2	burnt frag		black chert	Thin, thermoclastic flake	black	0	0	0	0	0	0	0	0		24	0	18	0	3
K7	31595	80378	80371	5474	3	burnt frag		black chert	Thin, thermoclastic flake	black	0	0	0	0	0	0	0	0		24	0	21	0	4
K7	31595	80378	80371	5474	4	burnt frag		black chert	Thin, thermoclastic flake	black	0	0	0	0	0	0	0	0		17	0	10	0	4
K7	31595	80378	80371	5474	5	burnt frag		black chert	Thin, thermoclastic flake	black	0	0	0	0	0	0	0	0		29	0	15	0	4
K7	31595	80378	80371	5474	1	burnt frag		black chert	Thin, thermoclastic flake	black	0	0	0	0	0	0	0	0		32	0	29	0	3
K7	31595	80390	80259	5468	0	flake fragment		black chert		black	0	0	0	1	2	1	2	0		10	0	24	0	6
K9a	31573	80684	80686	5731	0	retouched piece	piercer	flint	Thin, naturally pointed flake, the point of which has been improved by fine abrupt retouch on one edge and a single larger inverse removal to produce a narrow tip	mid grey	0	0	0	1	2	2	0	2	27	0	22	0	5	0
K9a	31573	80593	80594	5715	0	irregular fragment		black chert		black	0	0	0	1	0	2	0	0		25	0	21	0	8
K9a	31573	80593	80594	2228	0	natural piece		black chert	Gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0
K9a	31573	80601	80602	5712	1	retouched piece	scraper end	flint	Pebble-backed	yellow brown	0	0	0	1	3	1	0	2	32	0	27	0	9	0
K9a	31573	80601	80602	5712	2	split pebble frag		flint		buff/cream	0	0	0	1	3	1	0	2	33	0	25	0	8	0
K9a	31573	80601	80602	5712	3	split pebble frag		flint	Coarse cherty flint	mid grey	0	0	0	1	3	2	0	0		32	0	20	0	9
K9a	31573	80609	80610	6113	0	chip		flint		mid grey	0	0	0	0	0	3	0	0	12	0	9	0	2	0
K9a	31573	80638	80594	6115	1	fragment		flint		light grey	0	0	0	1	3	1	0	2	27	0	16	0	4	0
K9a	31573	80638	80594	6115	2	ecaille piece		flint	Scalar flake	mid grey	0	0	0	0	3	3	0	0	22	0	17	0	5	0
K9a	31573	80638	80594	6115	3	fragment		flint		mid grey	0	0	0	0	3	3	0	0	18	0	21	0	3	0
K9a	31573	80638	80594	6115	4	fragment		flint		mid grey	0	0	0	1	0	2	0	2	22	0	15	0	5	0
K9a	31573	80638	80594	6115	5	fragment		flint		mid grey	0	0	0	0	3	3	0	0	18	0	18	0	3	0
K9a	31573	80638	80594	6115	6	irregular fragment		flint		mid grey	1	0	0	0	0	0	0	0		13	0	8	0	4
K9a	31573	80638	80594	6115	7	irregular fragment		flint		mid grey	0	0	0	0	0	3	0	0		7	0	7	0	3
K9a	31573	80638	80594	6115	8	irregular fragment		flint		light grey	0	0	0	1	0	1	0	0		12	0	4	0	3
K9a	31573	80638	80594	6116	0	core	core reject	flint	Split pebble frag with a few attempts at flake removal, reject, poor flint	light grey	0	0	0	1	0	0	0	0	45	0	33	0	12	0
K9a	31573	80684	80686	5716	0	ecaille piece		flint	Scalar struck from pebble	mid grey	0	0	0	1	3	2	0	0		16	0	16	0	3
K9a	31573	80685	80686	5723	0	fragment		flint		yellow brown	0	0	0	1	0	1	0	2	36	0	30	0	11	0
K9a	31596	80726	80725	5746	0	fragment		black chert		black	0	0	0	0	5	3	0	1	28	0	1	0	4	0
K9b	31596	80983		6148	0	retouched piece	bifacial knife	flint	Poss gloss one edge	mid grey	0	0	0	0	2	3	0	1	39	0	17	0	4	0
K9b	31596	80808		6002	0	fragment		black chert		black	0	0	0	1	2	2	0	0	58	0	52	0	11	0
K9b	31596	80813		6265	0	natural piece		flint	Gravel	yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0
K9b	31596	80820	80905	6066	0	ecaille piece		flint	Scalar flake from outside of pebble	red brown	0	0	0	1	3	1	0	0	14	0	14	0	3	0
K9b	31596	80833		6025	0	fragment		flint		pot	0	0	0	0	0	0	0	0		0	0	0	0	0
K9b	31596	80857		6297	0	irregular fragment		black chert		black	0	0	0	0	3	0	0	0		18	0	14	0	5
K9b	31596	80863		6023	0	fragment		flint		light grey	0	0	1	1	1	2	0	0	23	0	17	0	6	0
K9b	31596	80865		6275	0	irregular		black chert	Part of an angular cobble	black	0	0	0	0	0	1	0	0		48	0	38	0	25

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						fragment																		
K9b	31596	80874		6052	0	retouched piece frag	piercer	flint	Tip of a triangular section flake	yellow brown	0	0	0	0	0	3	0	0		20	8	0	5	0
K9b	31596	80945	80946	6273	0	split pebble frag		black chert		black	0	0	0	0	0	1	0	0		24	0	17	0	4
K9b	31596	81011	81012	6304	0	natural piece		black chert	Gravel	black	0	0	0	0	0	0	0	0		0	0	0	0	0
K9b	31596	81027	80924	6278	0	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		37	0	16	0	5
K9b	31596	81044	81045	6279	0	irregular fragment		black chert		black	0	0	0	1	0	2	0	0		58	0	32	0	17
K9b	31596	81055	81056	6296	0	fragment		black chert		black	0	0	0	0	1	3	0	1	12	0	7	0	3	0
K9b	31596	81063	81064	6298	0	irregular fragment		black chert		black	0	0	0	1	0	1	0	0		14	0	10	0	7
K9b	31596	81094		6269	0	irregular fragment		black chert		black	0	0	0	1	0	0	0	0		18	0	18	0	9
K9b	31596	81221	81219	6442	0	retouched piece	scraper thumbnail	flint	Small split pebble	yellow brown	0	0	0	1	0	0	0	0	15	0	14	0	5	0
K9b	31596	81247	81248	6444	0	split pebble frag		black chert	Rolled cobble	black	0	0	0	0	0	2	0	0		35	0	25	0	12
L3	31593	21201	21200	1341	1	natural piece		black chert	Rolled frag	x	0	0	0	0	0	0	0	0		0	0	0	0	0
L3	31593	21226	21225	1592	2	microflake		flint		mid grey	0	0	0	0	0	0	0	0		0	0	0	0	0
L3	31593	21226	21225	1592	1	microflake		flint		yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0
L3	31593	22169	22170	4079	0	natural piece		crystal quartz	Gravel	transparent	0	0	0	0	0	0	0	0		0	0	0	0	0
L3	31593	22179	22180	4082	1	split pebble frag		black chert	Large angular frag, possibly from a quarried block	black	0	0	0	0	0	0	0	0	38	0	31	0	16	0
L3	31593	22179	22180	4082	2	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		34	0	22	0	6
L3	31593	22181	22182	2052	0	chip		flint	Chip	buff/cream	0	0	0	0	0	3	0	0	9	0	4	0	1	0
M2	31591	22065	22066	1359	0	pebble unused		quartz	18-26mm long	x	0	0	0	0	0	0	0	0		0	0	0	0	0
M2	31591	22073	22072	1356	0	pebble unused		quartz	30mm long	x	0	0	0	0	0	0	0	0		0	0	0	0	0
M2	31591	22073	22072	1363	0	pebble unused		quartz	15-45mm long	x	0	0	0	0	0	0	0	0		0	0	0	0	0
M2	31591	22077	22076	1358	0	pebble unused		quartz	50mm long	x	0	0	0	0	0	0	0	0		0	0	0	0	0
M2	31591	22077	22076	1269	0	split pebble frag		black chert		black	0	0	0	0	0	0	0	0		28	0	15	0	7
M2	31591	22077	22076	1357	0	microflake		flint		mid grey	0	0	0	0	0	0	0	0		0	0	0	0	0
M2	31591	22077	22076	1360	0	pebble unused		quartz	50mm long	x	0	0	0	0	0	0	0	0		0	0	0	0	0
M2	31591	22083	22082	1364	0	pebble unused		quartz	18-48mm long	owst	0	0	0	0	0	0	0	0		0	0	0	0	0
M2	31591	22083	22082	1361	0	pebble unused		quartz	13-25mm long	x	0	0	0	0	0	0	0	0		0	0	0	0	0
M2	31591	22084	22082	1362	0	pebble unused		quartz	14-30mm long	x	0	0	0	0	0	0	0	0		0	0	0	0	0
M2	31591	22087	22090	5972	1	split pebble frag		black chert		black	0	0	0	0	0	0	0	0		47	0	19	0	9
M2	31591	22087	22090	5972	2	flake fragment		black chert		black	0	0	0	1	1	2	2	2		12	0	19	4	0
M2	31591	22108	22111	1266	1	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		33	0	12	0	5
M2	31591	22108	22111	1266	2	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		20	0	16	0	5
M2	31591	22116	22066	1330	0	utilised piece?	utilised cutting flake	black chert	Flake with sharpened edge with some microchipping and possible wear polish. Needs further study. Is it just damage?	black	0	0	0	0	1	3	2	1	21	0	29	0	6	0
M2	31591	22116	22066	1220	0	natural piece		flint	Gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0

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M2	31591	22117	22118	1245	1	split pebble frag		black chert		black	0	0	0	1	0	2	0	0		27	0	16	0	10
M2	31591	22117	22118	1478	0	natural piece		flint	Gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0
M2	31591	22117	22118	1317	0	chip		crystal quartz	Chip	transparent	0	0	0	0	0	0	0	0		4	0	0	0	0
M2	31591	22117	22118	1245	2	core frag		black chert		black	0	0	0	0	0	3	0	0		21	0	14	0	10
M2	31591	22117	22118	1580	0	natural piece		crystal quartz	Gravel	transparent	0	0	0	0	0	0	0	0		0	0	0	0	0
M4	31571	40077	40076	1893	0	retouched piece frag	edge-retouched knife?	flint	Fire shattered fragment of a larger flake tool with fine invasive sharpening retouch along one straight edge. Poss frag of edge ret knife	mid grey	2	0	0	0	0	3	0	0		23	0	24	5	0
M4	31589	40176	40159	4500	0	retouched piece frag	edge-retouched knife	flint	Grave good. Broken, missing end. Convex side edge with fine partly invasive shaping.	mid grey	0	0	0	1	5	2	2	1		30	16	0	5	0
M4	31571	40011	40010	1413	0	utilised piece?	utilised cutting flake	flint	Probable microch and gloss one sharp edge	mid grey	0	0	0	1	2	2	2	2		26	23	0	9	0
M4		40001	40000	1906	0	natural piece		flint		x	1	0	0	0	0	0	0	0		0	0	0	0	0
M4	31571	40011	40010	1412	1	split pebble frag		black chert	Not a scraper	black	0	0	0	1	0	0	0	0		37	0	29	0	12
M4	31590	40026	40025	4091	4	irregular fragment		black chert		black	0	0	0	0	0	0	0	0		23	0	12	0	8
M4	31590	40026	40025	4091	3	irregular fragment		black chert		black	0	0	0	1	0	2	0	0		17	0	12	0	5
M4	31590	40026	40025	4091	2	split pebble frag		black chert		black	0	0	0	0	0	0	0	0	31	0	18	0	8	0
M4	31590	40026	40025	4091	1	ecaille piece		black chert	Anvil struck frag from pebble	black	0	0	0	1	3	2	0	0	31	0	29	0	8	0
M4	31571	40039	40038	5792	0	chip		crystal quartz		transparent	0	0	0	0	0	3	0	0		5	0	0	0	0
M4	31571	40041	40040	5497	3	burnt frag		flint	Part of one small pebble. Heat altered colour	buff/cream	0	0	0	0	0	0	0	0		0	0	0	0	0
M4	31571	40041	40040	5497	2	burnt frag		flint	Part of one small pebble. Heat altered colour	buff/cream	0	0	0	0	0	0	0	0		0	0	0	0	0
M4	31571	40041	40040	5497	1	burnt frag		flint	Part of one small pebble. Heat altered colour	buff/cream	0	0	0	0	0	0	0	0		0	0	0	0	0
M4	31571	40072	40071	4564	1	flake fragment		flint	Heat altered colour	buff/cream	1	0	0	0	0	3	0	0		19	22	0	4	0
M4	31571	40072	40071	4564	2	irregular fragment		flint		mid grey	0	0	0	1	0	0	0	0		21	0	13	0	7
M4	31571	40077	40076	4442	0	flake fragment		flint	Heat altered colour	red brown	1	0	0	1	1	2	2	1		21	0	25	5	0
M4	31571	40077	40076	5836	0	microflake		black chert		black	0	0	0	0	0	0	0	0		0	0	0	0	0
M4	31571	40077	40076	4509	0	flake fragment		flint	Thermoclastic flake from a larger flake. Could be part of same object as 1893	light grey	1	0	0	0	0	3	0	0		14	0	11	0	2
M4	31571	40077	40076	4067	0	flake fragment		flint	Thermoclastic flake from a larger struck flake. Could be part of same object as 1893	mid grey	1	0	0	0	0	3	0	0		21	0	14	0	3
M4	31571	40077	40076	5853	0	natural piece		crystal quartz	Gravel	transparent	0	0	0	0	0	0	0	0		0	0	0	0	0
M4	31571	40077	40076	5839	0	burnt frag		flint	Heat altered colour	mid grey	0	0	0	0	0	0	0	0		0	0	0	0	0
M4	31571	40080	40079	5889	0	irregular fragment		flint		mid grey	0	0	0	1	0	2	0	0		14	0	7	0	4
M4	31571	40100	40099	4294	2	natural piece		crystal quartz	Gravel	transparent	0	0	0	0	0	0	0	0		0	0	0	0	0
M4	31571	40100	40099	4294	1	natural piece		crystal quartz	Gravel	transparent	0	0	0	0	0	0	0	0		0	0	0	0	0
M4	31589	40108	40107	5499	1	axe flake?		Graig Lwyd	Two polished facets of which one might be an axe side facet and one might be a face.	light grey	0	0	0	0	0	0	0	0	29	0	14	0	5	0
M4	31589	40108	40107	5499	2	irregular fragment		black chert		black	0	0	0	0	0	0	0	0		21	0	13	0	8

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M4	31589	40108	40107	5499	3	irregular fragment		black chert		black	0	0	0	0	0	3	0	0		14	0	6	0	5
M4	31589	40112	40109	5430	0	chip		crystal quartz		transparent	0	0	0	0	0	0	0	0		5	0	5	1	0
M4	31589	40115	40127	5438	0	chip		crystal quartz		transparent	0	0	0	0	0	3	0	0		5	0	4	0	2
M4	31589	40128	40127	6110	0	pebble unused		flint		mid grey	0	0	0	0	0	0	0	0	35	0	27	0	18	0
M4	31589	40130	40109	4421	0	irregular fragment		black chert		black	0	0	0	1	0	2	0	0		17	0	10	0	6
M4	31589	40133	40119	4147	0	microflake		flint		red brown	0	0	0	0	0	0	0	0		0	0	0	0	0
M4	31589	40136	40119	4301	0	natural piece		crystal quartz	Gravel	transparent	0	0	0	0	0	0	0	0		0	0	0	0	0
M4	31571	40150	40151	4454	0	natural piece		quartzite		x	0	0	0	0	0	0	0	0		0	0	0	0	0
M4	31589	40157	40166	4069	0	microflake		flint		mid red	0	0	0	0	0	0	0	0		0	0	0	0	0
M4	31589	40177	40169	4511	0	natural piece		flint	Small anciently rolled frag	light grey	0	0	0	0	0	0	0	0		0	0	0	0	0
M4	31589	40181	40180	4313	0	natural piece		flint	Gravel	x	0	0	0	0	0	0	0	0		0	0	0	0	0
M4	31589	40190	40164	4444	2	flake fragment		black chert		black	0	0	0	0	0	0	0	0		17	0	6	0	2
M4	31589	40190	40164	4446	0	chip		flint		buff/cream	0	0	0	1	0	1	0	0	7	0	10	0	1	0
M4	31589	40190	40164	4444	1	irregular fragment		black chert		black	0	0	0	0	0	0	0	0		21	0	56	0	5
M4	31589	40196	40180	4499	0	ecaille piece		flint	Scalar flake frag	yellow brown	0	0	1	0	3	2	0	0		12	0	12	3	0
M4	31589	40198		5885	0	natural piece		crystal quartz	Gravel	transparent	0	0	0	0	0	0	0	0		0	0	0	0	0
		0		6287	0	retouched piece frag	scraper end	black chert	Snapped-off frag with retouch and gloss	owst	0	0	0	0	0	0	0	0		0	0	0	0	0
		0		6295	0	retouched piece	edge-retouched knife	black chert	Large flake with ret edge and steep ret end	owst	0	0	0	0	0	0	0	0		0	0	0	0	0
		0		4868	0	chip		flint	Micro flake	yellow brown	0	0	0	0	0	0	0	0		0	0	0	0	0

Part V.2: Lithic Use-wear Report for Parc Cybi

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Introduction

One hundred and one lithics were selected for use-wear analysis. The edge angles, macroscopic and microscopic wear were recorded for these with the aid of a contact goniometer, hand lens and digital microscopy. Twenty-one of theses lithics were selected to undergo further analysis. These lithics were examined under low to high magnification (40x-10,000x) using Scanning Electron Microscopy (SEM). The discussion of these lithics below is divided into area of excavation, with a separate short summary for each area.

Description of lithics by Area

Area B2

Three lithics were selected for lithic analysis; none were selected for SEM analysis. Find nos. 307, 309, 554 were examined under digital microscopy. Find no. 307 is a well-used scraper. It was used in a unidirectional manner with the ventral surface leading and the dorsal surface trailing. The material of use is most likely a medium to medium hard material, please see appendix V.2.1 for description of material hardness. Find no. 309 is a small scalar flake with two edges that come together to make a slight point. There was no wear associated with this tip, but scraper wear was observed on both edges. The material of use is most likely medium to medium-soft. Find no. 554 has two utilized edges. Use-wear analysis indicates a scraping function for both edges. Both edges suffer from edge damage resulting in the removal of some use-wear, possibly indicating its use on a hard material.

See Fig V.2.1 for summary of lithic function and material for Area B2

SEM Analysis – No lithics from Area B2 were analysed with SEM.

Area D3

Five lithics were selected for use-wear analysis from Area D3. The lithics analysed, but not sent on to further analysis with SEM, are described below. A cutting function is confirmed for Find no. 1654.1 as it contained parallel striations on both dorsal and ventral surfaces and some polish development; suggesting use on a medium soft material. Find no. 1654.2 had a cutting function with polish developed on both the dorsal and ventral surfaces of the edge. The material of use could not be determined. Use-wear on Find no. 4452, suggests a perforator function. The strong polish distribution suggests use on hard to medium hard material; the lack of striations might indicate a non-twisting motion for use.

Find nos. 1652 and 1967 contain no wear that could suggest their use. A scalar core piece, Find no. 1652, contained no use-wear, even though there are signs of retouch. Find no. 1967 despite having a sharp relatively straight edge on an otherwise cortex dominated flake, contains no use-wear.

See Fig V.2.2 for summary of lithic function and material for Area D3

SEM Analysis – No lithics from Area D3 were analysed with SEM.

Area E (hollow)

Twenty-seven lithics were selected for use-wear analysis with eleven being analysed further with SEM.

Find No. 861 is a flake with two surfaces of use. The thicker of the two was used as a scraper. The thinner was used in a cutting motion but for a limited time, probably because it was a bit thick for this function. The material of use could not be determined for either edge. Find no. 846 was an expedient scraper, with little wear development. Due to the limited wear, material of use could not be determined. There were two edges with polish development on Find nos. 909 and 932, indicating a cutting function for the four edges. Both edges on Find nos. 909 and 932 show cutting use on medium to medium soft hardness material of considerable duration. Find No. 2351, a blade, shows considerable polish suggesting a cutting function. Material of use is likely medium to medium soft. With short term use it was not possible to determine the material of use for Find no. 5136. However, we were able to confirm use in a cutting motion. Find no. 5014 is an expedient perforator. It was not possible to determine the material of use, but the mode of use included a slight twist action during perforation.

Find no. 5099 is a unidirectional scraper with ventral leading and good polish development. Suggested material of use is medium soft to soft. A cutting function is suggested for Find no. 5263 as the use edge contains considerable polish development and transverse striations. Most likely material of use is medium to medium soft. Find no. 5364 is one part of a thick blade that contained one use edge with considerable retouch and wear. The other half of this blade was sent for further analysis using SEM, thus the wear of Find no. 5364 will be described with that of Find no. 5373 below. Find no. 5366, a Scalar flake, had both ventral and dorsal polish and microchipping, but no striations were visible suggesting cutting on softer materials

There was good scraper use-wear on the utilized edge of Find no. 5368. However, material of use could not be determined. Find no. 5369 show some use as a knife or cutting implement, though use was probably short lived. The lack of duration of use precludes determination of material of use. Despite the coarseness of the material clear wear on the thin edge was visible for Find no. 5374. This wear is indicative of a cutting function, but the material of use could not be ascertained. Unutilized pieces include; Find nos. 5065, 5101 and 5379.

Suggested Function	**Total**	**Find no.**
Cutting	9	861, 909, 932, 2351, 5136, 5263, 5364, 5366, 5369, 5374
Scraping	4	846, 861, 5099, 5368
Perforator	1	5014
Unutilized	4	5065, 5101, 5379
SEM analysis	11	912, 977, 2266, 2269, 4560, 5145, 5146, 5267, 5348, 5362, 5373

Table V.2.1: Tabulation of suggested function for lithics recovered from Area E. Total is 28 not 27 as Find No. 861 was counted under scraping and cutting; due to having two use areas.

SEM Analysis

A flint leaf-shaped arrowhead, Find no. 912, was examined with SEM. The analysis confirms its use as a projectile. The end of the tool contained classic hafting wear and possible traces of resin or tree gum for adhesion (Fig V.2.3). This suggests that the arrowhead was hafted into an arrow or such with the aid of some kind of natural glue. Without chemical analysis, it is unclear what this might have been but tree gum is a strong possibility.

Find no. 977 is a double-sided flint blade that was used for cutting. The nature of the use-wear suggests the tool was used on a medium-soft to medium hardness material. The large quantity of striations, their shape and length points to a fibrous material of use (Fig V.2.4). The limited polish development might simply be a result of short duration of use rather than use on non-silica materials.

Find no. 2266 showed the expected polish, striations and microchipping of scraper use (Fig V.2.5). The distribution of these indicates a bi-directional motion of use. Given the characteristics of these features, it is possible to say that it was most likely used on a medium to medium-hard material.

Find no. 2269 is a wide flake. The use-wear is consistent with that of use as a scraper. The wear is quite well developed including extensive ventral polish and spot microchipping (Fig V.2.6). The configuration of the use-wear indicates a uni-directional use, with ventral edge leading. The depth of polish is roughly 40µm. The limited edge damage and microchipping suggests a relatively soft material of use; most probably soft to medium soft material.

A small flint scraper, sometimes called a thumbnail-scraper due to its shape, was examined with SEM; its Find no. was 4560. There were areas of discontinuous polish, along with perpendicular striations (Fig V.2.7). The use-wear observed indicates bi-directional scraping on a medium-soft to soft material.

Find no. 5145 contains two utilized edges; one was used in a scraping motion (Fig V.2.8a) and the other in a cutting motion (Fig V.2.8b). Use-wear on the scraper's edge suggests a unidirectional motion with the ventral surface leading. This is most likely a result of the large amount of cortex present on and near the dorsal surface of the scraper edge. The material of use could not be determined for the scraper edge. The cutting edge has considerable polish development and transverse striations. The depth of polish on the cutting edge is approximately 100 µm or 0.1 mm; this indicates the penetration of the tool into the material. Given this depth of penetration and the character of the striations, it can be suggested that the cutting edge of this tool was used on a medium to medium-hard material.

Find no. 5146 is a thick flake, worked to enhance a point area. Despite this work there is not a lot of wear on the tip of the tool. There is some ridge rounding and the start of polish development in some places. This suggests

that the tool was not used for a substantial period of time. However, there are quite a few striations along and across the tip (Fig V.2.9). These features read together could indicate that the tool was used for a short period of time as a perforator, but material of use could not be determined.

A piece of crystal quartz, Find no. 5267, was examined with SEM. The use-wear present is indicative of a cutting function; transverse striations, angled microchipping, and polish development are in evidence. The depth of polish is visible under relatively light magnification, thanks to the nature of the material. What is interesting is that the depth of polish varies slightly from approximately 20μm to 60μm (Fig V.2.10). This difference could be due to a number of factors such as use on different materials, a material of different depth or hardness, or changing pressure by the user. As such it is not possible to determine the material of use.

Find no. 5348 is a broken flake that happened to break into a triangular shape. This shape would be conducive for a perforating function. Limited microchipping and polish can be seen under high magnification, though not very heavy (Fig V.2.11). This could mean one of two things, short term use or use on a very soft material. As striations are absent the motion of use cannot be determined. Thus, a perforator function, with or without a twisting motion on an indeterminate material is the extent of information extracted from Find no. 5348.

A very thin flake, Find no. 5362, was examined using SEM. Very little wear could be identified using digital microscopy; however, SEM was able to confirm use albeit very short term. The use edge is very thin, 24°, and is probably why it was not used long. There is some polish development in isolated areas of the edge, but microchipping has removed much of the edge and thus the use-wear (Fig V.2.12). Striations confirm a cutting motion. Material of use could not be determined.

Find no. 5373 is part of a large long blade; the other half is Find no. 5364. Only Find no. 5373 was examined with SEM, and the result extrapolated to Find no. 5354. The rational for this is macroscopically both halves have the same use-wear. Under high magnification both straight edges of the blade contain the same cutting use-wear. There was considerable polish and gloss development on both edges, which also showed transverse and parallel striations (Fig V.2.13). The end opposite to break that connects to Find no. 5364 was examined for evidence of hafting but none was found, in fact gloss continues into the zone of the would-be haft suggesting the haft like shape is a result of edge damage from use. Given the nature of the gloss, use-wear, and shape of blade it is most likely that the tool was used for the harvesting of grasses, i.e. plant material with high silica content (medium soft material).

See Fig V.2.14 for summary of lithic function and material for Area D3.

Area H

Fifty-eight lithics were selected from Area H for use-wear analysis. Eleven of these were then analysed with SEM. Both sharp edges of Find no. 123 were used for expedient cutting. Even through Find no. 123 was not used for long a suggestion of use material can be made. It appears that it was used on medium soft to soft material. Likewise both edges of the half blade Find no. 5994.4 were used for cutting. Due to the coarse chert material, striation and polish development was restricted and thus, material of use could not be determined. Find no. 1386 also has two cutting edges with one being much longer than the other. The material of use could not be determined for either edge. Find nos. 1019, 1075, 1084, 1372, 2026.3, 4309 contain polish and transverse and parallel striations on the edge indicating use as cutting implements. It is most likely that these pieces were used on medium soft to soft material. Find nos. 125, 1013, 1087, 1157, 1386, 1415, 1511, 1515, and 6078.2 are also cutting tools but these were utilized for a shorter duration. Due to their short duration of use the material of use could not be determined.

The use-wear on Find no. 1203.2, 1203.3 and 1460.4, indicates a cutting function with very good polish development, confined to the very edge of the tool. No striations were visible but microchipping on both surfaces is consistent with use as a knife. This wear suggests that they were used on non-fibrous medium to medium soft material. Find no. 1203.1 has two utilized edges the first has similar wear to that of Find nos. 1203.2 and 1203.3. Thus, is classified the same, with a cutting function on non-fibrous medium to medium soft material. The second edge was used briefly as a scraper, bidirectional. Material of use was indeterminate. There is evidence to indicate that Find no. 1203.1 might also have been hafted at some point in its use life. Find no. 1712.2 also contains two utilized edges. The first is a cutting edge with some polish development and the second is a scraping edge that varies in edge angle from 70 to 108°. This unusual edge angle is probably the reason why the edge was only used unidirectionally with the ventral surface leading. The material of use could not be determined for either edge of Find no. 1721.2. Find nos. 1724 and 2219 were used for cutting, but the large amount of polish development suggests use on a medium-soft material such as silica containing plants.

Used for a limited time, Find nos. 1198, 1799, 4085, and 4534 are expedient scrapers. Due to the limited amount of time they were used the material of use could not be determined. Find no. 1671.1 is a scraper with nice polish development. Wear patterns indicate bi-directional use on medium soft to soft materials. Another scraper, but with a steep edge, is Find no. 1415. It is most likely that it was used on medium hard to medium materials. A scraping function mostly used unidirectionally with ventral leading, is suggested for 1551; though material of use could not be determined partly from removal of use-wear through breakage. Find nos. 1019 and 1712.1 are expedient scrapers used unidirectional with the ventral leading. It is not possible to determine their material of use. There are several specialty scrapers found in Area H, Find nos. 1402, 4539, 5964.2, 5995 and 6078.3 are concave scrapers, or spokeshaves. They appear to have been used on hard to medium hard materials. Interestingly, Find no. 4539 has two concave scraper surfaces. Find no. 5964.1 actually had three scraper surfaces, including one that was concave. None of the edges could have the material of use determined. Find no. 1671.4 is a perforator with a broken tip. Also a perforator, Find no. 4105, was used in a puncturing rather than a twisting motion. What wear was present was confined to the area around the broken portion of the piece and included striations and polish. It was not possible to determine the material of use for these perforators due to the damage.

Unutilized pieces include; Find nos. 122, 1175, 1460.2, 1648, 1706, 2026.4, 4391, 6085, 6094 & 6114.

Suggested Function	**Total**	**Find no.**
Cutting	24	123, 125, 1013, 1019, 1075, 1084, 1087, 1157, 1203.1, 1203.2, 1203.3, 1382, 2026.3, 1372, 1386, 1415, 1460.4, 1515, 1712.2, 1724, 2219, 4309, 5994.4, 6078.2
Scraping	15	1198, 1203.1, 1402, 1551, 1671.1, 1712.1, 1712.2, 1799, 4085, 4534, 4539, 5964.1, 5964.2, 5995, 6078.4
Perforator	2	1671.4 , 4105
Unutilized	10	122, 1308, 1460.2, 1648, 1706, 2026.4, 4391, 6085, 6094, 6114
SEM analysis	9	124, 1069, 1117, 1376, 1511, 1671.1, 1671.4, 4318, 6078.3

Table V.2.2: Tabulation of suggested function for lithics recovered from Area H. Total number exceeds 58 as Find No. 1203.1, 1712.2 was recorded under both cutting and scraping functions, due to having two use edges.

SEM Analysis
Nine lithics were selected for SEM analysis from Area H.

Find no. 124, a large blade was selected for additional use-wear analysis, as it showed use-wear along both straight edges and a possible haft area. No hafting wear could be found, but both edges showed considerable polish development and the start of gloss in areas (Fig V.2.15), which, considering the coarseness of the material shows considerable use. The most likely use for Find no. 124 is cutting on medium to medium soft material.

The polish was poorly developed on Find no. 1069; however, there are considerable transverse striations (Fig V.2.16). A possible explanation for the lack of polish development while still acquiring striations is the removal of polish through microchipping of the edge. Fig V.2.16 shows an area of polish development, but note there is a lack of microchipping; this is opposite to what is seen on most of the edge where microchipping dominates and there is little polish. In both scenarios transverse striations are present. All of these features taken together suggest cutting as a function, on medium-hard to hard material.

Find no. 1117 is bifacially worked with use-wear present only on the proximal end, despite both lateral edges having been retouched. The wear is consistent with use as a bi-directional scraper. Material of use is most likely medium to medium-soft. The depth of penetration varies considerably across the edge (Fig V.2.17). This is most likely a function of the shape of the edge rather than varying pressures.

A large blade, Find no. 1376 was examined for wear using SEM. Wear was consistent with cutting and was found on both lateral edges. Interestingly, polish development was minimal, being confined to spot polish; this does not seem to be a feature of damage but rather how the wear developed on the utilized surface (Fig V.2.18). It could also be a result of the rather coarse material. Transverse and parallel striations show direction of use. Material of use is most likely medium to medium soft.

Find no. 1511 is a small piece of crystal quartz that was examined with SEM. Transverse and parallel striations show direction of use while some ridge polish and edge polish confirm that it was used for expedient cutting (Fig V.2.19). Due to the short-term use of the tool, it is not possible to suggest a material of use.

Find no. 1671.1 is a large flake with nice retouch. The edge contains wear from cutting. Though polish is present on the very edge of the tool, we can see depth of penetration more accurately with the pre-polish rounding (Fig V.2.20). This indicates the area that was in contact with the material. Given enough use, this area would also have developed polish. However, as this area experienced less stress than the area on the very edge it did not develop polish as fast. It can be useful to help determine the material of use, and averages roughly 50µm (Fig V.2.20). The most likely material of use medium to medium soft.

A small thick flake, Find no. 1671.4, showed nice polish development (Fig V.2.21). This suggests that the tool was used for a considerable period of time, which is contrary to what was initially thought. Continuous edge polish and associated transverse striations confirm its use as a cutting implement. The limited microchipping suggests that the tool may have been used on a softer material (medium soft to soft material).

Well-developed use-wear such as transverse and perpendicular striations and polish indicate that Find no. 4318, a thick flake retouched into a rounded edge, was used as a scraper. The amount of wear suggests that this tool was used for a considerable period of time. The area of contact appears very dark in Fig V.2.22 and measures approximately 200µm. The patterning of the wear indicates probable use on a medium soft to soft material.

Find no. 6078.3 is a long narrow flake with two edges used for cutting. There is considerable polish development and areas of large numbers of transverse and parallel striations on both edges. The material of use is most likely medium soft to soft, but fibrous due to the number of striations. The depth of penetration is roughly 200µm indicating a soft material of contact (Fig V.2.23).

See Fig V.2.25 for summary of lithic function and material for Area H.

Area J

Three lithics were selected for use-wear analysis from Area J though none were analysed under the SEM. Find no. 1823 is the middle part of a large thin flake off a polished axe. Microchipping, polish and parallel striations indicate use as an expedient cutting tool. Due to the short-term nature, material of use cannot be determined. With minimal polish development and parallel and transverse striations, Find no. 6378 is a cutting tool on fine-grained chert with good use-wear development; possibly used on medium soft to soft material. Find no. 1853.1, was an expedient cutting tool with polish on both ventral and dorsal edges. Material of use could not be ascertained.

See Fig V.2.26 for summary of lithic function and material for Area J.

SEM Analysis – No lithics from Area J were analysed with SEM.

Area K9b

Two lithics were chosen for use-wear analysis from Area K9b; one of which was further selected for SEM analysis. Find no. 6052 is a triangular distal section of a section flake. The use-wear is poorly developed, suggesting use as an expedient scraping tool with wear on two edges. Due to the limited use-wear material of use could not be determined.

SEM Analysis

One lithic from Area K9b was examined with SEM, Find no. 6148. It is a blade with skilled retouch on both edges and the distal end. Use-wear is indicative of cutting on both lateral edges. Depth of polish on average was 100µm (Fig V.2.24). There was the start of gloss in some areas of the use edges and parallel and transverse striations. This wear is consistent with cutting as a function; material of use is most likely medium-soft such as silica rich grasses.

See Fig V.2.27 for summary of lithic function and material for Area K9B.

Area M4

Two lithics were selected for use-wear analysis from Area M4; neither was selected for SEM analysis. Find no. 1413 is a flake with 35% cortex on dorsal surface and one sharp cutting edge. The use-wear was distributed on both ventral and dorsal surfaces and indicates considerable use on a medium-soft material. Find no. 5499 was a

flake removed from a polished stone axe. There was no discernible use-wear on the flake to suggest a use-life beyond that as part of an axe.

SEM Analysis - No lithics from Area M4 were analysed with SEM.

See Fig V.2.28 for summary of lithic function and material for Area M4.

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Appendix V.2.1

Hardness	Materials
Hard	Dry antler, bone, dry wood
Medium-hard	Fresh hard woods, fresh antler
Medium	Soft woods, reeds
Medium-soft	dry hide, grasses, fibrous plants, plants with silica
Soft	Meat, fresh hides, green plants, soft plants, non-fibrous plants

Table V.2.3: Hardness of Material Information Adapted from (Odell and Odell-Vereecken, 1980) (Debert, 2005: 50, Table 3.2)

Appendix V.2.2 Glossary

Gloss: is invasive into the body of the tool, is continuous and has the appearance of being domed on the top surface of the tool (Clemente and Gibaja, 1998, Meeks et al., 1982). Its general appearance is smooth, glossy and confined to the use edge (Clemente and Gibaja, 1998, Figure 3. 7).

Microchipping: small flakes removed during use not exceeding 5mm (Kooyman 2000)

Polish: a general smoothing and removal of topography, caused by abrasion (Andrefsky 1998)

Striation: Scratches produced by abrasive particles on a tools edge during use.

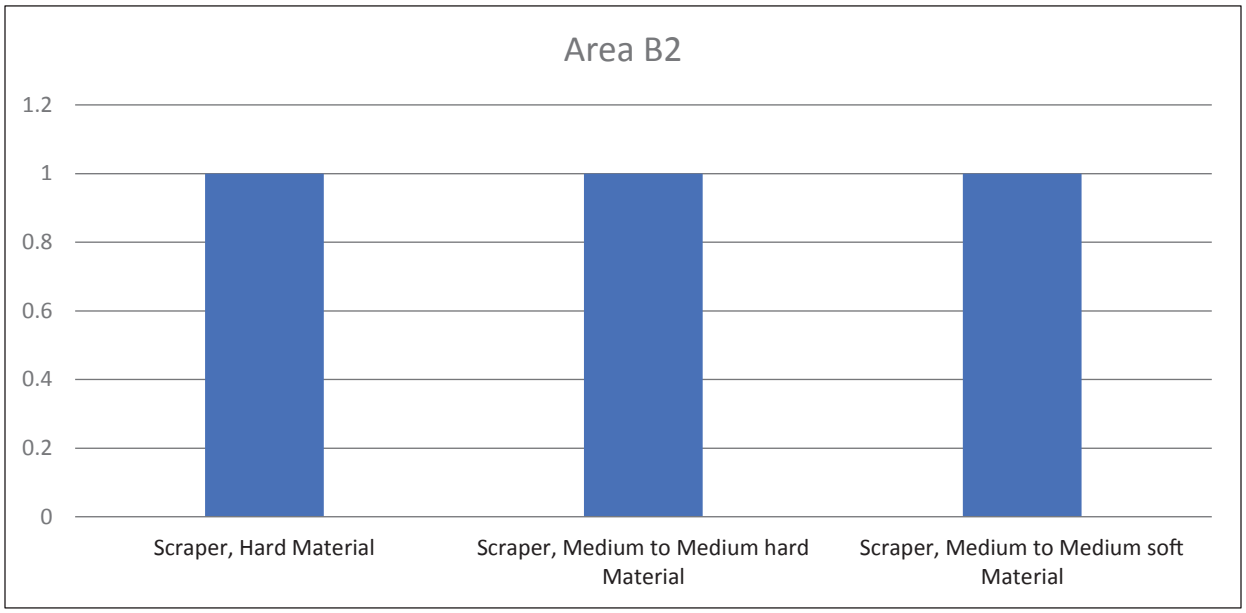

Fig V.2.1: Summary of lithic function and material for Area B2

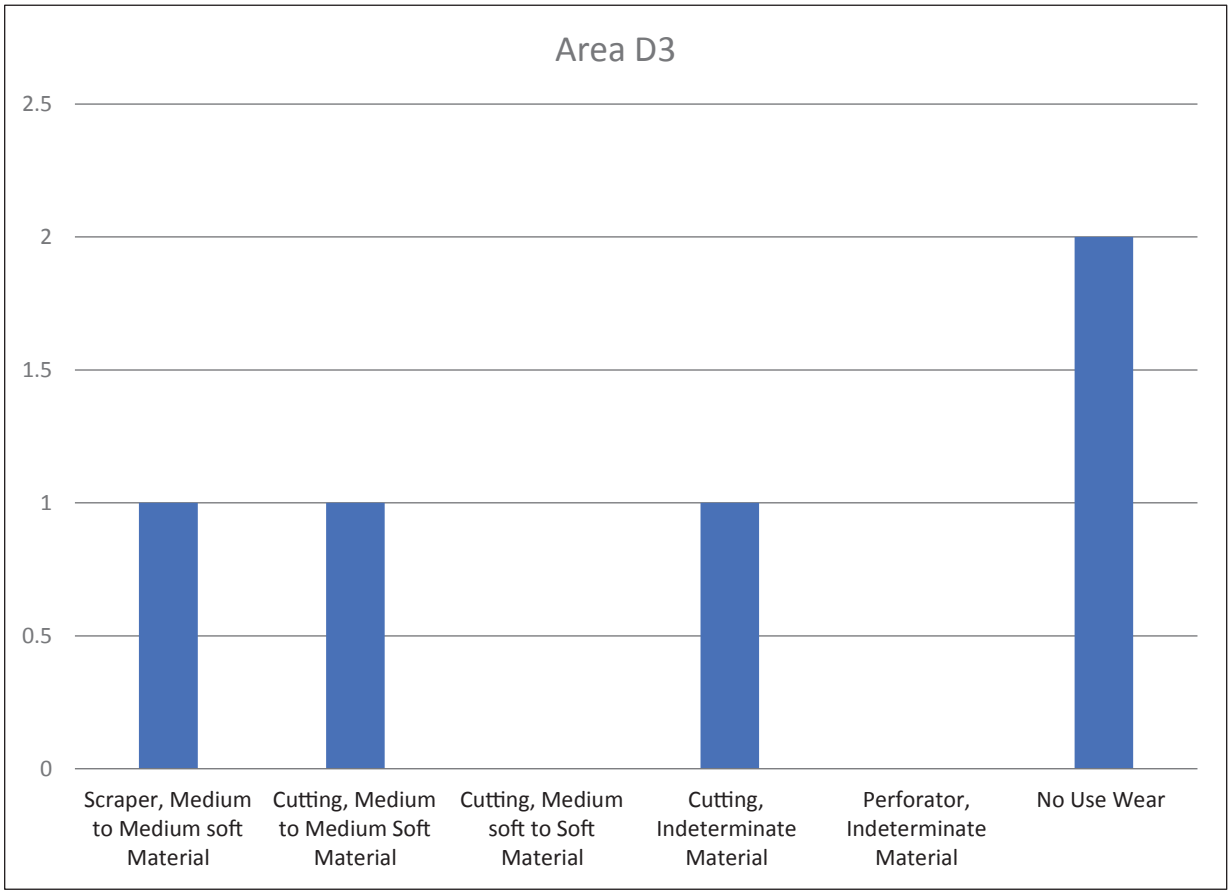

Fig V.2.2: Summary of lithic function and material for Area D3

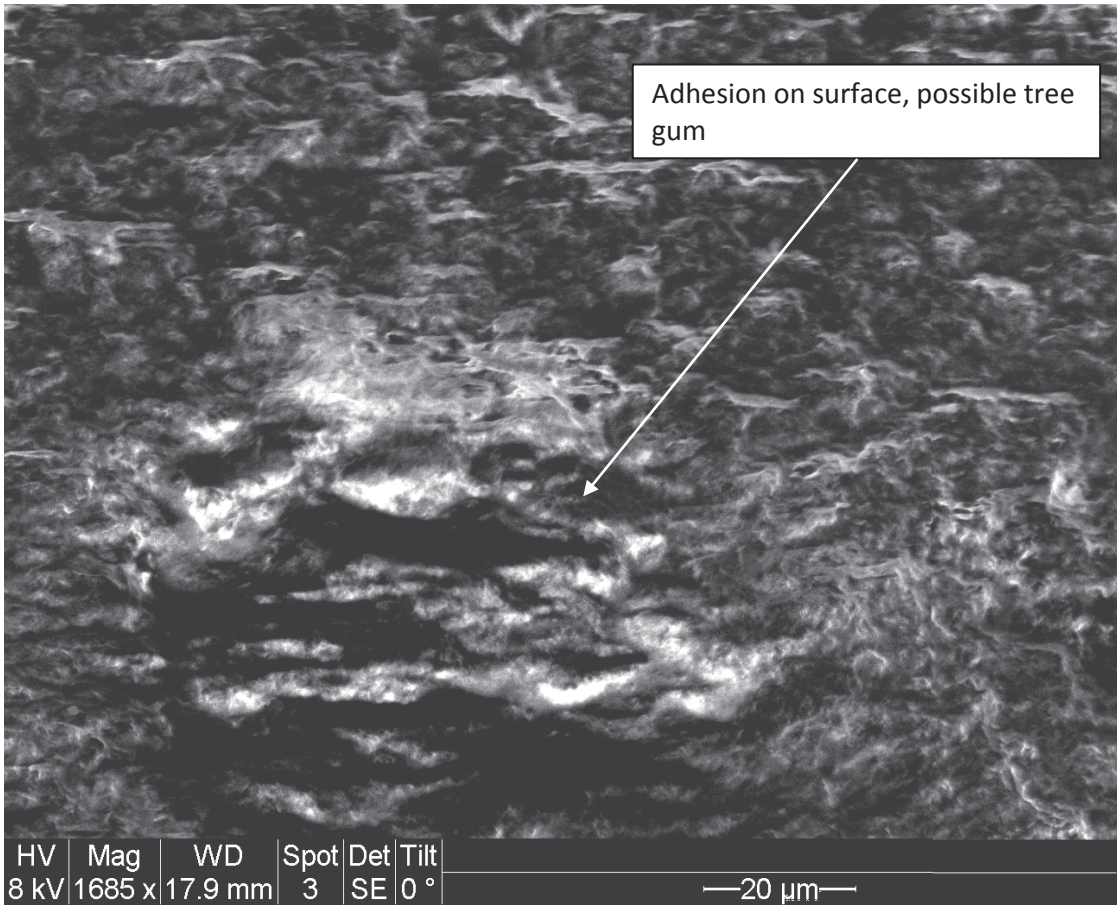

Fig V.2.3: Micrograph of Find no. 912 from Area E (hollow); possible tree gum on surface of haft area

Fig V.2.4: Micrograph of Find no. 977 from Area E (hollow); microchipping on edge and parallel and transverse striations

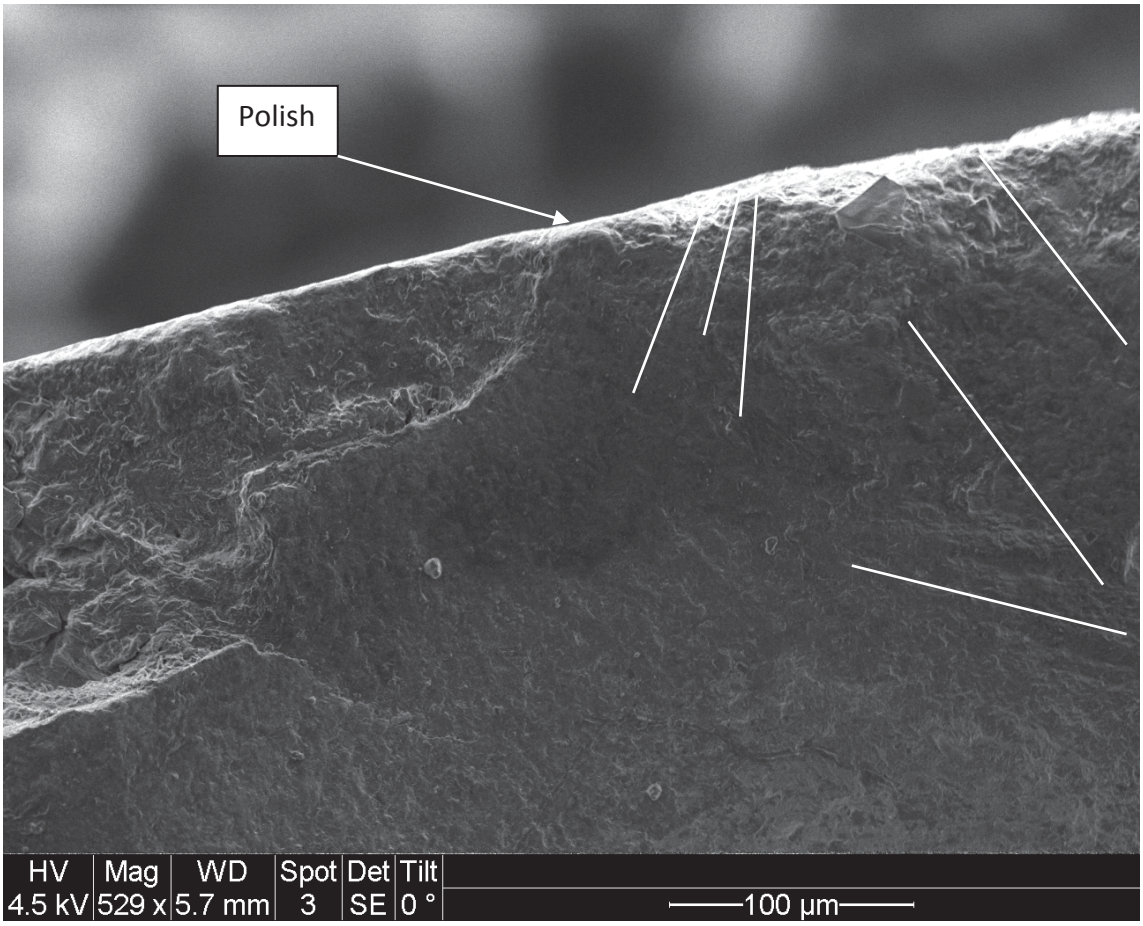

Fig V.2.5: Micrograph of Find no. 2266 from Area E (hollow); polish on edge and transverse striations

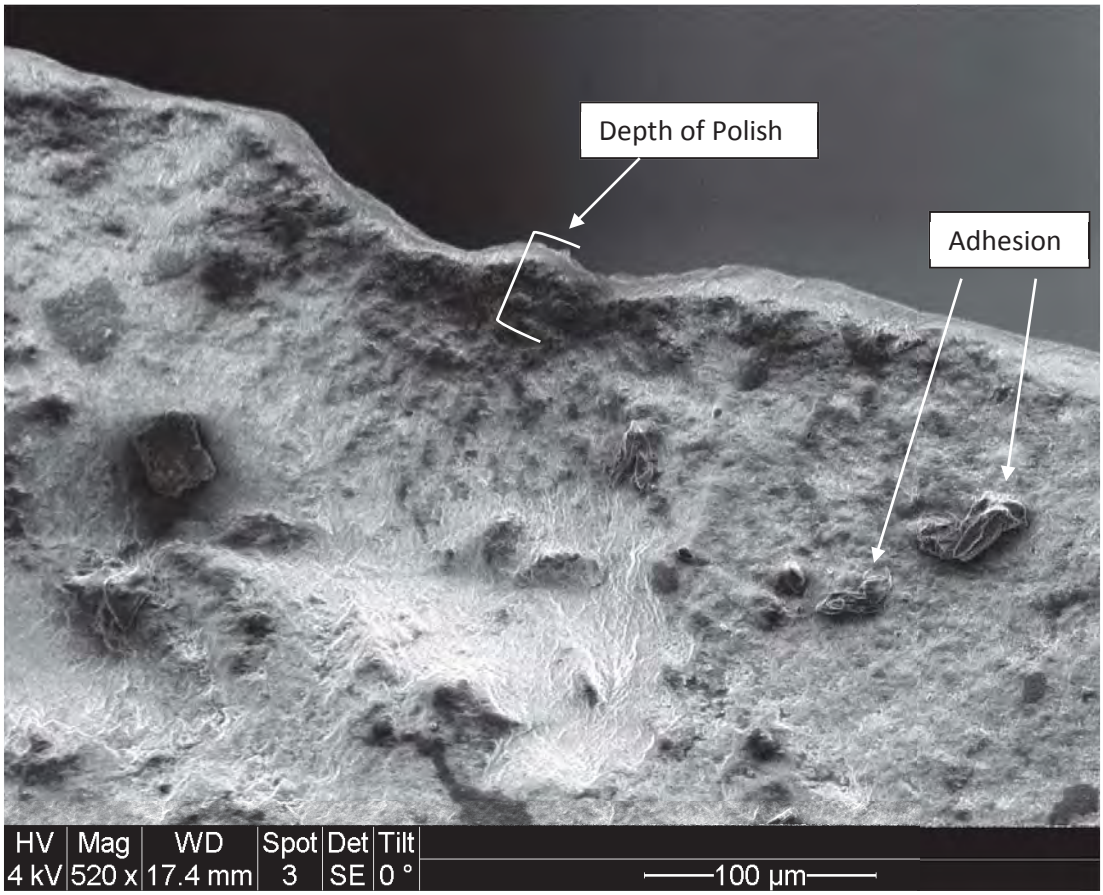

Fig V.2.6: Micrograph of Find no. 2269 from Area E (hollow); polish on edge and some adhesions

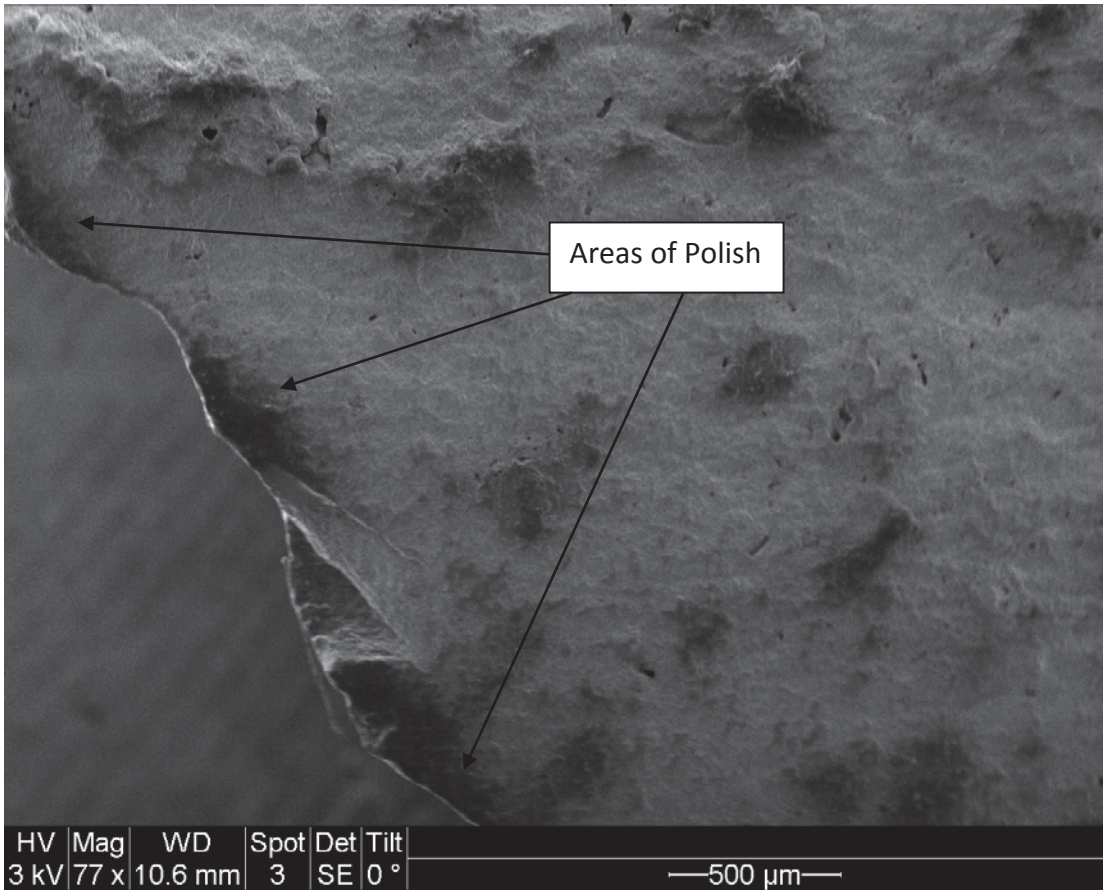

Fig V.2.7: Micrograph of Find no. 4560 from Area E (hollow); polish on edge.

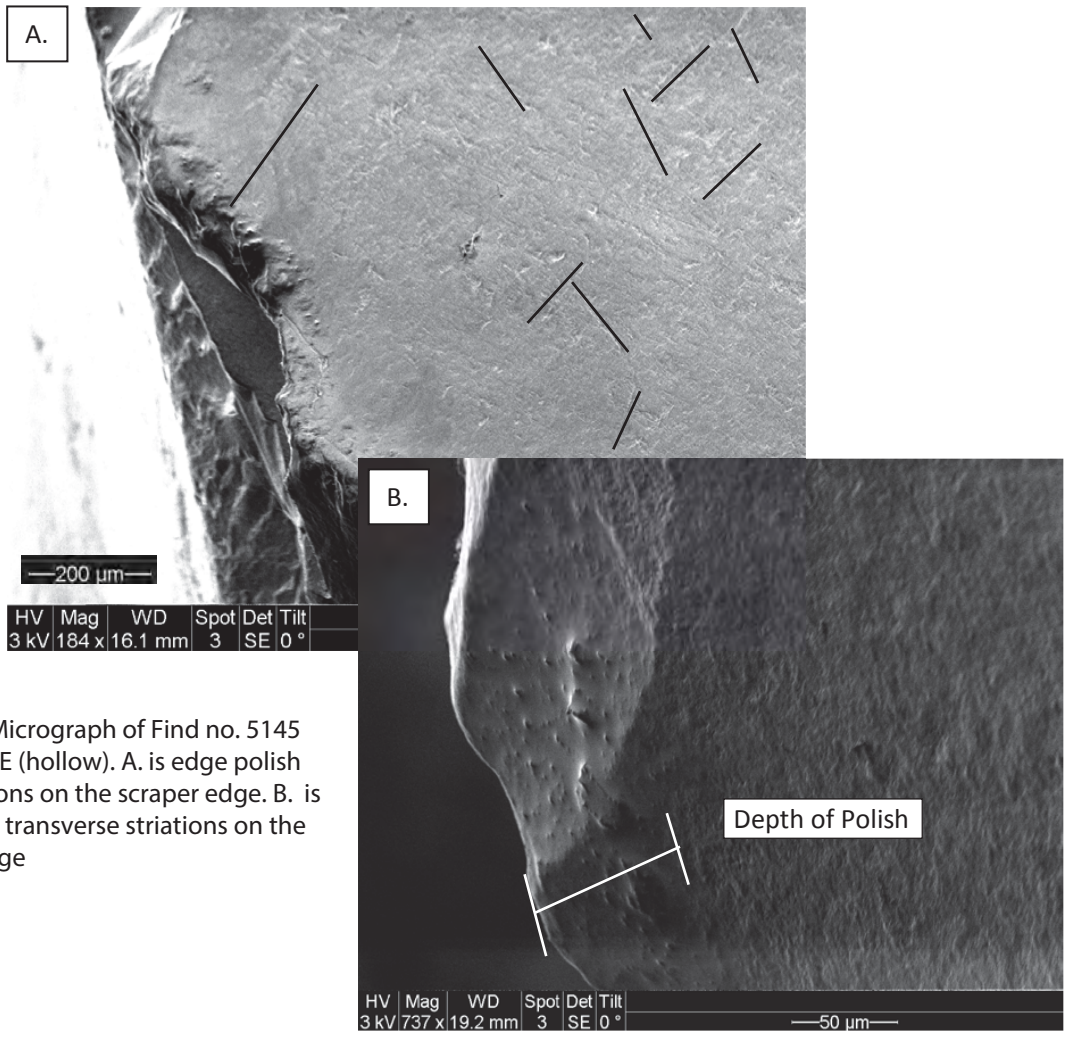

Fig V.2.8: Micrograph of Find no. 5145 from Area E (hollow). A. is edge polish and striations on the scraper edge. B. is polish and transverse striations on the cutting edge

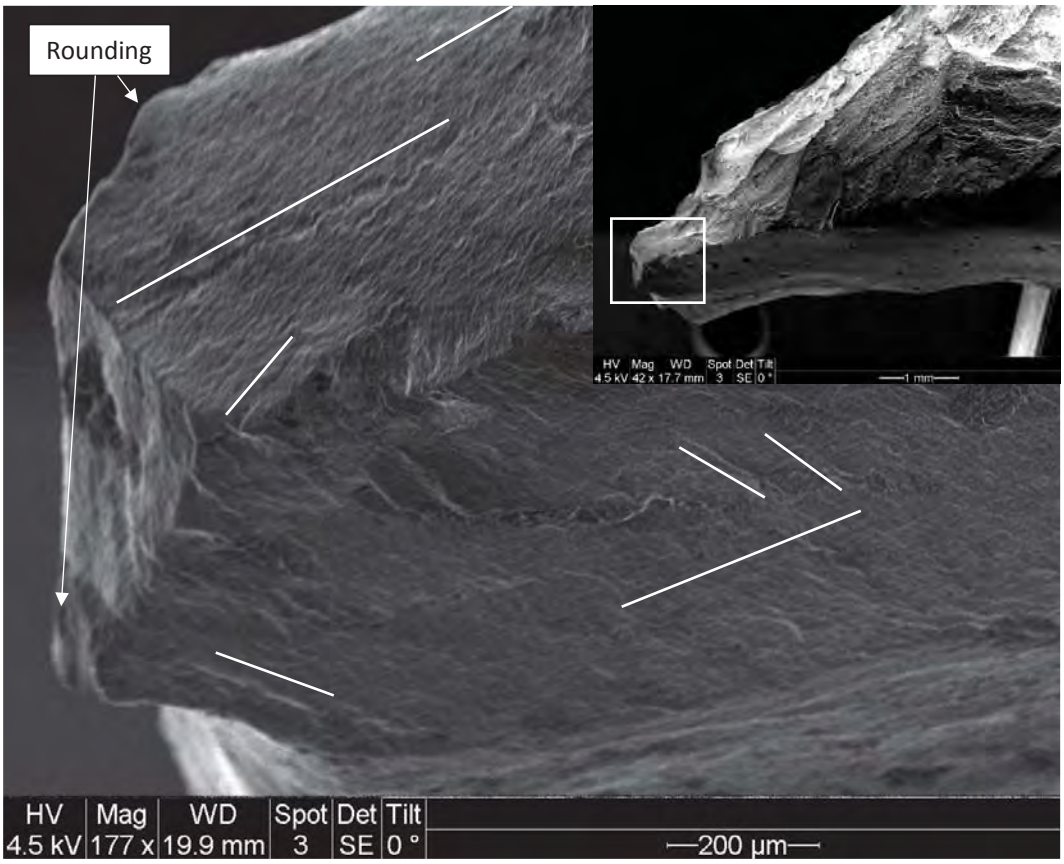

Fig V.2.9: Micrograph of Find no. 5146 from Area E (hollow). Shows striations on tip of perforator

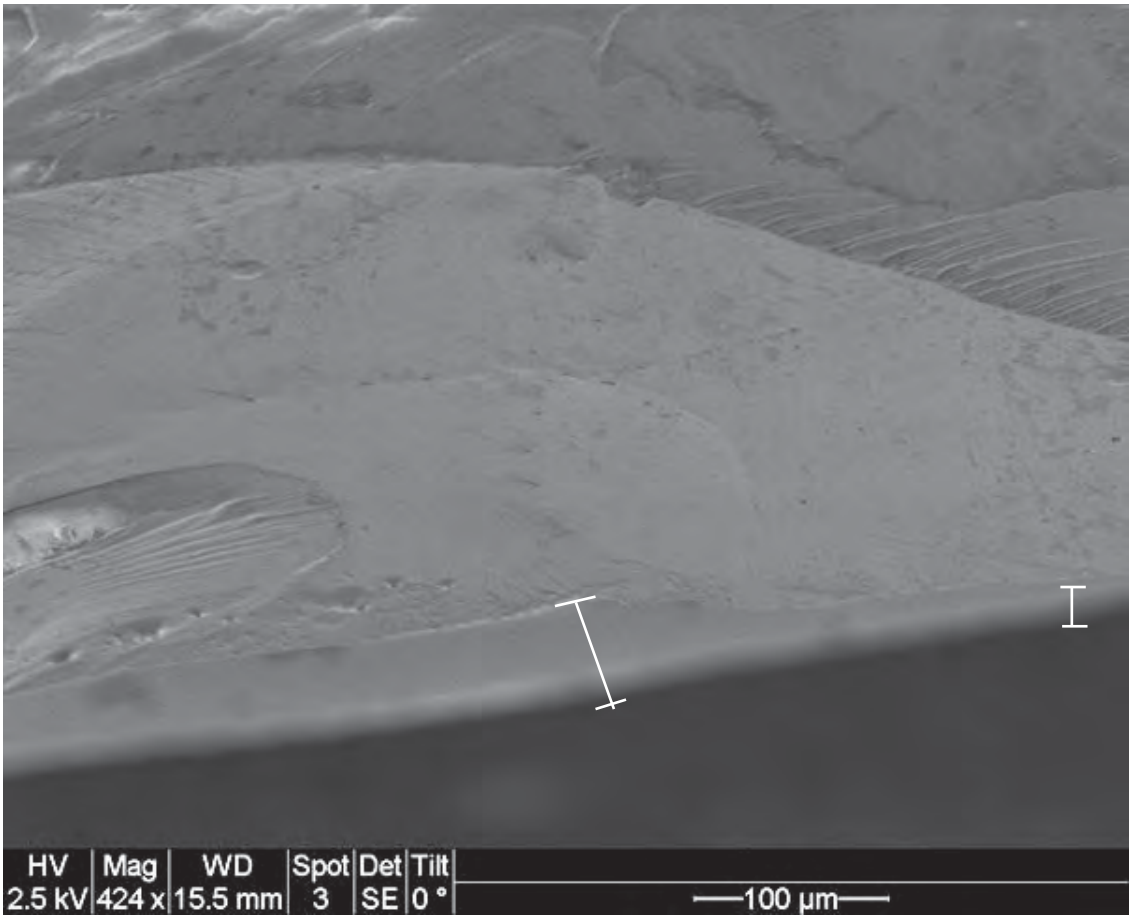

Fig V.2.10: Micrograph of Find no. 5267 from Area E (hollow). Image is showing variation in depth of polish

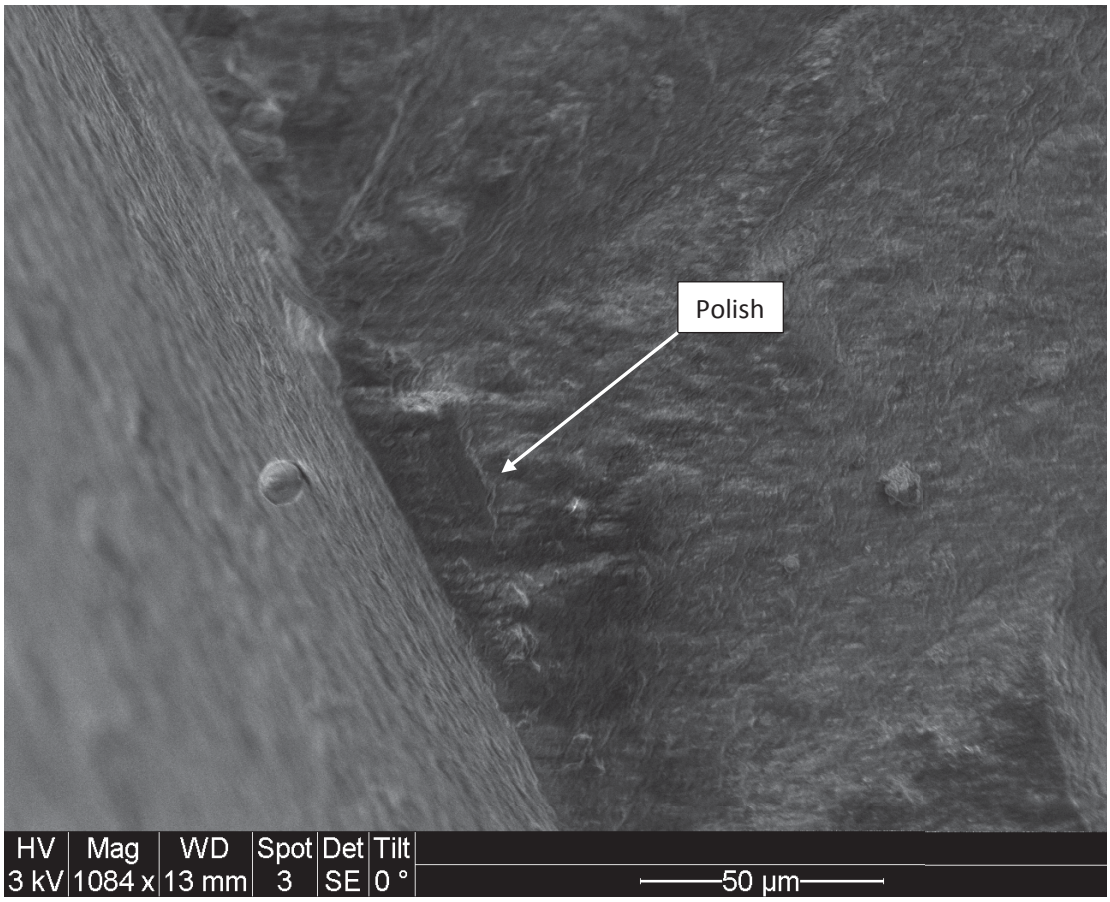

Fig V.2.11: Micrograph of Find no. 5348 from Area E (hollow). Image is showing polish on a ridge of the triangular tip

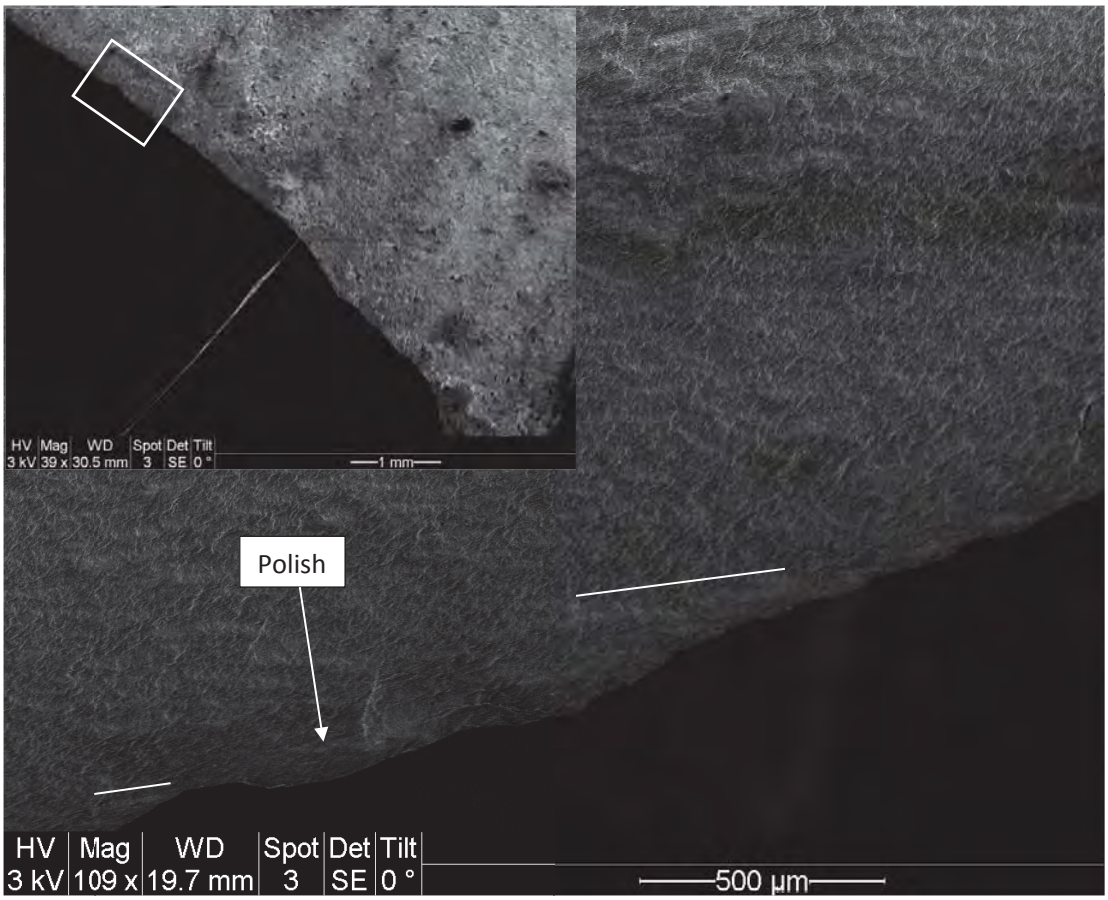

Fig V.2.12: Micrograph of Find no. 5362 from Area E (hollow). Image is showing polish and minor striation development on use edge.

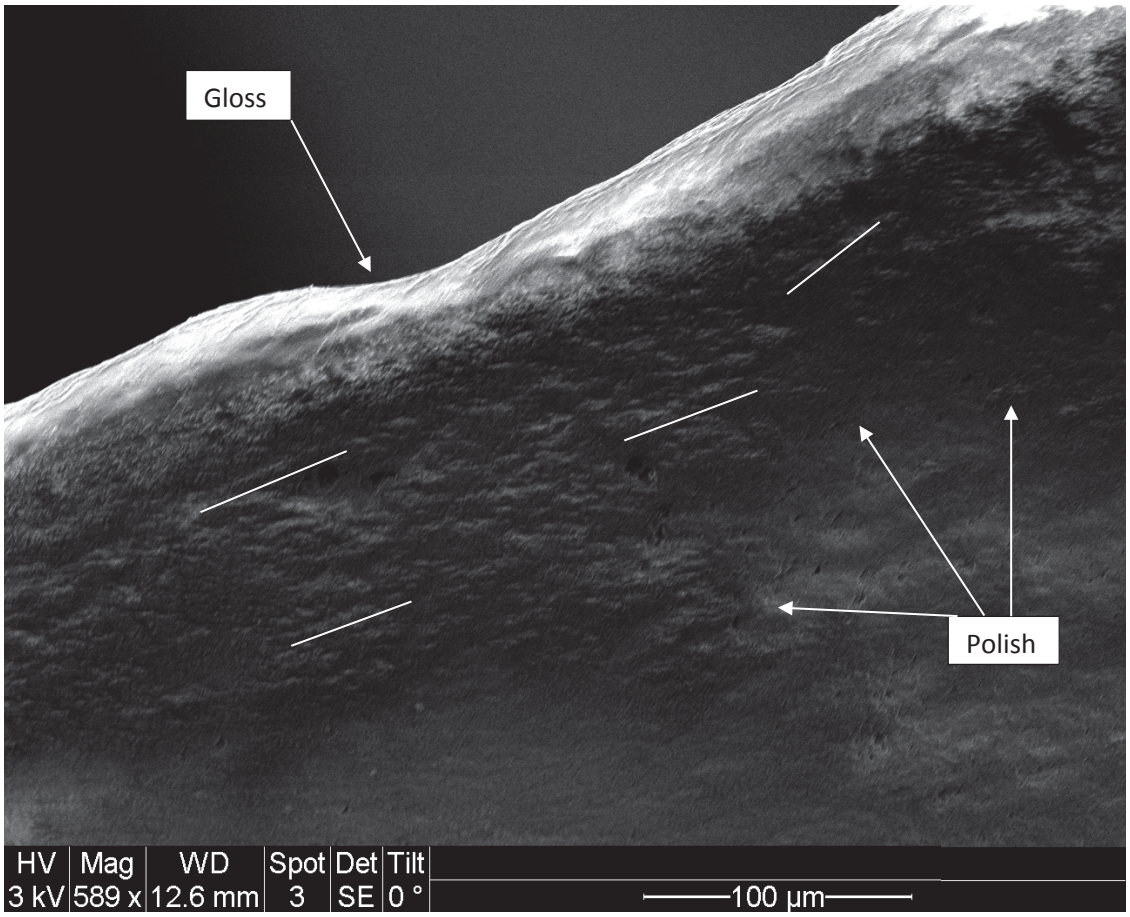

Fig V.2.13: Micrograph of Find no. 5373 from Area E (hollow). Image is showing gloss on the very edge, polish and depth of contact at the side of the edge and striations showing directions of use.

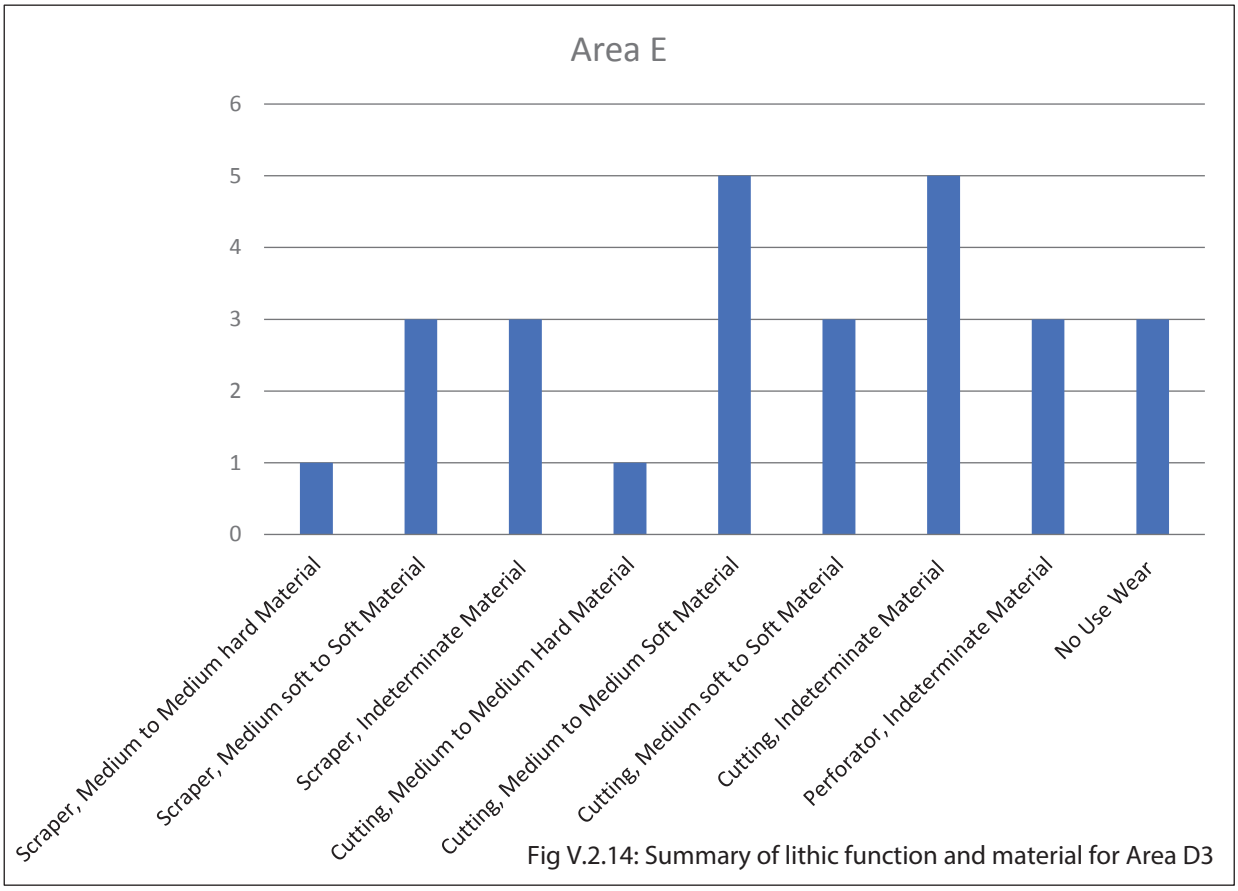

Fig V.2.14: Summary of lithic function and material for Area D3

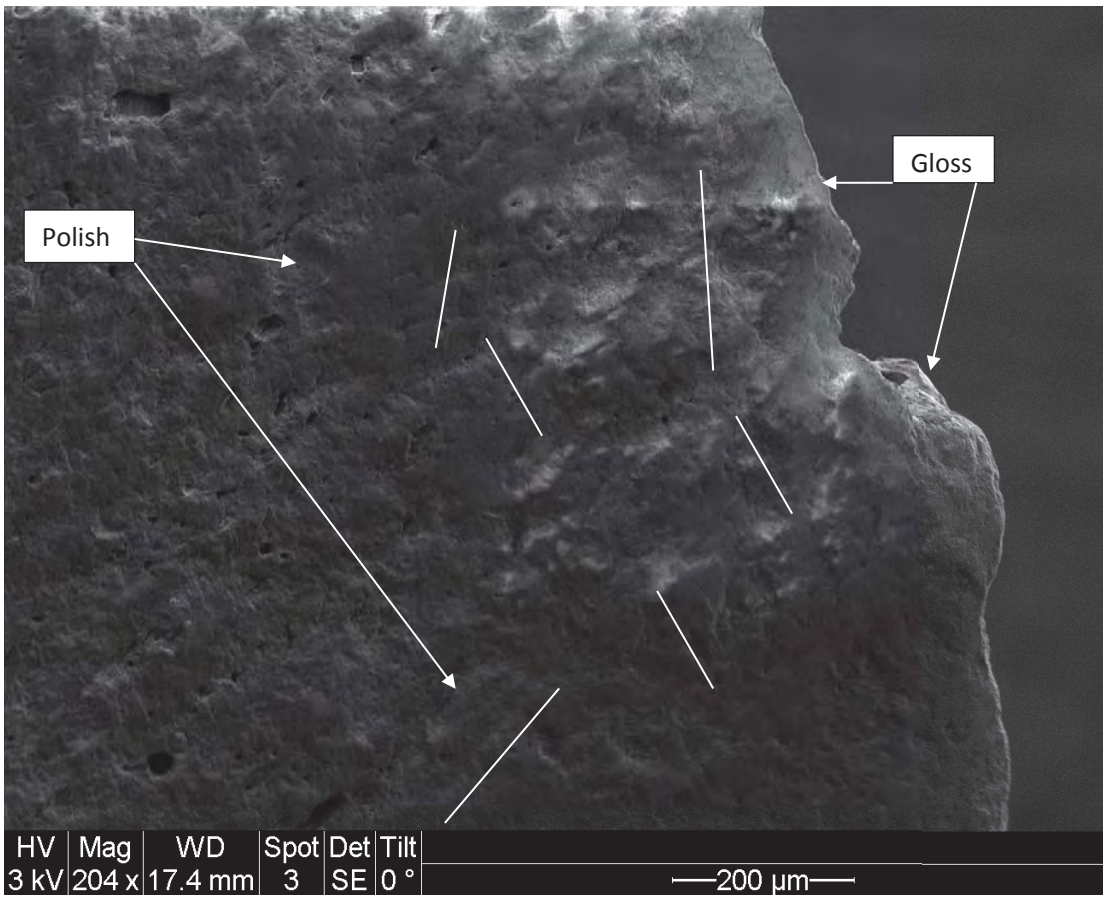

Fig V.2.15: Micrograph of Find no. 124 from Area H. Image is showing gloss on the very edge, polish and depth of contact at the side of the edge and striations showing directions of use.

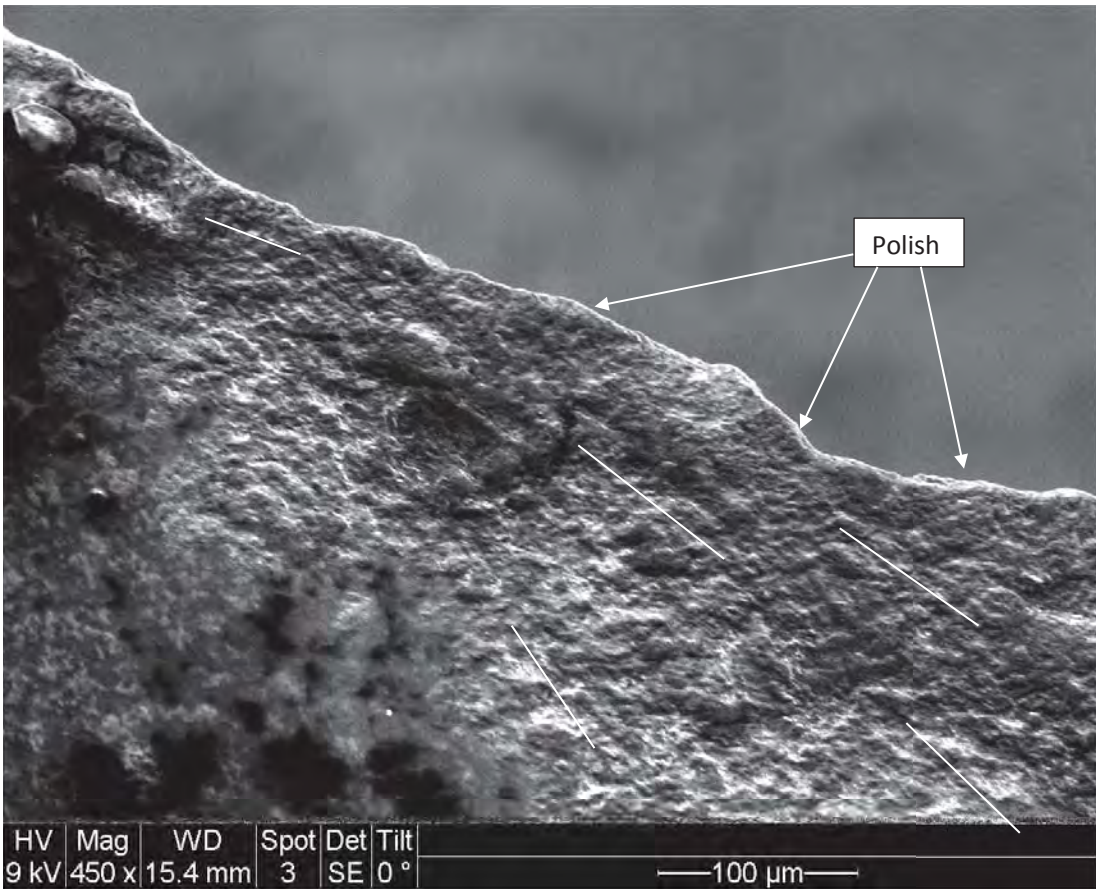

Fig V.2.16: Micrograph of Find no. 1069 from Area H. Image is showing polish on edge and striations showing directions of use.

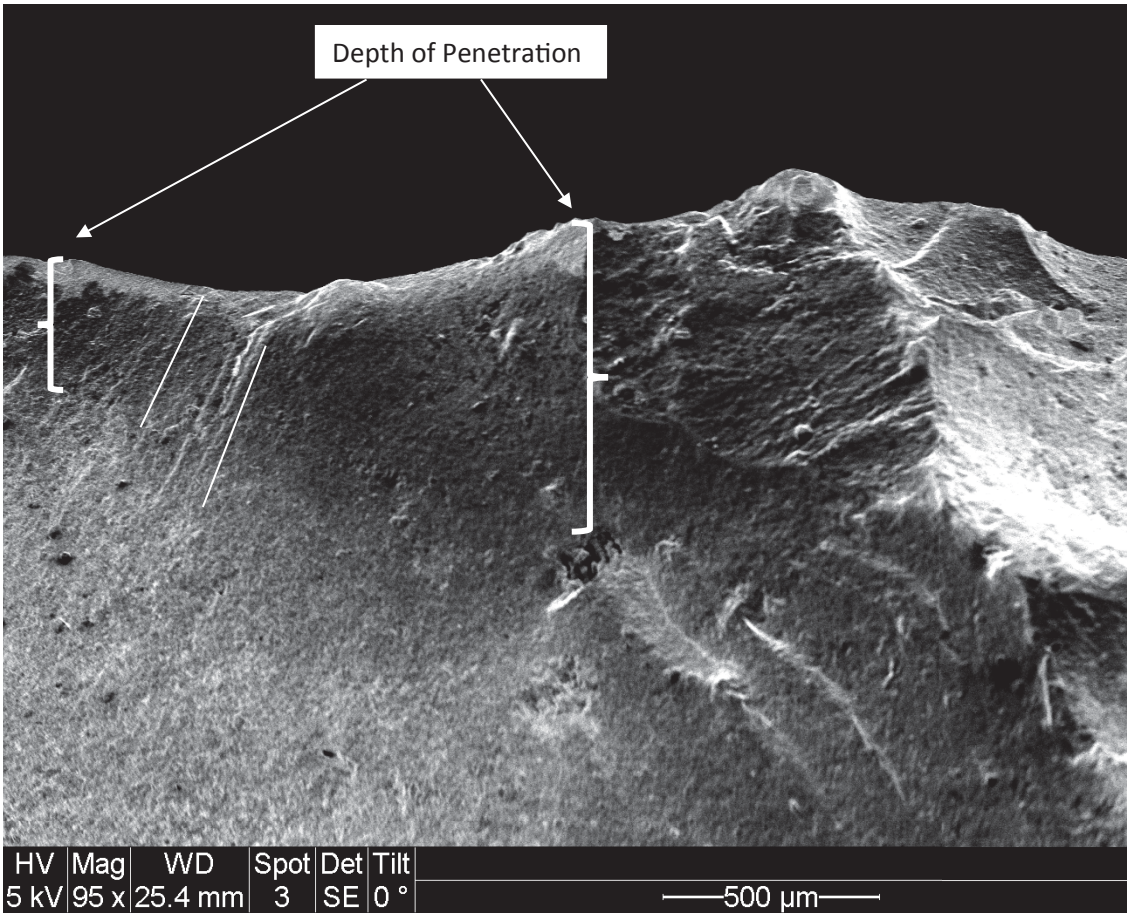

Fig V.2.17: Micrograph of Find no. 1117 from Area H. Image is showing rounding and polish on edge and perpendicular striations showing directions of use.

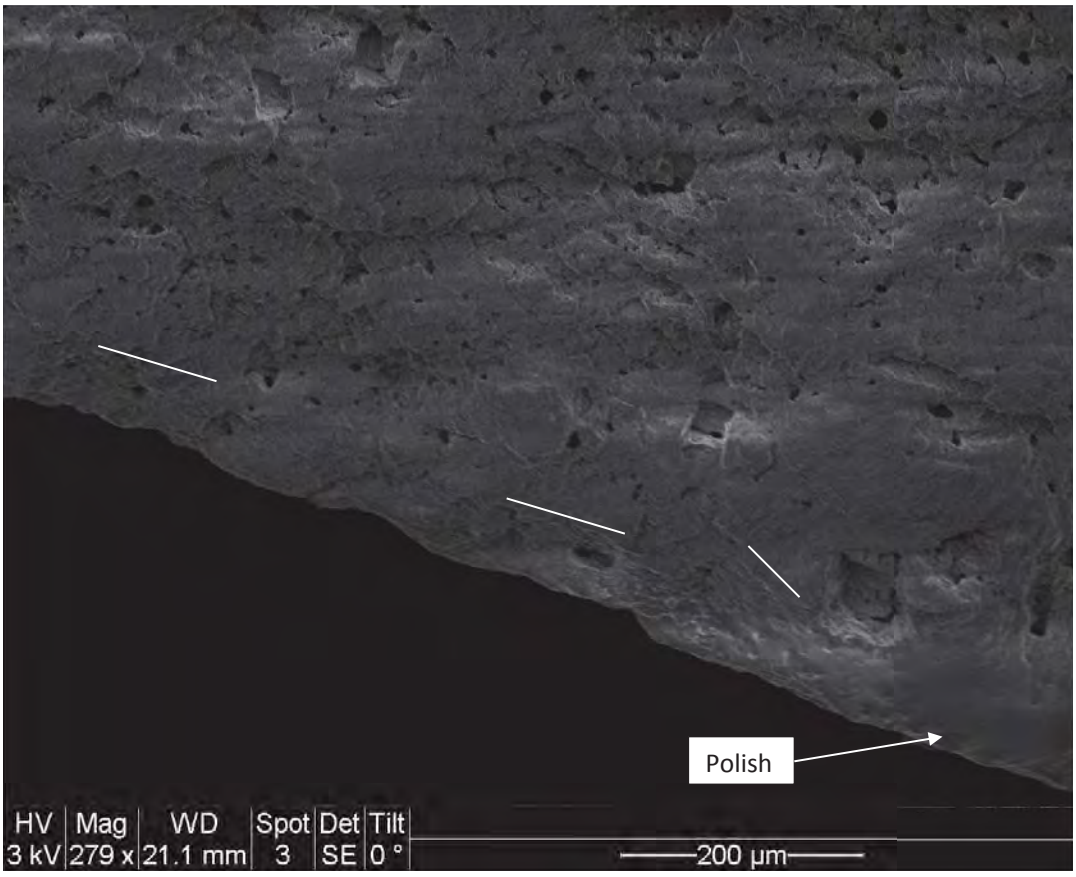

Fig V.2.18: Micrograph of Find no. 1376 from Area H. Image is showing rounding and polish on edge and parallel striations showing directions of use.

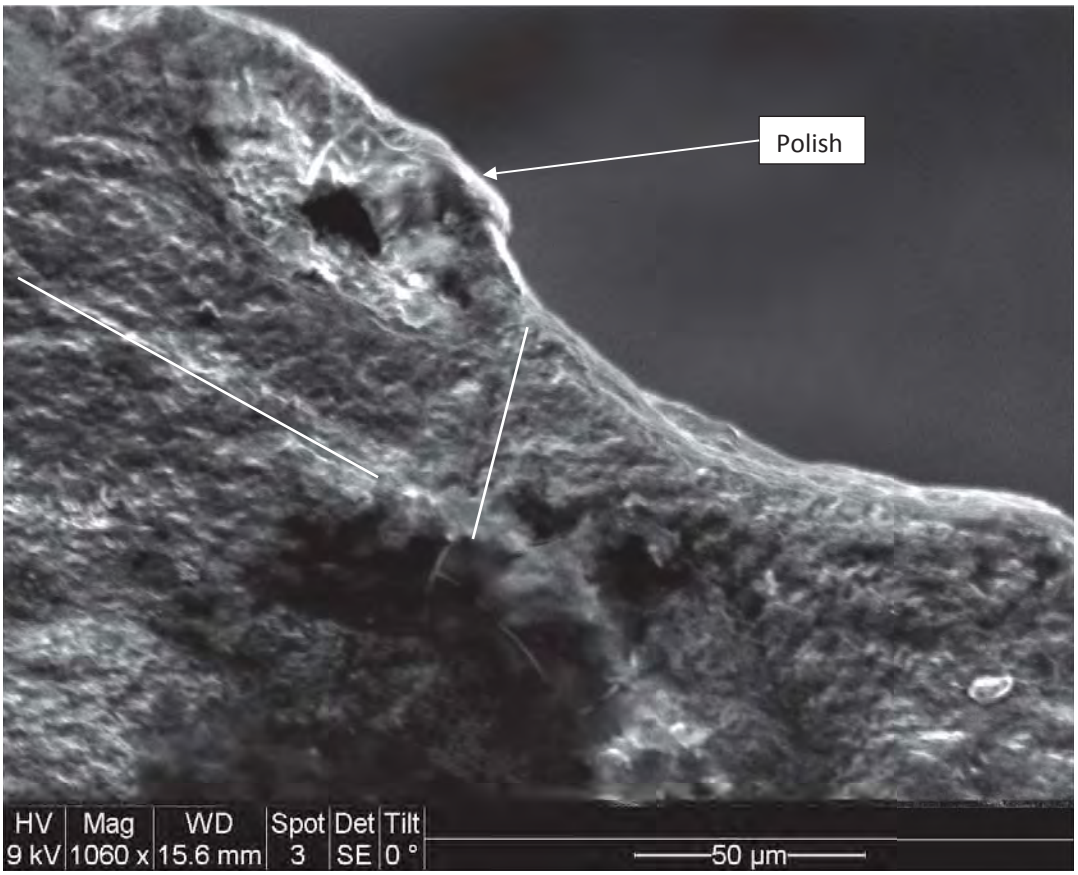

Fig V.2.19: Micrograph of Find no. 1511 from Area H. Image is showing rounding and polish on edge and parallel and transverse striations showing directions of use.

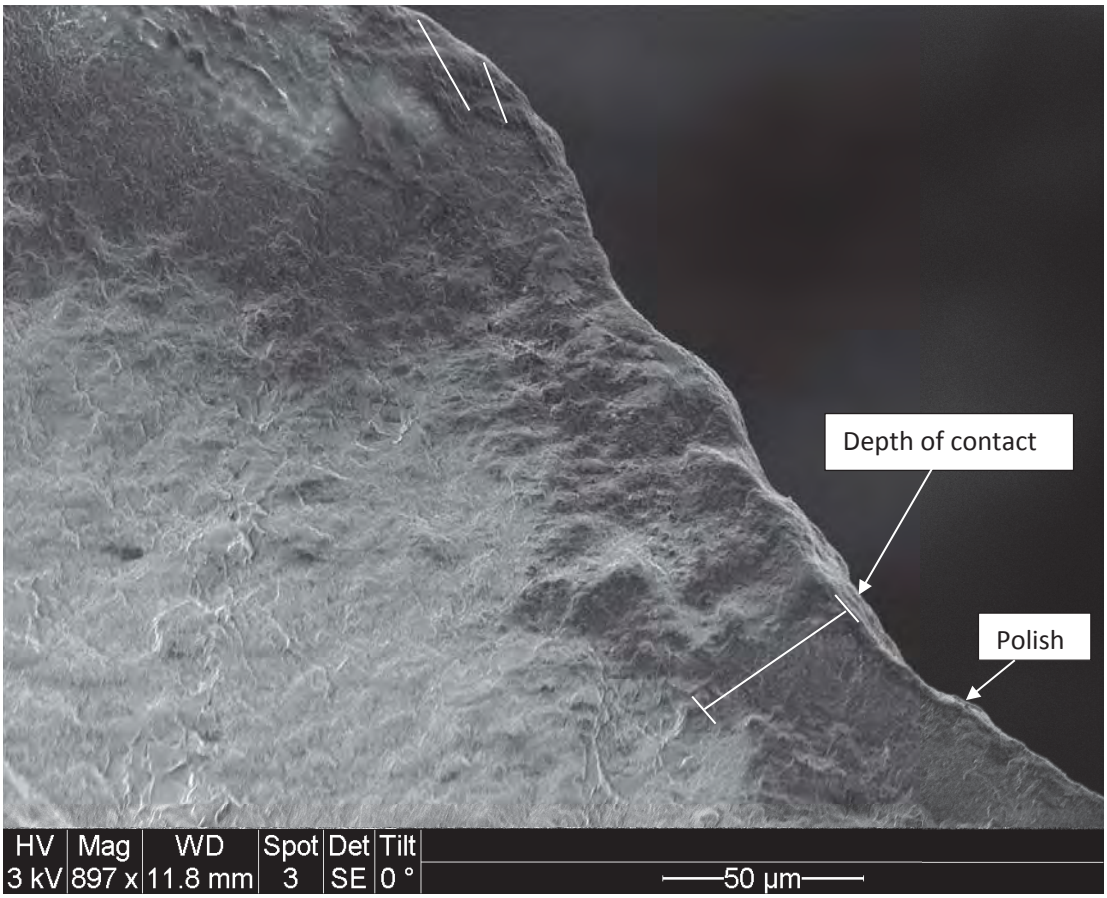

Fig V.2.20: Micrograph of Find no. 1671.1 from Area H. Image shows polish on edge and area of contact with material.

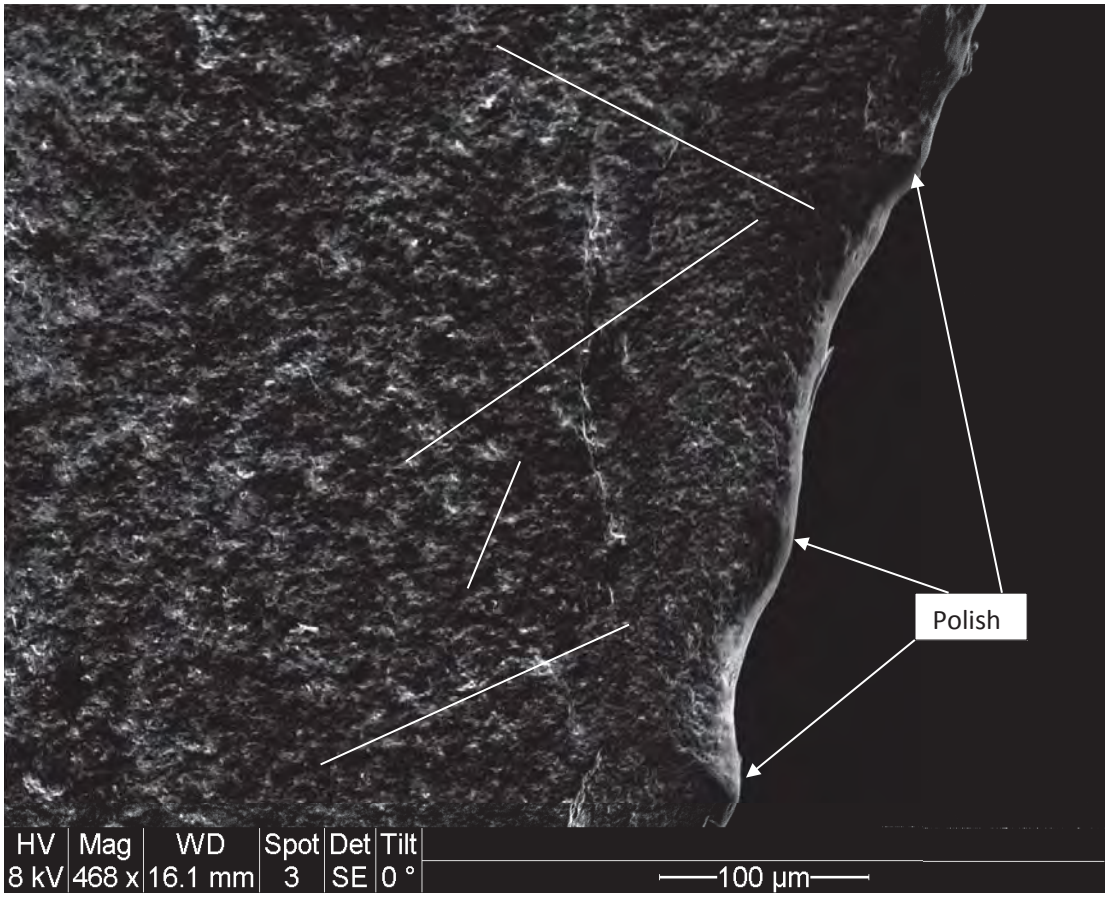

Fig V.2.21: Micrograph of Find no. 1671.4 from Area H. Image shows polish on edge and parallel and transverse striations showing directions of use.

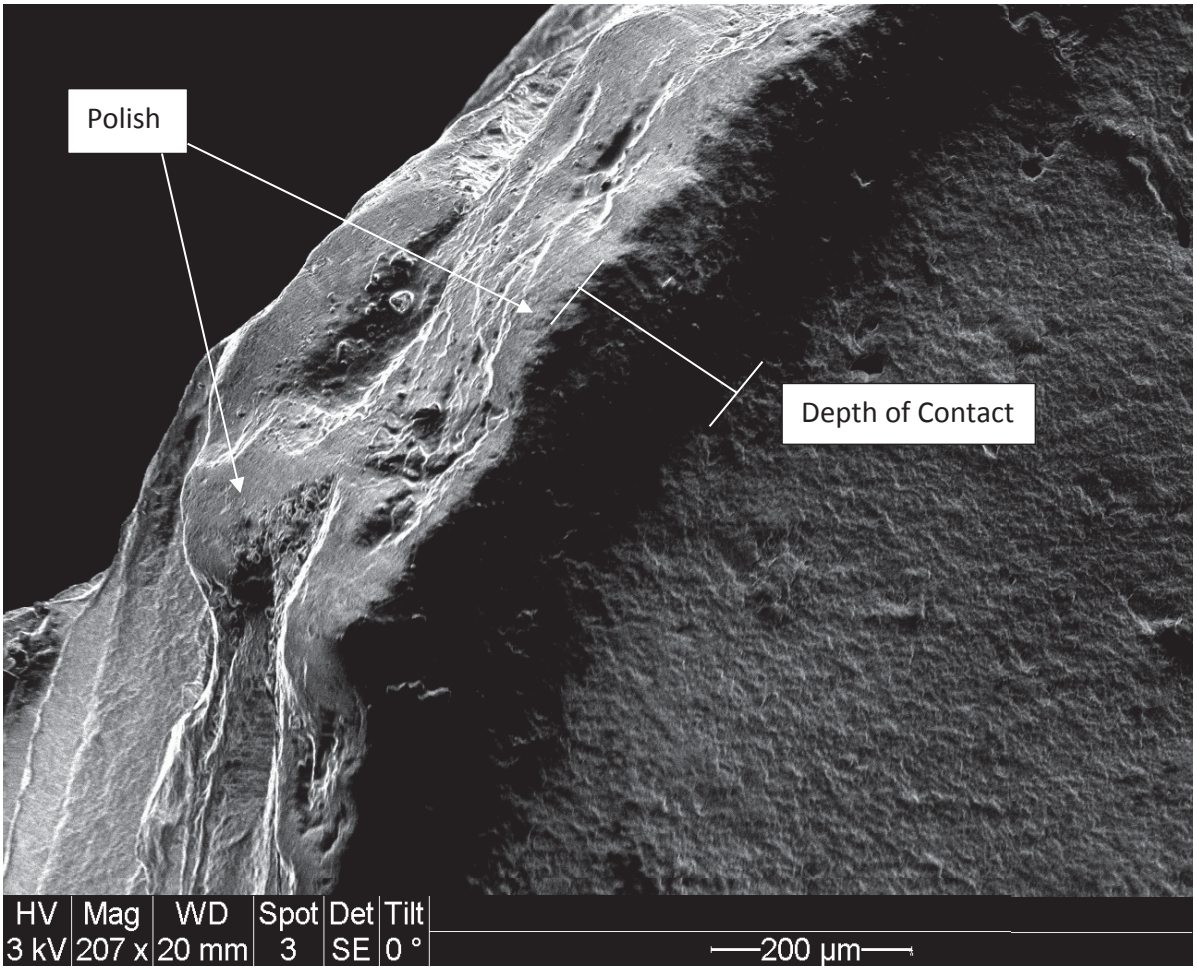

Fig V.2.22: Micrograph of Find no. 4318 from Area H. Image shows polish on edge and depth of material contact.

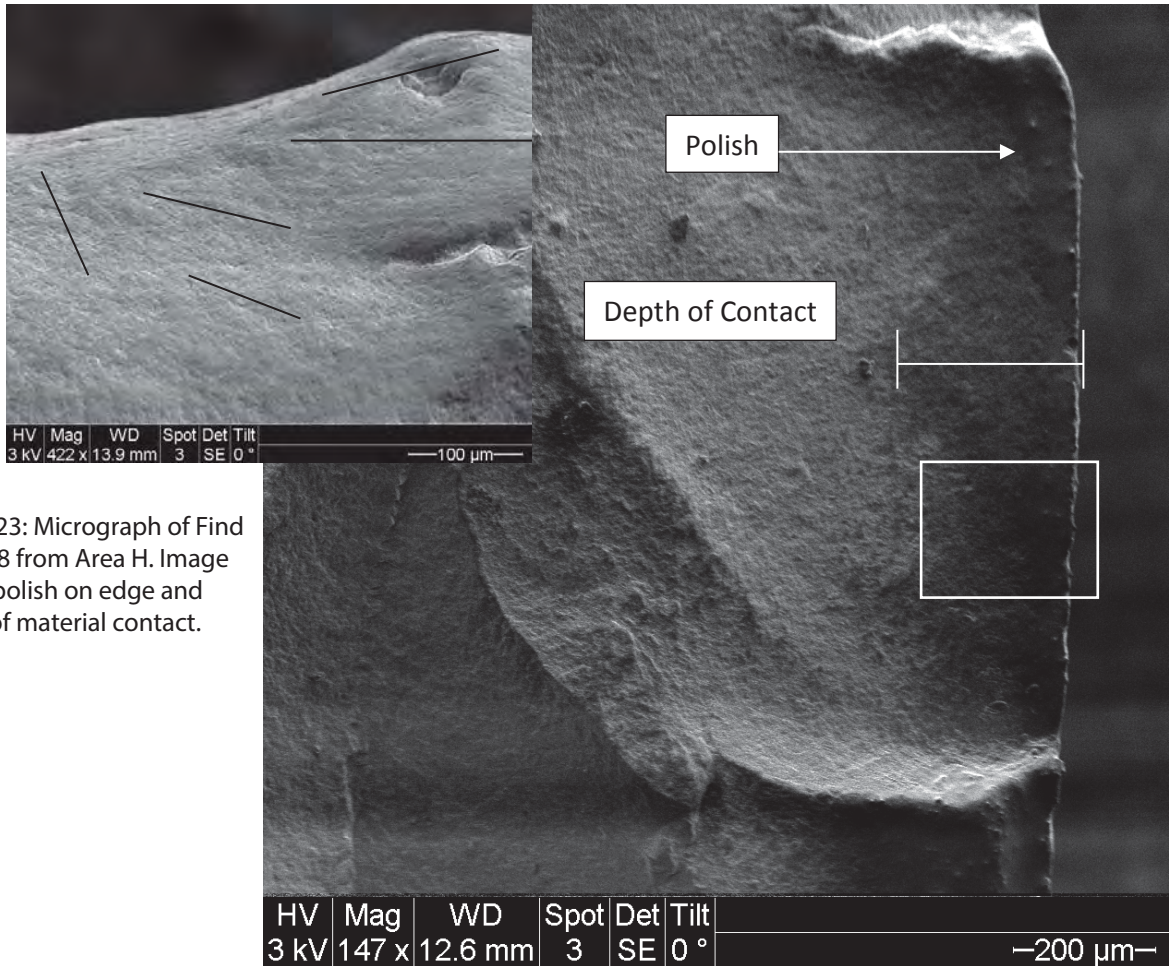

Fig V.2.23: Micrograph of Find no. 6078 from Area H. Image shows polish on edge and depth of material contact.

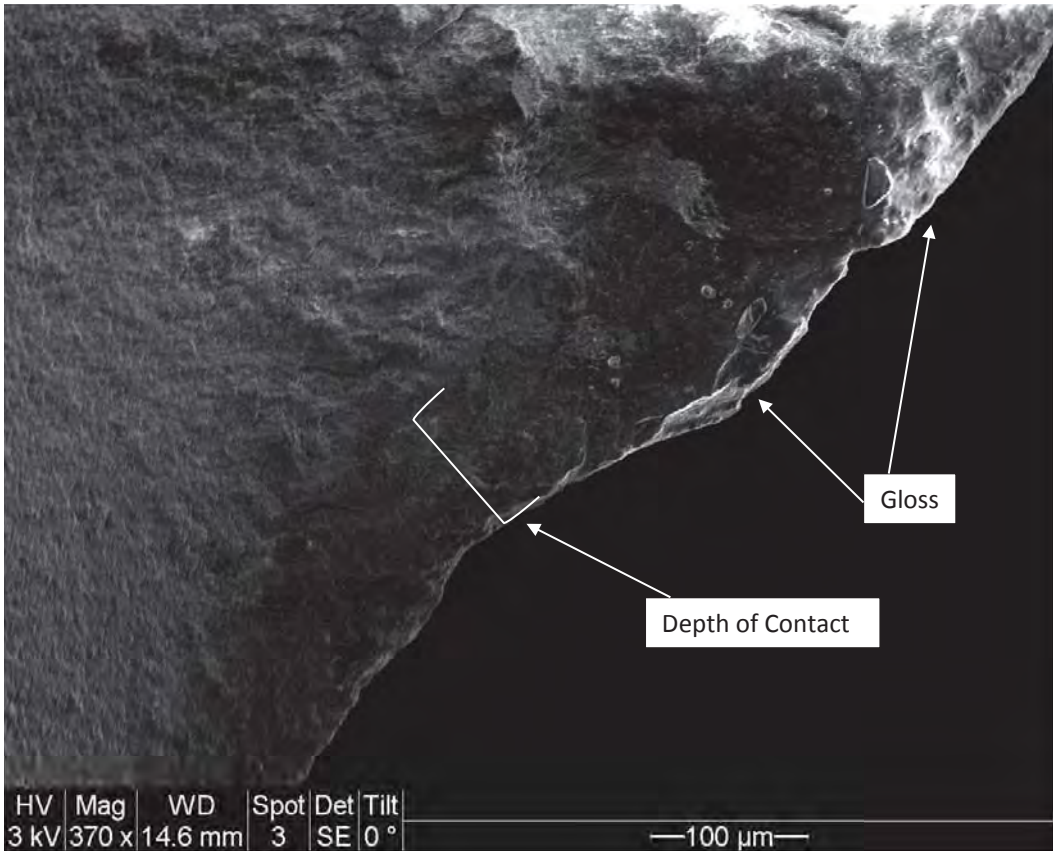

Fig V.2.24: Micrograph of Find no. 6148 from Area K9. Image shows polish on edge and some gloss development.

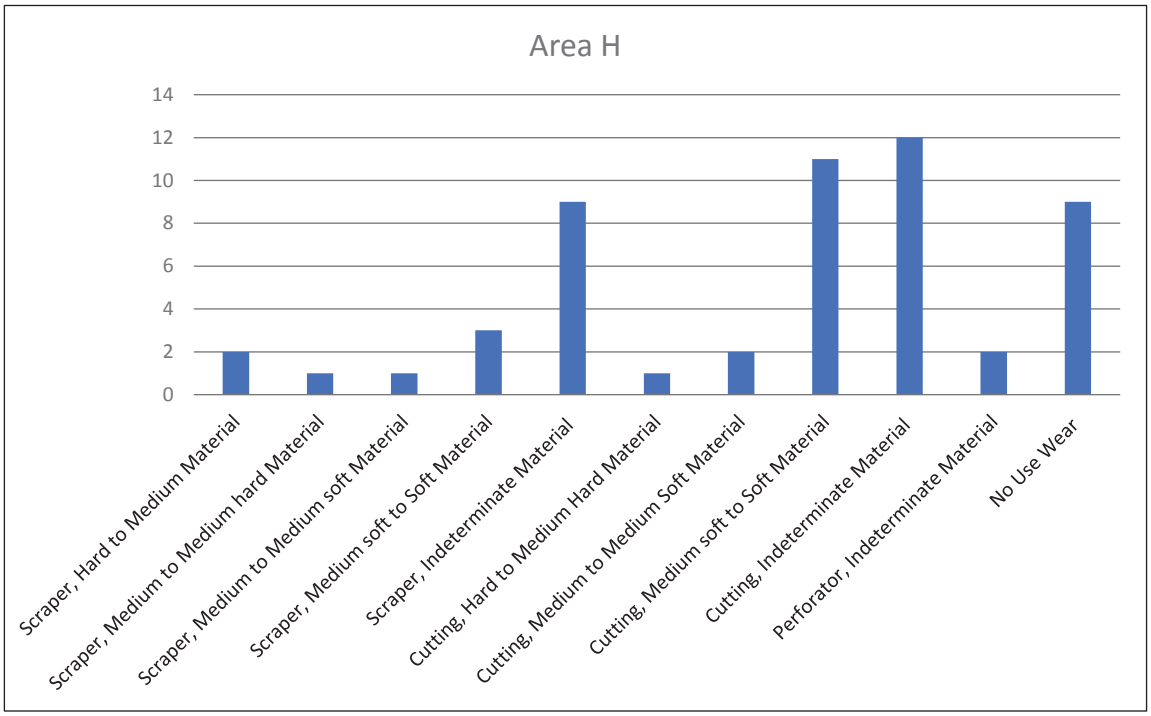

Fig V.2.25: Summary of lithic function and material for Area H

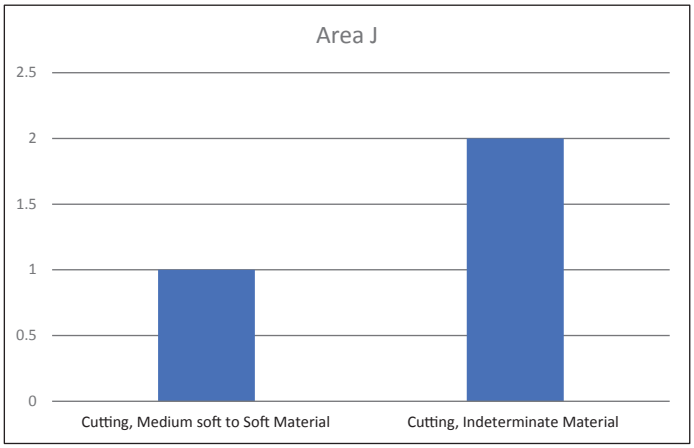

Fig V.2.26: Summary of lithic function and material for Area J

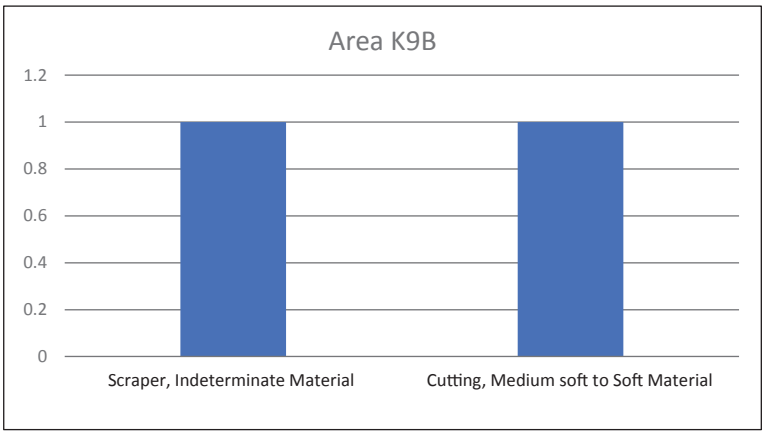

Fig V.2.27: Summary of lithic function and material for Area K9

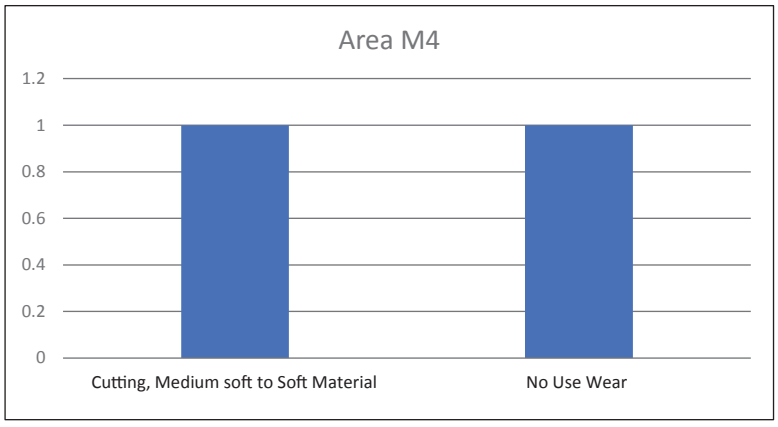

Fig V.2.28: Summary of lithic function and material for Area M4

Part VI: Stone objects

Part VI.1 Other Worked Stone Report

George Smith

For assessment report see Kenney *et al* 2011

Introduction

The stone objects that are not worked by knapping are described separately here. There is some slight overlap with knapped stone in that pebbles (4-64mm diam.) or cobbles (64-256mm diam.) of suitable stone may be collected for knapping or for use as hammer stones for knapping other stones. This refers mainly here to the use of chert cobbles, which are readily available and hard enough for hammers but can also be flaked. Stone axes are also described elsewhere, as a specific tool type (below, part VI.5), although some varieties of rock used for axes was also used for other types of implement, and described here. Objects shaped and created deliberately, by chipping or pecking or with perforations are described first, such as querns or mortars but there is a larger group of objects which involve just utilisation of pebbles, cobbles, boulders (over 256mm max dimension), or slabs of rock without actual shaping. These include objects such as hammer stones, rubbers, abraders, polishers, whetstones and potboilers as well as larger rock frags used for instance as working slabs. In a few cases also, naturally shaped stones may have, for instance, hollows that could be used as mortars. There remain small numbers of pebbles or cobbles that show no signs of use but that seem likely to have been collected and brought from elsewhere for potential use, for example as hammer-stones. Some particular pebble rock types were collected and used in human burial contexts and occasionally, perhaps purely for their curiosity or decorative value. In some cases stone objects can be classified as to actual function, such as querns, mortars or spindle whorls but unfortunately, in the majority of cases, objects are just tools, such as hammers, abraders or polishers, without knowing what particular task was being carried out. Some of the latter would have been used to make the former but it is likely that the larger objects would have been made close to the quarry site, not within the houses, so other tasks must have been taking place, some just to do with food preparation.

The local rock outcropping here and so the easiest available is green schist. This is not strong and splits easily so is of limited use. The rocks available within few kilometres of Parc Cybi are very variable, partly because of the complex geology of Anglesey and partly because of the glacial drift deposits, which include rocks from as far as the Lake District and Northern Ireland. Many of these are easily available on local beaches although there are a few objects, such as the axes, imported from elsewhere. These various rocks provide materials with different qualities, such as hard and strong for hammer stones, softer for spindle whorl making, coarse for grinding, or finer for abrading or polishing. The rock types of individual objects were initially recorded in general terms and later were identified in more detail, see Williams (current volume part VI.2) these identifications inserted in the text here.

Area B1

This was an extensive linear area with very few archaeological features apart from one group of pits (PRN 25046). The only stone items came from the general Post-medieval ploughsoil (2046). These were a complete spindle whorl sf35, and a probable whetstone, sf 54, both of fine sandstone. The spindle whorl is made from the same sandstone as most of the numerous whorls from the Iron Age settlement in Area B2, from which it is probably a stray. Whetstones are often found as isolated finds in fields after use during crop harvesting by scythe and so could be of any date from Iron Age to 19th century.

Areas B2 and F1 Stone-walled Iron Age roundhouse settlement

Unstratified finds and peripheral areas

These objects, although in unstratified contexts, mainly belong to disturbed contexts deriving from the Iron Age roundhouse complex (see below). This comprises the majority of the objects shown in Tables VI.1.1 and 2, but particularly referenced by the number of spindle whorls e.g. sf362 (see Walton Rogers, below, part VI.4), of fine sandstone and four other perforated items, as well as many utilised stone objects, e.g. a whetstone, sf519 (Fig. VI.1.3), of fine sandstone. The perforated discs, sf294, sf298 and sf528 (Fig. VI.1.7) are made on thin split slabs of the local schist, and are possible weights of uncertain use (see Walton Rogers, below part VI.4). The other perforated slab is an irregular piece of local schist with the remains of two perforations on its edges. This rock is flaky and the piece could have just been created by damage of the edges. There was also fragment of a deep mortar, made by pecking out a small boulder of dolerite (Fig. VI.1.4).

The presence here of a Neolithic stone axe, sf102 as well as a possible stone axe fragment, sf248 (Fig. VI.5.1, see Stone axe discussion below), both of Graig Lwyd rock, show that some of the stone objects

could belong with earlier activity, as otherwise demonstrated by the number of pieces of knapped flint and chert found in the same area.

There are also over 20 utilised stone objects (Table VI.1.2), of a variety of uses, showing a considerable amount of craft activity in this area, predominantly involving hammering and sharpening, e.g. sf332, a small anvil, also used as a heavy hammerstone, of sandstone (Fig. V1.1.1), sf376 an abrader, of sandstone (Fig. VI.1.1) and sf254, a light hammerstone, of sandstone (Fig. VI.1.1). Also illustrated from these are a polishing slab, sf103 and a whetstone abrader, sf 357 (Fig. VI.1.2). Some of these, particularly the utilised pebble hammer stones, could belong with these earlier phases of activity from use in flint and chert flaking and tool production. Apart from the Neolithic stone axes there are also indications of possible Bronze Age activity in this area, see below.

Table VI.1.1 Summary of other stone types from B2 General area, East area, Laneside, North-West Area and Pen-y-lon

	Axe/fragment	*Axe frag/ secondary flake*	*Perforated disc/Weight?*	*Mortar*	*Perforated slab*	*Spindle whorl*	*Split pebble frag*	*Utilised stone tool*
B2	-	1	2	1	-	6	1	20
B2East	-	-	1	-	1	1	-	5
B2NWA	-	-	-	-	-	-	-	1
B2PenyLon	1	-	-	-	-	-	-	-

Table VI.1.2 Summary of utilised stone types from Area B2 General area, East area, Laneside, North-West Area and Pen-y-lon

	Abrader	*Disc*	*Grinder*	*Hammer, heavy*	*Hammer, light*	*Polisher*	*Rubber*	*Whetstone*	*Grinding/rubbing/ polishing slab*	*Found object*	*Potboiler*
B2	3	1	1	1	4	2	-	4	2	1	1
B2E	-	-	-	-	2	1	1	1	-	-	-
B2NWA	-	-	-	-	1	-	-	-	-	-	-

B2 Phase 1: Pre- Roundhouse settlement contexts

A few objects came from contexts stratigraphically below the round-house structures and floors and possibly therefore belonging to a phase of earlier activity, associated with several shallow ditches. This activity has been interpreted as possibly of the Later Bronze Age on the basis of the discovery near there of a gold hair ring of that period. However, three radiocarbon dates were obtained from the old ground surface and those fell within the Later Mesolithic, Later Neolithic and Early Bronze Age periods, suggesting that, as might be expected, there was some activity here over a very long time span. There were only seven stone objects from these layers. Two were spindle whorls, sf642 and sf769, both of fine sandstone. These were not stylistically different from several others found in the occupation layers of the roundhouses and so are probably intrusive from these layers. The other five objects are all utilised pebbles. One is a potboiler. Two are light hammer stones and two have use-polish. These are not stylistically identifiable by period but all five could belong to earlier activity, for instance the light hammer stones could be from flint or chert knapping. The soils from this phase did produce some worked flint and chert although rather more came from the occupation layers of the roundhouses, showing the extent to which the roundhouse floors had incorporated the earlier soil levels.

B2 Roundhouse settlement Iron Age occupation contexts

The objects are summarised in Tables VI.1.3 and 4. They are grouped according to objects demonstrably within the area of each roundhouse, or from areas between two houses (e.g. B2RHA/D), from the 'passageway' west of RHA (B2Passageway), and from the area outside but close to the outlying roundhouse RHF (RHFLaneside).

Table VI.1.3 Summary of other stone objects from Iron Age occupation contexts

	Axe/fragment	*Chopping tool*	*Staddle stone*	*Double cupped stone*	*Weight?*	*Disc/gaming piece*	*Mortar*	*Perforated disc/disc*	*Saddle quern/rubber*	*Spindle whorl*	*Utilised stone tool*
B2Passageway	-	1	-	-	1	-	-	-	-	2	7
B2RHA	-	-	1	-	-	-	-	1	-	3	9
B2RHA/D	-	-	-	-	-	-	-	-	-	-	-
B2RHA/E	-	-	-	-	1	-	-	-	-	-	-
B2RHB	1	-	-	-	-	-	1	1	1	3	26
B2RHC	1	-	-	-	-	-	-	1	-	1	12
B2RHD	-	-	-	-	-	-	-	-	-	-	2
B2RHE	1	-	-	1	-	1	-	-	-	8	12
B2RHFLaneside	-	-	-	-	-	-	-	-	1	1	11
B2RHF	-	-	-	2	-	-	-	1	-	4	5

The overall assemblage of stone objects is characterised by the presence of large numbers of utilised stone tools, described separately below, which demonstrate a high level of craft activity within the houses. The more individual items are dominated by spindle whorls (see Walton Rogers, below part VI.4), comprising 22 in total, plus another seven from unstratified contexts (see above), with a concentration in one house, RHE, where there were eight. That house is not otherwise different in the range of types of objects from it, which indicates some kind of specialised activity there. It is remarkable because six of the eight spindle whorls were found in one small area on the north side of the east doorway. This small area also contained a number of other stone objects, including three perforated discs, a hammer stone, two whetstones, a rubber, a double cup-marked pebble, a bead and a probable gaming counter, sf407 (see Walton Rogers, below), similar to the spindle whorls, but only 29mm diam. It suggests that this area was one that was well-used for a variety of craft activities or even some kind of storage space. Spindle whorls also occur close to eastern doorways in RHB and C. RHF is a little unusual being smaller than the other buildings but does have several spindle whorls as well as several utilised stones and evidence of metal-working so seems more like a workshop than a domestic building. Other objects, recognisably domestic in nature, from the round-houses are surprisingly few. There were two saddle quern topstones, sf 288 and sf647, one from RHB, one from RHF, both of breccia, probably originating in Anglesey (Fig. VI.1.4). Generally though, the lack of querns, with only two saddle quern rubbers, and one deep, coarsely abrasive mortar of dolerite, sf774 (Fig. VI.1.12), re-used as part of the yard paving just outside RHB, is remarkable, since querns and mortars are a frequent component within excavated roundhouses in North Wales. This is possible evidence that the houses were dismantled or at least deliberately abandoned and valuable objects such as querns removed. Alternatively, it could be that grain processing was actually taking place elsewhere, or even traded for. One object may be a fragment of an unusual small cylindrical rotary quern, sf574 (Fig. VI.1.7), from RHC. It is made of coarse sandstone, a neatly made cylinder 230mm diameter with a central hole 89mm diameter, which could be a grain hopper. It is rather small for that purpose but could have been designed to grind something other than cereal grain. However, there is no evidence that it ever had a handle, although it is possible that could have been on the broken-off fragment. It was set upright in the floor of RHC close to a hearth. This would be a typical place to find a quern but it seems this may have already been broken when it was set in place so perhaps was being re-used for another purpose. Whatever it was used for it is a technically remarkable object, and undoubtedly of specialist manufacture.

Two small perforated stones of schist, sf294 and sf651, have off-centre perforations, suggesting that they were meant for suspension (Fig. VI.1.7). The four large perforated stones are an unusual and unexplained category of artefact but others were found in association with other Iron Age roundhouses in Areas F1 and K7, below. One, sf751 (Fig. VI.1.8), is a broken half of a large, heavy, flat disc of local schist, 608mm diam. and 68mm thick, roughly chipped to a circular shape. The large central perforation, 95mm diam.,

appeared to have been worn by rotary motion, whether in manufacture or in use. It had been re-used in the external paving around RHB. Its original function is unknown. Several similar pieces were found elsewhere in Parc Cybi (see below) and other similar objects have been found in Iron Age settlements in Cornwall, for instance from the cliff promontory fort of The Rumps (Brooks, 1974) where they were suggested to be thatch weights, or from a settlement at Camelford (Quinnell, 2015), where they were of local slate and suggested to be covers for pits, because of the careful shaping of the perforations. The other discs are much smaller, 85, 100, 79 and 133mm diam. and 10, 28, 16 and 38mm thick respectively. These, sf245, sf292, sf385, sf723 and sf775 (Fig. VI.I.7) are also of schist but of a finer, more cohesive variety than that of the larger perforated stones. They are neatly manufactured objects and their resemblance to large spindle whorls is noted but their actual use is unknown. They have been classified as probable weights (see Walton Rogers, below). Similar sized perforated stone discs from the Iron Age and Romano-British settlement of Porthmeor, Cornwall (Hirst 1937) have been shown to be lids, with holes probably for cord handles, for storage jars. Other similar objects have been shown to be lids or stoppers for flagons or amphorae at Wroxeter (Moffett 2018) and at the post-Roman site of Tintagel, Cornwall (Moffett, 2107). Obviously there is no pottery at Parc Cybi, but wooden vessels would have been in use, although rarely preserved. The quality of these discs is similar to that of the spindle whorls and so may have a related use, perhaps as flywheel weights for bow drills to drill holes in spindle whorl blanks. Such use has been shown for similar native North American artefacts (Barnett, 1973, 13-15). Two unperforated discs of spindle whorl size and of the same fine sandstone as the spindle whorls were also found here, sf205 and sf366 (see Walton Rogers, below), sf 205 had an unfinished drill hole showing that drilling did take place here, but the absence of drill tips, either of stone or iron is problematic. There are, however, many hammers and abraders stones that could have been used in shaping and grinding stone discs, of whatever size.

One exceptional item is a fragment of a cylindrical column of local schist, sf729 (Fig VI.1.12), 710mm long remaining, carefully shaped to a round section, maximum 250mm diameter and tapering to its end, where there is a neatly shaped round tenon. It was found re-used, set horizontally in the doorway of RHA. Small columns of the same schist rock and of similar size to the Parc Cybi example, were found, set upright and still *in situ*, as part of a nine-post setting for a small timber granary building at the Holyhead Mountain Iron Age/Romano-British settlement (Smith, 1985, 30-3). There are several similar rectangular post-holes settings at the Parc Cybi settlement that are also interpreted as the settings for granaries. However, no columns were found *in situ*, and so this one may have been a stray left after the buildings were robbed of materials. Another, of similar size, but not so neatly worked was found in the post-hole of a granary near RHH and RHI in the southern area of the settlement, see Area F1 FE below. That one was more like columns found at the Holyhead Mountain settlement, which were quite thick and rough pieces of rock, whereas the column from RHA and its tenon are so carefully made and finished that it could almost be lathe-turned or at least lathe-finished and seems too delicate to have supported a structure that could weigh a ton or more. However, Smith (ibid, 32) quotes Stanley's excavation at the Penrhos Feilw Iron Age settlement, on the south side of Holy Island, where a similar post setting to that at Holyhead Mountain contained stone columns '… that appeared to have been worked like small round pillars..' (Stanley 1869, 309-10).

The presence of three Neolithic stone axes, sf229 in RHB, sf650 in RHC (Fig. VI.5.1) and sf326 in RHE is very difficult to explain, although there had clearly been activity of that earlier period nearby, the suggestion is that the axes had been brought into the settlement, perhaps as curiosities. A similar explanation can be made for the presence of a piece of cup-marked stone, in RHB, sf564 (Fig VI.1.11). This is a slab of local schist rock, 390 x 345 x 62mm, with five small cup-marks on it. It appears to have been deliberately split off from an outcrop by means of drilling three vertical holes around it, probably by use of an iron bar. Similar shallow cup marks occur quite widely elsewhere on Anglesey, on outcrops, e.g. around Bryn Celli Ddu, Llanedwen and in a few places on the top of roof slabs of Neolithic tombs e.g. at Ty Newydd, Anglesey, and Bach Wen, Gwynedd, and are generally, like more complex rock art, regarded as Later Neolithic or Bronze Age in date and symbolic or votive in nature. Why such an object would be attractive in the Iron Age is mysterious

Table VI.1.4 Summary of utilised stone types from Iron Age occupation contexts

	Abrader	*Bevelled pebble*	*Chopping tool*	*Cup-mkd pebble*	*Grinder*	*Hammer heavy*	*Hammer light*	*Mortar*	*Polisher*	*Rubber*	*Whetstone*	*Grinding/pol slab*	*Working slab*	*Found object*	*Potboiler*	*Unclassified*
B2Passageway	-	-	1	-	-	-	1	-	4	-	-	-	-	-	-	1

B2RHA	-	-	-	-	1	-	1	1	1	1	2	-	-	1	-	1
B2RHA/D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2RHA/E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2RHB	1	-	-	-	-	3	3	-	7	-	1	8	2	-	-	1
B2RHC	1	-	1	-	1	1	-	1	4	1	1	-	-	-	2	-
B2RHD	-	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-
B2RHE	-	-	-	1	-	2	1	-	3	1	1	2	1	-	-	1
B2RHFLaneside	-	-	-	-	-	-	2	-	-	-	-	-	1	1	2	-
B2RHF	-	-	-	-	-	-	3	-	1	1	-	-	-	-	-	-

The utilised stone tools (Table VI.1.4) are numerous and varied and demonstrate a significant level of craft activities in all the houses, except RHD, perhaps suggesting that RHD was a purely domestic building or a store. The types of tools represented seem to show a greater level of activity than expected in a purely domestic, self-sufficient economy. They include chopping, hammering, grinding and polishing as well as two mortars created on sandstone cobbles, sf226, from RHA and sf506, from RHC (Fig. VI.1.5). Hammerstones illustrated are sf152, sf185, sf211, sf212, sf 222, sf254, sf258 and sf661 (Fig. VI.1.1). One hammerstone, of fine sandstone was also used for some polishing, sf33360 (Fig. VI.1.3). Also illustrated are a polisher/working slab, sf295, a polisher, sf522, a grinder/sharpening stone, sf510 and a whetstone, sf404 (Fig. VI.1.2). The presence of some unfinished spindle whorl blanks shows that they were being made and that there were a number of other tools that could have been involved in their production, including working slabs as well as hammers, rubbers and polishers. RHB had an exceptional selection of tools, with over twenty utilised stone tools including an exceptional ten working slabs. This type of stone, e.g. sf208 (Fig. VI.1.6), from RHA, of fine sandstone) was used mainly for grinding and polishing. RHB also contained seven smaller polishing stones e.g. sf360 (also used for hammering), of coarse sandstone (Fig. VI.1.3). RHB produced one unusual item, a large split piece of naturally cuboid boulder of dolerite. sf552 (Fig VI.1.11), about 250mm square, of sandstone, into one face of which a cup mark concavity, 59mm diameter had been pecked, and another, similar, 74mm diameter , on another side, perpendicular to the first. It seems likely that this large and heavy object had been used as an anvil or hold fast in which the cup mark provided a pattern or rest. The stone was built into the platform for RHB, where it seems to have just been re-used as construction material and so belonged to an earlier phase of activity. RHE also had another large cuboid boulder, sf652, set into the ground close to its wall on the north-west side. This had some wear polish on its upper surface and was clearly a working slab, whether for food preparation of some craft activity, but not the deeper wear that would have been created by use as a quern.

There were three other unusual and unclassified objects. These are stones with opposed cup-marks. One is from RHE and is a flat, approximately circular cobble of sandstone, sf753, 129mm diam. and 34mm deep, with shallow cup-marks pecked on each face, although not exactly diametrically opposed (Fig. VI.1.10). There is no wear evidence to show how it might have been used. The second, from RHF, is a similar but larger, sub-rounded cobble of dolerite, sf239, 310 x 42 x 117mm. also with cup-marks in each face but again, not exactly diametrically opposed (Fig. VI.1.10). Again there is no wear evidence to suggest a function. The third object, sf131 (Fig. VI.5.1), came from the medieval ploughsoil above RHF and is rather different than the other two double cup-marked stones. This has larger and directly opposed cup-marks and is much smaller, 67mm diam., x 43mm deep and made from fine sandstone, seemingly by modification of a suitable pebble. It was carefully pecked around the perimeter to produce a drum-like shape, but retaining some of the original pebble surface. This object is more neatly made than the two stones described above and is in size is similar to a mace head, although the cup marks are clearly not part of an unfinished perforation. If it is mace head of some kind it does belong with earlier activity than the Iron Age roundhouse settlement. As two Neolithic axes were found, one in RHB and one in RHC, then there seems a good possibility that this also is a Neolithic item and that would agree with the expected time period for such a mace-head, although this cannot be confidently identified as such.

The quantity of other stone objects, mostly tools of various kinds, suggests an almost industrial, rather than domestic, scale of activity at the settlement. If that is so, then it shows that some kind of trading must have been taking place. Apart from the possibility of spindle whorl manufacture there is no evidence of any other specific type of activity taking place. Oddly, if spindle whorl-making was taking place there are no tools for drilling their perforations. The spindle whorls also exhibit a range of sizes and perforation types, some plain and some decorated in different styles, suggesting that they were made by different hands. A possible explanation for this could be that individual houses produced slightly different styles of spindle whorl. Discs that were probably unfinished whorls were found in both RHA and RHE. The rock type used for the spindle whorls, a fine sandstone, is likely to have derived from collection of suitably sized pebbles, which would have made manufacture easier. The stone used is not the easiest material to choose for such a simple task. It is fine grained but would require hammering to shape and much grinding

and smoothing, showing that the finished spindle whorls were relatively long-lived, desirable and therefore tradeable objects.

Area F1

This area formed the southern part of the roundhouse settlement of which the focus was in Area B2. Area FI contained pits and post-holes without pottery, but belonging to three more roundhouses, G, H and I. There were no objects recorded as predating the round house settlement, equivalent to Phase 1 in Area B2. The objects from this area are considered in two parts, firstly, objects from the general area or residual in clearly later contexts and secondly, those objects belonging directly to phases of the roundhouse settlement.

Objects from Post Medieval contexts

Two spindle whorls, from separate contexts. sf780, a finished whorl, and sf2260, only roughly shaped and probably an unfinished whorl, both of the same fine grained sandstone as used for the majority of the whorls from the Iron Age roundhouse settlement (see Walton Rogers, below).

Objects from Phase IV, probably Romano-British contexts

Six utilised stones: - One heavy hammer stone of quartzite, three light hammer stones, two of sandstone and one of dolerite, one hammer stone of sandstone, with polish on one face and one polishing slab. The latter is a flat, ovoid, sub-rounded cobble of granite with polish on one face. These are all cobbles of hard rock, the light hammer stones with only light pecking whereas the heavy hammer stone has battered facets. The types present in this group of objects generally mirror those found in the Iron Age phases of the roundhouses, described below.

Objects from the Iron Age Roundhouse settlement

Table VI.1.5 Summary of other stone objects from Iron Age occupation contexts

	Disc	*Cup-marked disc*	*Mortar*	*Perforated disc*	*Spindle whorl*	*Utilised stone tool*	*Unused pebble*
RHG	-	-	-	1	-	1	1
RHH	-	-	1	-	-	1	-
RHI	3	1	1	-	2	5	-

The stone objects from the general excavation of the southern area of the Iron Age settlement including three more roundhouses, G, H and I, are summarized in Table VI.1.5 and described below.

Roundhouse G (granary structures)

Perforated disc, sf829 (Fig. VI.1.7). A thick slab of local schist, roughly chipped to a sub-circular shape, so possibly unfinished, 112mm diam. and 60mm deep. The central perforation was punched or augered form one side only and oval in shape. It has some internal facets which could indicate wear from suspension or mounting on a drilling shaft.

Utilised stone

Rubber, sf804. Fine sandstone. A flat, ovoid cobble facetted from rubbing on both faces.

Unused pebble Hard igneous rock. Probably collected as a potential hammer stone

Roundhouse H

Mortar sf825 (Fig. VI.1.5). Sub-rounded sandstone cobble with a pecked and worn concavity and natural flat facets on the base.

Utilised stone

Polishing slab sf826. A flat, sub-rounded sandstone cobble. The centre of one face is smoothed from use, but not facetted.

Roundhouse I

Disc, sf5518 (Fig. VI.1.9). A large slab of local schist, chipped to a circular shape *c*. 406mm diam. x 54mm deep. From the post-footing trench of the wall of the house and probably a post-footing pad.

Disc, sf5412 (Fig. VI.1.10). A large, thin slab of local schist neatly chipped to a circular shape. 410mm diam. x 46mm deep. Probably a post-footing pad, found within the post-hole of a four-post structure, a probable granary outside RHI (Group 93477).

Oval disc, sf5456 (Fig. VI.1.9). A thin slab of local schist neatly chipped to an oval shape. 260mm x 225mm x 28mm deep.

Two spindle whorls, sf5457 and sf5463, one 52mm diam., one 46mm diam., both of fine sandstone ((see Walton Rogers, below).

A small mortar, sf226 (Fig. VI.1.5), possibly a lamp or pigment pot, 79 x 53 and 48mm deep, with a carved oval concavity 46 x 34 by 23mm deep. Made of a soft stone, possibly tuff. Found close to a small, stone-built structure and next to the probable granary, group 93477.

Utilised stone

Light hammer stone, sf5408. Elongated cobble of sandstone with pecking at one end.

Polisher, sf967. Sub-rounded hard sandstone cobble with slight polish on one face. No faceting.

Whetstone? sf5748. Rectangular-sectioned, rod-shaped sandstone pebble with broken end. No visible use wear but wear signs could have been removed by weathering.

A large, cuboid boulder, sf834 652 x 520 x 243mm of dolerite. Originally set within the floor of the house. A working slab, anvil or grinder.

Potboiler fragment? sf5452. A heat-cracked pebble of rhyolitic porphyry.

Discussion

Of the three roundhouses there are notably more objects from Roundhouse I, which may indicate a focus of craft activity there. This was made clear by the presence in the floor of the house, of a large stone block, a working stone or anvil. One of the spindle whorls from RHI was unusual in that it was so irregular that it would not have 'spun' properly (sf5457, see Walton Rogers, below). It had a very crude 'awled' perforation and retains grinding marks. This was suggested to be just an unfinished whorl but seems more likely to be a child's attempt since it was clearly irregular even before the central hole was cut. The three larger discs, one of which is centrally perforated, are of uncertain function, but suggested to be weights (but see discussion above and Walton Rogers, below). The largest of them, made from local schist, from a four-post granary structure just outside RHI, was found in the base of a post-hole, and probably made to fit it as a post-footing pad. Other, similar-sized, but naturally shaped stones were found in similar positions in the other three post-holes of this structure. The oval disc sf5456, also of schist, from RHI was found in what was probably a post-footing trench for an internal partition wall could also be a small post-footing pad but its neat oval shaping could mean it was a food platter . The disc from RHG is different in being perforated and is more likely to have been a weight of some kind. Although about twice the diameter of the average spindle whorl, it seems likely to fit into the same category of object, perhaps used for spinning coarser fibres for cord. The number of spindle whorls recovered from the roundhouse settlement as a whole, including a few unfinished blanks, including one that had an unfinished perforation (sf205 from RHA), shows that spindle whorls were being made here. Some at least of the spindle whorls had perforations that had been neatly drilled and, from the neatness of the overall shape and the hardness of the material used it is also likely that some kind of rotary grinding equipment had been used. Both the drills and grinding set-up could have used the larger perforated discs as fly-wheel weights to assist the rotation process. There are certainly numbers of grinding and polishing stones but there is no evidence of drill points. This might be because iron was being used, which being a precious material and one that was recyclable, was never discarded. Finer drills used in the Roman period were of the bow or strap drill type with mainly simple, spoon shaped iron drill tips, while augers, using hand turning of bigger holes use pyramidal-shaped points (Manning 2011, 79). The same was likely to be the case here.

Area D3 Pit group PRN 31574

A pit group and hearth with Later Neolithic Grooved Ware pottery and interpreted as the possible remains of a small settlement area of which the structural evidence has been lost due to Post-medieval ploughing.

There was only one stone find from this area. This was a small, utilised, cuboid-shaped cobble of black chert or silicate metamorphic rock, sf1655, *c*. 45mm square, which had been used as a burnisher, with heavy all over polish. It came from pit 60093, which also contained Later Neolithic pottery, worked flint and chert, charcoal and burnt stones. The worked flint included one retouched piece, a combined spurred piece and edge-retouched knife, and three utilised flakes, all cutting tools. Burnishers are usually interpreted as evidence of leather working and this would also fit with the flint tools from the pit, which

were mainly for cutting, with one piercer (the spurred piece). Flint and chert tools from other pits in this group comprised a scraper/cutter, a small scraper, a piercer and a fragment of a possible chisel arrowhead. Burnishers are generally regarded as being leather preparation tools, but difficult to confirm. Use-wear study of the flint tools produced a little more information. Two pieces showed use on medium soft material, such as dry hide or fibrous plants, which could support the use of the burnisher for leather or fabric working.

Area E (Hollow)

Neolithic open settlement area

Objects stratified within the hollow. PRN 18406

There were only two stone objects from this context: a disc fragment and a possible working slab. The disc fragment, sf6337, is of schist, *c*. 75mm diam. when complete, and 13mm thick, of uncertain function. Insufficient is left to say whether it had been perforated but that seems most likely. It is too large for a spindle whorl but could have been a bow-drill weight. It has been classified as a possible weight (see Walton Rogers, below). It was found in the fill of a small hollow, 31082, which also produced several pieces of Early Neolithic pottery as well as worked flint and chert. The slab (sf6501) is a split plaque of local schist rock and is sub-rectangular, 565mm long, 245mm wide and 60mm deep. It was lying embedded in the subsoil close to the main hollow and to a number of postholes and a hearth. It has no evidence of use but must have been imported to the hollow, perhaps used as a working slab for some purpose that would cause no wear, such as softening leather or preparing bread dough.

Objects from the relict soil layer context 31025

Only one stone object from this context: a piece of a pebble of very decorative, polished banded agate, of amber-like golden brown (sf5021, Fig. VI.5.1). If projected this fragment would have come from an egg-shaped pebble, which could be a simple pebble mace-head or small ovoid mace-head, Type A, (after Roe 1979), although there is not enough remaining to show if there had been a perforation, except that the way it has broken hints at that. Simple pebble mace-heads occur in the Later Mesolithic but more refined and often decorative mace-heads are of Later Neolithic date and presumed to have been non-functional, special items. The rock type used for this example is a semi-precious stone, rare and likely to have been imported from some distance. If it was broken here, one would expect other pieces of it to have been found.

Area E Burnt Mound and Earth Ovens

This group of features includes a burnt mound and isolated pits containing burnt stone all within Area E but some distance from the activity hollow. It included four features, PRNs 31582, 31583, 31584 and 31585. Only one, PRN 31585, produced any stone objects.

PRN 31585

Isolated Pit 31306

This pit produced pottery fragments of probable Middle Bronze Age date and a few undiagnostic pieces of flint and chert. Two objects came from this pit, both utilised pebbles. One is a possible heavy hammer stone of dolerite, sf961, which is a granite cobble, fractured, probably from use. The other is a possible polisher, sf5503, a rounded cobble of quartzite, possibly smoothed from use and with heat fractures.

Early Neolithic Building PRN 31570, AREA H

The most significant objects found here were a saddle quern fragment and a large mortar fragment. The fragment of a large saddle quern, sf1202 (Fig. VI.1.4) is a large natural flat boulder of medium grained dolerite that has been worn into a wide facet by use. The remaining part is about half of its original size and is now 420 x 265 x 11mm. The mortar fragment, sf1204 (Fig. VI.1.6), is a similar large natural flat boulder, but of fine sandstone, 340 x 310 x 110mm. It has a natural, approximately flat base and appears to have had a shallow natural concavity that has subsequently been utilised, rather than the hollow being entirely created by pecking. The bowl is so wide and shallow that it could be described as a bowl quern, worked by a rotating rubbing action, rather than back and forth like the saddle quern. The rock is finer grained than the saddle quern indicating that it was probably intended for a different stage of processing then the saddle quern. The quern fragment was found face down in a large pit in the centre of the building, set in amongst well-packed stones. It seems, therefore to have been a deliberate deposit and emphasised by the fact that the pit contained only a small amount of knapped stone and pottery compared to

neighbouring features. The broken mortar was found in the upper fill of a post-hole of the building and is also likely to have been deposited there deliberately. It could have been a post-packing stone but seems unsuitable for that purpose and so put there after the post had been removed as a 'closing' deposit. The quern is made from a substantial slab and very unlikely to have been broken in normal use, suggesting that it may have been deliberately broken, perhaps also as part of a 'closing' deposit. Such deposition has been shown to be a feature of Early Neolithic communities in South-west Britain, but occurs also in later periods (Watts 2014).

Table VI.1.6 Utilised stones from PRN 31570, Area H

Rec no	*Specific type*	*Material*	*Comment*
1030	hammer stone/chopping tool	sandstone/tuff	Broken, sub-rounded cobble with pecking facet on tip
1146	grinding slab	fine grained dolerite	Natural, flat, thin, sub-angular slab with one flat worn face
1191	hammer stone/core reject	black chert	Small, thick, sub-rounded pebble with damage on two tips. Possibly just a core reject
1400	heavy hammer stone	coarse sandstone	Sub-rounded cobble heavily battered on two tips
1401	abrading slab	medium grained dolerite	Sub-rounded cobble with convex work facet on one face
1718	polisher	banded black chert	Small, flat, oval pebble with all-over polish. Possible burnisher
4527-1	polisher/rubber	fine sandstone igneous	Rounded smooth pebble with possible slight polish and red staining on one face. Not facetted

The utilised stone objects are summarised in Table VI.1.6. Two are small grinding slabs, one uses a cobble and one uses a natural slab, both with evidence of use. Two are smaller pebbles of finer rock, used for rubbing or polishing. One has some red staining so could have been used for ochre. One hammer stone, sf1400 (Fig. VI.1.3), shows heavy use, the other only lighter pecking. The latter also has a broken sharp edge that could have been used for chopping. The other is a smaller pebble of black chert which has tip damage but could be just a knapping core reject. The two hammer stones are, surprisingly, the only such items to accompany the considerable quantity of knapped flint and chert from this location, as they are necessary tools for primary flaking, and there are no objects that could have been retouching tools. However, the knapped stone assemblage has a high proportion of retouched to waste pieces indicating that most primary flaking took place elsewhere. One of the grinding/abrading slabs came from the ploughsoil, so could be intrusive but the other pieces came from pit fills, except for the grinding slab, sf1146, which was *in situ* close to a hearth in the south-east corner of the building. The activity in the house may have included cereal processing as shown by the quern and mortar, unless these were introduced from houses elsewhere. The hammer stone/chopping tool, a heavy tool, may have been for butchery. The hammers could have been used in meat processing, or flint and chert knapping. The grinders/abraders could have been for processing of foods other than cereals but could also have been used in production of wood or bone articles while the polisher could have been used in leather production. The latter activity would agree with the knapped flint and chert assemblage from the house, of which the most frequent types are firstly edge-retouched knives and secondly, scrapers.

There are also six small unused pebbles of various rocks, coarse igneous, fine igneous, sandstone, schist and slate. These seem out of place in the fine sediments on which the house was built and so are likely to have been collected and brought for future use, as polishers or hammer stones. Apart from one piece, they also came from *in situ* deposits in pits, post-holes or, in one case, a beam slot of the building.

Areas I and Ia

Area I Isolated pits
PRN 31598
From Pit 22015, probably Iron Age. An utilised pebble polishing tool, sf1043 (Fig. VI.1.2). It is a fine grained sandstone cobble with one worn and polished facet. Undatable.

PRN 31599
Pit 21039, Iron Age. An unusual and special spindle whorl with complex incised decoration, sf 1042 (see Walton Rogers, below). The whorl is very neatly made, possibly turned and ground to shape. The type of spindle whorl suggests it belongs with the Iron Age or Romano-British settlements although the pit it came from was some distance from those features.

Pit 22002, probably Iron Age. A fragment of a broken, small but deep mortar, sf1036 (Fig. VI.1.4), 280mm diam. and 160mm deep, made by pecking a hollow in a small boulder of medium-grained dolerite. The lips of the mortar have been rounded from extensive use.

The pits in this scatter are dated to the Iron Age and probably represent a small occupation area.

Area Ia PRN 31572
This comprises a discrete group of pits and post-holes with Mid-Neolithic dates, *c*. 3300-2900 Cal BC, Fengate pottery, knapped lithics and burnt stones.

Pit 21208. Two objects:- Firstly, an utilised stone working slab, sf1147 (Fig. VI.1.4), a flat, sub-angular small boulder of medium-grained dolerite with the centre of both faces worn slightly concave by use. Secondly, a sub-rounded cobble, sf3004, of coarse granite, probably imported and possibly heat fractured but otherwise without evidence of use.

Pit 21215. A fine perforated mace-head, sf1145, made by modification of a cobble of fine sandstone (Fig. VI.5.1). It is ovoid in plan with a slightly flattened 'working' end, 98mm long by 68mm wide and 37mm deep. The perforation is central lengthways but set towards the end away from the 'working' end. The perforation is slightly hour-glass in section but otherwise very neatly circular, from a maximum of 29mm diam., to a minimum of 22mm diam.. The stone is probably not very strong, so was probably chosen for its shape and easily worked quality. However, the 'working' end does have multiple pecking marks from some light use. There are some grinding striations on the top and bottom faces but the object could have been made from a pebble that was already of approximately the right shape. The object is a type identified as of Neolithic date and of Ovoid - Class C mace-head, as classified by Roe (1979). A similar mace-head has been found by chance, without any useful association, at Llanllechid, on the upland slopes east of Bangor, Gwynedd (Lynch 1989).

Pit 21221. A modified pebble, possibly an unfinished mace-head, sf1172 (Fig. VI.5.1), a distinctive, natural, but perfectly rounded oval 80 x 68 x 54mm cobble of fine sandstone with small, opposing, pecked cup-marks on two faces. These could have been an unfinished perforation or as an aid to hafting in their own right.

These pits, containing pottery and a variety of flint and chert and other stone objects, must be the result of some domestic activity but the presence in one pit of a fine mace-head and another pit with a possible unfinished mace-head suggests possible deliberate deposition. The pit that contained the latter object also contained the largest number of knapped lithics in the group and a significant number of pieces of pottery. Pit 21215, which contained the perforated mace-head, however, produced no pottery and only two flint flakes, suggesting a quite different kind of deposition. On the other hand, pit 21208 contained two stone objects but produced no pottery or knapped lithics, so could be unrelated to the other pits.

Area J1/J2/J3 Pit and post-hole groups

Area J1/J2
Unstratified from ploughsoil
Three utilised pebbles: Two are light hammer stones, sf1677 and sf1725, one of microgranite and one of sandstone. The other pebble tool, sf1769, of fine sandstone, has a worn groove, possibly an arrow shaft smoother.

PRN 31577, fill of tree-hole
An utilised pebble, sf2200, of fine sandstone with a possibly worn concave facet. This feature also produced four pieces of knapped lithics, including a small, unclassified, fragment of a neatly retouched object, so was definitely the site of prehistoric activity. Tree-throw holes provided temporary shelters during hunting/gathering activities.

Area J3
Possible Romano-British contexts
Three objects - A whetstone/light hammer stone, sf6034, of fine-grained basalt. A pebble with a sawn cut mark, sf6398, of medium-coarse sandstone, presumably a reject or test piece. A fragment of a large, angular slab, sf6353, of schist with the remains of a neatly cut, possibly drilled perforation in one edge. Function unknown.

Pit group PRN 74832

Pit 70529 produced a chopping tool, sf6392 (Fig. VI.1.3), made from an elongated oval cobble of fine sandstone, which also has polish on one face, and a working slab, sf6391 of fine dolerite. Pit 70503 produced a polishing slab, sf6400, of fine quartzite. These pits both contained quantities of Late Neolithic Grooved Ware pottery from several different vessels. It was suggested that the pots and stone objects had been re-deposited from a midden nearby. The presence in both of working slabs is significant in terms of representing some particular activity happening nearby, possibly of an industrial nature, rather than purely domestic, food related, although associated with settlement.

Pit group PRN 74831
Two pits, which contained Middle Neolithic Fengate Ware pottery. These contained a considerable quantity of knapped lithics but only one other stone object, a flake from a Graig Lwyd stone polished axe, sf1823. The lack of other stone objects suggests that these pits were not associated with any longer term settlement.

Area K

General area unstratified and ploughsoil finds
Two unstratified finds: both utilised stones, firstly a light hammer stone, sf2241, using a pebble of fine sandstone and secondly a working slab, sf2199, a flat, sub-rectangular slab of medium sandstone with some polish and a worn or pecked hollow in one face. There were also two burnt stones of dolerite. This type of stone was specifically chosen for its qualities for use as pot/trough boilers.

Area K1 PRN 31588
This area contained a number post-holes of a timber roundhouse believed, on style, to be of Bronze Age date and pits nearby did produce some Bronze Age pottery and two produced radiocarbon dates in the second millennium Cal BC. Only one lithic find came from the area of the house itself, a flint utilised cutting tool. The nearby pits produced a few more pieces of knapped lithics but no objects of other stone.

Area K5
This small area produced only two objects, both from a probably Post Medieval culvert. One was a small disc, sf2217, of fine sandstone, probably an unfinished spindle whorl (see Walton Rogers, below). The other was an abrader, sf2214, using a small, oval pebble of sandstone, on one end of which were worn facets.

Area K7
Area K7 included two clay-walled Iron Age roundhouses, two corn driers and a long cist cemetery of 23 graves.

Ploughsoil
One piece came from the ploughsoil, a polishing slab, sf6071, an elongated, sub-rectangular cobble of fine sandstone with one flat face smoothed from use.

The long cist cemetery PRN 31600
The fill of one cist produced 31white vein quartz angular and sub-angular rock fragments, some rolled, 28-42mm diameter. These must have been carefully selected and are interpreted as a funerary deposit.

Corn drying ovens, PRN 31601 and PRN 31602
Close to the long cist cemetery were found two stone-built corn drying ovens of Early Medieval date. The fill of the pit of Corn Drier PRN 31601 produced a fragment of an approximately circular, thin disc, sf4476, of fine sandstone, with a large central perforation. It is similar to the spindle whorls but larger, at *c*. 96mm diameter. This type of object is of unknown function but possibly a weight of some type (see Walton Rogers, below). This suggests a fairly mundane task, such as a fishing net sinker but no obvious use in relation to grain processing. The fill of the pit of Corn Drier PRN 31602 produced just one find, an utilised stone rubber, sf4103, a sub-rectangular, flat cobble of sandstone with one edge smoothed from rubbing. Function unknown, although it could have been used in grain processing.

Contexts belonging to the two Iron Age round houses, PRN 31595
These produced several worked stone objects, comprising a spindle whorl, three perforated discs and two utilised stone tools. The absence of such domestic items as querns, quern rubbers or mortars is notable.

The spindle whorl, sf4248 (for more detail see Walton Rogers, below), found in a post-hole, is complete, made of fine sandstone, relatively thin at *c*. 12mm, so is disc-like. It is neatly circular, with a probably drilled perforation. The perforation is unworn so the whorl appears to be unused.

Two perforated stone discs were found. One, sf837 (Fig. VI.1.7), from a pit, is a fragment of a thin disc, 98mm diam. and only 8mm thick, of schist chipped to a neat circle and with a small central perforation, 10mm diam., which appears to have been drilled. It would have been fairly fragile. The other, sf5393 (Fig. VI.1.8), from a house drainage gulley, is a fragment of a much larger split slab of local schist, roughly chipped to an approximately circular disc *c*. 410mm diam. and with a large central perforation. The perforation is of hour-glass profile, so cut from both sides, tapering from *c*. 56mm to *c*. 32mm diam.. There are no wear signs on the faces or in the perforation to indicate any use or function. Two other perforated stone objects sf5391 and sf5392 (Fig. VI.1.8), were both found in the same pit. Both are large, heavy objects and only about half of each remains, both broken across the central perforation. Both are made from slabs split from the local schist bedrock. One, sf5391, appears originally to have been of an oval outline, *c*. 420mm wide, 59mm thick. The perforation is cut from one side only, tapering from 82mm to 48mm and has been reamed out, not drilled. There are no wear signs. The other piece, sf5392, is made of the same material but is of an irregular angular outline, *c*. 360mm wide and 37mm thick. The perforation is cut from one side, tapering from 84mm to 66mm diam. Both of these could be unfinished circular discs and both perhaps broken before completion. If so this suggests that the perforation was cut first, before chipping to a circular shape. Another, but complete, oval slab sf5394, was found in the same house drain as disc sf5393. This was a large split slab of local schist rock, roughly edge-chipped to an irregular ovoid outline, *c*. 440mm by 385mm by 63mm thick. The similar sizes and thicknesses of these last three objects suggest that they were for a similar purpose. Their size suggests they may have been thatch weights and if so may never have been intended to be neatly finished discs. It is notable that the perforations are all fresh with no wear, in contrast to the smaller perforated discs from the settlement in area B2, which all had worn and rounded perforations. However, one of the discs, sf5393, is quite carefully finished and so may have had a different function. The small disc sf837 is so thin and carefully made that it bears more similarity with the spindle whorl group of objects and has been classified as a possible weight (see Walton Rogers, below).

The two utilised stone tools were a polisher or whetstone, sf4229 (Fig. VI.1.2), from a pit, and a heavy hammer, sf4461, from a house drain. The polisher is a small, elongated, rod-shaped pebble of fine sandstone with polish on two faces. The hammer is a large, rounded cobble of coarser sandstone, heavily peck-marked and with red staining suggesting possible use in ochre or iron ore crushing although the colour could derive from post-burial natural iron-pan staining.

Areas K9A and K9B

PRN 31573, a pit group in Area K9A

This group consisted of seven large pits lay some way to the north of, and separated from the roundhouse settlement of Area K9B. The pits produced Middle Neolithic pottery and three radiocarbon dates of *c*. 3350-3050 Cal BC. There were surprisingly few knapped lithics from these pits, comprising just a few waste pieces and two non-diagnostic tools, all of flint. Such numbers of objects could have become incorporated by chance during backfilling. Furthermore, there were no tools of other stone or utilised stones. This suggests specialised deposition of the pottery or may relate to how stone materials were being used at the time the pits were created.

PRN 31596, a Romano-British period settlement, Area K9B

The contexts belonging to the Roman-British settlement produced a few pieces of knapped stone residual from earlier activity as well as a number of objects of other stone more probably deriving from the settlement itself. The settlement was long-lived and three phases of activity were identified.

Contexts associated with specific structures (Table VI.1.7)

Structure 80526

The most interesting object from this building was a fragment of a small rotary quern topstone, sf6173 (Fig. VI.1.6), found in the backfill of pit 81041. It is *c*. 230mm diam. and 60mm deep, made from coarse sandstone, possibly not from Anglesey, and imported as a finished object. The central perforation is 60mm diam. and two, of probably an original three, smaller conical partial perforations set in a triangle, probably for fixing a metal strap to attach a wooden handle. The rim of the quernstone is decorated with shallow ‘dogtooth’ indentations. The base of the quern is flat, not inclined. Such flat rotary querns came into use during the Romano-British period.

Two utilised stone objects were also found in this building, a potboiler of dolerite, sf6172, and a small, regular, polished pebble, sf6012, of black chert, possibly a found object.

A burnisher, sf6000, and a light hammer stone, sf6001, were found between structure 80526 and the nearby corn-drier 80924.

Post-hole group A
This was a complex group of post-holes probably belonging to a small building, probably re-built several times. This area was almost devoid of stone or other artefacts, suggesting it was just an agricultural building. The only two objects came from just south of the main group of post-holes, probably representing a small separate structure or area of activity.

Post-hole group B
This was a complex group of post-holes probably belonging to a small building, probably re-built several times and with a central hearth. There was some evidence of activity with a heat-shattered potboiler, sf6139, in the central hearth and in one of the post-holes was a broken hammer stone, sf6140.

Overall these contexts produced ten utilised stone objects, described in Table VI.1.7, comprising two probable hammer stones, two polishers, a burnisher, a group of small pebbles, possibly gaming pieces, and four burnt cobble potboilers, two of dolerite, one of sandstone and one of coarse igneous rock. These are all common objects probably residual from the Romano-British settlement and represent a range of food processing and cooking as well as craft, and possibly gaming activities.

Table VI.1.7 Utilised stone objects from specific structures

Structure/ Group	*Rec no.*	*Specific type*	*Material*	*Description*
80526	6000	Burnisher	Fine sandstone	Sub-rounded, smooth pebble with polish on one face
80526	6001	Light hammer stone	Schist	Fragment of elongated cobble with pecked facet on tip and two areas of pecking on sides
80526	6012	Polisher?	Fine, cherty sandstone	Symmetrical and polished pebble. Possible 'found object'
80527	6163	Polisher	Dolerite	Small, flat ovoid pebble with slight polish on one flat face. No faceting
80527	6256	Gaming pieces?	Fine, cherty sandstone	Four small, similar size, rounded pebbles
Group A	6184	Potboiler/Hammer stone?	Dolerite	Heavy, rounded burnt cobble. Possible damage from hammering
Group A	6185	Potboiler/Hammer stone?	Dolerite	Heavy, rounded burnt cobble. Possible damage from hammering
Group B	6140	Potboiler/Hammer stone?	Coarse igneous	Heavy, rounded burnt cobble. Possible damage from hammering

Structure 80527
This consisted of a compact group of post-holes and curvilinear gulleys, probably the remains of a small circular building. It contained a considerable number of artefacts, suggesting it had been a well-used domestic building. The floors and features belonging to this structure were separated stratigraphically by phase, the great majority of artefacts assigned to Phase 1/1a, see below. Buried soil in the top of a natural ice-wedge just outside the building produced a polisher, sf6163 and a group of 4 small similar pebbles, sf6256, possibly gaming pieces (Table VI.1.7).

b.1 Phase 1/1a contexts
These are summarised in Table VI.1.8. The presence of three types of quern is interesting as they are technologically different from each other and introduced in different periods. Saddle querns and their topstones, like sf6065 (Fig. VI.14), of breccia, were in use throughout prehistory and have been found to have still been used in Roman and early post-Roman Britain. Their longevity most probably derives from the fact that the lower stone did not need specialist manufacture, although the slug-shaped rubbers, like this one are carefully shaped. Any suitably shaped natural slab of the right quality of rock could be used. Beehive querns and flat rotary querns, for which the broken fragment sf6176 (Fig. VI.1.4) of breccia, was a topstone, were specialist items and would have been traded from a factory using particularly suitable rocks. Beehive querns, of which sf6054 (Fig. VI.1.6), of sandstone, is a topstone, first appear in North

Wales in the Later Iron Age, perhaps reaching this part of the world in 1st century BC (Hughes 1977) whereas flat rotary querns were introduced during the Roman period, many imported from the Continent then later manufactured locally (Watts 1996). The hearth stone was part of a structure built of boulders and local schist slabs to form a furnace structure of uncertain function but associated with bone fragments so was possibly a food oven. It formed part of a complex of related features, including a deep mortar, sf6149, of breccia (Fig VI.1.12), set in a small pit and, within the furnace area, a hammer stone sf6181 (Fig. VI.1.1), of rhyolitic tuff and a possible beehive quern fragment, sf6180 of dolerite. The possible shaft smoother, sf6182 (Fig. VI.1.3) is a type usually associated with arrow making, but here seems more likely to have been for another purpose. The cup-marked stone, sf6070 (Fig. VI.1.10), is a large heavy slab of local schist rock roughly chipped to an oval shape, *c*. 385 x 320mx 88mm deep, with a large, shallow cup mark, 50mm diam., pecked approximately centrally in one face. There are no wear signs. Possibly a post pad.

The utilised stone objects are summarised in Table VI.1.9. They comprise a fairly complete set of tools, indicating a considerable amount of craft activity.

Table VI.1.8 Area K9B, Phase 1/1a: Other stone objects general types

Rec no.	*General Type*	*Specific Type*	*Material*	*Description*
6065	Saddle Quern	Topstone	Coarse sandstone/breccia	Slug-shaped rubbing stone from developed type of saddle quern
6070	Cup marked disc		Schist	Split slab of local rock roughly chipped to an oval shape and with a shallow cup-mark in centre of one face. Cup-mark 50mm diam., 9mm deep
6149	Mortar	Deep	Coarse sandstone/breccia	Sub-rectangular boulder with neatly pecked sub-rectangular bowl, well-worn
6176	Rotary quern	Topstone	Coarse sandstone/breccia	Fragment of a flat disc rotary quern top stone. Ancient break
6180	Rotary quern fragment?	Topstone	Medium grained dolerite	Possible beehive quern top stone. Uncertain identification because of the small size of the fragment
6182	Shaft smoother?		Fine sandstone	Thin, split cobble fragment with straight pecked grooves on both faces

Table VI.1.9 Area K9B, Phase 1/1a: Utilised stone types

Rec. no.	*Type*	*Material*	*Description*
6003	Heavy hammer stone	Fine dolerite	Slightly elongated, sub-rectangular cobble facetted by hammering at both ends. Its shape suggests it may have been hafted (Fig. VI.1.3)
6004	Abrader	Fine quartzite	Large, elongated cobble with an abraded facet at one end
6069	Light hammer stone	Schist	Large, oval cobble with a small amount of pecking damage on both tips
6076	Polisher	Fine dolerite	Small oval cobble with possible slight polish on one face
6132	Potboiler	Fine sandstone	Egg-shaped cobble. No visible use wear. Surface heat cracks suggest it was a potboiler
6133	Light hammer stone	Fine quartzite	Large, oval cobble with a small amount of pecking damage on both tips
6144	Mortar	Coarse sandstone	Sub-angular cobble with a shallow, pecked, little worn concavity in one face and worn on the base from pressure in use, (Fig.VI.1.5)
6177	Light hammer stone	Schist	Small, oval cobble with a pecked facet on one tip
6181	Heavy hammer stone	Fine tuff?	Very heavy, rounded cobble with pecking facet on tip (Fig. VI.1.1)

6187	Hearth structure	Dolerite and schist	Complex structure interpreted as a furnace

b.2 Phase 2: floor of structure 80527
These produced only two objects, a rotary quern topstone and a cup-marked stone, both from the floor surface of this structure. The rotary quern topstone, sf6054 (Fig. VI.1.6), is from a beehive quern of coarse sandstone, possibly imported to Anglesey. It is 290mm diameter and 131mm deep. It has a tapering hopper hole and the remains of a handle hole. The quern has worn slightly asymmetrically with heavier wear on the handle side, which has resulted in eventual loss of the handle, making the stone unusable. The cup-marked stone, sf6069 (Fig. VI.1.10), is similar to that from Phase 1/1a, above, but more irregular in shape. It is a large, thick, heavy, irregular slab, 485mm x 365mm x 95mm deep, of the local schist bedrock with a small cup mark, 45mm diam., in the centre of one face but with no wear signs. Possibly a post pad.

b.3 Phase 3: Upper floor of structure 80527
This produced only two objects, both utilised stones. One is a polishing slab, from the house floor and the other is a light hammer stone, from a deposit associated with a furnace. The polishing slab, sf6039, is a large, flat, rounded cobble of fine sandstone, one face facetted and smoothed from wear. The hammer stone, sf6022, is a small cobble of hard, metamorphose sandstone (Fig VI.1.3). It was naturally slightly waisted but this had been emphasised by pecking to aid hafting, a type of modification documented from as far back as the Early Bronze Age, e.g. at the Ross Island copper mine in south-west Ireland (O'Brien 1961) and into the Roman period (Tylecote 1992).

Area L3

PRN 31593
The main feature here was a circular post-hole feature with a central 'hearth' plus other pits and ovens lying within a sub-circular terraced hollow. The size of the hollow, *c*. 7m diameter, suggests that these features represent the slight remnants of a timber roundhouse. Finds from this area included charcoal, burnt bone fragments, a piece of copper alloy slag or waste and pottery fragments of probable Middle Bronze Age date, but radiocarbon dates suggest a late Iron Age date. The only stone object from this area was a spindle whorl, sf1375 of fine sandstone. This came from above a probable stone-capped drain just outside the hollow. The spindle whorl is described in detail, below (Walton Rogers). The majority of spindle whorls found in the present project have come from the Iron Age settlement in Area B2 to the south-east. This spindle whorl is somewhat different from most of those, being flat and so neatly made it could be wheel-turned. The spindle hole is also straight-sided and therefore drilled, whereas most of the whorls from Area B2 have somewhat biconical holes. There is a suggestion that this is a more technically advanced product than those from the roundhouse settlement in Area B2.

Area L5

PRN 31587
One pit here was filled with burnt stones and interpreted as a water-heating trough belonging to burnt mound type activity of Late Neolithic or Early Bronze Age date. Apart from burnt stones the pit contained only two stone objects, neither of use in identifying date or function of the pit. One is a broken block of black chert and the other an abrader, sf5704, a fragment of an oval, rounded cobble of metamorphosed sandstone with a small facet worn on its tip.

Area M2 Bronze Age Funerary Complex

D-shaped Enclosure PRN 31591
This feature consists of two conjoined ditched enclosures, the earliest a small sub-circular ring ditch, later added to or modified by the addition on one side of it of a second ditch, forming another conjoined ditched enclosure of an irregular shape. The ditch fills have produced pieces of Early Bronze Age Food vessel pottery, but the radiocarbon dates, from the same context as this pottery are of the Middle Bronze Age *c*. 1200-1000 cal BC. The whole feature is interpreted as the remains of two small burial monuments, one added on to the other after a relatively short interval and both of unknown original appearance. There are no burial features as such within the enclosures and no artefacts to suggest burial deposition. However, some of the ditch fills derived from within the enclosures and these fills contained 76 small white vein

quartz pebbles, from various points within the circumference of the ditch. The pebbles fell within a fairly limited size range, between *c*. 15 to 75mm diameter. The presence of such distinctive stones indicates that they were carefully selected and collected. One of them was also more 'special', having unusual and attractive inclusions. White quartz pebbles are frequently found in association with both Neolithic and Bronze Age burial monuments and regarded as token deposits, rather than burial goods (e.g. Piggott 1937).

Some areas of the enclosure ditch contained quantities of larger stones, mainly cobbles, four of these were recorded, being large, flat, oval cobbles, of rocks of varying textures, *c*. 180mm long. One of them was an abrading slab, sf1070, a flat, elongated oval cobble of coarse dolerite, with a small amount of wear polish on one face. Accompanying these larger cobbles were a number of even larger slabs of local schist, concentrated on the inner edge of the ditch fill and interpreted as deliberately redeposited from a former mound or structure within the enclosure.

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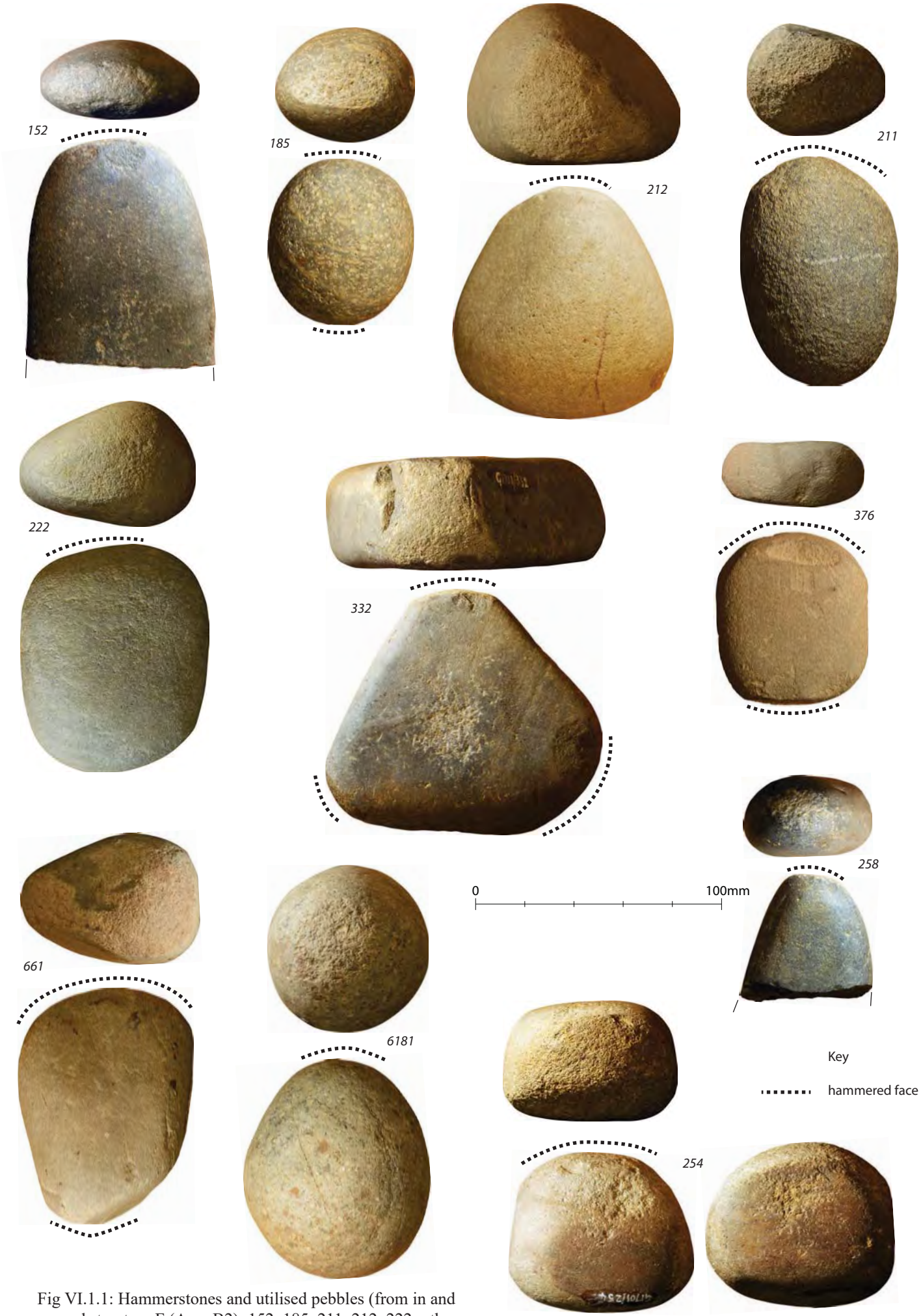
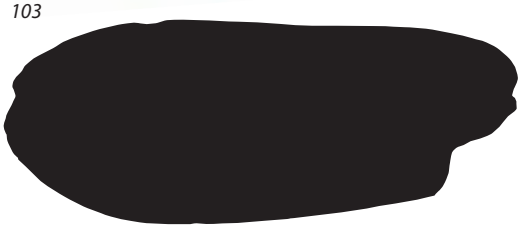


Fig VI.1.1: Hammerstones and utilised pebbles (from in and around structure F (Area B2): 152, 185, 211, 212, 222; other from over and within the main roundhouse settlement in Area B2, except 6181 from the boulder hearth in Area K9)

103



295

510

357

0 100mm

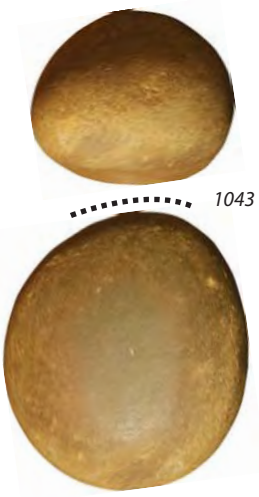
404

4229

Key

hammered face

522



1043

Fig VI.1.2: Whetstones and polishing stones (from the main roundhouse settlement in Area B2, except 4229 from an isolated pit in Area K7 and 1043 from Group 19073 in Area I)

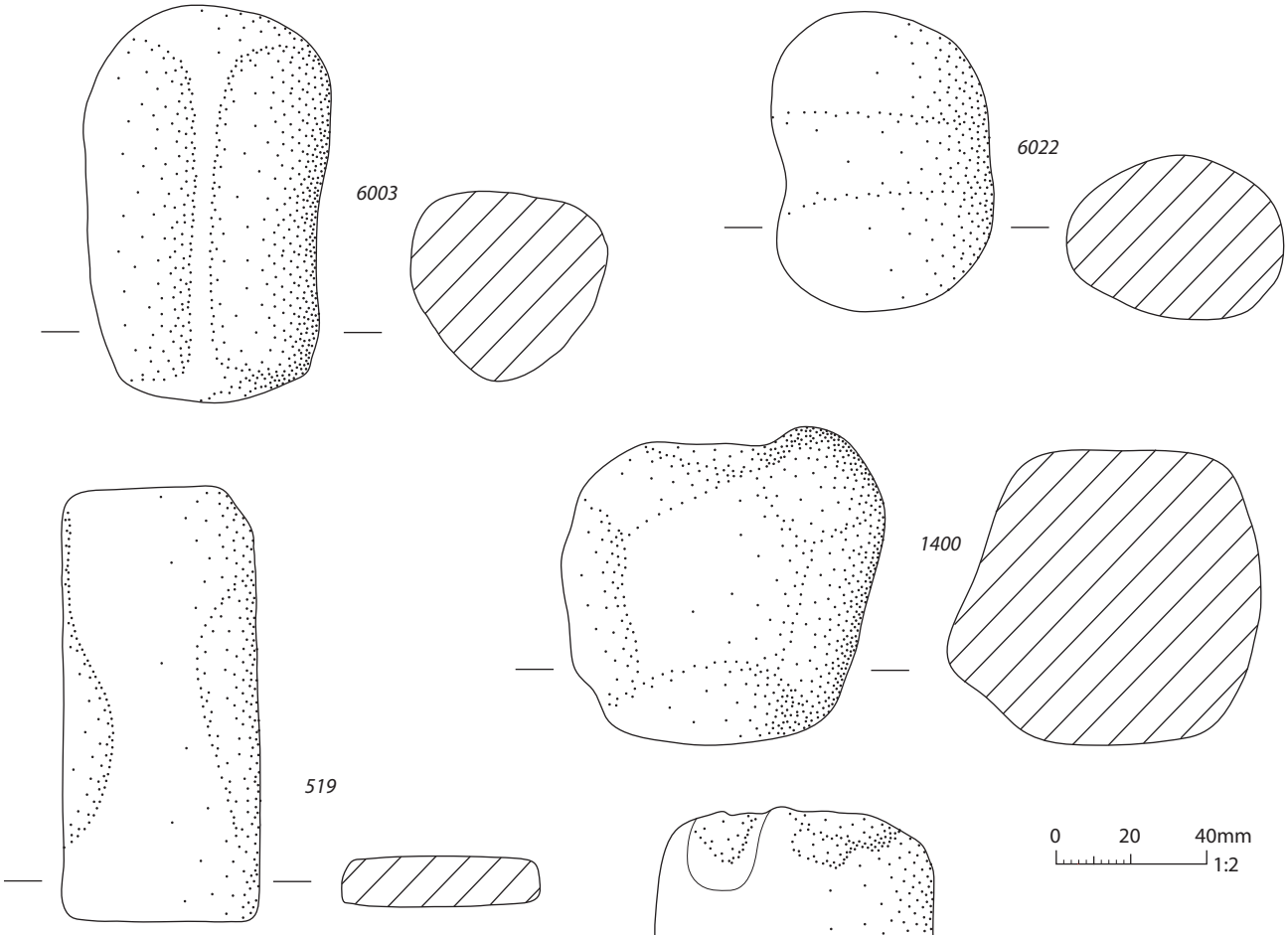


Fig VI.1.3: Hammerstones and whetstones
Hammerstones: sf6003 and sf6022 from Area K9; sf1400 from Area H. Whetstones/polishing stones: sf519 and sf360 from Area B2; polishing and chopping tool sf 6392 from Area J; sf6182, possible shaft smoother from Area K9.
Drawn by Tanya Williams

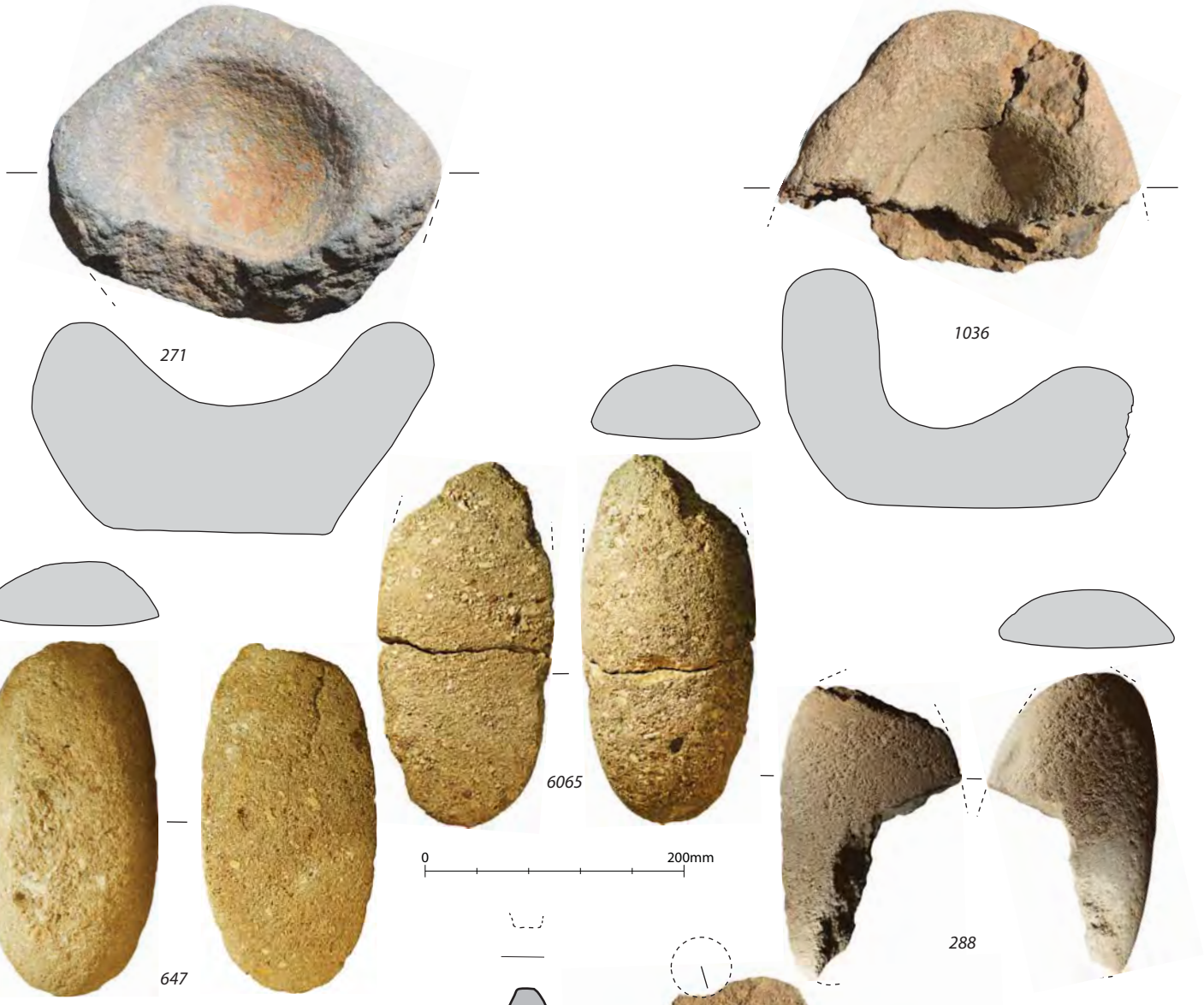


Fig VI.1.4: Mortars, querns and rubbing stones (271-mortar from Area B2; 1036-mortar from Group 19073, Area I; 288, 647, 6065-rubbing stones for saddle querns from structure F Area B2, roundhouse B Area B2 and structure 80527 Area K9 respectively; 6176- fragment of rotary quern topstone from structure 80527 Area K9; 1147-grinding stone from Neolithic pit group, Area I; 1202-saddle quern from Early Neolithic Building)

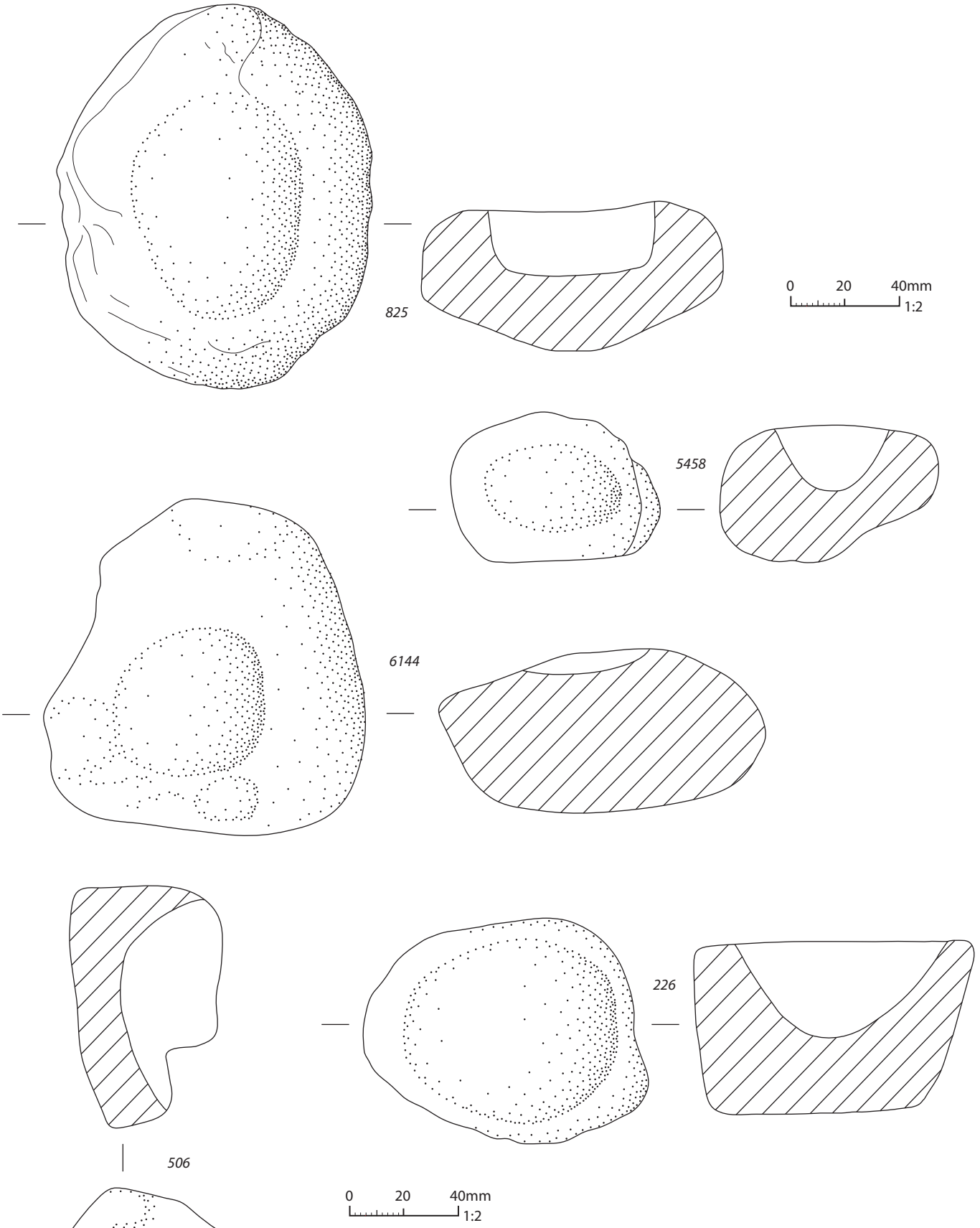
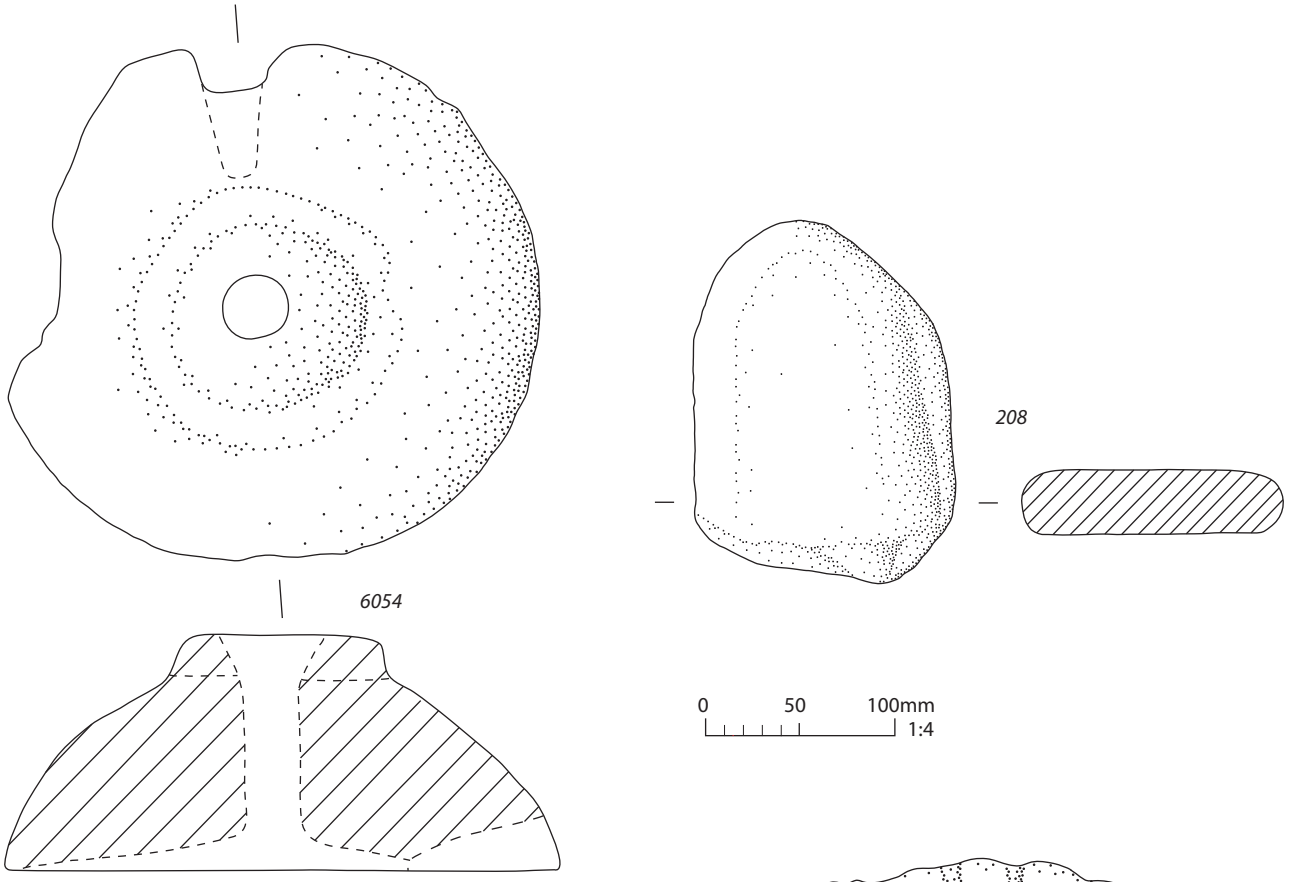
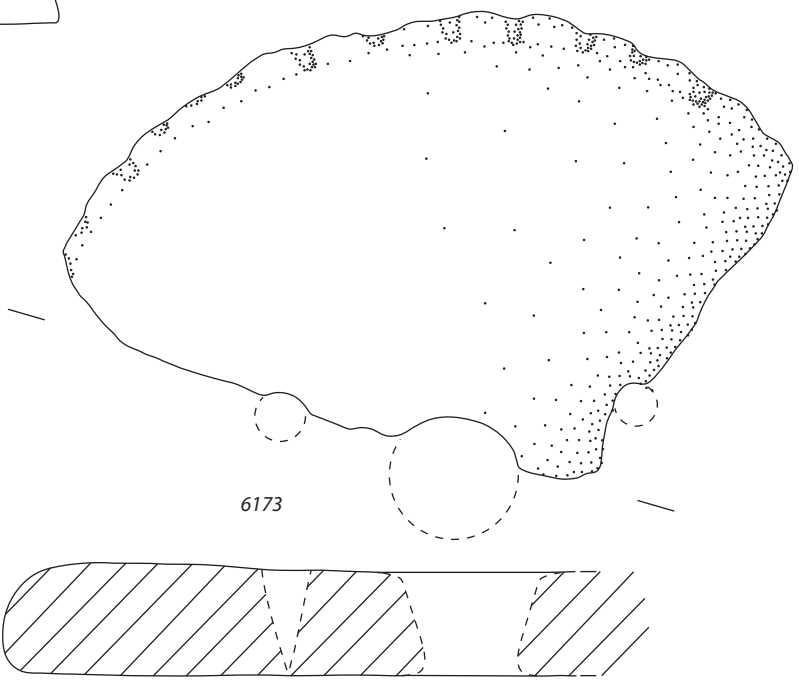


Fig VI.1.5: Mortars and stone bowls
Area B2: sf506 from roundhouse C, sf226 from roundhouse A
Area F1: sf825 from roundhouse H, sf5458 from roundhouse I
Area K9: sf6144 from structure 80527
Drawn by Tanya Williams





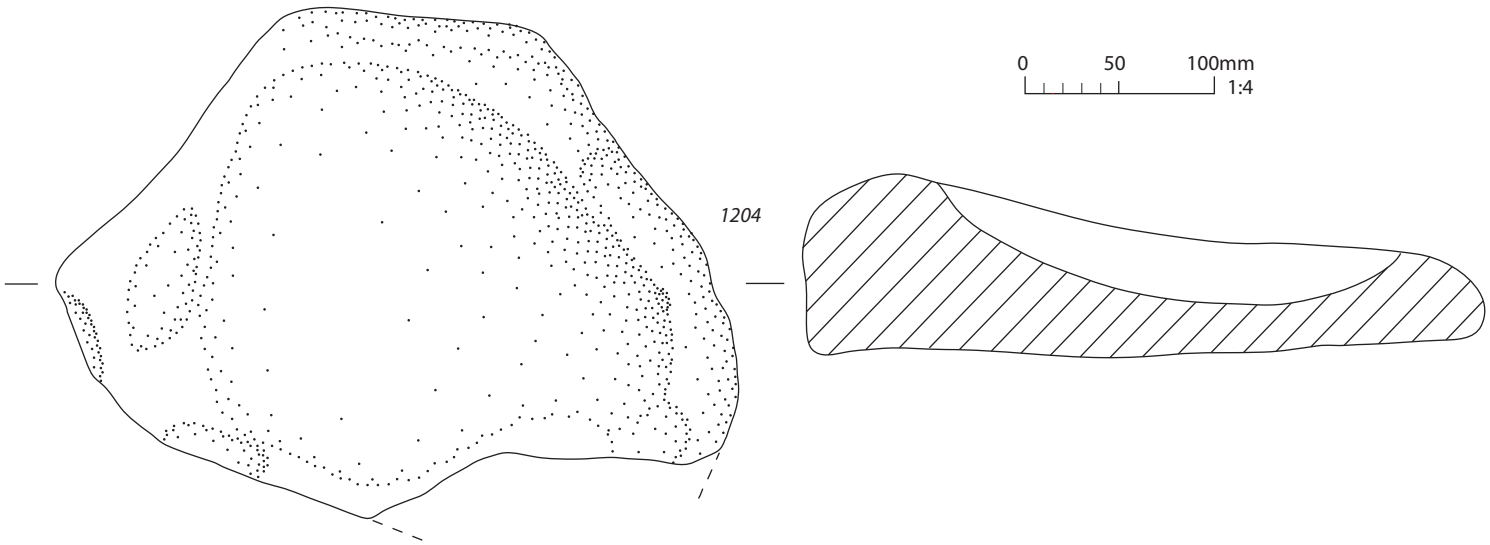


Fig VI.1.6: Querns and grinding stones
Sf6054, beehive quern topstonefrom structure 80527, Area K9
Sf208, grinding stone from roundhouse A, Area B2
Sf6173, rotary quern topstone from structure 80526, Area K9
Sf1204, shallow mortar from Neolithic building in Area H
Drawn by Tanya Williams

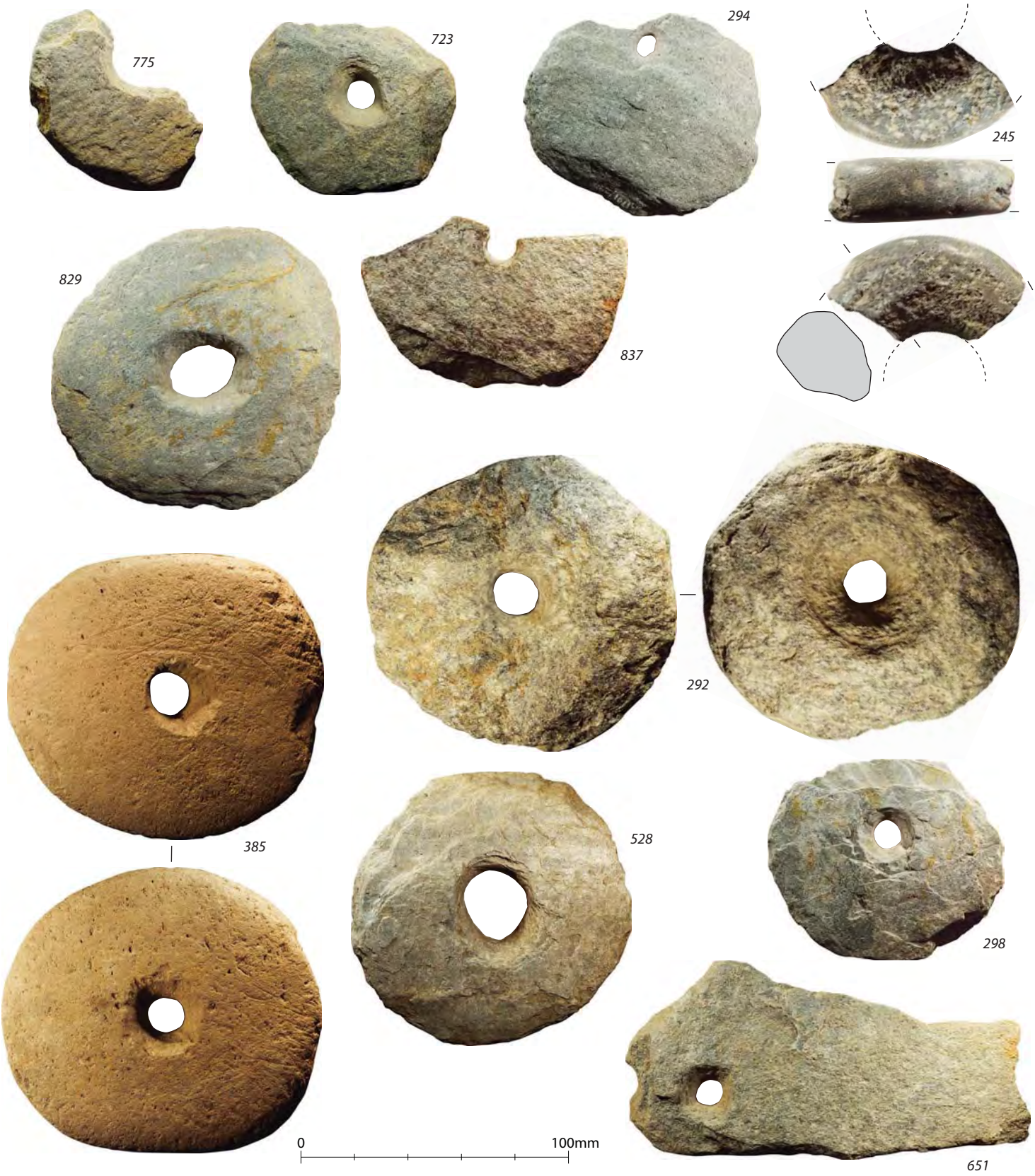


Fig VI.1.7: Perforated stones (all from the round house settlement in Area B2, except 837 from structure 80249 in Area K7)

Fig VI.1.8: . Large perforated stones
(751 from the roundhouse settlement in Area B2; 5391, 5392, 5393 from structure 80248 in Area K7)

Stone from Bonc Deg (not to scale)
Oriel Ynys Môn accession number 12/07
(reproduced by the kind permission of Oriel Ynys Môn, Llangefni)

Fig VI.1.9: A large perforated stone found at Bonc Dêg and shaped post-pads from roundhouse I Area F1

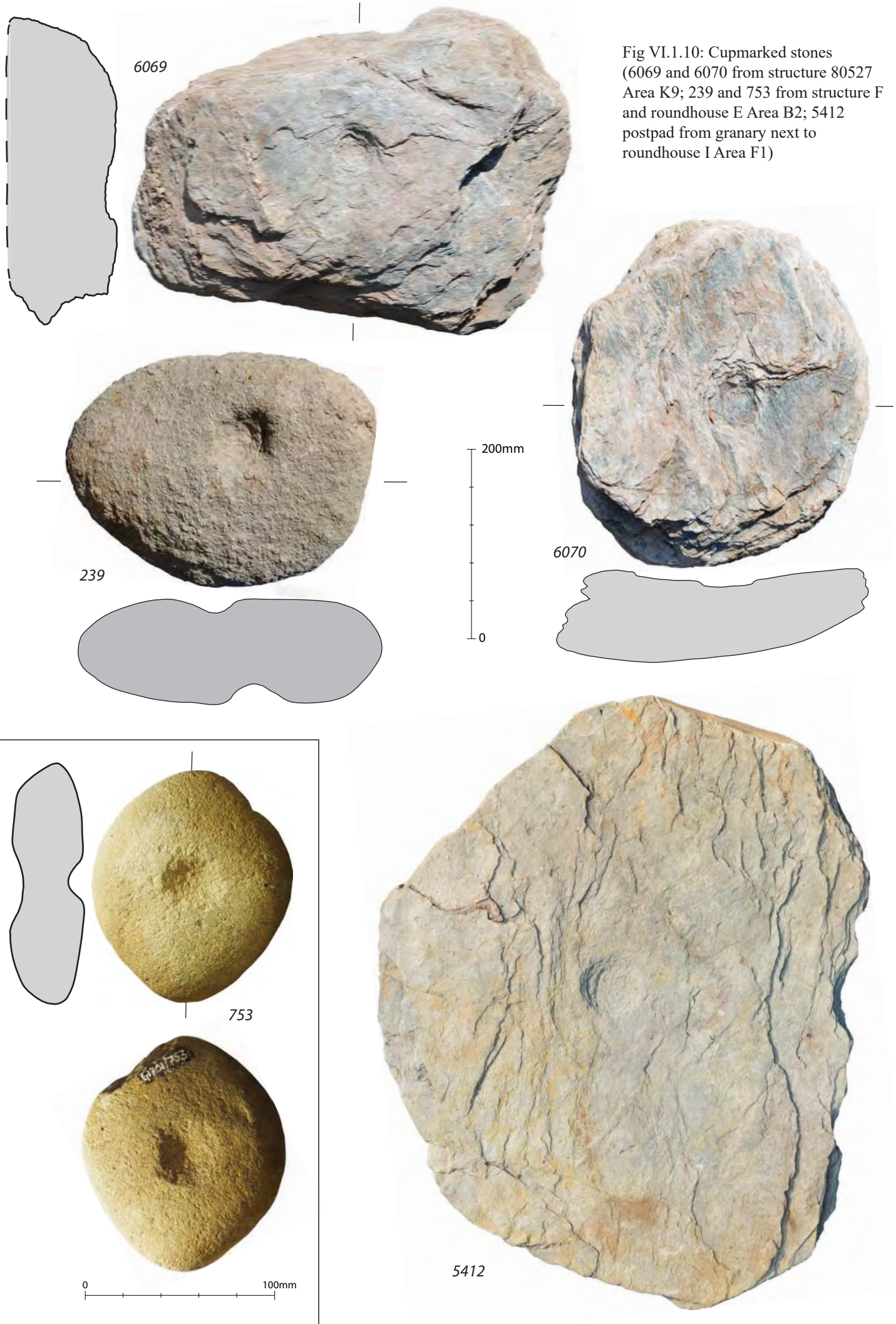
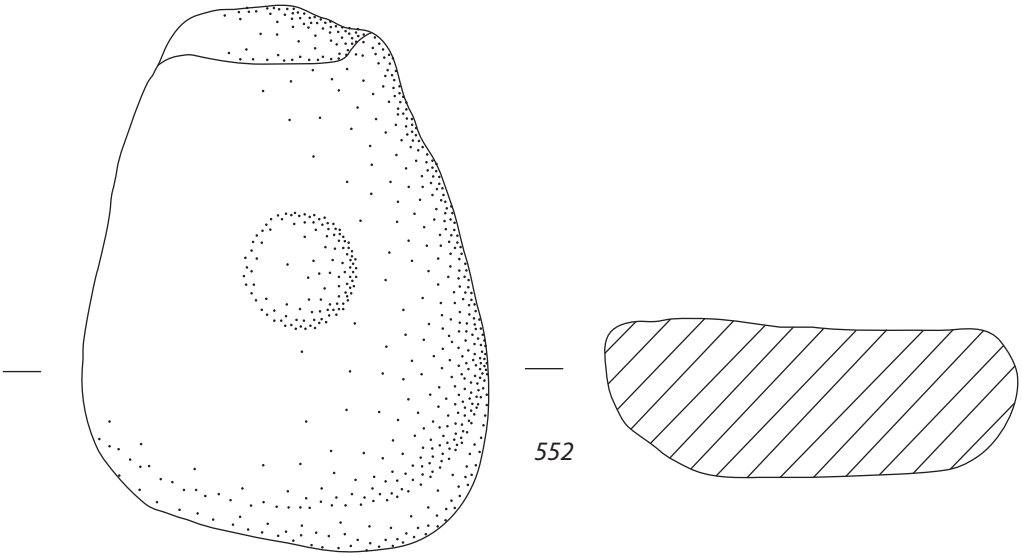
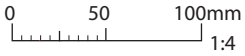


Fig VI.1.10: Cupmarked stones (6069 and 6070 from structure 80527 Area K9; 239 and 753 from structure F and roundhouse E Area B2; 5412 postpad from granary next to roundhouse I Area F1)





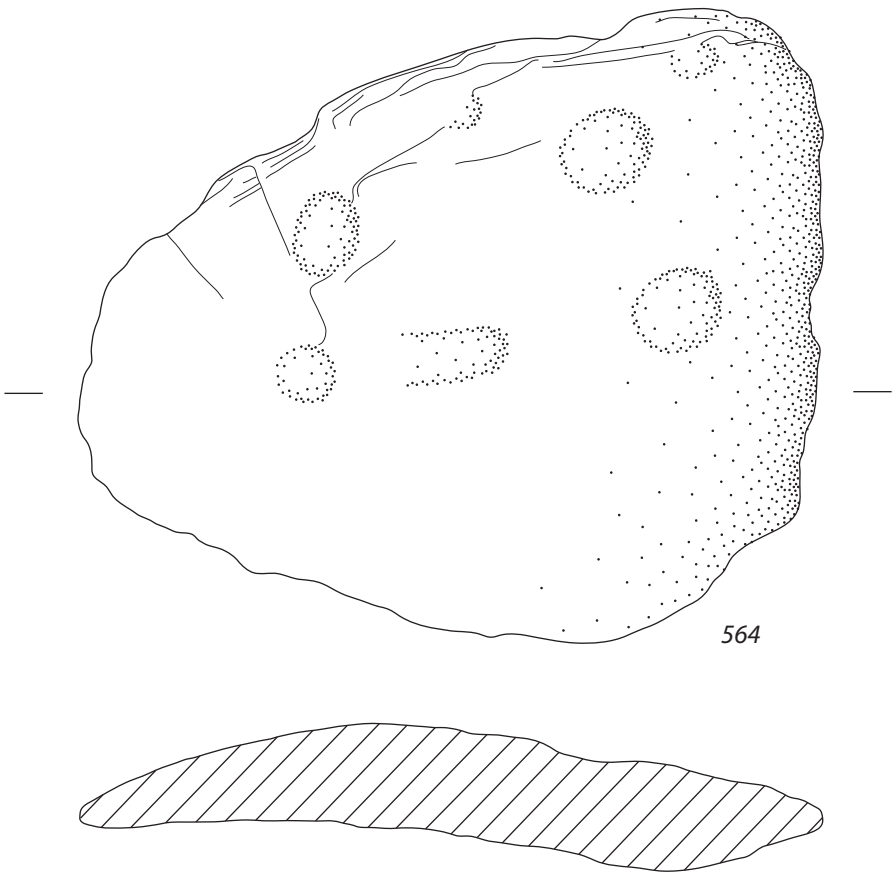
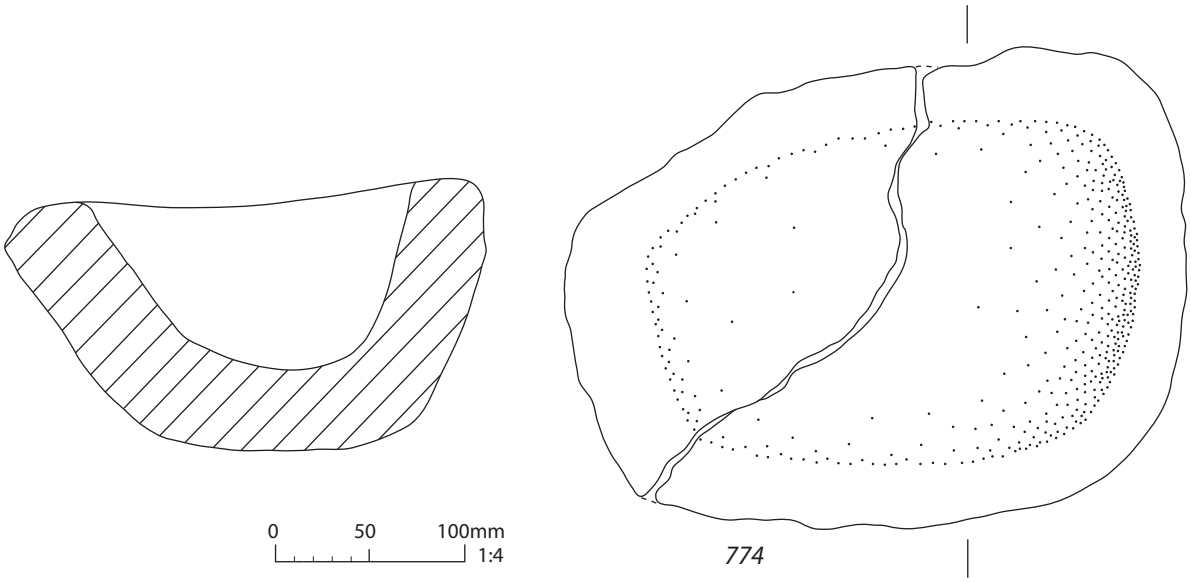
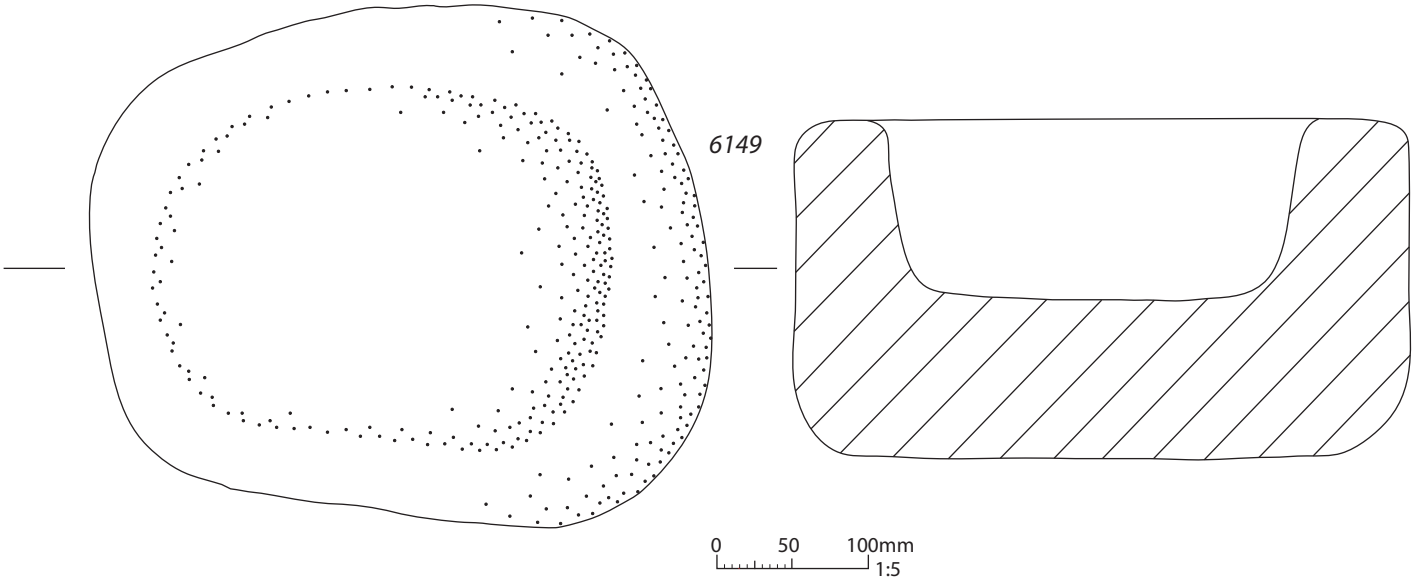


Fig VI.1.11: Large stones with cup-marks
Both from roundhouse B, Area B2
Drawn by Tanya Williams





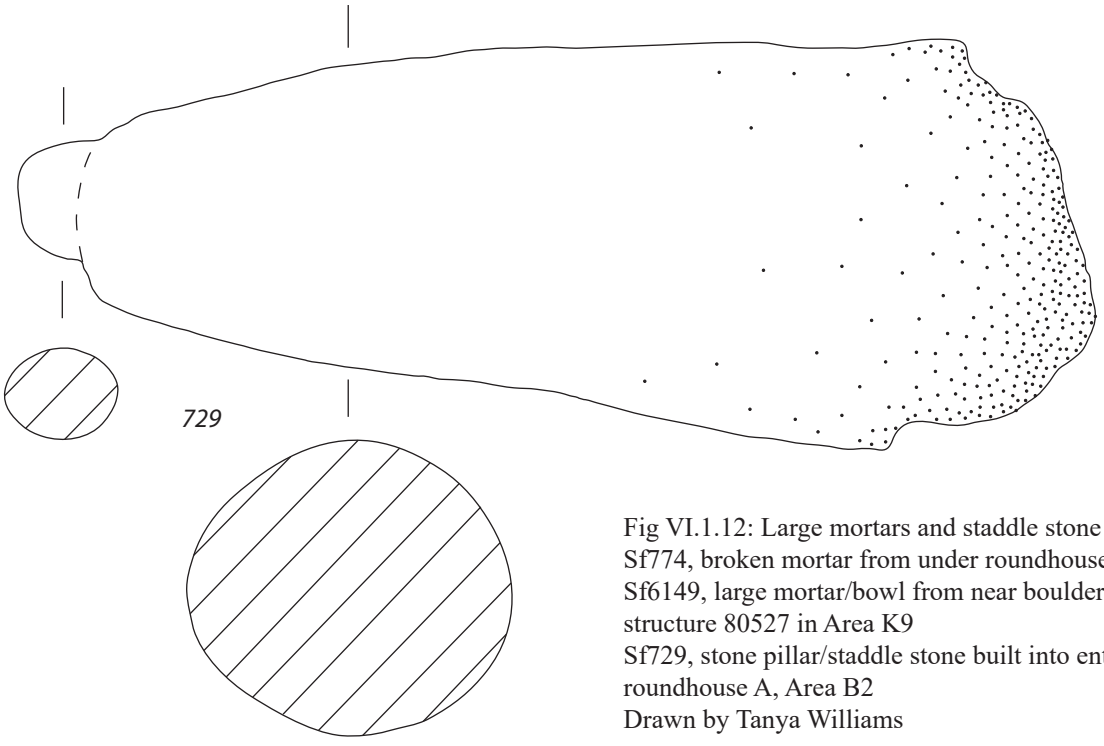


Fig VI.1.12: Large mortars and staddle stone
Sf774, broken mortar from under roundhouse C in Area B2
Sf6149, large mortar/bowl from near boulder hearth in structure 80527 in Area K9
Sf729, stone pillar/staddle stone built into entrance of roundhouse A, Area B2
Drawn by Tanya Williams

Appendix VI.1.1: catalogue of worked stone

area	context	Find No	subno	general type	specific type	material	colour	diameter	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)	internal diameter	internal depth	internal length	internal breadth	Description
B1	2064	5	0	split pebble frag		black chert		0	0	0	0	0	0	0	0	0			Large rounded cobble broken in half. No visible use wear
B1	7056	1487	0	pebble unused		granite?		0	0	0	0	0	0	0	0	0	0		Small pebble with natural pot-lid fracture
B1	2064	54	0	utilised pebble?	whetstone	sandstone	brown	0	0	0	0	0	0	0	0	0			Rectangular-sectioned rod-shaped pebble with one smooth face but no facetting. Possibly a whetstone and any wear evidence has been lost due to weathering. Sub-rounded cobble. PM ploughsoil.
B1	2064	35	0	spindle whorl		sandstone	brown	43	0	0	0	0	18	0	0	0			Complete stone spindle whorl. Ground to shape: Form B2, with slightly rounded sides
B2	90000	396	0	pebble unused				0	0	0	0	0	0	0	0	0	0		Sub-rounded cobble. No use wear. Chipping at ends from recent damage
B2	90002	2224	0	utilised pebble	objet trouve	coarse igneous		0	83	0	49	0	60	0	0	0	0		Small, rounded, unusually symmetrical cobble. No visible use wear. Objet trouve?
B2	90002	330	0	pebble unused frag		black chert		0	0	0	0	0	0	0	0	0			Fragment of smooth, rounded cobble. No visible use wear
B2	90002	257	0	utilised pebble	abrader	black chert	dark grey	0	119	0	41	0	23	0	0	0			Triangular-sectioned rod-shaped pebble with two bevelled facets on one narrow end and scratches on one face
B2	90002	357	0	utilised pebble	whetstone/abrader	black chert	dark grey	0	93	0	57	0	9	0	0	0	0		Thin, sub-rectangular pebble with whetstone use on both faces plus abraded bevels on both sides of both ends
B2	90002	285	0	utilised pebble	polisher	black chert?		0	0	0	0	0	0	0	0	0			Small block of chert with scratches and polish on one face
B2	90002	255	0	pebble unused frag	burnt frag	conglomerate		0	0	0	0	0	0	0	0	0	0		Fragment of rounded cobble, possibly heat fractured
B2	90642	271	0	mortar frag	deep	dolerite	grey-green	0	290	0	240	0	168	0	0	60	180	160	Incomplete. Small boulder with pecked bowl
B2	90002	509	0	utilised pebble?	light hammer stone	dolerite	brown	0	70	0	50	0	45	0	0	0			Rounded cobble with a damaged area, which could be accidental

area	context	Find No	subno	general type	specific type	material	colour	diameter	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)	internal diameter	internal depth	internal length	internal breadth	Description
B2	90002	317	0	pebble unused		dolerite?		0	0	0	0	0	0	0	0	0	0		Natural sub-angular cobble. No visible use wear
B2	90002	377	0	pebble unused		dolerite?		0	0	0	0	0	0	0	0	0			Flat, oval cobble. No visible use wear
B2	90002	6095	0	pebble unused		fine igneous		0	0	0	0	0	0	0	0	0	0		Rod-shaped cobble. No visible use wear
B2	90002	658	0	pebble unused		fine igneous		0	0	0	0	0	0	0	0	0	0		Thick, rounded pebble. No visible use wear
B2	90818	640	0	burnt pebble frag	pot boiler	granite		0	0	0	0	0	0	0	0	0	0		Rounded cobble fragment, shattered by heat
B2	90002	2190	0	pebble unused		hard igneous		0	114	0	80	0	57	0	0	0			Sub-rounded cobble. No visible use wear
B2	90002	6	0	pebble unused		hard igneous		0	153	0	101	0	72	0	0	0			Sub-angular cobble. No visible use wear
B2	90002	153	0	pebble unused		hard igneous		0	0	0	0	0	0	0	0	0			No visible use wear
B2	90002	7	0	pebble unused		hard igneous		0	0	0	0	0	0	0	0	0			Sub-rounded cobble. No visible use wear
B2	90002	248	0	axe frag?		igneous rock		0	0	0	0	0	0	0	0	0	0		Small fragment of highly polished object of unusual stone. Possible axe fragment
B2	90002	298	0	perforated disc		phyllite	grey-green	0	93	0	80	0	10	0	0	0	0		Incomplete perforated flat near-circular stone weight. Chipped to shape. Perforation off-centre, irregularly formed from two wide cone shapes worked on both faces
B2	90002	294	0	perforated disc	unclassified	phyllite	grey-green	0	93	0	81	0	15	0	9	0	0		Oval disc with irreg perf c. 9mm dia of hour-glass profile at one side. Incomplete perforated flat near-circular weight. Chipped to shape.
B2	90002	310	0	perforated disc frag	unclassified	phyllite	grey-green	77	0	0	0	0	7	0	13	0	0		Circular disc chipped and ground to shape and with neatly made central perforation.
B2	90002	6077	1	utilised pebble	disc	phyllite	grey-green	31	0	0	0	0	6	0	0	0	0		Natural plaque prob chipped and ground on edges to shape. Gaming piece?
B2	90090	346	0	pebble unused		quartz		0	0	0	0	0	0	0	0	0			Large, heavy, sub-rounded cobble. No visible use wear
B2	90002	2237	0	pebble unused frag	burnt frag	quartz		0	0	0	0	0	0	0	0	0	0		Fragment of a rounded cobble. Heat fractured
B2	90002	517	0	utilised pebble	light hammerstone/chopp	quartzite	grey-green	0	158	0	114	0	76	0	0	0	0		Sub-rounded cobble with pecked facet on one tip and a chopping edge on another

area	context	Find No	subno	general type	specific type	material	colour	diameter	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)	internal diameter	internal depth	internal length	internal breadth	Description
					er														
B2	90103	103	0	utilised pebble frag	polishing slab	quartzite	grey-green	0	0	0	0	0	0	0	0	0	0		Fragment of small, ovoid, flattish boulder with wear and polish on one flat face
B2	90002	2236	0	pebble unused		quartzite		0	0	0	0	0	0	0	0	0			Sub-angular rod-shaped cobble. No visible use wear
B2	90002	233	0	utilised pebble	polisher	sandstone	brown	0	120	0	39	0	20	0	0	0			Flat, rod-shaped pebble with slight polish on one face
B2	90002	380	0	utilised pebble	grinder	sandstone	brown	0	120	0	50	0	33	0	0	0			Ovoid cobble with groove worn on one face from grinding or sharpening
B2	90002	376	0	utilised pebble	abrader	sandstone	brown	0	64	0	55	0	25	0	0	0			Sub-rounded pebble fragment, facetted from heavy wear at both ends, flat, not bevelled
B2	90002	278	0	utilised pebble frag	abrader	sandstone	grey	0	0	0	0	0	0	0	0	0	0		Broken cobble with a natural perforation and with abraded bevelled facets at both sides of tip
B2	90002	253	0	utilised pebble?	whetstone	sandstone	brown	0	83	0	47	0	37	0	0	0			Small, sub-rectangular cobble, possibly slightly facetted from use
B2	90002	11	0	utilised pebble frag	polisher/working slab	sandstone	brown	0	0	140	188	0	54	0	0	0	0		Flat sub-rounded cobble fragment, smoothed and facetted on one face and a pecked hollow in the other face. PM ploughsoil
B2	90121	112	0	utilised pebble frag	pot boiler	sandstone	brown	0	0	0	0	0	0	0	0	0	0		Burnt pebble fragment
B2	90000	356	0	utilised pebble	light hammer stone	sandstone	brown	0	127	0	37	0	33	0	0	0			Sub-rounded, rod-shaped pebble with one small area of light pecking on both faces but not on the tip
B2	801	2261	0	spindle whorl		sandstone	brown	32	0	0	0	0	16	0	0	0	0		Complete stone spindle whorl, brown. Ground to shape, Form B1.
B2	90002	370	0	spindle whorl		sandstone	brown	40	0	0	0	0	18	0	0	0			Complete stone spindle whorl. Ground to shape; Form B2.
B2	90002	246	0	spindle whorl		sandstone	brown	32	0	0	0	0	15	0	0	0			Complete small stone spindle whorl. Ground to shape, Form B1. Spindle hole straight-sided.
B2	90002	362	0	spindle whorl decorated		sandstone	brown	44	0	0	0	0	22	0	0	0	0		Complete stone spindle whorl. Ground to shape, Form B1, but asymmetrical when viewed in profile.
B2	90000	314	0	spindle whorl?		sandstone	brown	65	0	61	0	20	0	0	7	0	0		Split pebble partially drilled through from two sides.

area	context	Find No	subno	general type	specific type	material	colour	diameter	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)	internal diameter	internal depth	internal length	internal breadth	Description
B2	90002	254	0	unfinished? utilised pebble	light hammer stone	sandstone	brown	0	83	0	71	0	54	0	0	0			Small, thick, rounded cobble with pecked facets around three sides
B2	90002	332	0	utilised pebble	heavy hammer stone/anvil	sandstone	brown	0	108	0	108	0	43	0	0	0	0		Flat, triangular cobble with battered facets on three tips and pecked on centre of one face
B2	90202	127	0	utilised pebble	whetstone/abrader	sandstone	brown	0	137	0	45	0	12	0	0	0			Thin, sub-rectangular pebble with worn facets on side and on both tips
B2	90002	1891	0	utilised pebble	whetstone/polisher	sandstone	brown	0	120	0	43	0	15	0	0	0			Rectangular plaque of very fine stone. Heavily polished on both faces and worn on one edge
B2	90000	5411	0	utilised pebble frag	light hammer stone	sandstone	grey	0	0	0	0	0	0	0	0	0			Fragment of a large broken, rod-shaped cobble with a facet at the tip from light hammering
B2	90002	6077	3	pebble unused		schist	grey-green	0	0	0	0	0	0	0	0	0	0		Small, natural, broken rock fragment
B2	90002	6077	2	pebble unused		schist	grey-green	0	0	0	0	0	0	0	0	0	0		Natural weathered rock fragment
B2	90002	298	0	perforated disc	unclassified	schist	grey-green	94	0	0	0	0	8	0	11	0	0		Roughly chipped disc from split local rock. Large central hour-glass perforation
B2	90000	2187	0	pebble unused		various		0	0	0	0	0	0	0	0	0	0		Obviously selected symmetrical and attractive pebbles 25-49mm long. Funerary? (10 items)
B2 E area	91421	551	0	utilised pebble frag	rubber	dolerite	grey	0	0	0	0	0	0	0	0	0	0		Fragment of cobble with one flat face smoothed from wear
B2 E area	91455	528	0	perforated disc		phyllite	grey-green	105	0	0	0	0	18	0	0	0			Complete perforated flat near-circular stone weight. Chipped to shape.
B2 E area	91573	519	0	utilised pebble	whetstone	sandstone	brown	0	0	0	0	0	0	0	0	0	0		Rectangular plaque with whetstone wear on both flat faces
B2 E area	91453	649	0	utilised pebble	light hammer stone	sandstone	brown	0	95	0	49	0	25	0	0	0	0		Small, elongated cobble with pecked facet at each end
B2 E area	92183	648	0	utilised pebble	polisher	sandstone	grey-	0	170	0	160	0	57	0	0	0			Flat, oval, cobble with slight polish on one flat face

area	context	Find No	subno	general type	specific type	material	colour	diameter	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)	internal diameter	internal depth	internal length	internal breadth	Description
B2 E area	92129	634	0	utilised pebble	light hammerstone/polisher	sandstone	green brown	0	128	0	77	0	27	0	0	0			Ovoid cobble with peck marks on sides and ends. Also very smooth surfaced so probably dual function. Found in Phase 1, Bronze Age? old ground surface.
B2 E area	91474	525	0	spindle whorl		sandstone	brown	36	0	0	0	0	14	0	0	0			Complete stone spindle whorl. Ground to shape, Form B1.
B2 E area	91453	2189	0	perforated slab	unclassified	schist	grey-green	0	160	0	100	0	23	0	0	0	0		Small, angular, irregular slab fragment, chipped to shape, with two large perforations on edges.
B2 NW area	91948	754	0	utilised pebble	light hammer stone	sandstone	brown	0	89	0	85	0	24	0	0	0	0		Flat, sub-rounded pebble with pecking facet on one tip and impact fracture on another
B2 passage-way	91233	395	0	pebble unused		black chert		0	35	0	25	0	24	0	0	0	0		Unusually symmetrical egg-shaped pebble. No visible use wear
B2 passage-way	92412	5982	0	utilised pebble	polisher	black chert?	brown	0	115	0	61	0	21	0	0	0			Flat, ovoid pebble with some polish on one face
B2 passage-way	90009	284	0	pebble unused		cherty quartz		0	0	0	0	0	0	0	0	0			Flat oval pebble. No visible use wear
B2 passage-way	92412	750	0	utilised pebble	light hammer stone	dolerite	grey-green	0	143	0	95	0	46	0	0	0	0		Heavy, sub-rounded cobble with peck marks on narrow tip
B2 passage-way	91812	732	0	utilised pebble	polisher	dolerite	grey-green	0	91	0	78	0	31	0	0	0	0		Flat, ovoid, sub-rounded cobble with all-over polish
B2 passage-	91233	392	0	pebble unused		limestone		0	0	0	0	0	0	0	0	0	0		Small pebble with recent damage marks

area	context	Find No	subno	general type	specific type	material	colour	diameter	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)	internal diameter	internal depth	internal length	internal breadth	Description
way																			
B2 passage-way	92190	723	0	perforated disc		phyllite	grey-green	79	0	0	0	0	16	0	0	0			Incomplete or irregularly made perforated weight. Chipped to shape.
B2 passage-way	91322	728	0	utilised pebble	polishing slab	quartzite	brown	0	145	0	126	0	102	0	0	0	0		Sub-angular block with smoothing and polish traces on three faces
B2 passage-way	90009	283	0	utilised pebble frag	polisher/polishing slab	sandstone	brown	0	0	0	0	0	0	0	0	0	0		Fragment of a large sub-rounded cobble with polish on one flat face. Burnt
B2 passage-way	91322	653	0	utilised pebble frag?	polisher	sandstone	brown	0	0	58	60	0	31	0	0	0			Broken, sub-rounded, flattish pebble, one face slightly smoothed from use
B2 passage-way	91222	717	0	utilised pebble frag	light hammer stone	sandstone	grey	0	0	0	0	0	0	0	0	0	0		Fragment of a flat oval pebble with light hammerstone facet at tip
B2 passage-way	90009	61	0	spindle whorl		sandstone	brown	45	0	0	0	0	16	0	0	0			Complete stone spindle whorl. Ground to shape, with some irregularities: Form B2, with sides slightly rounded.
B2 passage-way	91233	375	0	spindle whorl unfinished		sandstone	brown	32	0	0	0	0	29	0	0	0	0		Shaped stone object, possibly an unfinished spindle whorl. Irregularly shaped, almost globular, flattened top and bottom, with a conical depression in largest horizontal face.
B2 passage-way	92189	655	0	utilised pebble	chopping tool	sandstone	brown	0	100	0	72	0	37	0	0	0	0		Oval, rounded cobble chipped to a sharp edge at one end and with use wear rounding
B2 passage-	90794	341	0	rock frag		schist		0	0	0	0	0	0	0	0	0	0		Natural exfoliated rock fragment

area	context	Find No	subno	general type	specific type	material	colour	diameter	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)	internal diameter	internal depth	internal length	internal breadth	Description
way B2 passage-way	92423	744	0	utilised pebble		schist	grey-green	0	0	0	0	0	0	0	0	0			Possible pebble tool or axe imitation?
B2 Pen y Lôn	90056	102	0	axe		Graig Lwyd		0	0	0	0	0	0	0	0	0			Material not typical GL
B2 RHA	90021	234	0	utilised pebble	objet trouve	black chert	black	0	0	0	0	0	0	0	0	0	0		Small, perfectly symmetrical elongated oval pebble with high all-over handling (?) polish
B2 RHA	90535	247	0	utilised pebble	grinding slab	fine sandstone		0	238	0	190	0	113	0	0	0	0		Thick oval cobble, one flat face facetted from wear
B2 RHA	92275	4052	0	pebble unused		hard igneous		0	0	0	0	0	0	0	0	0			Flat, oval cobble. No visible use wear
B2 RHA	90466	245	0	perforated disc frag	unclassified	phyllite	grey-green	100	0	0	0	0	28	0	0	0	0		Pecked and ground disc, originally c. 100mm dia. Central perf c. 25mm dia, with subsequent pecking on surface.
B2 RHA	90021	238	0	pebble unused		quartzite		0	0	0	0	0	0	0	0	0	0		Oval rounded pebble. No visible use wear
B2 RHA	90582	260	0	utilised pebble	whetstone	sandstone	brown	0	0	0	0	0	0	0	0	0	0		Elongated flat cobble with fine wear on one face
B2 RHA	90722	5482	0	utilised pebble frag	rubber	sandstone	grey	0	0	0	0	0	0	0	0	0			Burnt fragment of a sub-rounded cobble with one smoothed face
B2 RHA	90021	226	0	utilised pebble	mortar	sandstone	grey-green	0	105	0	84	0	74	0	0	28	76	63	Sub-angular cobble with pecked and smoothly worn oval concavity. Natural flat base
B2 RHA	90021	208	0	utilised pebble	polishing slab	sandstone	brown	0	188	0	137	0	62	0	0	0	0		Large, flat, sub-rounded cobble with one face worn and facetted from wear
B2 RHA	91000	252	0	utilised pebble frag	whetstone	sandstone	brown	0	0	0	0	0	0	0	0	0			Burnt fragment of a whetstone
B2 RHA	92321	721	0	utilised pebble frag	pot boiler	sandstone	brown	0	0	0	0	0	0	0	0	0	0		Fragment of a sub-rounded cobble fractured by heat. No visible use wear
B2 RHA	90466	244	0	spindle whorl		sandstone	brown	0	0	0	0	0	0	0	0	0			Incomplete stone spindle whorl, chipped on one side. Partially ground to shape, unfinished, Form B2.
B2 RHA	90021	205	0	spindle whorl		sandstone	brown	42	0	0	0	0	14	0	0	0			Unfinished stone spindle whorl. Ground to shape, Form

area	context	Find No	subno	general type	specific type	material	colour	diameter	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)	internal diameter	internal depth	internal length	internal breadth	Description
																			B1.
B2 RHA	90646	272	0	spindle whorl		sandstone	brown	48	0	0	0	0	15	0	0	0	0		Complete stone spindle whorl. Ground to shape, with rounded sides and upper and lower faces also slightly rounded, Form B2.
B2 RHA	90668	473	0	spindle whorl		sandstone	brown	40	0	0	0	0	16	0	0	0			Half a stone spindle whorl. Ground to shape, irregular Form B2.
B2 RHA	90467	258	0	utilised pebble frag	light hammer stone	sandstone	grey	0	0	0	0	0	0	0	0	0			Tip of elongated sub-rounded cobble with pecked facet at tip
B2 RHA	90492	2240	0	pebble unused		schist		0	0	0	0	0	0	0	0	0			Flat, ovoid cobble with possible slight polish but no definite visible use wear
B2 RHA	90596	265	1	pebble unused frag		schist		0	0	0	0	0	0	0	0	0			Not used
B2 RHA	90596	265	2	pebble unused frag		schist		0	0	0	0	0	0	0	0	0			Not used
B2 RHA	92500	729	0	staddle stone		schist		250	0	733	0	0	0	0	0	0	0		Staddle stone. Broken section of a long tapering column of local rock with a protruding rounded pecked tenon at one end.
B2 RHA	90547	489	0	utilised pebble frag	perforated	schist	grey-green	0	0	0	0	0	0	0	0	0	0		Small fragment split from a larger object with a very small perforation, c. 2mm dia
B2 RHA	90638	237	0	pebble unused		silty chert		0	0	0	0	0	0	0	0	0			Burnt, sub-rounded cobble. No visible use wear
B2 RHA/RHE	91109	651	0	perforated slab frag	weight?	phyllite	grey-green	0	155	0	75	0	17	0	0	0	0		Large thick frag prob from a triangular piece with the perf at the top. A quadrilateral fragment of stone with a worked perforation,.
B2 RHB	90990	641	0	utilised pebble?	polisher	black chert	dark grey	0	70	0	33	0	30	0	0	0			Small, thick, sub-rounded pebble with slight all-over polish. No facets
B2 RHB	90875	538	0	utilised pebble	polisher	black chert?	dark grey	0	77	0	60	0	30	0	0	0			Small, sub-rounded flat pebble, one face with polish, no facets
B2 RHB	90875	647	0	saddle quern	topstone	breccia		0	280	0	137	0	0	0	0	0	0		Almost complete slug-shaped rubber
B2 RHB	92543	774	0	mortar	deep	dolerite	grey-	0	338	0	252	0	138	0	0	91	260	180	Small boulder with deep, oval, pecked bowl

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B2 RHB	90884	552	0	utilised pebble	working slab	dolerite	green grey-green	0	285	0	235	0	130	0	0	0	0		A small, sub-rectangular boulder with a natural flat base provided by the face of the split boulder. It has a pecked cup mark on the 'upper' face and another, similar on one side face. Dark staining on the end as well as smoothing within the cup marks suggests twas a working stone use for grinding a mineral or plant substance. Found in the building platform under RHB phase 2.
B2 RHB	92582	654	0	utilised pebble frag	polisher/cpmk slab	dolerite	brown	0	0	0	0	0	0	0	0	0	0		Fragment of a small cobble, smoothed from use/handing and with traces of a small pecked concavity on one face
B2 RHB	90990	567	0	utilised pebble frag	pot boiler/polisher	dolerite		0	0	0	0	0	0	0	0	0	0		Fragment of a sub-rounded cobble broken by heat and possibly smoothed from use
B2 RHB	90990	522	0	utilised pebble	polisher	dolerite	grey-green	0	88	0	80	0	17	0	0	0			Flat, triangular-shaped, sub-rounded pebble, highly polished on both faces
B2 RHB	91929	573	0	utilised pebble	pol slabr/lhst/abr	dolerite	grey-green	0	142	0	114	0	49	0	0	0	0		Flat, ovoid, sub-rounded cobble with polish on one face and pecking or abrasion at each end
B2 RHB	92398	748	0	utilised pebble	working slab	dolerite	brown	0	250	0	172	0	146	0	0	0	0		Small, sub-angular boulder with a cup-shaped working hollow in one face. Within laid stone paving of RHB, phase 2, presumably just re-used.
B2 RHB	90883	410	0	utilised pebble	polishing slab/hammerst	dolerite	grey-green	0	147	0	115	0	30	0	0	0	0		Flat, ovoid, sub-rounded cobble with slight polish one face and pecked facets on one tip and on sides
B2 RHB	90990	562	0	pebble unused		fine igneous		0	0	0	0	0	0	0	0	0	0		Flat, oval pebble. No visible use wear
B2 RHB	90508	313	0	pebble unused		fine sandstone		0	0	0	0	0	0	0	0	0			Sub-angular cobble. No visible use wear or shaping
B2 RHB	90875	316	0	pebble unused frag		fine sandstone		0	0	0	0	0	0	0	0	0	0		Fragment of large flat oval cobble. No visible use wear
B2 RHB	90508	229	0	axe		Graig Lwyd		0	0	0	0	0	0	0	0	0			Unusual, narrow, chisel-like form
B2 RHB	91166	369	0	utilised pebble frag	polisher	granite	grey	0	0	0	0	0	0	0	0	0	0		Thick, ovoid cobble with polish on one face, a worn facet on the tip and burnt

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B2 RHB	90990	2204	0	pebble unused		igneous		0	0	0	0	0	0	0	0	0	0		Large, sub-rounded cobble. No visible use wear
B2 RHB	90990	515	0	Perforated disc		phyllite	grey-green	32	0	0	0	0	3	0	4	0	0		Complete perforated flat disc, possibly a gaming counter.
B2 RHB	90884	767	0	utilised pebble	rubbing slab	quartzite	brown	0	224	0	172	0	124	0	0	0	0		Sub-angular cobble with two flat faces with signs of wear from smoothing
B2 RHB	90508	296	0	pebble unused		quartzite		0	0	0	0	0	0	0	0	0			Sub-angular cobble. No visible use wear
B2 RHB	91622	709	0	pebble unused		quartzite		26	0	20	0	14	0	0	0	0	0		Oval, rounded pebble. No visible use wear
B2 RHB	92534	776	0	pebble unused		quartzite		0	153	0	108	0	74	0	0	0			Ovoid sub-rounded pebble. No visible use wear
B2 RHB	90884	759	0	utilised pebble	abrader slab	sandstone	brown	0	259	0	155	0	106	0	0	0	0		Sub-angular cobble with one smoothed face
B2 RHB	92069	595	0	utilised pebble	abrader slab	sandstone	brown	0	320	0	204	0	87	0	0	0	0		Large, flat, sub-rounded cobble with one face smoothed from wear
B2 RHB	90990	579	0	utilised pebble	light hammer stone	sandstone	brown	0	117	0	76	0	50	0	0	0	0		Thick, oval cobble with a limited amount of impact damage on each end
B2 RHB	90990	578	0	utilised pebble	light hammer stone	sandstone	brown	0	115	0	65	0	43	0	0	0	0		Elongated oval cobble with slight pecking damage on both ends and one flake removed by impact
B2 RHB	90990	566	0	utilised pebble	whetstone	sandstone	grey-green	0	185	0	50	0	35	0	0	0			Sub-rectangular, elongated cobble with slight smoothing on faces, probably from use as a whetstone
B2 RHB	90806	295	0	utilised pebble	polisher/working slab	sandstone	grey-green	0	120	0	72	0	23	0	0	0	0		Flat, ovoid cobble with a flat smooth worn facet on one face and pecked in the centre of the opposite face
B2 RHB	90990	565	0	utilised pebble frag	polishing slab	sandstone	brown	0	0	0	0	0	0	0	0	0	0		Fragment of a flat, sub-rounded cobble broken by heat and possibly smoothed from use
B2 RHB	90990	576	0	utilised pebble frag	heavy hammer stone	sandstone	brown	116	0	0	0	0	0	0	0	0	0		Large, broken spherical cobble, probably burnt and with a large area of impact damage from use as a hammer
B2 RHB	90990	523	0	utilised pebble frag	abrader slab	sandstone	brown	0	78	0	68	0	16	0	0	0	0		Flat, oval pebble with a worn shallow concavity on each face
B2 RHB	91929	572	0	utilised pebble frag	polishing slab	sandstone	brown	0	129	0	90	0	20	0	0	0	0		Flat, thin, ovoid cobble worn smooth on one face

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B2 RHB	90807	768	0	utilised pebble	light hammer stone	sandstone	brown	0	146	0	72	0	55	0	0	0	0		Elongated cobble with pecking facet at tip
B2 RHB	90990	524	0	utilised pebble	polisher	sandstone	brown	0	147	0	91	0	39	0	0	0			Triangular flat cobble with slight polish on both flat faces
B2 RHB	90882	360	0	utilised pebble	hammerstone/polisher	sandstone	grey-green	0	122	0	68	0	72	0	0	0	0		Sub-rectangular cobble battered at both ends and with polish on three faces
B2 RHB	90990	577	0	utilised pebble?	polisher?	sandstone	brown	0	0	0	0	0	0	0	0	0	0		Flat, ovoid, sub-rounded cobble with possible smoothing on one face
B2 RHB	90883	344	0	spindle whorl		sandstone	brown	38	0	0	0	0	15	0	0	0			Complete stone spindle whorl. Ground to shape, one horizontal flat face slightly rounded, Form B1..
B2 RHB	90992	642	0	spindle whorl		sandstone	brown	37	0	0	0	0	18	0	0	0			Complete stone spindle whorl. Ground to shape, Form B1.
B2 RHB	90990	571	0	spindle whorl		sandstone	brown	42	0	0	0	0	18	0	0	0			Complete stone spindle whorl . Ground to shape, slightly asymmetrical Form B2.
B2 RHB	92399	661	0	utilised pebble	heavy hammer stone	sandstone	brown	0	107	0	78	0	62	0	0	0	0		Sub-rounded cobble with battered facets on both ends. Some red (iron?) staining
B2 RHB	90990	560	0	pebble unused		sandstone		0	0	0	0	0	0	0	0	0	0		Broken cobble. No visible use wear
B2 RHB	90883	586	0	utilised pebble	abrader/polisher	sandstone	brown	0	100	0	85	0	72	0	0	0	0		Heavy, rounded cobble with extensive abrasion facets, also with some polish on each face, perhaps just from handling
B2 RHB	90990	564	0	cupmarked slab		schist	grey-green	0	390	0	345	0	62	0	0	0	0		Split slab from surface of a local rock outcrop with five cup-marks on the original external surface and with three notches on its sides. Bronze Age feature removed from outcrop?
B2 RHB	92514	751	0	perforated disc	unclassified	schist	grey-green	608	0	0	0	0	68	0	95	0	0		Large, heavy, flat, split slab of local rock, roughly chipped to disc shape and with a large, neatly cut, pecked-through central perforation. This is slightly hour-glass shape and possibly cut or worn by rotary motion.
B2 RHB	90992	644	0	utilised pebble frag	polisher	schist	grey-green	0	0	0	0	0	0	0	0	0	0		Fragment of rod-shaped pebble with smoothing on one face
B2 RHC	91271	546	0	pebble unused		black chert		0	0	0	0	0	0	0	0	0	0		Group of 15 similar small pebbles, 28-42mm dia. Collected as game pieces or counters?

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B2 RHC	91290	405	1	pebble unused		black chert		0	64	0	24	0	15	0	0	0	0		Small rod-shaped pebble. Possibly an objet trouve
B2 RHC	91290	405	2	pebble unused		black chert		0	45	0	18	0	12	0	0	0	0		Small rod-shaped pebble. Possibly an objet trouve
B2 RHC	91227	379	0	utilised pebble frag	heavy hammer stone	dolerite	brown	0	0	65	70	0	52	0	0	0	0		Rounded cobble fragment with peck marks on edges and faces. Probably broken in use
B2 RHC	91626	650	0	axe frag		Graig Lwyd		0	0	64	66	0	30	0	0	0	0		Intact blade fragment from an all-over ground and polished axe, snapped in mid-section from use
B2 RHC	91648	662	0	utilised pebble	pot boiler	granite	grey	0	0	0	0	0	0	0	0	0	0		Fragment of a smooth sub-rounded cobble fractured by heat
B2 RHC	92569	775	0	perforated disc frag	unclassified	phyllite	grey-green	85	0	0	0	0	10	0	12	0	0		Plaque of local schist with pecked and ground edges and a neatly cut and ground perf, slightly off-centre.
B2 RHC	91648	549	0	objet trouve		quartzite	brown	0	0	0	0	0	0	0	0	0	0		Unusually symmetrical egg-shaped cobble with a little probably accidental damage at both ends. Probably just an objet trouve
B2 RHC	91710	771	0	utilised pebble frag	polisher	quartzite	brown	0	0	0	0	0	0	0	0	0	0		Fragment of a rod-shaped pebble of very fine rock with traces of polish
B2 RHC	91436	506	0	utilised pebble frag	mortar	sandstone	brown	0	110	0	92	0	56	0	0	25	80	63	Sub-angular broken cobble with pecked worn oval concavity. Natural flat base
B2 RHC	91922	574	0	rotary quern?		sandstone		230	0	0	0	0	0	167	89	0	0		Heavy, stone cylinder fragment. Central perforation neatly cut. One flat end face survives, although damaged and might have been a grinding surface, suggesting that this was a small pot quern. In support of this the central hole is slightly tapering and there is a slight groove in the broken end, radial to the stone, which might have been a handle hole, and the reason the stone broke.
B2 RHC	91289	510	0	utilised pebble	grinding/sharpening stone	sandstone	brown	0	156	0	153	0	58	0	0	0			Large, flat, oval cobble with two worn linear grooves worn in one face. The stone is very fine grained and suitable as a sharpening stone. One of the grooves is broad and round-bottomed, about 5mm wide. The other is similar width but has two finer cuts in its base, for sharpening a pointed object. The grooves taper out at both ends but are not sharp cuts so are not from grinding

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																			and axe edge. Definitely not from grinding the edge of a spindle whorl. From floor surface of RHC.
B2 RHC	91267	548	0	utilised pebble	abrader	sandstone	brown	0	100	0	87	0	60	0	0	0	0		Thick, heavy cobble with some random peck marks and two bevelled facets on one tip
B2 RHC	91267	730	0	utilised pebble	rubber	sandstone	brown	0	77	0	53	0	33	0	0	0	0		Small, subrectangular block. All faces facetted flat from rubbing and one bevelled
B2 RHC	91516	1773	2	pebble unused		sandstone	brown	0	0	0	0	0	0	0	0	0			Small, unused pebble fragment
B2 RHC	91436	501	0	utilised pebble	polishing slab	sandstone	brown	0	124	0	72	0	36	0	0	0	0		Flat, oval, rounded cobble with some polish on both faces
B2 RHC	91516	1773	1	utilised pebble?	polisher	sandstone	brown	0	0	69	71	0	25	0	0	0			Flat, oval pebble, broken. Possible slight signs of polish on one face
B2 RHC	91268	526	0	utilised pebble	pot boiler	sandstone	brown	0	77	0	70	0	48	0	0	0			Oval, rounded cobble. No visible use wear but surface cracking suggests it is a pot boiler
B2 RHC	92561	769	0	spindle whorl		sandstone	brown	51	0	0	0	0	6	0	0	0			Complete stone spindle whorl. Ground to shape, signs of surface smoothing, possibly from wear, on both faces, thin Form B2. Four deep incised radial lines in one quadrant, with some finer crossways lines.
B2 RHC	91289	531	0	spindle whorl		sandstone	brown	34	0	0	0	0	17	0	0	0			Incomplete stone spindle whorl. Ground to shape, Form B1. Two areas of damage and random peck marks on all faces.
B2 RHC	91271	537	0	utilised pebble frag	chopping tool	sandstone	grey-green	0	74	0	72	0	30	0	0	0			Flat, ovoid cobble, flaked to create a chopping edge with possible edge use wear
B2 RHC	91271	404	0	utilised pebble	whetstone	sandstone	brown	0	88	0	30	0	25	0	0	0			Rectangular, rod-shaped cobble wiith one face smoothed and with various scratches but not facetted
B2 RHC	91155	368	0	utilised pebble	polisher	sandstone	brown	0	93	0	47	0	25	0	0	0			Rectangular, elongated plaque with polish on both faces, no facets
B2 RHD	91037	355	0	utilised pebble	polishing slab	black chert?	brown	0	90	0	81	0	38	0	0	0	0		Sub-rectangular block with wear and polish on one flat face
B2 RHD	90934	335	0	pebble unused		fine sandstone		0	0	0	0	0	0	0	0	0	0		Chance natural fracture
B2 RHD	90471	521	0	utilised pebble	bevelled pebble	sandstone	grey-green	0	180	0	70	0	23	0	0	0	0		Rod-like cobble with chipping and wear on both ends

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B2 RHD	90532	157	0	pebble unused		schist		0	0	0	0	0	0	0	0	0			Flat ovoid pebble. No visible use wear
B2 RHD	90532	249	0	pebble unused frag		silty chert		0	0	0	0	0	0	0	0	0			Oval pebble fragment. No visible use wear
B2 RHE	92230	652	0	utilised pebble	working slab	?		0	630	0	530	0	0	0	0	0	0		Large flat-topped stone with an area of polish on the upper surface. Left in situ as too heavy.
B2 RHE	91171	365	0	utilised pebble?	polisher	black chert	brown	0	0	0	0	0	0	0	0	0	0		Small, flat, ovoid pebble, very smooth all over but could be natural, not smoothed from use
B2 RHE	91543	426	0	utilised pebble	polishing slab	black chert?	brown	0	98	0	87	0	45	0	0	0	0		Natural rectangular block of chert with smoothing from use on two faces
B2 RHE	91171	363	0	pebble unused		coarse igneous		0	0	0	0	0	0	0	0	0	0		Thick, sub-rounded cobble. No visible use wear
B2 RHE	91722	547	0	utilised pebble frag	polisher	dolerite	grey	0	0	98	0	56	40	0	0	0			Flat, sub-rounded pebble broken by heat. Slight polish on both faces. No facets
B2 RHE	91343	423	0	pebble unused frag		dolerite?		0	0	99	102	0	60	0	0	0	0		Large, rounded broken cobble with burning. No visible use wear. Possibly a broken hammerstone
B2 RHE	91247	389	0	pebble unused		fine igneous		0	0	0	0	0	0	0	0	0	0		Sub-rounded cobble. No visible use wear
B2 RHE	90002	326	0	axe		Graig Lwyd		0	0	0	0	0	0	0	0	0			
B2 RHE	91209	371	0	pebble unused		granite		0	93	0	70	0	49	0	0	0			Sub-rounded cobble. No visible use wear
B2 RHE	91638	746	0	pebble unused		granite		23	0	0	0	0	0	0	0	0	0		Small, spherical pebble
B2 RHE	91334	407	0	disc	gaming counter	phyllite	grey-green	29	0	0	0	0	7	0	0	0	0		Complete stone disc, probably a gaming counter.
B2 RHE	91247	385	0	perforated disc	weight?	phyllite	brown	120	0	0	0	0	24	0	0	0			Complete perforated near-circular stone weight.
B2 RHE	91444	534	0	utilised pebble frag	polishing slab	sandstone	grey	0	0	0	0	0	0	0	0	0	0		Fragment of a broken polishing slab. Polish and scratches on two flat faces
B2 RHE	91543	505	0	utilised pebble	heavy hammer stone	sandstone	brown	0	74	0	49	0	36	0	0	0	0		Small but heavy rounded pebble with pecking and impact fracture on one end
B2 RHE	91171	364	0	utilised pebble	hammer stone	sandstone	brown	0	65	0	65	0	50	0	0	0	0		Small, thick cobble with battered ends
B2 RHE	91343	421	0	utilised pebble?	unclassified	sandstone	brown	0	101	0	73	0	40	0	0	0	0		Flat, rounded cobble with numerous random scratches.

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B2 RHE	91153	358	0	utilised pebble	rubber	sandstone	brown	0	0	0	0	0	0	0	0	0	0		Function uncertain Natural pebble fragment with rubbing wear on one flat face
B2 RHE	92504	753	0	utilised pebble	cupmarked pebble	sandstone	grey	129	0	0	0	34	0	0	0	0	0		Flat, heavy cobble with pecked cup marks on both faces. Possible hammer or small anvil
B2 RHE	91247	390	0	utilised pebble	polisher	sandstone	brown	0	113	0	54	0	35	0	0	0			Thick, rod-like pebble with slight polish on one face. No facetting
B2 RHE	91406	409	0	spindle whorl		sandstone	brown	51	0	0	0	0	19	0	0	0			Complete stone spindle whorl. Ground to shape, Form B2..
B2 RHE	91343	415	0	spindle whorl		sandstone	brown	53	0	0	0	0	18	0	0	0			Complete stone spindle whorl. Ground to shape, thick disc with straight sides, Form B1
B2 RHE	91247	387	0	spindle whorl		sandstone	brown	36	0	0	0	0	17	0	0	0			Complete decorated stone spindle whor. Ground unevenly to shape, upper and lower faces and sides all slightly rounded; Form B1 or B2.
B2 RHE	91444	533	0	spindle whorl		sandstone	brown	39	0	0	0	0	13	0	0	0			Complete stone spindle whorl. Ground to shape, Form B1.
B2 RHE	91367	412	0	spindle whorl		sandstone	brown	34	0	0	0	0	13	0	0	0			Complete stone spindle whorl. Ground to shape, Form B1.
B2 RHE	91247	386	0	spindle whorl		sandstone	brown	38	0	0	0	0	15	0	0	0			Complete stone spindle whorl. Ground to shape, irregular, Form B1
B2 RHE	91247	391	0	spindle whorl		sandstone	brown	44	0	0	0	0	12	0	0	0			Complete stone spindle whorl. Ground to shape, irregular disc with rounded sides, Form B2
B2 RHE	91171	366	0	spindle whorl unfinished		sandstone	brown	31	0	0	0	0	14	0	0	0			Incomplete stone disc, possibly unfinished spindle whorl. Ground to shape, Form B1; damaged afterwards: approximately one-tenth missing. Fine pin-prick marks on one face.
B2 RHE	91274	399	0	utilised pebble	whetstone	sandstone	brown	0	120	0	47	0	20	0	0	0			Sub-rectangular, flat pebble. Facetted, probably from use, on one face and bevelled at the tip
B2 RHE	91722	736	0	utilised pebble	light hammer stone	sandstone	brown	0	124	0	71	0	51	0	0	0	0		Elongated cobble with considerable random pecking, scratching and possible smoothing
B2 RHE	92537	2188	0	pebble unused		schist		0	0	0	0	0	0	0	0	0	0		Naturally shattered rock fragment
B2 RHE	91722	5969	0	pebble unused		schist		0	0	0	0	0	0	0	0	0			Not used

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B2 RHF	90501	227	0	utilised pebble frag	rubber	dolerite	grey	0	0	0	0	0	0	0	0	0			Fragment of flat, subangular cobble worn on one flat face
B2 RHF	90502	239	0	cupmarked stone		dolerite	grey-green	0	310	0	242	0	117	0	0	0	0		Small, flat, sub-rounded boulder with a deep cup mark pecked on each face, but not diametrically opposite. One cup-mark is 50mm diam. and 19mm deep, the other is 59mm diam. and 25mm deep. The cupmarks appear well weathered but there is a small amount of wear showing in the smaller cup-mark, which shows that the original surfaces have weathered away. But there is no evidence to show how the stone was being used.
B2 RHF	90501	225	0	utilised pebble	polisher	quartzite	brown	0	0	0	0	0	0	0	0	0			Flat, ovoid pebble with a small area of polish on one face
B2 RHF	90300	185	0	utilised pebble	hammer stone	rhyolithic porphyry	grey	0	74	0	65	0	54	0	0	0			Rounded cobble with pecked facets at both ends
B2 RHF	90002	131	0	mace-head?	pebble macehead?	sandstone		67	0	0	0	0	43	0	0	0	0		Thick, circular, cobble pecked to a neat drum-like shape and with two opposing large pecked concavities in each face. Appears to be a finished piece, not an unfinished perforated object. Re-study. Measure and record. Any use wear?
B2 RHF	90501	222	0	utilised pebble	light hammer stone	sandstone	brown	0	0	0	0	0	0	0	0	0			Heavy, oval cobble with worn or pecked facet on tip
B2 RHF	90501	219	0	spindle whorl		sandstone	brown	0	47	0	38	0	14	0	0	0	0		Stone spindle whorl, probably unfinished.
B2 RHF	90002	132	0	spindle whorl		sandstone	brown	50	0	0	0	0	18	0	0	0			Incomplete stone spindle whorl. Interpreted as a naturally shaped pebble chipped to shape: Form B2.
B2 RHF	90300	195	0	spindle whorl		sandstone	brown	42	0	0	0	0	12	0	0	0			Complete stone spindle whorl. Ground to shape, shallow Form B1. A first attempt at drilling the spindle hole is visible as a cone-shaped depression on both horizontal faces, midway between the finished spindle hole and the edge of the whorl.
B2 RHF	90300	189	0	spindle whorl		sandstone	brown	42	0	0	0	0	19	0	0	0			Complete stone spindle whorl, asymmetrical, possibly unfinished. Ground to shape, with work-marks (striations) on flat faces; irregular shape, Form B1.

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B2 RHF	90299	212	0	utilised pebble	hammer stone	sandstone	brown	0	80	0	80	0	55	0	0	0			Thick, sub-rounded cobble with pecked facets on two tips
B2 RHF	90746	292	0	perforated disc	weight?	schist	grey-green	133	0	0	0	0	38	0	18	0	0		Large heavy disc, chipped and partly ground to shape with a central wide hour-glass perf. Complete or almost complete near-circular stone weight.
B2 RHF Laneside	90408	168	0	utilised pebble?		black chert?	grey	0	0	0	0	0	0	0	0	0			Small cuboid pebble possibly with handling polish. Possible an objet trouve
B2 RHF Laneside	90502	288	0	saddle quern frag	topstone	breccia		0	0	255	150	0	63	0	0	0	0		Fragment of a slug-shaped rubber
B2 RHF Laneside	90550	279	0	utilised pebble	pot boiler	dolerite	grey	0	0	0	0	0	0	0	0	0			Burnt fragment of a large, flat sub-rounded cobble
B2 RHF Laneside	90501	217	0	pebble unused		fine igneous		0	0	0	0	0	0	0	0	0	0		Sub-angular pebble. No visible use wear
B2 RHF Laneside	90501	2239	0	pebble unused		hard igneous		0	0	0	0	0	0	0	0	0			Large, flat, oval cobble. No visible use wear
B2 RHF Laneside	90711	289	0	pebble unused frag		hard igneous		0	0	0	0	0	0	0	0	0			Broken rod-shaped pebble. No visible use wear. Could be that a utilised area has been broken off.
B2 RHF Laneside	90299	214	0	split pebble frag		quartzite	grey-green	0	0	0	0	0	0	0	0	0			Split by a heavy blow but not otherwise used. Core reject?
B2 RHF Laneside	90501	243	0	pebble unused		quartzite		0	0	0	0	0	0	0	0	0			Large, sub-rounded cobble. No visible use wear
B2 RHF Laneside	90548	264	0	utilised pebble	working slab	sandstone	brown	0	120	0	130	0	150	0	0	0	0		Sub-rectangular block of tabular cherty rock, one face probably used as a working slab
B2 RHF Laneside	90299	211	0	utilised pebble	hammer stone	sandstone	brown	0	87	0	61	0	50	0	0	0			Small, thick, rounded cobble with two bevelled facets at one end
B2 RHF Laneside	90306	152	0	utilised pebble frag	hammer stone	sandstone	grey	0	0	96	80	0	35	0	0	0			Part of a broken elongated cobble with a pecking facet at the tip

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B2 RHF Laneside	90299	201	0	spindle whorl		sandstone	brown	36	0	0	0	0	20	0	0	0			Complete stone spindle whorl. Ground to shape, with remaining irregularities, straight sides with rounded shoulders, Form B1.
B2 RHF Laneside	90299	213	0	utilised pebble	pot boiler?	sandstone	brown	0	0	0	0	0	0	0	0	0			No visible use wear. Fractured by heat. Pot boiler?
B2 RHF Laneside	90548	280	0	pebble unused		schist		0	0	0	0	0	0	0	0	0	0		Unused, elongated thin cobble, probably collected as curiosity or for potential use as a light hammerstone
B3	22156	4076	0	pebble unused		quartz		0	25	0	20	0	18	0	0	0	0		Small, oval pebble
B3	2063	49	0	pebble unused		schist		0	156	0	105	0	87	0	0	0			Sub-rounded cobble. No visible use wear. PM ploughsoil.
D3	60100	1655	0	utilised pebble	burnisher	black chert	black	0	46	0	42	0	30	0	0	0	0		Cuboid, sub-rounded pebble, heavily polished all over
E	31307	961	0	utilised pebble frag	heavy hammer stone?	dolerite	brown	0	0	87	88	0	53	0	0	0	0		Heavy, rounded cobble, fractured from use or burning. No wear signs. Possible tool reject
E	31305	5503	0	utilised pebble	pot boiler/polisher?	quartzite	brown	0	0	0	0	0	0	0	0	0	0		Rounded cobble possibly smoothed from use and with heat fractures
E (hollow)	31024	6337	0	disc frag	weight?	phyllite	grey-green	75	67	0	40	0	13	0	0	0	0		Frag of a roughly shaped disc originally c. 80mm dia. Insufficient left to know if it had been perforated.
E (hollow)	31041	6501	0	slab	unclassified	schist	yellow-grey	0	565	0	245	0	60	0	0	0	0		A sub-rectangular, split and broken slab of local rock. It appears to have sat in the ground with the flatter surface at the top and was close to a hearth so probably a working surface but there is no visible use wear on this surface.
F1	904	2260	0	spindle whorl		sandstone	brown	34	0	0	0	0	15	0	0	0	0		Unfinished stone spindle whorl. Partially ground to shape, straight-sided where finished, Form B1.
F1 FE	93560	5464	0	pebble unused		fine sandstone		0	0	0	0	0	0	0	0	0			Split cobble deeply weathered in acidic soil? One concavity is a natural frost fracture
F1 FE	93089	845	0	staddle stone?		schist		0	0	0	0	0	0	0	0	0	0		Pillar-like rock. Possible staddle stone from granary posthole [93052]. Discarded
F1 FW	93256	5398	0	utilised pebble	light hammer stone	dolerite	brown	0	117	0	53	0	42	0	0	0			Sub-rounded, rod-shaped cobble with light pecking damage at tip

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F1 FW	93256	5399	1	pebble unused		granite		0	98	0	87	0	28	0	0	0	0		Flat, ovoid, sub-rounded cobble
F1 FW	93284	5404	0	utilised pebble	polishing slab	granite	brown	0	112	0	96	0	36	0	0	0	0		Flat, ovoid, sub-rounded cobble with polish on one face
F1 FW	93256	5399	2	pebble unused		quartz		0	80	0	56	0	25	0	0	0	0		Flat, ovoid, sub-rounded cobble
F1 FW	93294	5401	2	pebble unused		quartzite	brown	0	119	0	72	0	18	0	0	0	0		Flat, elongated pebble. No visible use wear
F1 FW	93294	5401	1	utilised pebble	heavy hammer stone	quartzite	brown	0	139	0	87	0	74	0	0	0	0		Large, sub-rounded cobble with a pecked facet on one tip
F1 FW	93030	5397	0	utilised pebble frag	light hammer stone	sandstone	brown	0	0	78	107	0	40	0	0	0	0		Flat, oval cobble fragment with pecking damage on part of one edge
F1 FW	93100	848	0	utilised pebble	light hammer stone	sandstone	brown	0	110	0	54	0	24	0	0	0	0		Rod-shaped pebble with peck marks on both ends
F1 FW	93284	5403	0	utilised pebble	hammerstone/polisher	sandstone	brown	0	112	0	92	0	52	0	0	0	0		Sub-rounded cobble with battered facets on both ends and polish on one flat face
F1 FW	92597	780	0	spindle whorl		sandstone	brown	42	0	0	0	0	17	0	6	0	0		Complete stone spindle whorl. Ground to shape, Form B1.
F1 RHG	92612	789	0	pebble unused		hard igneous		0	0	0	0	0	0	0	0	0			Sub-rounded oval cobble. No visible use wear
F1 RHG	92798	829	0	perforated disc	unclassified	phyllite	grey-green	112	0	0	0	0	15	0	20	0	0		Sub-circ disc chipped to shape, with large oval central perf tapering and cut from one side only.
F1 RHG	92799	804	0	utilised pebble	rubber	sandstone	brown	0	125	0	98	0	20	0	0	0			Flat ovoid cobble facetted from rubbing on both faces
F1 RHH	92923	826	0	utilised pebble	polishing slab	sandstone	brown	0	212	0	212	0	51	0	0	0	0		Flat, sub-rounded cobble, centre of one face smoothed from use, but not facetted
F1 RHH	92923	825	0	utilised pebble	mortar	sandstone	grey-green	0	146	0	129	0	65	0	0	37	84	73	Sub-rounded cobble with pecked and worn concavity and natural flat base
F1 RHI	93487	5453	0	pebble unused		coarse chert		0	0	0	0	0	0	0	0	0			Sub-rounded cobble. No visible use wear
F1 RHI	90002	834	0	utilised pebble	working slab	dolerite	grey-green	0	656	0	520	0	243	0	0	0	0		Large polishing/grinding stone?
F1 RHI	93453	5452	0	utilised pebble frag	pot boiler	rhyolithic porphyry	grey	0	0	0	0	0	0	0	0	0			Sub-rounded cobble fragment, possibly broken by heat. No visible use wear
F1 RHI	93404	5408	0	utilised pebble	light hammer stone	sandstone	brown	0	124	0	65	0	35	0	0	0	0		Elongated cobble with pecking at one end

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F1 RHI	92949	967	0	utilised pebble	polisher	sandstone	brown	0	111	0	89	0	67	0	0	0			Sub-rounded cobble with slight polish and black staining on one face. No facetting
F1 RHI	93507	5457	0	spindle whorl		sandstone	brown	52	0	0	0	0	31	0	9	0	0		Rough-out for a spindle whorl. Work marks on all surfaces; profile asymmetrical; and spindle hole very roughly gouged out.
F1 RHI	93507	5463	0	spindle whorl		sandstone	brown	41	0	0	0	0	12	0	4	0	0		Complete stone spindle whorl. One face roughly worked, other has rasp marks; sides ground to shape; Form B1.
F1 RHI	93606	5748	0	utilised pebble?	whetstone	sandstone	brown	0	0	0	0	0	0	0	0	0			Rectangular-sectioned, rod-shaped pebble with broken end. No visible use wear but wear signs could have been removed by weathering
F1 RHI	93457	5412	0	cupmarked disc	post-pad	schist		0	676	0	520	0	92	0	0	0	0		Large, heavy, flat, approximately oval disc, roughly chipped to shape, with a large, shallow, central cup-mark, c. 65mm diam. and 10mm deep. The cup-mark is smooth as if worn or created by circular motion, rather than pecked. The stone formed a post pad but the presence of the cup-mark is unexplained. It was too small and shallow to have functioned as a mortice for a post.
F1 RHI	93385	5518	0	disc	post pad	schist	grey-green	0	407	0	403	0	54	0	0	0	0		Split slab of local rock chipped to a neat circular shape. No visible use wear.
F1 RHI	93503	5456	0	disc	post-pad?	schist	grey-green	0	260	0	225	0	28	0	0	0	0		A thin, flat slab of local schist rock neatly chipped to an oval shape. Function unknown. One side is very flat, so it could be a food platter, but shows no surface wear, scratches or cut-marks.
F1 RHI	93507	5458	0	utilised pebble	mortar	tuff?	brown	0	79	0	53	0	48	0	0	23	46	34	Small, sub-angular pebble of very soft rock, with a carved oval concavity with some wear. Possible lamp or pigment pot
F3	25051	1102	0	pebble unused		shale		0	0	0	0	0	0	0	0	0			No visible use wear
H	2093	1191	0	utilised pebble	hammerstone/core reject	black chert	dark grey	0	57	0	50	0	39	0	0	0			Small, thick, sub-rounded pebble with damage on two tips. Possibly just a core reject
H	50246	1718	0	utilised pebble?	polisher	black chert?	brown	0	70	0	39	0	13	0	0	0	0		Small, flat, oval pebble with all-over polish. Possible burnisher

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H	50091	1202	0	saddle quern frag	bottom stone	dolerite	grey-green	0	0	420	265	0	111	0	0	0	0		Flat slab of a small boulder worn into saddle by wear
H	50132	1401	0	utilised pebble	abrader slab	dolerite	grey-green	0	255	0	155	0	58	0	0	0	0		Sub-rounded cobble with convex work facet on one face
H	50089	1146	0	utilised pebble	grinding slab	dolerite	brown	0	212	0	168	0	41	0	0	0	0		Natural flat thin sub-angular slab with one flat worn face
H	50149	1456	0	pebble unused		fine igneous		0	0	0	0	0	0	0	0	0			Small, flat, sub-rounded pebble. No visible use wear
H	50109	1192	0	pebble unused		fine igneous		0	0	0	0	0	0	0	0	0	0		Thick, ovoid pebble. No visible use wear
H	50064	1127	0	objet trouve		granite	brown	0	0	0	0	0	0	0	0	0	0		Unusually symmetrical egg-shaped cobble. No visible use. Objet trouve?
H	50110	1201	0	pebble unused		quartz		0	0	0	0	0	0	0	0	0	0		Two rounded pebbles. 31 and 35mm dia. No visible use wear
H	50132	1400	0	utilised pebble	heavy hammer stone	sandstone	brown	0	103	0	84	0	94	0	0	0	0		Sub-rounded cobble with heavily battered facets on two tips
H	50086	1204	0	mortar frag	shallow	sandstone	brown	0	340	0	310	0	110	0	0	45	250	195	Flat, sub-angular boulder with a large, shallow, concave bowl
H	50396	4527	2	pebble unused frag		sandstone	brown	0	0	90	0	87	73	0	0	0			Broken, sub-rounded cobble fractured by heat. No visible use wear
H	50396	4527	1	utilised pebble	polisher/rubber	sandstone	brown	0	63	0	48	0	41	0	0	0			Rounded smooth pebble wirh possible slight polish and red staining on one face. No facetting
H	2104	1030	0	utilised pebble frag?	hammerstone/chopping tool	sandstone/tuff?	brown	0	0	0	0	0	0	0	0	0			Broken, sub-rounded cobble with pecking facet on tip
H	2070	1067	0	pebble unused		schist		0	0	0	0	0	0	0	0	0			No visible use wear
H	50149	1419	0	pebble unused		slate		0	0	0	0	0	0	0	0	0	0		Small flat pebble. No visible use wear
I	22003	1036	0	mortar frag	deep	dolerite	grey-green	280	0	0	0	0	160	0	0	90	0		Large fragment of a broken bowl mortar made by hollowing a small boulder
I	2070	1039	0	utilised pebble	polisher/grinding slab	dolerite?	light green	0	205	0	121	0	91	0	0	0	0		Sub-rectangular, sub-rounded cobble with one flat face with smoothing but no facetting

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I	22014	1043	0	utilised pebble	polisher	sandstone	brown	0	75	0	65	0	56	0	0	0	0		Spherical cobble with a worn and polished facet on one face
I	21041	1042	0	spindle whorl	decorated	sandstone	brown	43	0	0	0	0	24	0	6	0	0		Complete decorated stone spindle whorl. Probably ground to shape, evenly produced, cylindrical with a deep encircling groove, Form B1. Incised ornament on all faces.
Ia	21209	1147	0	utilised pebble	working slab	dolerite		0	352	0	303	0	82	0	0	0	0		Flat, sub-angular small boulder with centre of both faces worn slightly concave by use
Ia	21209	3004	0	pebble unused?		granite		0	133	0	95	0	35	0	0	0			Sub-rounded cobble. Possibly heat fractured. No visible use wear
Ia	21223	1172	0	mace-head?	pebble macehead?	sandstone	grey-green	0	80	0	68	0	54	0	0	0			Unusually perfect rounded cobble with small opposing pecked facets on each face. Possible unfinished mace-head
Ia	21216	1145	0	mace-head	ovoid	sandstone	brown	0	98	0	68	0	37	0	0	0			Fine perforated macehead
J1/J2	70001	1771	0	pebble unused		coarse igneous		0	0	0	0	0	0	0	0	0	0		Sub-rounded cobble. No visible use wear
J1/J2	70000	1711	0	pebble unused		dolerite		0	0	0	0	0	0	0	0	0	0		No visible use wear
J1/J2	70001	1677	0	utilised pebble?	light hammerstone?	granite		0	52	0	40	0	32	0	0	0			Rounded pebble with damage to tip, could be accidental
J1/J2	70000	1725	0	utilised pebble	light hammer stone	sandstone	brown	0	71	0	59	0	22	0	0	0	0		Flat, oval pebble with peck marks on one face at one end. Possible retouching tool
J1/J2	70093	2200	0	utilised pebble	unclassified	sandstone	brown	0	0	78	91	0	35	0	0	0			Flat, oval cobble with possibly worn concave facet, but could be natural
J1/J2	70000	1769	0	utilised pebble	shaft smoother?	sandstone	brown	0	0	0	0	0	0	0	0	0	0		Sub-angular pebble with a worn groove - possible arrow shaft smoother
J3	70339	6034	0	utilised pebble	polisher/hammerstone	basalt	grey-green	0	102	0	61	0	50	0	0	0			Elongated oval, sub-rounded cobble with polish. Chipped at both ends
J3	70528	6391	0	utilised pebble?	working slab	dolerite	grey-green	0	132	0	108	0	34	0	0	0	0		Flat oval cobble, one face heavily peck-marked, possibly from use as a working slab
J3	70502	6400	0	utilised pebble frag	polishing slab	quartzite	brown	0	0	90	0	67	34	0	0	0	0		Heat-fractured fragment of a flat cobble with heavily polished faces
J3	70536	6392	0	utilised pebble	chopping	sandstone	grey-	0	190	0	102	0	43	0	0	0	0		Elongated, oval cobble with polish on one face and one

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					tool/polish slab		green												end bifacialy flaked to produce a sharp chopping edge
J3	70546	6398	0	utilised pebble	unclassified	sandstone	brown	0	0	0	0	0	0	0	0	0	0		Sub-angular pebble with wide saw cut on one face
J3	70442	6353	0	perforated slab frag	weight?	schist	grey-green	0	0	0	0	0	0	0	0	0	0		Angular fragment of a large thick slab with part of a large, straight-sided perforation on one edge. The perforation is very neat and looks cut or drilled (or worn) not punched, pecked or awled. It is larger than a quarrying drill hole. There is no indication of what it could have been used for, although it could have been an 'axle stand' for a horizontally rotating shaft.
K	80000	2242	2	burnt pebble frag	pot boiler	dolerite		0	0	0	0	0	0	0	0	0	0		Fragment of a rounded cobble fractured by heat
K	80000	2242	1	burnt pebble frag	pot boiler	dolerite		0	0	0	0	0	0	0	0	0	0		Fragment of a rounded cobble fractured by heat
K	80000	2203	0	pebble unused		fine sandstone		0	0	0	0	0	0	0	0	0	0		Naturally exfoliated fragment of a boulder
K	80000	2199	0	utilised pebble	polisher	sandstone	brown	0	135	0	78	0	25	0	0	0			Very fine hard stone. Sub-rectangular flat slab with polish and a worn or pecked hollow on one face
K	80000	2241	0	utilised pebble	light hammer stone	sandstone	grey-green	0	95	0	88	0	43	0	0	0	0		Flat, oval cobble with pecking damage around most of its perimeter
K5	1313	2214	0	utilised pebble	abrader	black chert?	brown	37	0	0	0	0	9	0	0	0	0		A natural, small, flat, sub-circular pebble of black chert, possibly smoothed from handing, suggesting it might have been a gaming counter.
K5	1313	2217	0	spindle whorl unfinished		sandstone	brown	52	0	0	0	0	11	0	0	0	0		Stone disc, possibly an unfinished stone spindle whorl. Ground to shape, smoother on one horizontal face than other; if a whorl, Form B1.
K7	80178	4229	0	utilised pebble	polisher/whetstone	black chert?	brown	0	84	0	28	0	15	0	0	0			Small, elongated, rod-shaped pebble with polish on two faces
K7	80057	4476	0	perforated disc frag	unclassified	phyllite	grey-green	95	0	0	0	0	14	0	0	0	0		Fragment, approximately one-third with remains of a perforation on one broken edge.
K7	80183	837	0	perforated disc frag	unclassified	phyllite	grey-green	98	0	0	0	0	8	0	11	0	0		Thin plaque with chipped and ground edges and neat perforation, poss drilled from one side. Approximately half of a perforated flat circular weight.

area	context	Find No	subno	general type	specific type	material	colour	diameter	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)	internal diameter	internal depth	internal length	internal breadth	Description
K7	80334	2223	0	pebble unused		pumice?		0	0	0	0	0	0	0	0	0	0		No visible use wear
K7	80012	2039	0	utilised pebble		quartz	white	0	0	0	0	0	0	0	0	0	0		Angular and sub-angular rock fragments, some rolled, 28-42mm dia. Funerary? (31 items)
K7	80187	4248	0	spindle whorl		sandstone	brown	44	0	0	0	0	12	0	0	0			Complete stone spindle whorl. Ground to shape, Form B1.
K7	80368	4461	0	utilised pebble	heavy hammer stone	sandstone	brown	0	126	0	117	0	99	0	0	0	0		Large, rounded cobble, heavily peck-marked and with red staining. Possible ochre or ore crushing?
K7	80002	6071	0	utilised pebble	polishing slab	sandstone	brown	0	177	0	66	0	47	0	0	0	0		Elongated, sub-rectangular cobble with one flat face smoothed from use
K7	80142	4103	0	utilised pebble	rubber	sandstone	brown	0	128	0	69	0	12	0	0	0			Sub-rectangular, flat cobble, one edge smoothed from rubbing. No facetting
K7	80335	5393	0	perforated disc frag	unclassified	schist	grey-green	410	0	0	280	0	73	0	0	0	0		About half of a large, heavy, flat, approximately circular slab broken across the perforation. Slab roughly chipped to shape. The neat large circular perforation was cut from both sides and tapers from 56mm to 32mm. Function unknown. No wear signs on the faces or in the perforation.
K7	80373	5391	0	perforated slab frag	unclassified	schist	grey-green	0	0	340	420	0	59	0	0	0	0		About half of a large, heavy, flat, ovoid slab broken across the perforation, chipped to shape and with a large, approximately central circular perforation. The perforation is conical, ground or worn from just one side. Function unknown. Clearly deliberately created and perforated but not circular enough to have performed any rotational function, such as a flywheel. It looks like a flat rotary quern bottom stone, but isn't. No evidence of grinding and is too smooth and fragile a rock for grinding.
K7	80373	5392	0	perforated slab frag	unclassified	schist	grey-green	0	0	350	360	0	37	0	0	0	0		About half of a large, heavy, flat, angular outline slab broken across the perforation, with a neat large circular perforation cut from one side only. The perforation tapers from 84mm to 66mm diam. Possibly an unfinished circular slab that broke but it would be expected that it would be chipped to shape before

area	context	Find No	subno	general type	specific type	material	colour	diameter	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)	internal diameter	internal depth	internal length	internal breadth	Description
																			making the perforation. Function unknown. No use wear.
K7	80335	5394	0	shaped slab	unclassified	schist	grey-green	0	440	0	385	0	63	0	0	0	0		Large, heavy, flat split slab of local rock, roughly edge-chipped to an irregular ovoid outline. No wear signs. Possible post-pad.
K9a	80459	5702	0	pebble unused		black chert		0	0	0	0	0	0	0	0	0			Small, flat, rod-shaped pebble. No visible use wear
K9b	80865	6256	0	utilised pebble		black chert?	brown	0	0	0	0	0	0	0	0	0	0		Four rounded pebbles, possibly collected as curiosities or as funerary deposit?
K9b	80808	6000	0	utilised pebble	burnisher	black chert?	dark grey	0	45	0	42	0	25	0	0	0	0		Sub-rounded, smooth pebble with polish on one face
K9b	80831	6012	0	utilised pebble?	polisher/obj trouve	black chert?	dark grey	0	43	0	35	0	20	0	0	0	0		A small, symmetrical and polished pebble. Possible objet trouve
K9b	80979	6176	0	rotary quern	topstone	breccia		265	0	0	0	0	71	0	60	0	0		Fragment of a flat disc rotary quern top stone, broken across the central perforation by an ancient break. It retains some of the outer rim and central hopper, 60mm diam. The lower grinding surface is almost flat, apart from a slight downward lip on the outer edge. The surface of the object is very eroded and It appeared to have been re-used to cap a pit.
K9b	80900	6065	0	saddle quern	topstone	breccia		0	194	0	135	0	59	0	0	0	0		Slug-shaped rubbing stone from developed type of saddle quern. The base is flat lengthways and convex across.
K9b	80945	6139	0	burnt pebble frag	pot boiler	cherty sandstone		0	0	0	0	0	0	0	0	0	0		Fragment of a sub-rounded cobble shattered by heat
K9b	80951	6140	0	utilised pebble	heavy hammer stone	coarse igneous		0	68	0	68	0	52	0	0	0	0		Broken hammer stone
K9b	81001	6149	0	mortar	deep	conglomerate?		0	430	0	360	0	220	0	0	145	300	230	Sub-rectangular, sub-angular boulder with a neatly pecked ovoid bowl and a natural flat base. The bowl has near vertical sides and only a very slightly concave base. The base is well-worn extending half-way up the sides. The lips of the mortar are also very work and smoothed. The upper, unworn, parts of the bowl sides retain peck-marks from the bowl's production. The mortar was found

area	context	Find No	subno	general type	specific type	material	colour	diameter	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)	internal diameter	internal depth	internal length	internal breadth	Description
																			within a house partly embedded in the floor close to a 'furnace' and was thought to have been packed around with clay, to make it stable.
K9b	80945	6137	0	utilised pebble?	pot boiler	dolerite	brown	0	85	0	62	0	45	0	0	0	0		Egg-shaped cobble. No visible use wear. Surface heat cracks suggest it was a potboiler
K9b	81206	6180	0	rotary quern frag	topstone	dolerite	brown	145	0	0	0	0	0	0	86	0	0		Uncertain ID because only a very small fragment. Possible beehive quern top stone, c. 310mm diameter with a large central hopper, c. 150mm diam. at the top and 90mm at the base. The lower grinding surface dipping outward
K9b	81084	6185	0	utilised pebble	pot boiler	dolerite	brown	0	76	0	60	0	58	0	0	0	0		Heavy, rounded burnt cobble. Possible damage from hammering
K9b	81084	6184	0	utilised pebble?	pot boiler/hammerstone ?	dolerite	brown	0	83	0	71	0	56	0	0	0	0		Heavy, rounded burnt cobble. Possible damage from hammering
K9b	80910	6076	0	utilised pebble?	polisher	dolerite	brown	0	89	0	49	0	25	0	0	0	0		Small oval cobble with possible slight polish on one face
K9b	80805	6003	0	utilised pebble	heavy hammer stone	dolerite		0	102	0	61	0	52	0	0	0	0		Slightly elongated, sub-rectangular cobble facetted by hammering at both ends. Its shape suggests it may have been hafted
K9b	80865	6163	0	utilised pebble	polisher	dolerite	grey	0	79	0	64	0	21	0	0	0			Small, flat ovoid pebble with slight polish on one flat face. No facetting
K9b	80839	6187	0	pebble unused		dolerite?		0	0	0	0	0	0	0	0	0	0		Large, sub-angular block cracked by heat. No use wear. Possible hearth stone
K9b	80903	6481	0	pebble unused		fine sandstone		0	0	0	0	0	0	0	0	0	0		Natural broken pebble. No visible use wear
K9b	81221	6183	0	pebble unused		fine sandstone		0	0	0	0	0	0	0	0	0	0		Small pebble with a few accidental damage peck marks
K9b	80893	6315	2	pebble unused		quartz		0	8	0	0	0	0	0	0	0	0		Probably natural gravel
K9b	80910	6259	0	pebble unused		quartz		0	32	0	26	0	1	0	0	0	0		Small, flat, oval pebble
K9b	80893	6315	1	pebble unused		quartz		0	15	0	0	0	0	0	0	0	0		Probably natural gravel
K9b	80824	6172	0	utilised pebble	pot boiler	quartzite	brown	0	65	0	57	0	30	0	0	0	0		Rounded pebble with heat fractures
K9b	80847	6133	0	utilised pebble	light hammer stone	quartzite	brown	0	134	0	105	0	44	0	0	0	0		Large, oval cobble with a small amount of pecking

area	context	Find No	subno	general type	specific type	material	colour	diameter	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)	internal diameter	internal depth	internal length	internal breadth	Description
																			damage on both tips
K9b	80805	6004	0	utilised pebble	abrader	quartzite	brown	0	172	0	88	0	55	0	0	0	0		Large, elongated cobble with an abraded facet at one end
K9b	81205	6181	0	utilised pebble	hammer stone	rhyolitic tuff	grey	0	0	0	0	0	0	0	0	0			Very heavy, rounded cobble with pecking facet on tip
K9b	80884	6054	0	rotary quern	topstone	sandstone	brown	290	0	0	0	0	131	0	0	0	0		Beehive quern topstone. The hopper tapers from 100mm to 31mm diam. The side handle hole is 62mm deep, tapering from 52mm to 22mm diam. Worn asymmetrically, usually assumed to be because of the way it was turned from one side. Probably discarded when the wear reached the handle-hole.
K9b	81100	6173	0	rotary quern frag	topstone	sandstone	brown	230	0	0	0	0	60	0	0	0	0		Fragment of a flat disc rotary quern top stone. Large central hole.c. 60mm diam. and remains of two conical holes that terminate at the base of the stone and were probably for attachment of a handle. The stone is distinctive because it has a decorative indented perimeter. The lower, working face is flat, not inclined and has a broad, concentric shallow groove in it. Perhaps because of an inclusion in the lower stone. Found in the deliberate back-fill of and R-B pit.
K9b	80903	6144	0	utilised pebble	mortar	sandstone	brown	0	131	0	127	0	0	0	56	11			Sub-angular cobble with a shallow, pecked, little worn concavity in one face and worn on the base from pressure in use
K9b	81221	6182	0	utilised pebble	shaft smoother?	sandstone	grey-green	0	0	0	0	0	0	0	0	0	0		Split cobble fragment with pecked groove around its longitudinal edge
K9b	80904	6132	0	utilised pebble	pot boiler	sandstone	brown	0	89	0	65	0	46	0	0	0	0		Egg-shaped cobble. No visible use wear. Surface heat cracks suggest it was a potboiler
K9b	80843	6039	0	utilised pebble frag	polishing slab	sandstone	grey-green	0	0	90	125	0	38	0	0	0	0		Large, flat, rounded cobble fragment, one face facetted and smoothed from wear
K9b	80846	6022	0	utilised pebble	light hammer stone	sandstone	grey-green	0	72	0	53	0	44	0	0	0	0		Small cobble, naturally slightly waisted but this then emphasised by pecking, possibly to aid hafting
K9b	81165	6177	0	utilised pebble	light hammer stone	schist	brown	0	81	0	61	0	24	0	0	0	0		Small, oval cobble with a pecked facet on one tip
K9b	80900	6070	0	cupmarked disc	unclassified	schist	grey-	0	385	0	320	0	88	0	0	0	0		Large, thick, heavy, flat slab of schist, roughly chipped

area	context	Find No	subno	general type	specific type	material	colour	diameter	length	length (incomplete)	breadth	breadth (incomplete)	depth	depth (incomplete)	internal diameter	internal depth	internal length	internal breadth	Description
							green												to an oval shape and with a shallow cup-mark in centre of one face. Cup-mark 50mm dia, 9mm deep, chipped out but no subsequent wear signs. Function unknown. No wear signs. Found within a dark occupation deposit.
K9b	80859	6069	0	cupmarked stone		schist	grey-green	0	485	0	365	0	95	0	0	0	0		A large, flat, angular slab of schist with a small, shallow cupmark approximately in the centre of one face. Cupmark 45mm dia, 13mm deep. No wear evidence. Formed part of slabs of house floor. Perhaps re-used?
K9b	80808	6001	0	utilised pebble frag	light hammer stone	schist	grey-green	0	0	132	0	53	0	28	0	0	0		Fragment of elongated cobble with pecked facet on tip and two areas of pecking on sides
L3	22183	1375	0	spindle whorl		sandstone	brown	48	0	0	0	0	13	0	0	0			Complete stone spindle whorl. Evenly produced, method of manufacture unclear; Form B1.
L5	3083	5706	0	pebble unused		grey chert		0	0	0	0	0	0	0	0	0	0		Broken block of chert cobble with natural irregularities. Not used
L5	3083	5704	0	utilised pebble frag	abrader	sandstone	grey-green	0	0	0	0	0	0	0	0	0			Fragment of an oval, rounded cobble with a small facet worn on tip
M2	22112	2205	2	pebble unused		cherty sandstone		0	0	0	0	0	0	0	0	0	0		Large, flat, oval cobble. No visible use wear
M2	22070	1070	0	utilised pebble	grinding slab	dolerite	grey-green	0	192	0	116	0	43	0	0	0	0		Flat, elongated oval cobble with a small amount of wear polish on one face
M2	22112	2205	1	pebble unused		fine igneous		0	0	0	0	0	0	0	0	0	0		Large, flat, oval cobble. No visible use wear
M2	22108	1097	0	pebble unused		granite		0	178	0	120	0	40	0	0	0	0		Flat, oval, sub-rounded cobble
M2	22088	1096	0	pebble unused		quartz		0	60	0	45	0	45	0	0	0	0		Egg-shaped, rounded pebble with unusual inclusions. Objet trouve?
M2	22109	2206	0	pebble unused		quartz		0	0	0	0	0	0	0	0	0	0		Obviously deliberate collection of rounded and sub-rounded pebbles 32-81mm long. Funerary? 16 items
M2	22088	2238	0	pebble unused		quartz		0	0	0	0	0	0	0	0	0	0		Sub-rounded pebbles 41-76mm long. All with small natural perforations. 5 items
M2	22073	1271	0	modified frag	perforated	slate		0	0	0	0	0	0	0	0	0	0		Small fragment of thin, sawn slate with a drilled perforation c. 6mm dia

Part VI.2 Macroscopic Petrological Identification of Stone Artefacts

Dr R. Alan Williams

Introduction

The following work was undertaken for the Gwynedd Archaeological Trust during February and March 2019 at their offices in Bangor on material collected from the multi-period site at Parc Cybi, Holyhead, Anglesey.

- Make a basic macro petrological identification of 265 lithic objects that have been modified for various uses and enter the results into the finds database spreadsheet and write a summary report.
- Examine selected sample bags of burnt stone and reference samples collected at Parc Cybi and sort into rock types to determine whether there was any deliberate selection of certain rock types.

Method

Samples were examined visually in hand specimen using a hand lens (X10) and where necessary a binocular microscope (up to X20). Surfaces were typically wetted to aim identification. While all samples could be broadly identified the process was sometimes difficult due to deep surface weathering and because artefacts could obviously not be broken open to reveal fresh surfaces. No thin sections to provide more detailed mineralogical information were available of the stone types identified and so this restricted the subdivision of some rock types, particularly igneous rocks.

Lithic artefact results

Rock types

The main rock types identified within the limitations of visual inspection are listed in Table VI.2.1 and visually in Fig VI.2.1. In addition, the description in the site database has been used to form a breakdown for each rock type.

For each artefact, an individual description of the rock type is included in the table in the appendix. Overall comments for each rock type are given below.

Rock type	Total	%	saddle quern	rotary quern	hammer stone	pot boiler	polisher/hammerstone	rubbing	mortar	work slab	spindle whorl	cupmarked stone	abrader slab	grinding slab	rubbing slab	mace head	whetstone	unclassified	chopping tool	stone weight	object trouve	burnisher	roller?	burnished	bevelled pebble	arrow shaft smoother	disc	slab (unclassified)
Sandstone (various types)	105	**40**		2	35	5	23	2	5	1	2	1	7	1	3	1	8	3	3				1		1	1		
Sandstone (mafic rich, porous)	55	**21**					7				37		2	1		1	2	2		2		1						
Dolerite	37	**14**	1	1	4	5	11	2	3	4	1	1	1	3														
Schist	32	**12**			2		1				2	2								17							6	2
Quartzite	14	**5.3**			3	2	5	1					1					1			1							
Chert	7	**2.6**			1		2						1				1				1	1						
Granite	5	**1.9**			1	1	2														1							
Breccia	4	**1.5**	3	1																								
Rhyolitic tuff	1	**0.4**			1																							
Rhyolitic porphyry	2	**0.8**			1	1																						
Basalt	1	**0.4**					1																					
Agate	1	**0.4**														1												
Quartz (vein)	1	**0.4**																1										
Total	265	**100**	4	4	48	14	52	5	8	5	42	4	12	5	3	3	11	7	3	19	3	2	1	0	1	1	6	2

Table VI.2.1. The rock types identified in this study and their totals by rock type. In addition, totals by artefact type based on the identifications given in the site database.

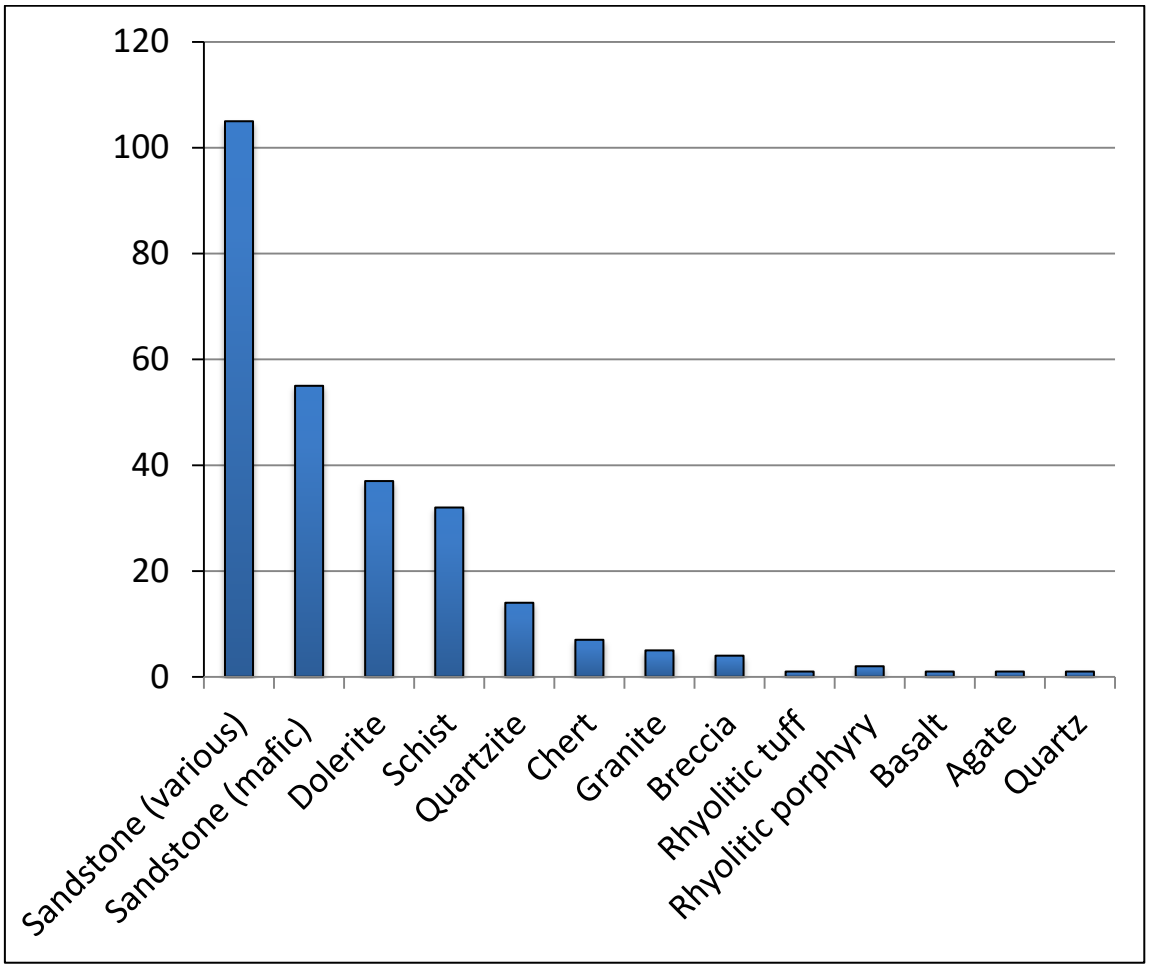

Fig VI.2.1. *The number of artefacts of each rock type.*

Sandstones. (61%)
This was the most common rock type. A wide variety of sandstones were present varying in colour (light to dark brown, reddish brown, grey, greenish grey), grain size (fine to coarse), poorly to well sorted and in mineralogy (all with quartz to varying degrees of purity, feldspar and few mica rich types). Most are massive well cemented with quartz showing varying degrees of low-grade metamorphism.

Sandstones appear to have been used for most applications, particularly as polishers and hammerstones.
One unusual type of sandstone (21%) stood out. This was light to medium brown fine grained sandstone rich in dark mafic minerals, sometimes seen as dark bands. The stone feels light due its high porosity and is relatively soft. This was the main choice for making spindle whorls, possibly because it was soft enough to make holes through it and presumably the light weight fitted the task. Other artefacts made of this stone type include a mace head and several whetstones.

Quartzites (5%)
Several quartzites, metamorphic quartz sandstones, were present, mostly light brown and fine grained with a few greenish grey and reddish varieties.
They were mainly used as polishers or hammer stones.

Breccia (2%)
A few quartz breccia's were present all selected for use as saddle or rotary querns.

Dolerite (14%)
Intrusive igneous rocks were prominent mostly in the form of dolerites (thin sections would be needed to be precise on sub-classification). They are mostly medium grained speckled greenish-grey (mafic minerals) to white (feldspar and its weathering products) and often the iron minerals present weather and produce an extensive brownish stain. They are typically massive with limited fractures and were used as polishers, hammer stones and as slabs for a range of work activities.

Schist (12%)
Light green, hard, low grade (chlorite-muscovite) metamorphic schists with some quartz bands are present and are similar to the rock outcropping in rocky knolls around the Parc Cybi site (see Jenkins, current report volume 1, "Geology"). Despite its abundance it was mostly used for crude stone weights or discs, probably because holes could be made in it easier than the more massive and harder rocks.

Miscellaneous rock types (6%)
Other minor rock types include dark brown/black impure cherts (3%) (thin sectioning would allow confirmation), a few weathered microgranites (2%), rhyolitic porphyry (<1%), a rhylolitic tuff (<1%) and a basalt (<1%). Many of these are used as hammerstones or polishers probably reflecting their hard and massive nature. Finally there was a single piece of banded honey coloured agate (partially translucent), apparently polished and recorded in the database as possibly being from a mace head.

Provenance of rock types

To discuss the possible provenance of the various rock types an understanding of the local geology is required. Fig VI.2.2 is a map of the solid geology of Anglesey with a key to the letters on the map. The key lists the rock formations by age, name and the rock types they contain. The main observation is the sheer variety of rock types present on Anglesey including sandstones, shales, siltstones, mudstones, slates, limestones, conglomerates basalt lava, volcanic tuffs, schists, quartzites, dolerites, ultrabasic rocks, granites and gneisses. Indeed, the island is a famous area for geologist training given the wide range of rock types exposed and is a Geopark.

Besides the outcropping solid geology, the superficial geology also needs to be considered and this is shown in Fig VI.2.3. The main point here is the widespread covering of glacial till deposits that besides consisting of sands, gravels and soils includes a wide variety of pebbles and boulders. The latter contains some rock types from as far away as the Lake District and Scotland due to the ice moving south or south-west across the Irish Sea. More locally, the Parc Cybi sites on Holy Island could also have glacial pebbles and boulders from the NW of Anglesey.

The light green schist outcropping on the Parc Cybi site has obviously been used for a few applications. With regards to the other main rock types (sandstones, quartzites, dolerites), they are present to some degree on Holy Island and on Anglesey more generally as shown in Fig VI.2.2. However, they are not characteristic enough on the basis of a visual examination without thin section work and equivalent fieldwork on local outcrops to provide any certainty. Given the abundance of glacial till deposits and their eroded remains in local rivers and beaches, more distant sources are quite possible. The rounded (weathered) form of most of the lithic types (except the schist and the spindle whorl sandstone) makes sourcing directly from rock outcrops unlikely and suggests the source to be rivers and beaches or directly exposed glacial till deposits. The rivers and beaches will contain both eroded local rocks and those weathered out of glacial till. Fieldwork in local rivers, beaches and glacial outcrops would be needed to determine the availability of the rock types found on the site and also whether the variation within each rock type group is also reflected within these possible sources.

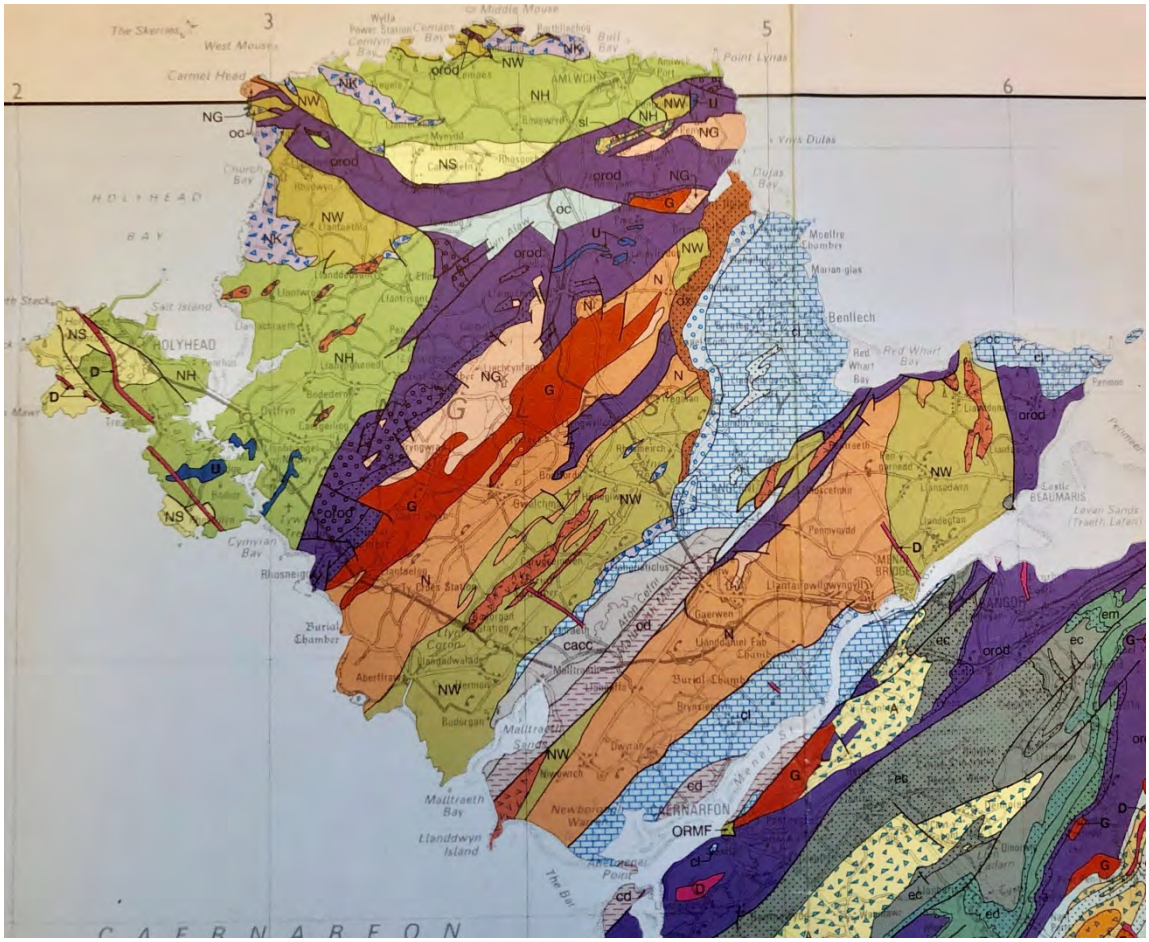
HOLYHEAD
HOLYHEAD BAY
Salt Island
Church Bay
Carmel Head
West Mouse
The Skerries
Middle Mouse
Point Lynas
Penrhos
Cymyran Bay
Rhosneigr
Llanddwyn Island
Malltraeth Bay
Malltraeth Sands
Newborough Warren
Aberffraw
Llangadwaladr
Bodorgan
Llyn Coron
Llyn Maelog
Llyn Dinam
Llyn Llywenan
Llyn Penrhyn-mawr
Llyn Parc-y-Mynydd
Llyn Llygeirian
Llyn Cefni
Llyn Alaw
Llyn Traffwll
Llyn Fawr
Llyn Bodeilio
Llyn Dinas
Llyn Cwellyn
Llyn Nantlle Uchaf
Llyn Nantlle
Llyn Dwythwch
Llyn Llydaw
Llyn Glaslyn
Llyn Gwynant
Llyn Dinas
Llyn Padarn
Llyn Peris
Llyn Cwm Dyli
Llyn Cwm Llan
Llyn Cwm Glas Mawr
Llyn Cwm Glas Bach
Llyn Llagi
Llyn Ffynnon Las
Llyn Ffynnon Lloer
Llyn Ffynnon-y-Gwas
Llyn Ffynnon-y-Gwas
Llyn Ffynnon-y-Gwas

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Fig VI.2.3. *Superficial deposits on Anglesey showing the widespread extent of glacial till, some of which contains pebbles and boulders from rocks in Northern England and Scotland.*

Rock type selection

Relative to the wide spectrum of rocks available on Anglesey, Table VI.2.1 shows clearly that selection was being made at Parc Cybi for the various lithic applications. The rock types selected for artefacts are dominated by hard and massive types with the minimum of joints and fractures to cause failure during use. This is particularly highlighted by the rock types that are not present in the site assemblage despite outcropping on Anglesey, namely limestones, shales, mudstones, siltstones, and slates. These rocks are obviously softer, contain joints and fractures causing failure in use. The only exception to this general 'massive and hard' requirement is the soft porous fine-grained brown sandstone used for spindle whorls, probably due to the requirement of being soft enough for holes to be made in them. The local green schist seems to be mainly used for crude weights probably because holes could be made much more easily than in the massive and hard rock types.

Summary

- 265 modified lithic artefacts were examined and the rock types identified.
- The dominant rock types were hard and massive generally lacked lines of weakness (joints, fractures, bedding and schistosity). These include sandstones (40%), dolerites (14%). quartzites (5%), chert (3%) granite (2%) and breccia (2%).
- The main exception to this pattern was the use of a light porous mafic-rich sandstone for spindle whorls probably due to the ease by which holes could be made. Similarly, the local schists were used for crude weights probably for a similar reason.
- A discussion of rock provenance has shown there is a great diversity of bedrock types present across Anglesey and also in the glacial till that contains both local rocks and those transported from northern England and Scotland by glaciers. Hence, apart from the local schist, tying down rock types to specific sources will be difficult in most instances without extensive geological fieldwork and thin sectioning.

- There has clearly been selection of specific rocks types for specific purposes, especially with regards to the hard massive rock types used for heavy duty work and a softer rock for spindle whorls. This is also highlighted by the absent of many of the softer and jointed rock types that are present on Anglesey.

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Appendix VI.2: List of Petrological Identifications

Find No.	context	area	Object type	Sub-type	Stone type	Description
11	90002	B2	utilised pebblefragment	polisher/work slab	sandstone	medium brown fine grained sandstone
35	2064	B1	Spindle whorl		sandstone	medium brown fine-grained sandstone, rich in black mafic minerals, feldspar, high porosity hence light.
54	2064	B1	utilised pebble?	whetstone	sandstone	Brown sandstone/tuff rich in mafics and feldspar? With clasts of iron oxide and other rock fragments
61	90009	B2 passage-way	Spindle whorl		sandstone	medium brown fine-grained sandstone, rich in black mafic minerals,feldspar, high porosity hence light.
103	90103	B2	utilised pebble fragment	polisher slab	quartzite	greenish-grey quartzite
112	90121	B2	utilised pebble fragment	pot boiler	sandstone	light brown fine-grained quartz sandstone
127	90202	B2	utilised pebble	whetstone/abrader	sandstone	reddy brown fine-grained quartz sandstone, with mica
132	90002	B2	Spindle whorl		sandstone	medium to dark brown banded fine-grained sandstone, rich in black mafic minerals,feldspar, high porosity hence light.
152	90306	B2 Structure F	utilised pebble fragment	hammer stone	sandstone	grey fine grained quartz meta-sandstone
168	90408	B2 Structure F	utilised pebble?		sandstone	grey impure quartz banded meta sandstone
185	90300	B2 Structure F	utilised pebble	hammer stone	rhyolithic porphyry	pale grey rhyolite porphyry (feldspar phenocrysts)
189	90300	B2 Structure F	Spindle whorl		sandstone	medium brown fine-grained sandstone, rich in black mafic minerals,feldspar, high porosity hence light.
195	90300	B2 Structure F	Spindle whorl		sandstone	light brown fine-grained sandstone, rich in black mafic minerals,feldspar, high porosity hence light.
201	90299	B2 Structure F	Spindle whorl		sandstone	light brown fine-grained sandstone, rich in black mafic minerals, feldspar, high porosity hence light.
205	90021	B2 RHA	Spindle whorl		sandstone	medium brown fine-grained sandstone, rich in black mafic minerals,feldspar, high porosity hence light.
208	90021	B2 RHA	utilised pebble	polisher slab	sandstone	light brown poorly sorted fine-grained sandstone
211	90299	B2 Structure F	utilised pebble	hammer stone	sandstone	light brown coarse poorly sorted sandstone with granite minerals + quartz veinlet

212	90299	B2 Structure F	utilised pebble	hammer stone	sandstone	light brown fine grained meta sandstone
213	90299	B2 Structure F	utilised pebble	pot boiler?	sandstone	light brown fine-grained quartz sandstone
214	90299	B2 Structure F	split pebble fragment		quartzite	green-grey quartzite
219	90501	B2 Structure F	Spindle whorl		sandstone	light brown quartz rich fine grained sandstone.
222	90501	B2 Structure F	utilised pebble	light hammer stone	sandstone	light brown fine-grained quartz sandstone
225	90501	B2 Structure F	utilised pebble	polisher	quartzite	brownish-grey fine-grained meta quartz sandstone/quartzite with quartz veinlet
226	90021	B2 RHA	utilised pebble	mortar	sandstone	light grey-green meta-quartz-sandstone weathering to light brown
227	90501	B2 Structure F	utilised pebble fragment	rubbing	dolerite	grey pitted dolerite
233	90002	B2	utilised pebble	polisher	sandstone	light brown fine-grained sandstone (feldspar, mafics, quartz)
234	90021	B2 RHA	utilised pebble	object trouve	chert?	black fine-grained rock
239	90502	B2 Structure F	cupmarked stone		dolerite	greenish grey coarse grained weathered igneous rock, probably dolerite
244	90466	B2 RHA	Spindle whorl		sandstone	dark brown fine-grained sandstone, rich in black mafic minerals,feldspar, high porosity hence light.
245	90466	B2 RHA	stone weight		schist	light green schist- less schistosity than others
246	90002	B2	Spindle whorl		sandstone	medium brown fine-grained sandstone, rich in black mafic minerals,feldspar, high porosity hence light.
247	90535	B2 RHA	utilised pebble	grinding slab	not found	Possibly in a box but not known which.
252	91000	B2 RHA	utilised pebble fragment	whetstone	sandstone	light brown fine-grained quartz sandstone
253	90002	B2	utilised pebble?	whetstone	sandstone	light brown fine grained sandstone, low porosity
254	90002	B2	utilised pebble	hammer stone	sandstone	light brown fine grained quartz sandstone, low porosity
257	90002	B2	utilised pebble	abrader	chert?	dark grey/black fine grained rock
258	90467	B2 RHA	utilised pebble fragment	light hammer stone	sandstone	grey fine grained quartz meta-sandstone
260	90582	B2 RHA	utilised pebble	whetstone	sandstone	light brown fine-grained quartz sandstone
264	90548	B2 Structure F	utilised pebble	work slab	sandstone	light brown fine grained meta sandstone/quartzite

271	90642	B2	mortar fragment	deep	dolerite	dolerite (medium grained greenish intrusive igneous rock)
272	90646	B2 RHA	Spindle whorl		sandstone	medium to dark brown fine-grained sandstone, rich in black mafic minerals,feldspar, high porosity hence light.
278	90002	B2	utilised pebble fragment	abrader	sandstone	grey fine grained sandstone
279	90550	B2 Structure F	utilised pebble	pot boiler	dolerite	weathered coarse grey dolerite
283	90009	B2 passage-way	utilised pebble fragment	polisher/polisher slab	sandstone	light brown fine-grained quartz sandstone with 'spots' of iron oxide stains?
285	90002	B2	utilised pebble	polisher	sandstone	Very fine-grained meta- quartz sandstone with darker bands
288	90502	B2 Structure F	saddle quern fragment	top stone	breccia	very coarse sandstone to quartz breccia
292	90746	B2 Laneside	stone weight		schist	light to medium green schist
294	90002	B2	stone weight		schist	light green schist
295	90806	B2 RHB	utilised pebble	polisher/work slab	sandstone	green-grey quartz sandstone
298	90002	B2	stone weight		schist	light to medium green schist with brown staining
310	90002	B2	stone weight		schist	light green schist with iron staining.
314	90000	B2	stone weight		sandstone	light to medium brown banded fine-grained sandstone, rich in black mafic minerals,feldspar, high porosity hence light.
332	90002	B2	utilised pebble	heavy hammer stone/anvil	sandstone	light brown fine-grained meta-sandstone
344	90883	B2 RHB	Spindle whorl		sandstone	light brown fine-grained sandstone, rich in black mafic minerals,feldspar, high porosity hence light.
355	91037	B2 RHD	utilised pebble	polisher slab	sandstone	dark-brown miceous quartz fine-grained sandstone/siltone fine bedding
356	90000	B2	utilised pebble	light hammer stone	sandstone	light brown fine-grained quartz sandstone
357	90002	B2	utilised pebble	whetstone/abrader	chert?	dark-grey fine-grained rock
358	91153	B2 RHE	utilised pebble	rubbing	sandstone	light brown to grey sandstone
360	90882	B2 RHB	utilised pebble	hammer stone/polisher	sandstone	light grey-green meta-quartz-sandstone
362	90002	B2	Spindle whorl		sandstone	medium brown banded fine-grained sandstone, rich in black mafic minerals,feldspar, high porosity hence light.
364	91171	B2 RHE	utilised pebble	hammer stone	sandstone	light brown fine-grained quartz sandstone
365	91171	B2 RHE	utilised pebble?	polisher	chert?	dark-brown-grey rock

366	90002	B2	Spindle whorl		sandstone	light to medium brown fine-grained sandstone, rich in black mafic minerals,feldspar, high porosity hence light.
368	91155	B2 RHC	utilised pebble	polisher	sandstone	dark brown sandstone rich in mafic minerals
369	91166	B2 RHB	utilised pebble fragment	polisher	granite	light grey microgranite
370	90002	B2	Spindle whorl		sandstone	light to medium brown fine-grained sandstone, rich in black mafic minerals,feldspar, high porosity hence light.
375	91233	B2 passage-way	Spindle whorl		sandstone	medium brown banded fine-grained sandstone, rich in black mafic minerals,feldspar, high porosity hence light.
376	90002	B2	utilised pebble	abrader	sandstone	light brown fine-grained sandstone, rich in black mafic minerals,feldspar, high porosity hence light.
379	91227	B2 RHC	utilised pebble fragment	heavy hammer stone	dolerite	brown weathered dolerite
380	90002	B2	utilised pebble	grinding	sandstone	medium brown fine-grained sandstone rich in dark mafics (feldspar, mafics, quartz)
385	91247	B2 RHE	stone weight		sandstone	light brown fine-grained sandstone, rich in black mafic minerals,feldspar, high porosity hence light.
386	91247	B2 RHE	Spindle whorl		sandstone	medium brown fine-grained sandstone, rich in black mafic minerals,feldspar, high porosity hence light.
387	91247	B2 RHE	Spindle whorl		sandstone	light brown fine-grained silty sandstone high porosity hence light.
390	91247	B2 RHE	utilised pebble	polisher	sandstone	dark brown fine-grained sandstone
391	91247	B2 RHE	Spindle whorl		sandstone	light to medium brown fine-grained sandstone, rich in black mafic minerals,feldspar, high porosity hence light.
399	91274	B2 RHE	utilised pebble	whetstone	sandstone	micaceous fine-grained brown sandstone
404	91271	B2 RHC	utilised pebble	whetstone	sandstone	light brown fine-grained sandstone rich in dark mafics (feldspar, mafics, quartz)
407	91334	B2 RHE	Disc/counter		schist	light green schist
409	91406	B2 RHE	Spindle whorl		sandstone	light to medium brown fine-grained sandstone, rich in black mafic minerals,feldspar, high porosity hence light.
410	90883	B2 RHB	utilised pebble	polisher slab/light hammer stone	dolerite	grey-green fine grained dolerite
412	91367	B2 RHE	Spindle whorl		sandstone	medium to dark brown fine-grained sandstone, rich in black mafic minerals,feldspar, high porosity hence light.
415	91343	B2 RHE	Spindle whorl		sandstone	light to medium brown fine-grained sandstone, rich in black mafic minerals,feldspar, high porosity hence light.

421	91343	B2 RHE	utilised pebble?	unclassified	sandstone	medium brown fine-grained sandstone rich in mafics.
426	91543	B2 RHE	utilised pebble	polisher slab	sandstone	medium browm meta sandstone with thin mafic rich bands
473	90668	B2 RHA	Spindle whorl		sandstone	light brown fine-grained sandstone, rich in black mafic minerals,feldspar, high porosity hence light.
489	90547	B2 RHA	utilised pebble fragment	perforated	schist	light grey-green schist
501	91436	B2 RHC	utilised pebble	polisher slab	sandstone	medoun grey-brown meta sandstone
505	91543	B2 RHE	utilised pebble	heavy hammer stone	sandstone	light browm fine grained quartz sandstone with mica
506	91436	B2 RHC	utilised pebblefragment	mortar	sandstone	light-brown micaceous quartz sandstone
509	90002	B2	utilised pebble?	hammer stone	dolerite	light brown micro-dolerite
510	91289	B2 RHC	utilised pebble	grinding	sandstone	light brown quartz sandstone
515	90990	B2 RHB	Perforated disc		schist	light green schist
517	90002	B2	utilised pebble	light hammer stone/chop	quartzite	light-green quartzite
519	91573	B2 E area	utilised pebble	whetstone	sandstone	micaeous fine-grained brown sandstone
521	90471	B2 RHD	utilised pebble	bevelled pebble	sandstone	light grey green meta sandstone weathering light brown with veinlets
522	90990	B2 RHB	utilised pebble	polisher	dolerite	green-grey dolerite with feldspar phenocrysts
523	90990	B2 RHB	utilised pebblefragment	abrader slab	sandstone	mediun brown fine grained sandstone
524	90990	B2 RHB	utilised pebble	polisher	sandstone	light-brown fine-grained sandstone
525	91474	B2 E area	Spindle whorl		sandstone	light to medium brown fine-grained sandstone, rich in black mafic minerals,feldspar, high porosity hence light.
526	91268	B2 RHC	utilised pebble	pot boiler	sandstone	light brown coarse poorly sorted sandstone with granite minerals
528	91455	B2 E area	stone weight		schist	light green schist with iron staining.
531	91289	B2 RHC	Spindle whorl		sandstone	light to medium brown fine-grained sandstone, rich in black mafic minerals,feldspar, high porosity hence light.
533	91444	B2 RHE	Spindle whorl		sandstone	light brown fine-grained silty sandstone high porosity hence light.
534	91444	B2 RHE	utilised pebble fragment	polisher slab	sandstone	Grey fine-grained sandstone/siltstone rich in mafic minerals
537	91271	B2 RHC	utilised pebble fragment	chopping tool	sandstone	light grey green meta-quartz-sandstone
538	90875	B2 RHB	utilised pebble	polisher	sandstone	dark-grey fine-grained sandstone mafic rich with banding tuff?

547	91722	B2 RHE	utilised pebble fragment	polisher	dolerite	grey fine-grained dolerite
548	91267	B2 RHC	utilised pebble	abrader	sandstone	light brown fine grained meta quartz sandstone
549	91648	B2 RHC	object trouve		quartzite	light brown fine grained quartzite
551	91421	B2 E area	utilised pebble fragment	rubbing	dolerite	dark grey dolerite
552	90884	B2 RHB	utilised pebble	work slab	dolerite	weathered light green dolerite
564	90990	B2 RHB	cupmarked slab		schist	light green schist
565	90990	B2 RHB	utilised pebble fragment	polisher slab	sandstone	light browm fine grained quartz sandstone
566	90990	B2 RHB	utilised pebble	whetstone	sandstone	greenish-grey quartz sandstone
567	90990	B2 RHB	utilised pebble fragment	pot boiler/polisher	dolerite	fine-grained dolerite
571	90990	B2 RHB	Spindle whorl		sandstone	light brown fine-grained sandstone, rich in black mafic minerals,feldspar, high porosity hence light.
572	91929	B2 RHB	utilised pebblefragment	polisher slab	sandstone	medium brown fine-grained sandstone
573	91929	B2 RHB	utilised pebble	polisher slab/light hammer stone/abraderader	dolerite	green-grey fine grained dolerite
574	91922	B2 RHC	roller?		sandstone	coarse quartz sandstone
576	90990	B2 RHB	utilised pebblefragment	heavy hammer stone	sandstone	medium brown fine-grained quartz sandstone
577	90990	B2 RHB	utilised pebble?	polisher?	sandstone	medium brown fine-grained meta sandstone
578	90990	B2 RHB	utilised pebble	light hammer stone	sandstone	medium brown fine-grained quartz sandstone
579	90990	B2 RHB	utilised pebble	light hammer stone	sandstone	grey-brown meta quartz sandstone, dense
586	90883	B2 RHB	utilised pebble	abrader/polisher	sandstone	medium brown fine-grained meta quartz sandstone rich in mafics.
595	92069	B2 RHB	utilised pebble	abrader slab	sandstone	light brown porous coarse sandstone (porous)
634	92129	B2 E area	utilised pebble	light hammer stone	sandstone	grey fine grained meta-sandstone
641	90990	B2 RHB	utilised pebble?	polisher	chert?	dark-grey fine-grained rock
642	90992	B2 RHB	Spindle whorl		sandstone	light brown fine-grained silty sandstone high porosity hence light.
644	90992	B2 RHB	utilised pebble fragment	polisher	schist	grey-green fine-grained schist
647	90875	B2 RHB	saddle quern	top stone	breccia	very coarse sandstone to quartz breccia

648	92183	B2 E area	utilised pebble	polisher	sandstone	light greenish brown coarse sandstone
649	91453	B2 E area	utilised pebble	light hammer stone	sandstone	medium brown fine-grained banded meta sandstone rich in feldspar & quartz & mafics
651	91109	B2 RHE	stone weight		schist	light to medium green schist
653	91322	B2 passage-way	utilised pebble fragment?	polisher	sandstone	reddy-browm medium-grained sandstone
654	92582	B2 RHB	utilised pebble fragment	polisher/cupmarked slab	dolerite	dark brown fine grained dolerite
655	92189	B2 passage-way	utilised pebble	choppimg tool	sandstone	light brown quartz sandstone with irreguar pale patches
661	92399	B2 RHB	utilised pebble	heavy hammer stone	sandstone	light pinky brown fine grained meta-sandstone
662	91648	B2 RHC	utilised pebble	pot boiler	granite	reddy-grey microgranite
717	91222	B2 passage-way	utilised pebble fragment	light hammer stone	sandstone	grey fine grained sandstone
721	92321	B2 RHA	utilised pebblefragment	pot boiler	sandstone	medium brown fine-grained quartz sandstone
723	92190	B2 passage-way	stone weight		schist	light green schist
728	91322	B2 passage-way	utilised pebble	polisher slab	quartzite	light brown /grey fine grained quartzite
730	91267	B2 RHC	utilised pebble	rubbing	sandstone	light brown fine-grained quartz sandstone
732	91812	B2 passage-way	utilised pebble	polisher	dolerite	medium grained dark to light green dolerite (irregular mafic crystals)
736	91722	B2 RHE	utilised pebble	light hammer stone	sandstone	medium brown fine-grained banded meta sandstone rich in feldspar & quartz & mafics
744	92423	B2 passage-way	utilised pebble		schist	light grey-green schist
748	92398	B2 RHB	utilised pebble	work slab	dolerite	speckled light brown highly weathered igneous rock- probably dolerite
750	92412	B2	utilised pebble	light hammer stone	dolerite	greenish grey fine grained dolerite

		passage-way				
751	92514	B2 RHC	perforated disc	unclassified	schist	light green schist
753	92504	B2 RHE	utilised pebble	cupmarked pebble	sandstone	light grey-grey sandstone
754	91948	B2 NW area	utilised pebble	light hammer stone	sandstone	light brown fine-grained quartz sandstone
759	90884	B2 RHB	utilised pebble	abrader slab	sandstone	light brown coarse sandstone
767	90884	B2 RHB	utilised pebble	rubbing slab	quartzite	light brown fine grained quartzite
768	90807	B2 RHB	utilised pebble	light hammer stone	sandstone	medium brown fine-grained banded meta sandstone rich in feldspar & quartz & mafics
769	92561	B2 RHC	Spindle whorl		sandstone	light to medium brown fine-grained sandstone, rich in black mafic minerals,feldspar, high porosity hence light.
771	91710	B2 RHC	utilised pebble fragment	polisher	quartzite	light brown fine grained quartzite
774	92543	B2 RHC	mortar	deep	dolerite	dolerite (medium grained greenish intrusive igneous rock)
775	92569	B2 RHC	stone weight		schist	light green schist
780	92597	F1	Spindle whorl		sandstone	light brown fine-grained sandstone, rich in black mafic minerals,feldspar, high porosity hence light.
804	92799	F1	utilised pebble	rubbing	sandstone	light brown fine-grained quartz sandstone with mica
825	92923	F1 RHH	utilised pebble	mortar	sandstone	light grey green meta-quartz-sandstone weathering light brown
826	92923	F1 RHH	utilised pebble	polisher slab	sandstone	medium brown porous banded fine grained sandstone rich in mafics
829	92798	F1	stone weight		schist	light green schist with iron staining.
834	90002	B2	grinding/polishing stone		dolerite	dolerite (medium grained greenish intrusive igneous rock)
837	80183	K7	stone weight		schist	medium green schist with iron staining.
848	93100	F1	utilised pebble	light hammer stone	sandstone	light brown fine-grained sandstone
961	31307	E	utilised pebble fragment	heavy hammer stone?	dolerite	light brown dolerite
967	92949	F1 RHI	utilised pebble	polisher	sandstone	light brown coarse pitted banded quartz meta sandstone, darker areas from use
1030	2104	H	utilised pebble fragment?	hammer stone/chop	sandstone/tuff?	light brown felsicsandstone/ tuff? With wavy layers of mafic minerals and some green chlorite. Joined to a dark grey mudstone
1036	22003	I	mortar fragment	deep	dolerite	dolerite (medium grained greenish intrusive igneous rosk)

1039	2070	H/I	utilised pebble	polisher/grinding slab	dolerite?	whitish to light green, highly weathered igneous rock - dolerite/diorite?
1042	21041	I	Spindle whorl		sandstone	dark brown fine-grained sandstone, rich in black mafic minerals,feldspar, high porosity hence light.
1043	22014	I	utilised pebble	polisher	sandstone	light brown fine-grained quartz sandstone
1070	22070	M2	utilised pebble	grinding slab	dolerite	brown-dark green coarse dolerite
1127	50064	H	objet trouve		granite	light brown with reddening granite with weathered surface
1145	21216	Ia	macehead		sandstone	Dark brown sandstone, with banding of black mafic mineral and feldspar
1146	50089	H	utilised pebble	grinding slab	dolerite	light greenish brown fine grained dolerite
1147	21209	Ia	utilised pebble	work slab	dolerite	dolerite (speckled white-black) weathered surface brown mafic rich (mortarar stone)
1172	21223	Ia	utilised pebble	macehead?	sandstone	light grey-green fine-grained meta sandstone
1191	2093	H	utilised pebble	hammer stone/cr	chert - impure	dark greyish brown/black fine grained rock. Weathered surface under microscope suggests black mineral with softer phase around but broken surface shows chert fracture.
1202	50091	H	saddle quern fragment	bottom stone	dolerite	dolerite (medium grained brownish green-grey intrusive igneous rock) Pitted surface from weathered feldspar
1204	50086	H	mortar fragment	shallow	sandstone	well-sorted brown fine-grained quartz sandstone
1375	22183	L3	Spindle whorl		sandstone	reddy brown quartz-mica fine-grained sandstone (dense/low porosity)
1400	50132	H	utilised pebble	heavy hammer stone	sandstone	Coarse light brown sandstone
1401	50132	H	utilised pebble	abrader slab	dolerite	mottled grey green medium grained dolerite
1655	60100	D3	utilised pebble	burnisher	chert?	black fine-grained rock
1677	70001	J	utilised pebble?	hammer stone	granite	microgranite
1718	50246	H	utilised pebble?	polisher	sandstone	banded dark browm mafic rich sandstone
1725	70000	J	utilised pebble	light hammer stone	sandstone	greenish brown mafic rich sandstone with mica
1769	70000	J	utilised pebble	arrow shaft smoother?	sandstone	medium brown fine-grained sandstone rich in dark mafics (feldspar, mafics, quartz)
1773	91516	B2 RHC	utilised pebble?	polisher	sandstone	reddy-browm medium-grained sandstone
1891	90002	B2	utilised pebble	whetstone/polisher	sandstone	fine-grained brown quartz sandstone, micaceous with bedding
2039	80012	K7	utilised pebble		quartz	numerous pieces of white vein quartz with impurities (green mineral chlorite?)
2189	91453	B2 E area	perforated slab	unclassified	schist	grey-green fine-grained schist (local stone)

2199	80000	K	utilised pebble	polisher	sandstone	grey/brown medium grained quartz sandstone
2200	70093	J	utilised pebble	unclassified	sandstone	light brown fine-grained quartz sandstone
2214	1313	K5	disc	abrader	sandstone	banded dark brown mafic rich sandstone (low density mafic tuff?)
2217	1313	K5	Spindle whorl		sandstone	light to medium brown fine-grained sandstone, rich in black mafic minerals,feldspar, high porosity hence light.
2241	80000	K	utilised pebble	light hammer stone	sandstone	green-grey fine grained sandstone
2260	904	F1	Spindle whorl		sandstone	light brown fine-grained silty sandstone high porosity hence light.
2261	801	B2	Spindle whorl		sandstone	light brown fine-grained sandstone, rich in black mafic minerals,feldspar, high porosity hence light.
4103	80142	K7	utilised pebble	rubbing	sandstone	light brown quartz sandstone
4229	80178	K7	utilised pebble	polisher	sandstone	medium brown fine-grained sandstone rich in dark mafics (feldspar, mafics, quartz)
4248	80187	K7	Spindle whorl		sandstone	dark brown fine-grained sandstone, rich in black mafic minerals,feldspar, high porosity hence light.
4461	80368	K7	utilised pebble	heavy hammer stone	sandstone	medium brown quartz sanstone
4476	80057	K7	stone weight		schist	light green schist with iron staining.
4527	50396	H	utilised pebble	polisher/rubbing	sandstone	light reddy brown banded fine grained meta sandstone
5021	31025	E	mace?		agate	banded translucent silica (probably agate)
5391	80373	K7	perforated slab fragment	unclassified	schist	light green schist
5392	80373	K7	perforated slab fragment	unclassified	schist	light green schist
5393	80335	K7	perforated disc fragment	unclassified	schist	light green schist
5394	80335	K7	shaped slab	unclassified	schist	light green schist
5397	93030	F1	utilised pebble fragment	light hammer stone	sandstone	light brown fine grained meta sandstone
5398	93256	F1	utilised pebble	light hammer stone	dolerite	light brown micro-dolerite
5401	93294	F1	utilised pebble	heavy hammer stone	quartzite	light brown quartzite
5403	93284	F1	utilised pebble	hammer stone/polisher	sandstone	light brownish grey fine-grained meta sandstone
5404	93284	F1	utilised pebble	polisher slab	granite	medium brown mica rich micro granite
5408	93404	F1 RHI	utilised pebble	light hammer stone	sandstone	light brown fine grained meta sandstone

5411	90000	B2	utilised pebble fragment	hammer stone	sandstone	grey fine grained meta-sandstone
5452	93453	F1 RHI	utilised pebblefragment	pot boiler	rhyolithic porphyry	pale grey rhyolite porphyry (feldspar phenocrysts)
5456	93503	F1 RHI	disc	unclassified	schist	light green schist
5457	93507	F1 RHI	Spindle whorl		sandstone	medium brown fine-grained sandstone, rich in black mafic minerals,feldspar, high porosity hence light.
5458	93507	F1 RHI	utilised pebble	mortar	tuff?	Low density high porosity soft brown tuff?
5463	93507	F1 RHI	Spindle whorl		sandstone	light brown fine-grained sandstone, rich in black mafic minerals,feldspar, high porosity hence light.
5482	90722	B2 RHA	utilised pebble fragment	rubbing	sandstone	Grey fine-grained quartz-felspar sandstone
5503	31305	E	utilised pebble	pot boiler/polisher?	quartzite	Reddened light brown quartzite
5518	93385	F1 RHI	disc	unclassified	schist	light green schist
5704	3083	L5	utilised pebble fragment	abrader	sandstone	light grey-green meta sandstone
5748	93606	F1 RHI	utilised pebble?	whetstone	sandstone	light brown fine-grained sandstone (feldspar, mafics, quartz)
Sample 5887	91707	B2 RHE	Sample of hearth stone		dolerite	dolerite- fresh surface light green, weathered surface white. Felsic rich.
5982	92412	B2 passage-way	utilised pebble	polisher	sandstone	light brown fine-grained sandstone (feldspar, mafics, quartz)
6000	80808	K9	utilised pebble	burnisher	sandstone	dark grey mafic rich sandstone
6001	80808	K9	utilised pebble fragment	light hammer stone	schist	grey-green quartzite with traces of schistosity
6003	80806	K9	utilised pebble	heavy hammer stone	dolerite	fine grained dolerite with occassional pheoncrysts of feldspar
6004	80805	K9	utilised pebble	abrader	quartzite	light brown fine grained quartzite with quartz veinlets
6012	80831	K9	utilised pebble?		sandstone	dark grey mafic rich banded sandstone. With hematite veinlet
6022	80846	K9	utilised pebble	light hammer stone	sandstone	light grey green meta-quartz-sandstone weathering light brown
6034	70339	J	utilised pebble	polisher/hammer stone	basalt	medium grey-green fine grained igneous rock with iron oxide mineral. Basalt
6039	80843	K9	utilised pebble fragment	polisher slab	sandstone	greenish grey fine grained meta-sandstone
6054	80884	K9	rotary quern	top stone	sandstone	light brown coarse sandstone
6065	80900	K9	saddle quern	top stone	breccia	very coarse sandstone to quartz breccia

6069	80859	K9	cupmarked stone		schist	light green schist
6070	80900	K9	cupmarked disc	unclassified	schist	light green schist
6071	80002	K7	utilised pebble	polisher slab	sandstone	medium brown fine grained meta sandstone with some mafic grains
6076	80910	K9	utilised pebble?	polisher	dolerite	light brown fine grained dolerite
6077	90002	B2	Circular no hole		schist	light green schist
6132	80904	K9	utilised pebble	pot boiler	sandstone	light brown fine-grained quartz sandstone
6133	80847	K9	utilised pebble	light hammer stone	quartzite	light brown fine grained quartzite
6137	80945	K9	utilised pebble?	pot boiler	dolerite	mottled brown medium grained dolerite
6144	80903	K9	utilised pebble	mortar	sandstone	light brown quartz sandstone poorly sorted
6149	81001	K9	mortar	deep	not present	
6163	80865	K9	utilised pebble	polisher	dolerite	dark grey fine grained dolerite
6172	80824	K9	utilised pebble	pot boiler	quartzite	medium brown fine grained quartzite
6173	81100	K9	rotary quern fragment	top stone	sandstone	coarse fairly well sorted light brown sandstone
6176	80979	K9	rotary quern	top stone	breccia	very coarse sandstone to quartz breccia
6177	81165	K9	utilised pebble	light hammer stone	schist	brown-green fine-grained schist
6180	81206	K9	rotary quern fragment?	top stone	dolerite	dolerite (medium grained brownish weathered intrusive rock)
6181	81205	K9	utilised pebble	hammer stone	rhyolitic tuff	light grey massive rhyolitic tuff with various coarse minerals in fine grained matrix
6182	81221	K9	utilised pebble	Shaft smoother?	sandstone	light grey green meta-quartz-sandstone weathering light brown
6184	81084	K9	utilised pebble?	pot boiler/ hammerstone?	dolerite	brown weathered dolerite
6185	81084	K9	utilised pebble	pot boiler	dolerite	brown weathered dolerite
6256	80865	K9	utilised pebble		sandstone	medium brown, fine-grained meta sandstone
6337	31024	E (hollow)	stone weight		schist	light green schist with iron staining.
6353	70442	J	perforated slab fragment	weight?	schist	Actually 3653 on bag. light green schist
6391	70528	J	utilised pebble?	work slab	dolerite	light grey-green dolerite /diorite(quartz?) With brown speckles from weathered mafics.
6392	70536	J	utilised pebble	chopping/polisher slab	sandstone	light grey-green meta-quartz-sandstone

6398	70546	J	utilised pebble	unclassified	sandstone	light brown medium to coarse grained sandstone
6400	70502	J	utilised pebblefragment	polisher slab	quartzite	light brown fine grained quartzite with some reddening

Part VI.3 Petrological Description of Selected Stone Artefacts

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Methodology

Examination of 7 lithic finds was undertaken following standard methodology detailed in British Standard EN 12407(2007); initial observation was made with the naked eye followed by use of a x20 achromatic triplet lens, and binocular microscope (Leica MZ 9.5). All samples, were initially subjected to visual identification, these samples, except 344 and 131, were subsequently analysed by X-ray diffraction to confirm the observed mineralogy. A thin section of was made of samples 344 to aid identification. An approximation of the weathered, and where possible fresher, colour of the lithics is approximated provided using standard Mansell colour charts and is presented thus [Munsell number, colour name], along with grain size by standard terminology (aphanitic, no crystals visible with the naked eye, phaneritic fine-grained < 1mm, medium-grained 1-5 mm, coarse 5-50mm and very coarse > 50mm). The addition of very fine-grained is used to indicate a grain-size less than 0.5mm.

Samples examined

Sample details as provided by Gwynedd Archaeological Trust.

Find No.	Object Description
102	Complete polished axe, probably Graig Lwyd
131	Circular object, with opposed pecked hollows, possibly Graig Lwyd
229	Complete polished axe, probably Graig Lwyd
248	Broken fragment of possible axe or macehead
326	Complete polished axe, probably Graig Lwyd
344	Spindle whorl, one of several of the sames tone type
650	Broken polished axe, probably Graig Lwyd

Description of Objects

102

Almost all of the outer surface of the axe is weathered to a light yellow brown colour [c. 2.5Y 6/3] although small chipped areas hint at a darker colour below. The weathered surface shows a weakly porphyritic texture or pale plagioclase feldspars up to 1 mm long, in a fine-grained ground mass. The phenocryst density is estimated at 1%.

131

This object is worked from a greyish brown-weathering [c. 2.5Y 5/2] sandstone, interpreted as a quartz arenite, on the basis of only quartz grains (<187 μm) and minor white mica flakes (c. 250 μm) being identified. X-ray diffraction of the samples confirms these observations (NMW X3679). The rock is well-sorted and homogenous. Minor iron staining is a product of the burial history and not a geological feature of the rock.

229

The axe shows a 3-4 mm pale weathering crust [c 2.5Y 8/1, white] with less weathered material a steely grey colour. The groundmass is homogenous but is weakly porphyritic, containing a low density (estimated at c 2%) of elongate, cream plagioclase phenocrysts up to 3 mm long.

248

A fragment of acid volcanic rock, which on fractured surfaces appears very dark grey [c. 5Y 3/1] and only slightly darker [2.5Y 8/1, black] the outer weathered surfaces. The chert-like texture seen of broken surfaces reflects the silica –rich composition of the rock. This is confirmed by XRD analysis (NMW X 3683) which shows a high content of quart. The rock contains a high density (c 10%) of plagioclase crystals, present individually and a clots. This suggests the rock may be a tuff (crystal tuff). The pitting on the outer polished surface related to removal of these crystals during weathering of the rock.

326

The outer surface of the axe is weathered variably to a pale [2.5Y 8/1, white] or a light brownish grey [2.5Y 6/2]. There is no unweathered surface visible. The groundmass appears homogenous and is very fine-grained, and contains a low density (1-2% by area) of elongated plagioclase phenocrysts 1-2mm long.

344
This is a fine grained (typical grain size c. 200 μm) sedimentary rock with a weak depositional layering oblique to the widest axis of the whorl. It has a low specific gravity and in thin section this can be attributed to the high content of voids (blue areas in Plate 1), estimated at 20% by volume.

The rocks is composed of sub-rounded to sub-angular quartz grains (approximately 7-10% by area) quartz grains, of the same dimensions as the voids, and generally non-crystalline in texture. The darker background material is a mixture of fine grained mica, and possibly clay material, with iron oxide imparting the darker colour.

The high degree of voids suggests that an original component of the rock has been removed by leaching or dissolution. The voids left are a mixture of irregular sub rounded shapes (Plate VI.3.1, A) and more angular and elongate forms (Plate VI.3.1, B). The rock chip used for thin section preparation does not show any reaction with dilute hydrochloric acid which raises the possibility that these voids may have been filled with carbonate material such as comminuted shell debris. An alternative interpretation is that the shapes and forms represent volcanic material which has been heavily altered. The simplest and most plausible interpretation however is that this is shell debris.

One tentative suggestion for the source location of such a lithology might be a beach rock deposit (possible preserved as a raised beach). For this to be the case iron rich solutions would have need to percolate through the rock to form the cement with subsequent dissolution of the carbonate by acidic fluids. At present no specific locality can be suggested as the provenance of this rock.

650
This axe has a pale buff [c.2.5Y 7/2, light grey] weathered surface, although there is no evidence of the unweathered colour, the fractured surface suggests that this is grey. The observable texture is homogenous and very fine-grained, with no evidence of the less, or unweathered colour of the lithology. Plagioclase phenocrysts are not obvious but close examination shows a very low density distribution, lower than any of the other porphyritic examples described in this report, perhaps indicating an abundance of less than 1% by area.

Summary
Samples 102, 229, 326 and 650 are all of igneous origin and are interpreted as microgranodiorite with variable density of plagioclase phenocrysts imparting a weakly porphyritic texture. These samples are all considered to be variations of the same lithology.

Sample 248 is an acid volcanic rock, most likely a crustal tuff.

Samples 131 and 344 are worked from sedimentary rock, although very different in texture and composition, so not attributable to the same source.

Geological provenance of stone
Graig Lwyd (Group VII) a is well-established and well-documented axe group, first defined by Keiller *et al.* (1941) and later described as an augite granophyre in Stone Axe Studies 2, (Clough & Cummins, 1988). Subsequently in geological studies Ball & Merriman (1989) described this lithology, the finer grained marginal facies of the Penmaenmawr intrusion (including Graig Lwyd) as microdiorite, and Durham (2004, fig 7.1) on the basis of whole rock geochemical analyses, indicates that compositions span the diorite and granodiorite field. A notable feature of the rock is its grey colour on fractured surfaces, and the presence of rectangular plagioclase crystals (typically in the range 0.5mm to 2mm long) and clinopyroxene crystals (typically c. 0.5 mm). In the east of the intrusion the phenocrysts of plagioclase have a maximum density of 5% (by area) but this increases to up to 10% further to the west (away from Graig Lwyd).

Amgueddfa Cymru-National Museum Wales Group VII axe samples, NMW 26-51, NMW 29.607/4 and NMW 29.607/5, clearly show a grey groundmass, with scattered but sparse off-white plagioclase feldspar phenocrysts, and sparser dark pyroxene phenocrysts. The external weathering on these samples is variable, from buff [38.753/5, c. 2.5Y 7/1] to dark grey (e.g. 26.51). However, this weathering can be influenced by the burial history post fabrication, and is not comparable to natural geological weathering patterns and colours.

Comparison with Graig Lwyd axes held in the NMW collections, support samples Investigation of the samples would supports 102, 229, 326 and 650 as belonging to Group VII. In particular the plagioclase phenocryst size (range 1-3mm) and density 1-2% , observe din the Graig Lwyd samples, lies within the range of values for objects

from Parc Gybi of 1-2 mm and up to 2%. Appendix 2. Shows the similarity in XRD traces for the Parc Gybi axes and a representative Graig Lwyd sample. Although the simple mineralogy dominated by quartz and plagioclase (albite), does not provide a unique fingerprint for these rocks, I does show that the mineralogy, abundance and lack of other mineralogy is common to both.

It is worthy of note that these samples also bear a close resemblance, in texture, mineralogy and weathering colour to axes described from Llanfaethlu (for C &R Archaeology) in 2019, and also attributed to Graig Lwyd.

It is possible to state that the acid tuff (sample 248), does not have a provenance in Anglesey. There are abundant acid volcanic rocks similar to this within the Ordovician sequence of North Wales, but a specific unit cannot be attributed from hand specimen examination. This should be qualified by the fact that further investigation by thin section examination may not provide further evidence that would enable a specific source to be pinpointed.

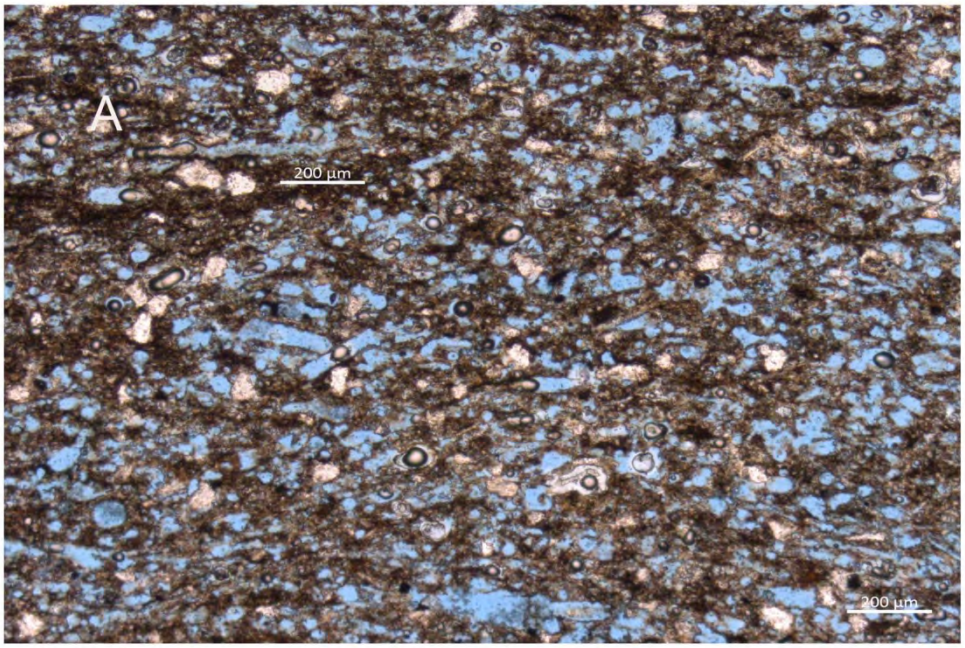
Of the two sedimentary rock samples (131 and 344) described in this report, one (131) was provisionally attributed to a Graig Lwyd provenance in the documentation provided with the samples. The textural data provided here, confirms that this is a sedimentary rocks and not associated with the igneous suite at Graig Lwyd. However the specific provenance of both these samples is not immediately apparent. Thin section examination of 344 have provided more information as the reasons why it has such a low specific gravity, but has unfortunately not constrained it provenance further.

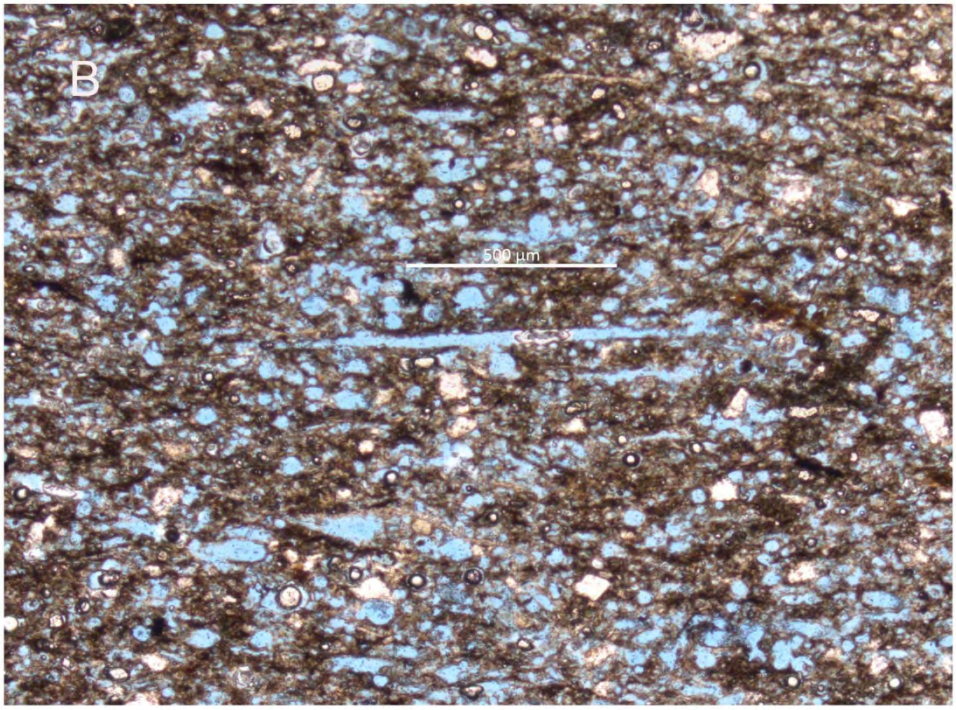
Note: The thin section of sf344 is held by National Museum of Wales accession number 2019.18G.T.1.

Plate VI.3.1: Sample 344, spindle whorl

This section images (standard 30 µm polished slice) viewed under plane polarised light. Note the scale bar in each image. In A the general texture of the rock with a high volume of voids is observed. These range from rounded to sub-rounded to angular and elongate Some variation in shape can be accounted for by one form being transacted in different orientations. However even taking tis into account there are clearly different shape voids in the rock. The white areas are quartz grains, the darker fuzzy areas are composed of fine grained mica (most likely sericite - a form of muscovite) possibly clay minerals and iron oxide. The small dark circles are bubbles in the resin and artefact of thin section production.

In the lower images (B), taken at the same scale as A, larger, thin voids are seen. It is considered plausible that these represent the former presence of shell debris, these being a cross section of the shell.

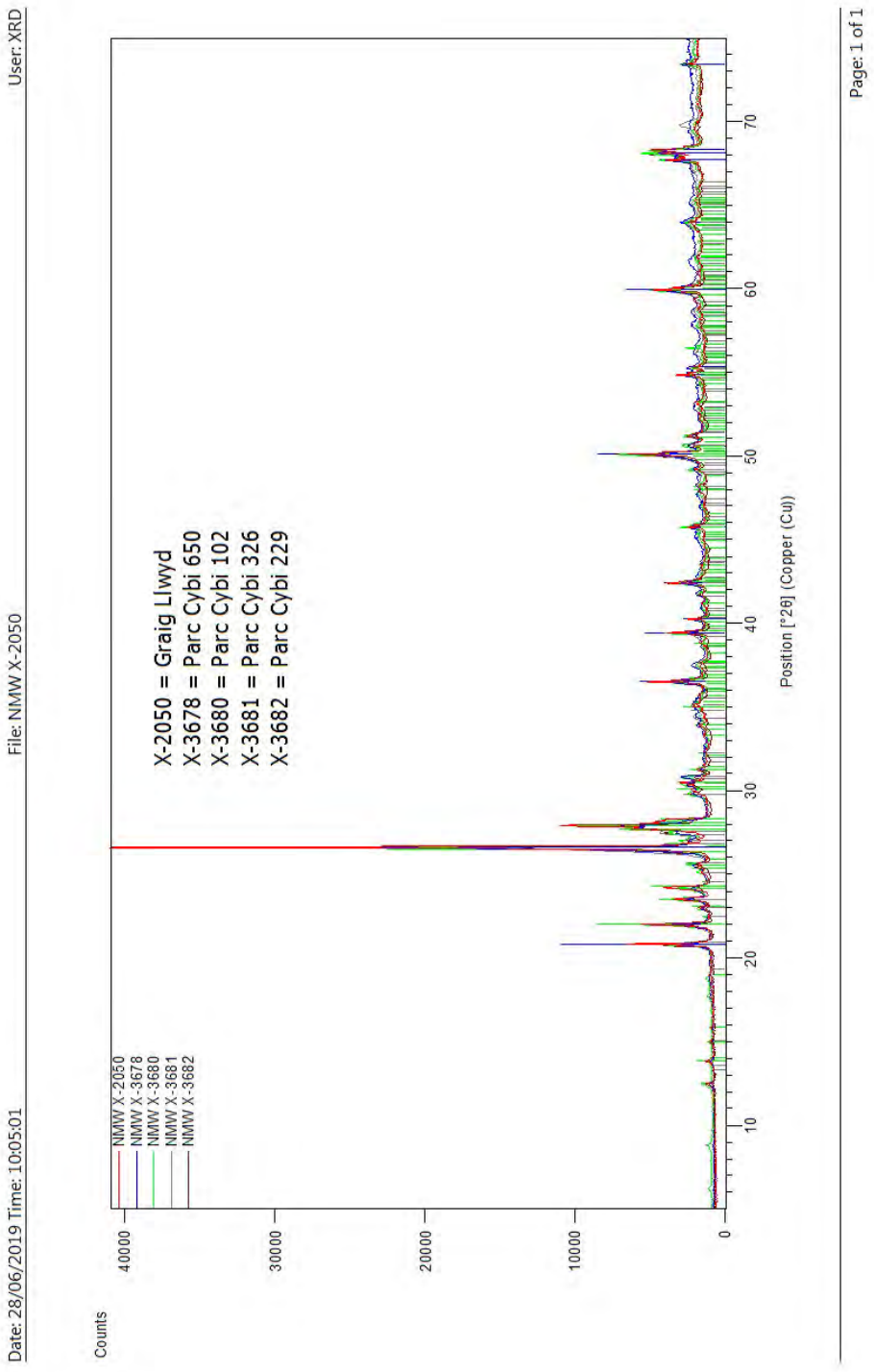




Appendix VI.3.1. Summary of lithological data

Geological Description												
No	Colour				Grainsize	mineralogy				Texture	Rock type	Notes
	Weathered	name	Fresh	fractured		Size (mm) max	Shape	Composition	Density			
102	2.5Y 6/3	light yellow brown	N/A	darker	fg	1	elongate	plagioclase	1%	Homogeneous, Porphyritic	Graig Lwyd microgranodiorite	
131	2.5Y 5/2	greyish brown	N/A	N/A	<187 µm	<187 µm	sub-rounded	qtz	N/A	Homogeneous	quartz arenite, qtz cement	white mica <250 µm, superficial iron staining
229	2.5Y 8/1	white	N/A	darker grey	fg	3	elongate 3 x 1	plagioclase	2%	Homogeneous, Porphyritic	Graig Lwyd microgranodiorite	weathered crust 3-4 mm
248	2.5Y 2.5/1 to 5Y 3/1	black-v. dk grey	GLEY2 3/5PB	v dk bluish grey	vfg	3		plagioclase	10%	Homogeneous, Porphyritic	? Porphyritic acid volcanic	siliceous tuff?
326	2.5Y 8/1- 6/2	white - light brownish grey	N/A	N/A	fg	2	elongate 2x1	plagioclase	1-2%	Homogeneous, Porphyritic	Graig Lwyd microgranodiorite	
344	2.5Y 5/2	greyish brown (poor match)	N/A	N/A	<187 µm		sub-rounded	quartz	N/A	Homogeneous	a few orange iron statined grains, ? Interstitial clay material?, low density rock	
650	2.5Y 7/2	light grey	N/A	dark grey	fg					Homogneous not porph	Graig Lwyd microgranodiorite	

Appendix VI.3.2
X-ray diffraction scans of samples



Part VI.4 Spindle whorls and Perforated Weights

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Spindle whorls

Thirty three of the 38 stone spindle whorls from the excavations were associated with the Iron Age roundhouse settlement in Areas B2 and F1 (Table VI.4.1). Only 21 whorls came directly from floors, postholes and other deposits within the roundhouses, but it will be argued that many of the remainder, especially those from the ploughsoil directly above the roundhouses, are likely to have originated in Iron Age levels. A group of five whorls from the ploughsoil above Structure F suggests continued use of the same whorl types into the Roman period.

Spindle whorls represent the craft of spinning, in other words, the production of yarn for textiles and cordage. As a simple piece of equipment, commonly used, they tend to represent local traditions of craft practice. The shapes and method of manufacture of the Parc Cybi whorls have proved to be in many ways typical of northern Britain and Ireland in the Iron Age, but made out of local materials. The distribution of the whorls across the site and the presence of part-worked unfinished whorls alongside whorls with signs of use is noteworthy. Other features of interest include deliberate markings that repeat on several whorls and a single whorl, 1042, with an unusual incised decoration, which could, perhaps, have cryptic meaning.

The characteristics of the whorls

To the naked eye, the whorls have the appearance of different fabrics (Figs VI.4.1-3, 6). They range from dull, porous grey-brown, including reddish brown (1375), through light and dark grey, often with banding (132, 205, 362, 375, 386), to a smooth pale grey with a silvery lustre (407, 515, 6077). Examination by a geologist, Mike Ridealgh, however, has established that each of the whorls is made from phyllite. Phyllite is a metamorphic rock, formed from shales and mudstones which have been altered 'under conditions of low grade metamorphism' (Hamilton *et al* 1980, 150, 178). The varying degree of alteration accounts for the differing colours and textures. The silvery sheen of some of the whorls shows that the phyllite is grading towards schist and the reddish tone of others is likely to indicate iron content (Ridealgh pers.comm.). The sources of the phyllite can be found in the South Stack Beds, which appear in coastal exposures between North Stack and Porth-y-post, and south-west of Rhoscolyn; or in the New Harbour Group, which is locally accessible between Salt Island and Soldier's Point, Holyhead (Challinor & Bates 1973, 144-5). This means that all the raw materials for the whorls could have been picked up at the foot of sea cliffs or other rocky outcrops at a short distance from the site.

Except for the decorated whorl, 1042, and a thin disc-shaped whorl, 769, the Iron Age whorls and the whorls from less secure contexts are visually similar. When scattergraphs were constructed to compare diameter, thickness, weight and narrowest diameter of spindle hole (six charts were constructed, of which two are illustrated in Fig VI.4.4a-b), whorls 1042 and 769 did indeed prove to be outliers, as did the heaviest whorl from the site, 1375. Whorl 1042 comes from Area I, at a distance from the roundhouse settlement, and will be discussed further below. 1375 was recovered from the undated, possibly prehistoric, remains of a wall or drain-capping in Area L3. Only 769 comes from the area of the roundhouses in Area B2, from what is thought to be the Bronze Age ground surface directly outside the wall of roundhouse C. All three of these outliers have the small spindle hole commonly found in prehistoric whorls (see below). In the charts, the rest of the whorls from insecure contexts fall within the range of the Iron Age whorls in all measurements. They have therefore been interpreted as a single group, originating in the Iron Age settlement and the subsequent Romano-British occupation.

The shapes of the whorls are typical of prehistoric whorls from Britain made from rocks other than chalk. They can be categorised as Form B, with two equally sized transverse flat faces, and include examples of Form B1 with straight vertical sides and B2 with convex sides (Fig VI.4.5) (Walton Rogers 2007, 24-5). Most have a relatively small spindle hole diameter, 3.5-6.5 mm, which is consistent with the established range for Iron Age spindle holes of 4-8 mm diameter, with 4-6 mm as the most common measurement (Walton Rogers 2007, 23-4). Only two whorls, 415 and 272, both from secure Iron Age contexts, have spindle holes over 8 mm diameter. The B2 whorls have on average a larger diameter and are heavier than B1 whorls, but the spindle-hole diameters are much the same in both groups (Table VI.4.2).

Evidence for manufacture and use

The process of manufacture can be reconstructed from the unfinished whorls. There are two blanks cut to shape, and a third with the beginnings of a spindle hole on one face (Fig VI.4.1). Fine striations on all surfaces show attempts to grind the whorl to shape (there is no evidence for lathe-turning) (Figs VI.4.2-3, 6a) and grinding stones such as sf1039, could perhaps have been used for the purpose. The spindle hole seems to have been made after the grinding of the edges. There are sometimes preliminary gouge marks and the hole itself must have been made with either a slow drill or a tool such as a burin (as suggested by Timberlake 2018, 235) to produce a conical or cup-shaped depression. First and second attempts at the spindle hole can be found on 205 (Fig VI.4.1.) and 195 (Fig VI.4.6a). The spindle hole has usually been worked from first one face then the other, which has often given it an exaggerated hourglass shape. At least nine whorls that appear to be unfinished, or to have irregular shapes and off-centre spindle holes, have been interpreted as failed attempts, discarded during manufacture (for a selection, see Fig VI.4.2).

In contrast, at least ten whorls are symmetrical with a centrally placed spindle hole and have particularly smooth surfaces (for a selection, see Fig VI.4.3). These are finished whorls and it is likely that the smoothing has been caused by handling. When used for suspended-spindle spinning, the whorl is jammed on the end of a spindle (usually of wood, sometimes of bone or iron), where its function is to keep the spindle stable as it rotates, and to keep up the momentum of spin. The constant rubbing of the rotating whorl against the hands, clothing and yarn causes whorls to develop a smooth finish over time. One of these whorls, 4248, and perhaps also 370, 409 and 1042, has dark patches on the surface, which may represent the build-up of grease that is seen on whorls used for spinning sheep's wool.

The failed whorls and those with worn surfaces were spread equally through the roundhouse settlement. The location of the unfinished and finished whorls from Roundhouse E is discussed further below.

Markings

Some of the whorls have markings which are difficult to interpret. Three whorls, 195, 387 and 769 and perhaps also 370, have incised lines within a single quadrant, radiating from the spindle hole (Fig VI.4.6a-d). The lines can be thin scratches or deeper grooves. In 387, the grooves are combined with an arc of peck-marks which suggests deliberate ornament (Fig VI.4.6b), although an arc of tiny marks on one of the blank whorls, 366 (Fig VI.4.1), might equally indicate that they were part of the manufacturing process. Each of the three whorls, 195, 387 and 769, weighs 17 g, which might suggest a deliberate weight marking, although they were variable in other measurements. Scratched marks on 473 more obviously represent a rudimentary form of decoration, made up primarily of diagonal lines, with an additional encircling line on one face (Fig VI.4.6e-f).

Ornamented whorl

Whorl 1042 is made from a dull grey, slightly porous phyllite. It is thicker than the other whorls (thickness was measured along the opposite axis to the diameter) and has a medium-sized spindle hole, 7 mm diameter. It has a deep encircling groove around its girth and incised decoration (Fig VI.4.7). On one transverse face there is a star formed from five inward-curving arcs. On the opposite face there is a grid made up of two vertical and two horizontal lines with the addition of two diagonal lines. On the sides, in the zone above the encircling groove, there is a band of ornament made up of a single zig-zag, which breaks into parallel diagonal lines with linking bars for part of the circuit. Between the dips on one side of the zig-zag are single +-signs. There is no ornament in the zone below the encircling groove.

This whorl was recovered from an earth oven, radiocarbon-dated to the Iron Age, in Area I. This was at a distance from the main Iron Age settlement and, as described above, it is a slightly thicker variant of the whorls from the roundhouses. No exact parallels have been identified in other sites, although an encircling groove – an unusual feature in spindle whorls - was recorded in a chalk whorl from an Iron Age site at Trumpington, Cambridge (Timberlake 2018, 235-6). Ornament other than radiating lines on prehistoric British whorls is comparatively rare and, as others have remarked, the decision to ornament something usually plain must have had some social significance (Chittock 2014, 315). One comparison can be drawn with an asymmetrical design with two inward curving arcs separated by hatching on a whorl from Glastonbury lake village (Tuohy 2004 105, fig.4). Examples of incised ornament are a little more common in the early medieval period and amongst the simple lines, dots and circles, there are some whorls with inscriptions, in ogham on a Pictish whorl (Sterling and Milek 2016, 58-9), in runes on lead whorls from England (Green 2014; PAS LEIC-38FE80; WMID-646AC5; LVPL-84880E) and pseudo-runes on a chalk whorl from Lurk Lane, Beverley (Walton Rogers unpublished a) . It is therefore worth noting that the zig-zag motif with +-signs seen on the sides of 1042 also occurs on a Roman Iron Age brooch from Fårtoft, Thisted Amt, Jutland. It appears on the catch-plate, a zone of the brooch which would often carry runes and other meaningful symbols (Przybyła 2015, 352, 373, fig.9). It is not impossible, therefore, that the ornament on 1042 had some symbolic meaning behind the artistic creation.

Comment

Whorls of the shapes recorded at Parc Cybi are typical of prehistoric Ireland and northern Britain. Maria Fitzgerald, in her survey of Irish spindle whorls, noted that this was the most common shape for Bronze Age and Iron Age whorls made of stone and that radiating lines (although not grouped in a single quadrant as they are in the Parc Cybi whorls) were the most common decoration (Fitzgerald 2000, 98-105, 118). No comparable survey has been conducted for Britain, but similar whorls have been recorded at a variety of Iron Age sites, stretching from Orkney, through the Yorkshire Pennines, to southern sites such as the hillfort at Danebury and the Somerset lake villages, although collections of stone whorls from southern and eastern sites include a wider variety of shape (Bulleid 1926, 40-1, 61-74; Henshall 1950, 142-4; Cunliffe 1984, 398-402, 422-5, 438-9; Coles 1987, 64-5 88, 157-168; Stirling and Milek 2016, 55-9; Walton Rogers unpublished b and c). Radiating lines were recorded on a proportion of these. Where the lithic origin has been determined, the material of the whorls reflected the local geology, at least in northern sites. As well as stone, bone whorls were recorded in Orkney (Stirling and Milek 2016, 55) and lead disc whorls and clay whorls in a range of shapes in southern and eastern Britain. Bone may not have been preserved at Parc Cybi, but clay was present at the site. There may be temporal variations hidden in this material, but, on the evidence as it stands, the absence of clay and lead whorls and the narrow range of shapes seem to align Parc Cybi with the north and west more than the south and east.

The weights of the Parc Cybi whorls suggest a range of different yarns being produced. They mostly fall within the range 12-38 g, with three whorls 46-55 g (Fig VI.4.4a). In the Irish material there was also a wide range of weight, but 73% of whorls (of all dates) weighed 5-35 g, and it was suggested that the heaviest whorls may have been used for plied yarns and cords (Fitzgerald 2000, 90-95). These weights are also comparable with the stone whorls from Iron Age Orkney, although the Orkney examples fell into two main groups, one 10-14 g and the other 35-39 g: this was interpreted as indicating the production of two main yarn categories (Stirling and Milek 2016, 64). Several useful experiments have been conducted with whorls of different shapes and sizes to see how they function during spinning, but in this author's view, it is not possible to deduce from this the precise use of individual excavated whorls without supplementary evidence, because the length and weight of the spindle, the type of fibre and the spinster's technique are unknowable variables. Nevertheless, a site with a range of weights is likely to have been producing yarn for a range of different textile types and cords.

The whorls were most commonly recovered from inside the roundhouses (Table VI.4.1). At Danebury this was not the case, only two stone (chalk) whorls being in roundhouses and the remainder being scattered over the excavated area of the fort (Brown in Cunliffe 1984, 422). A further significant finding is that the part-made whorls and the used whorls were often found close together. In the most completely preserved roundhouse, RHE, they clustered immediately to the right of the eastern entrance, in what must have been a well-lit area during the day (Fig VI.4.8) (Pope 2007, 216). Since they were often recovered from small pits or postholes, it is difficult to interpret this evidence, and the formation of abandonment deposits at the end of the building's life is in any case a complex subject (Pope 2007, 215-17). If, however, the distribution of whorls is taken at face value, it implies that the stationary task of whorl-making and the portable craft of spinning were both practised in the well-lit area just inside the entrance to the roundhouse.

The perforated weights

A number of relatively heavy stone objects have been grouped together because of their weight and the presence of a single perforation in each, although their variability in size and shape suggests that they will have had a variety of functions. They have been identified by Mike Ridealgh as being made, with one exception, from the same phyllites as the spindle whorls, but with a greater use of the greenish rocks of the group. The exception is 292, which is chlorite schist, a rock which forms under the same form of metamorphism as phyllite, with which it is associated (Hamilton *et al* 1980, 178-9). This is locally available in the cliffs close to Holyhead (Challinor & Bates 1973, 145).

Disc-shaped weights, possibly loomweights

There are ten disc-shaped weights, or parts of weights, with a central perforation. The range of diameters is 75-118 mm, thickness 7-24 mm and weight 80-271 g. At first sight, they appeared to divide into three sizes (Fig VI.4.9), but this proved not to correlate with how much they weighed (Table VI.4.3).Six weights came from the area of the roundhouse settlement and at least four could be related to the Iron Age occupation, although they were not associated with interiors in the way that the spindle whorls were.

Disc-shaped weights of this type have sometimes been classified as weights used to tension the warp when weaving on the warp-weighted loom, although there is no general consensus on this matter. Stirling and Milek accepted the excavators' identification of heavy sandstone weights, over 1k g, from Iron Age Orkney as loomweights (Stirling and Milek 2016, 52, 59-61). Fitzgerald on the other hand, after a full review of textile-making equipment and products in Ireland, came to the conclusion that the warp-weighted loom was not in use there before the Viking Age. She argued that the Irish weights were recovered individually from separate contexts, which contrasts with the occurrence of weights in clusters in regions where the warp-weighted loom is known to have been in use (Fitzgerald 2000, 14-15, 140-3, 245-49). Heavy chalk weights from Danebury, Hampshire, with parallels at Maiden Castle and Hod Hill, Dorset, did indeed occur in sets of similar weight (one set of seven weighed around 2kg each and most weights were 1-2 kg) and also had worn grooves for an attachment cord running from the perforation to the edge: these were interpreted as loomweights (Cunliffe 1984, 419-422). Similarly heavy chalk weights have been recorded in East Yorkshire (Brewster unpublished; Dent in prep).

Triangular fired-clay weights found in Iron Age and early Roman sites in the southern half of Britain and the near Continent, also occur in convincing sets (Henshall 1950, 144-6; Wilhelmi 1977; Wild 1970, 61-3, 136-7; 2012, 453; Ferdière 1984, 218-25). They weigh 1.0-3.5 kg, except for some rare 'mini' weights (Elsdon and Barford 1996, 332). Overall, the Iron Age stone and clay weights deemed to be loomweights are much heavier than the circular (annular and bun-shaped) clay loomweights of the Anglo-Saxon period, which are most commonly 150-550 g (Walton Rogers 2007, 30-1). The Parc Cybi weights, if they are loomweights, belong with the small weights. Experiments with weaving on the warp-weighted loom have shown that weight and thickness in loomweights correlate with the quality of the cloth (Mårtensson *et al* 2009). Interestingly, the textile products recorded for the Iron Age are predominantly coarse wool cloths (Crowfoot 1991; Bender Jørgensen 1992, 198-9; DeRoche 2012, 446-9), of a type which could be woven with heavy weights. Linens are found in finer qualities but they are rarer in the archaeological record. This may reflect an absence of preservation conditions conducive to their survival, or a genuine rarity in fine fabrics. On the whole, textile production in Iron Age settlements is likely to have been a domestic craft aimed at clothing the local community (Tuohy 2004; Cunliffe 2010, 485-7; DeDeroche 2012, 449).

To summarise, the Parc Cybi disc-shaped weights would function well as loomweights for weaving fine-to-medium cloths, but their limited numbers, lack of clustering on the site and the absence of supporting evidence in the form of the hand-tools commonly used with the warp-weighted loom (although that may be a product of the poor preservation of wood and bone artefacts), leaves this matter open to doubt. Only a rigorous review of Iron Age textile-manufacturing evidence, taking into account regional and temporal variation, can hope to resolve the problem.

Miscellaneous perforated weights

The remaining weights (Fig VI.4.10) can be described individually. The perforations on most are relatively small and suitable only for twine or thin cord. In two cases the perforation is set off-centre, a feature which Fitzgerald noted had an association with coastal sites and which suggested to her an association with fishing (Fitzgerald 2000, 249). Apart from this, there is little to indicate function.

292 is a circular stone weight from a posthole fill in Romano-British Structure F. It is 120-132 mm diameter and at 882 g is the heaviest object in the group. Made of chlorite schist, it has a rough, unfinished surface and a perforation of 18 mm diameter.

245 is a fragment of what was probably once a ring-shaped object, at its thickest in the outer edge but tapering inwards. It has a smooth polished outer surface, marked by fine scratches, although the other surfaces are rough and unfinished. Its original diameter was probably in the region of 100 mm and its weight approximately 550 g. It comes from a post-Iron Age deposit on top of the walls of RHA.

294 is a thin disc-shaped weight, 80-92 mm in diameter, weighing 171 g, with the remains of a small perforation, 7 mm wide, close to the edge. It was found in the post-medieval ploughsoil directly over the eastern part of RHE.

651 is a large flat angular piece, 155 x 75 x 17 mm, weight 323 g, with a perforation approximately 11 x 9 mm towards one end. One straight edge has been weathered more than the others, which may mean that this was re-used from a larger object, or that it was broken after use. It comes from the stone platform under RHA, close against RHE.

314 has the general appearance of a part-worked spindle whorl, but its diameter of 63 mm and weight of 79 g places it well outside the range for whorls, while its gouged slit-like perforation, 7 x 4 mm, bears no resemblance to a spindle hole. It comes from an unstratified context in Area B2.

Small stone counters

Two thin flat disc-shaped objects, 407 and 6077, both around 30 mm diameter, with a thickness of between 6 and 7 mm and a weight of 10 g, have been classified as counters, which were probably used in gaming. They both have smooth surfaces and 515 has a silvery sheen (Fig VI.4.11). A third disc, 515, is similar to the other two, if slightly thinner (diameter 32 mm, thickness 2.8 mm, weight 3 g) but it has a central perforation, less than 4 mm diameter. This is too flimsy to have been used as a spindle whorl and is probably another counter. All three have been made from the same phyllite as the spindle whorls, but their lustrous appearance indicates that the phyllite has formed under great pressure and is grading towards schist (Mike Ridealgh pers.comm.). Object 407 came from the second phase of activity in Roundhouse E and 515 from the floor of the first phase of Roundhouse B, while 6077 was recovered from the ploughsoil in the general area of the roundhouse settlement.

Gaming counters were used in competitive games played on the ground, the floor or on specially constructed boards. The pieces could be made of glass, stone or bone and might be discs, pegs or domed shapes with a flat base. These games were introduced into NW Europe by the Romans and they rapidly spread beyond the Roman frontier, so that they were established among the native populations of Britain and Ireland, certainly before the Conquest and probably towards the end of the first millennium BC (Hall and Forsyth 2011, 1335).

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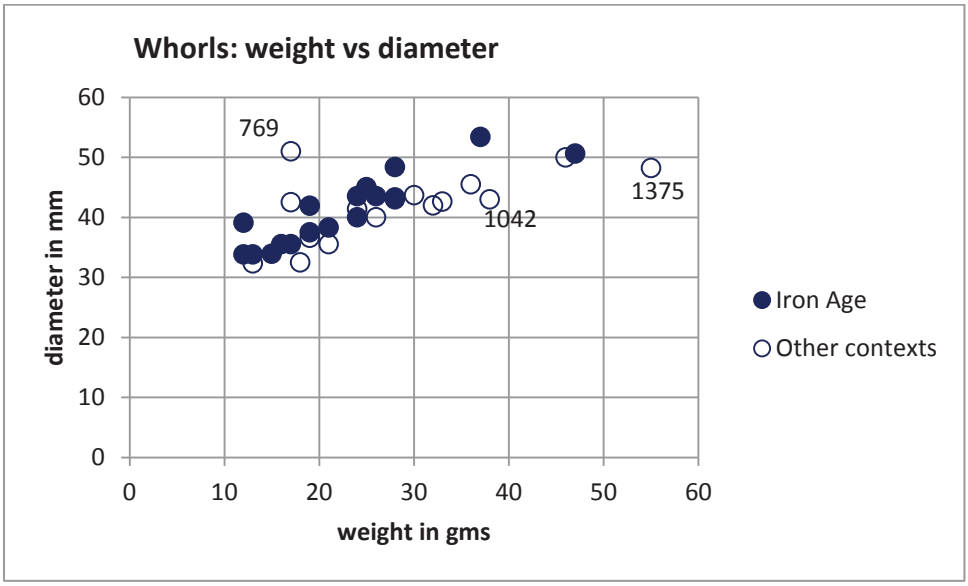
Fig VI.4.1: Three spindle whorl blanks prepared for drilling. Top 366, left 2217, right 205. Note the beginnings of a spindle hole in the centre of 205.
Scale in cm. ASlab: Arabelle Barratt

Fig VI.4.2: Spindle whorls likely to have been discarded during manufacture, viewed with a straking light to emphasise irregularities. Left, 2260; middle above 132, below 362; right, top to bottom, 219, 244, 5457.
Scale in cm. ASlab: Arabelle Barratt

Fig VI.4.3: Finished spindle whorls with smooth surfaces. Top 525; middle left 386, right 35; bottom, left to right, 1375, 2261, 4248.
Scale in cm. ASlab: Arabelle Barratt



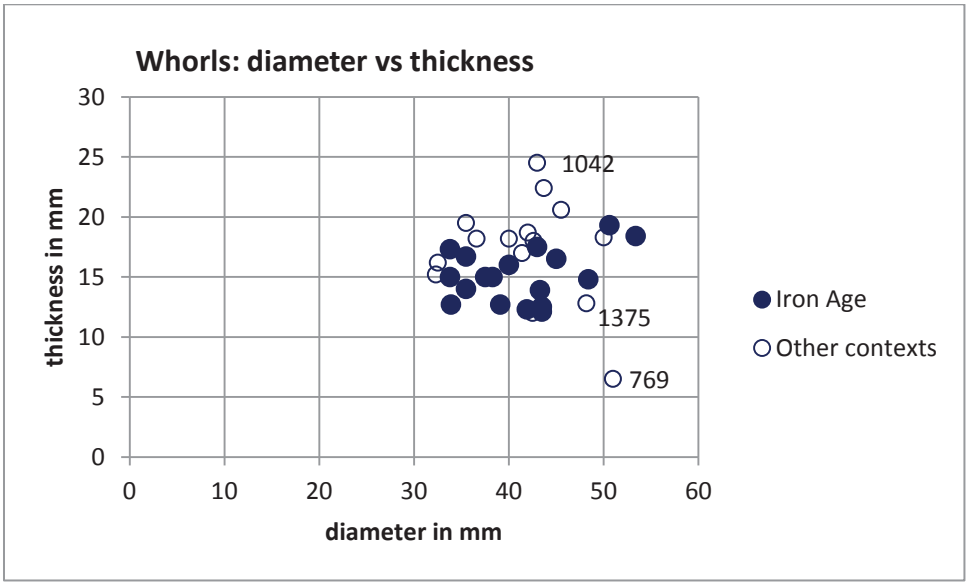


Fig VI.4.4: Two of the six charts constructed to compare the dimensions of the whorls securely associated with the Iron Age settlement, with those from less secure contexts

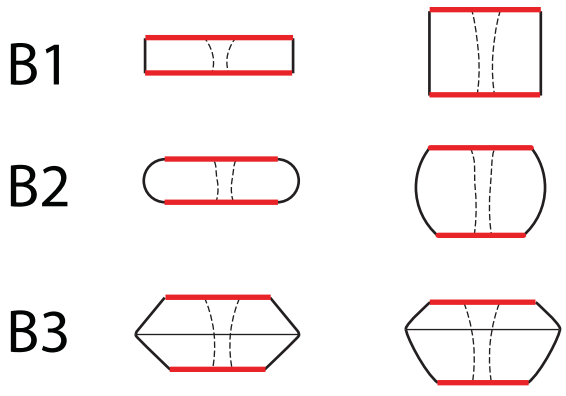


Fig VI.4.5: The shapes of Form B spindle whorls. Form B has two equally sized horizontal flat faces (marked in red). It is sub-divided according to the shape of the sides: B1 straight, B2 convex, B3 carinated.
ASLab: Penelope Walton Rogers

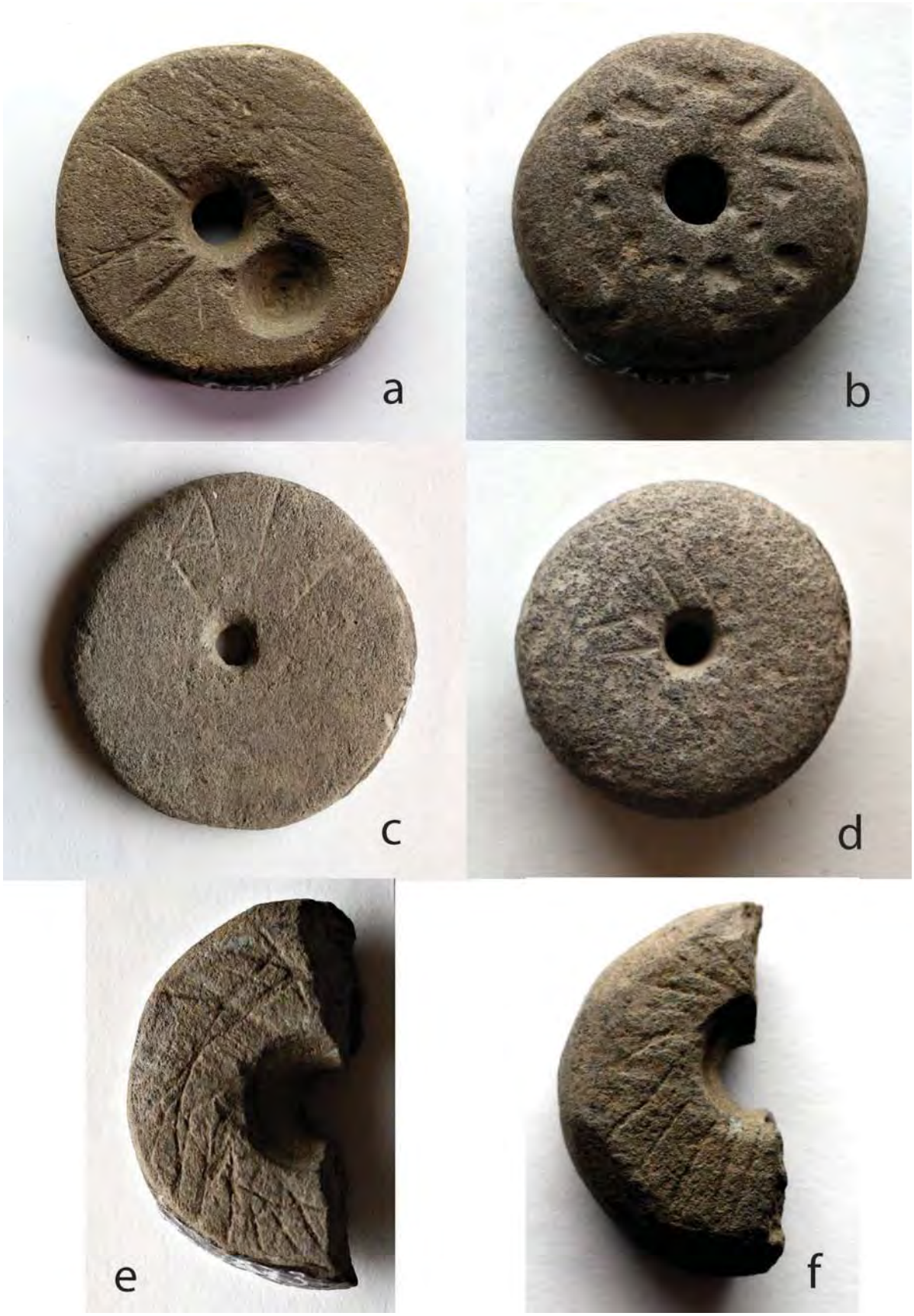
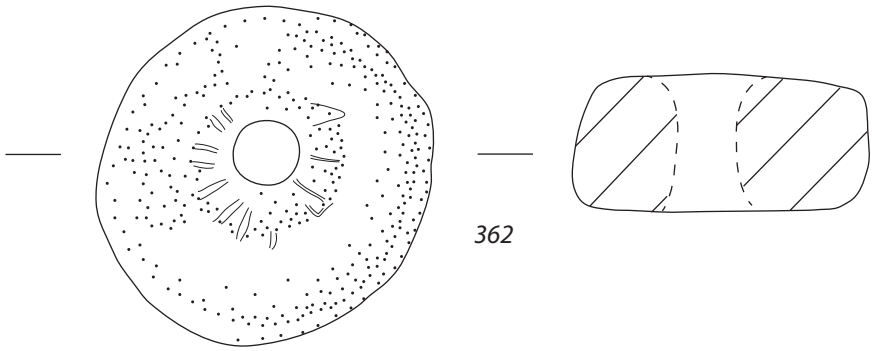
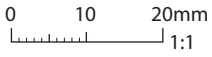
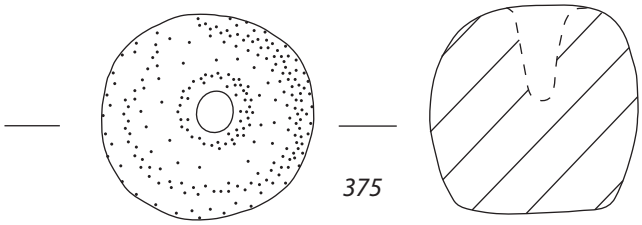


Fig VI.4.6: Spindle whorls with markings, viewed with straking light to emphasise details.
6a = 195; 6b = 387; 6c = 769; 6d = 370; 6e = 473 face 1; 6f = 473 face 2.
ASlab: Arabelle Barratt







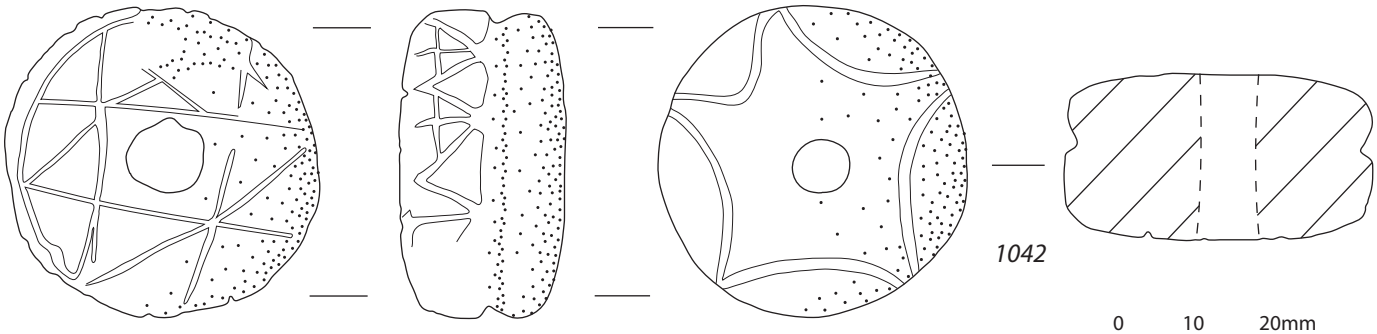


Fig VI.4.7: Drawings of spindle whorl sf362 and spindle whorl-like object sf375, with drawing of decorated spindle whorl sf1042, and photograph of sf1042 including the carved ornament around the side (sf1042 - Diameter 42.9 mm; thickness 24.5 mm).
ASlab: photos Arabelle Barratt; edge design Penelope Walton Rogers
Line drawing: Tanya Williams

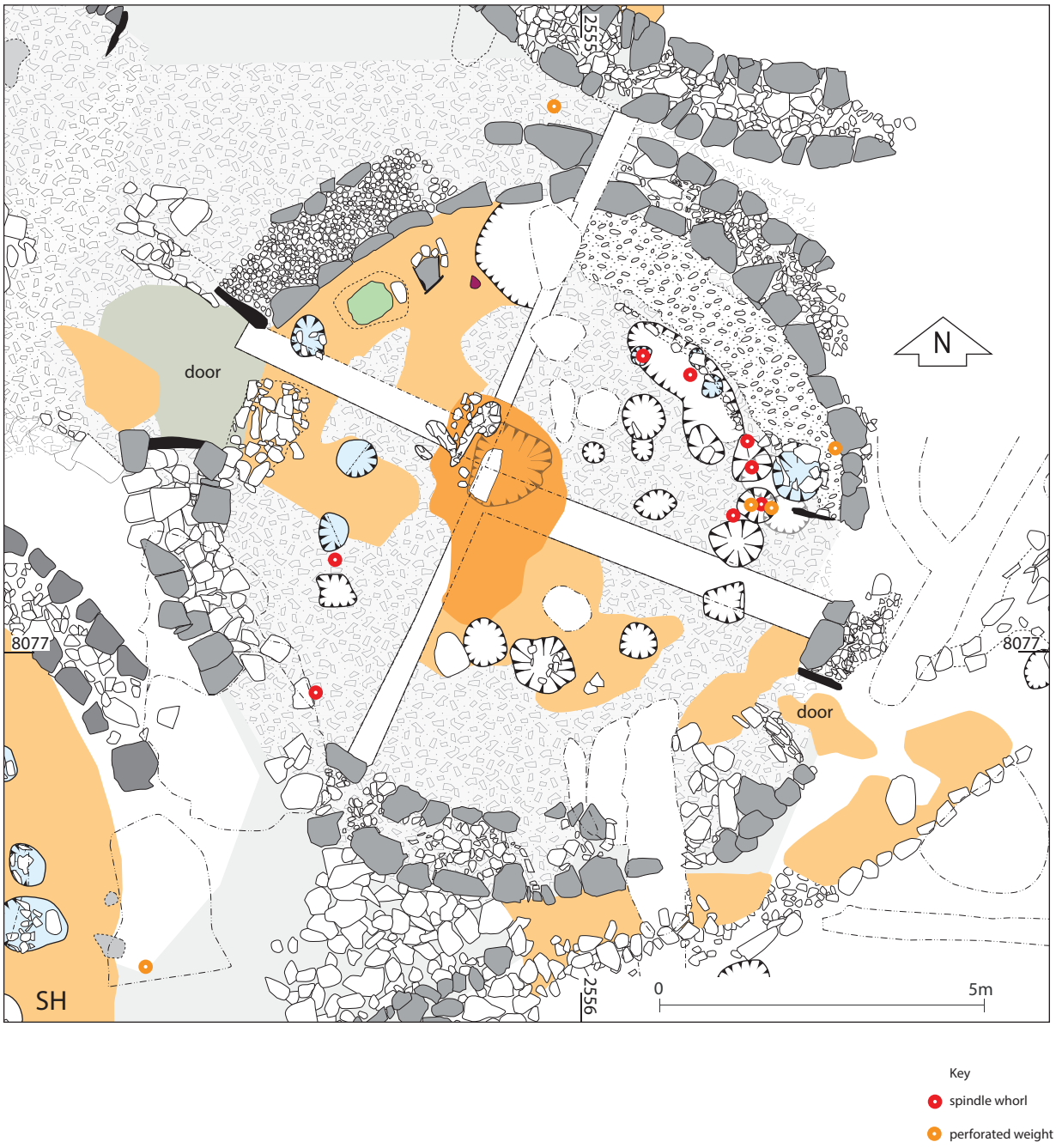


Fig VI.4.8: Distribution of spindle whorls and perforated stones in roundhouse E

Fig VI.4.9: Disc-shaped stone weights. Top row (left) 829, (right) 385; Middle row left to right, 298, 528, 837, 4476; bottom row, left to right, 723, 775, 6337, 310. Scale in cm. ASlab: Arabelle Barratt

Fig VI.4.10: Miscellaneous stone weights. Top row (left) 292, (right) 245; bottom row, left to right 294, 651, 314.
Scale in cm. ASlab: Arabelle Barratt

Fig VI.4.11: Small stone discs, probably gaming counters. Left to right, 407, 6077, 515.
Scale in cm. ASlab: Arabelle Barratt

Tables

Table VI.4.1: The find-spots of the spindle whorls.
Numbers are small-find numbers. BA = Bronze Age. RH= roundhouse.
RHA-1 = first phase of use of roundhouse A; RHB-2 = second phase of use of roundhouse B; etc.

Area	Iron Age	Iron Age or Romano-British	Other contexts
B1			035 ploughsoil
B2	272 RHA-1 posthole 344 RHB-2 floor 366 RHE-2 posthole 375 RHA pit 386 RHE-2 pit/posthole 387 RHE-2 pit/posthole 391 RHE-2 pit/posthole 409 RHE-1 posthole 412 RHE-1 post trench 415 RHE, above 473 RHA-1 posthole 525 East of RHE 531 RHC floor 533 RHE-1 sealing interior 571 RHB-1 floor	061 RHA tumble from collapse 205 RHA tumble from collapse	132 ploughsoil over Structure F 189 ploughsoil over Structure F 195 ploughsoil over Structure F 201 ploughsoil over Structure F 219 ploughsoil over Structure F 244 ploughsoil over RHE 246 ploughsoil over RHE 362 ploughsoil over RHC 370 ploughsoil over RHE 642 BA ground surface below RHB 769 BA ground surface near RHC
B2/F1			780 ploughsoil to west of RHs 2261 topsoil to west of RHs
F1	5457 east of RHI 5463 east of RHI	2260 west of RHH	
I	1042 fill of possible earth oven		
K5			2217 ploughsoil
K7	4248 posthole in clay-walled RH		
L3			Possibly prehistoric 1375 wall or drain to east of small structure

Table VI.4.2. Average dimensions of whorls of different shapes and contexts. These represent the 33 whorls for which full dimensions could be recorded. D, = diameter; Th. = thickness, Wt. = weight.

Whorl Form	Context	Whorl D. in mm	Whorl Th. in mm	Whorl Wt. in g	Spindle hole D. in mm
B1	Iron Age, n=9	39.6	14.6	20	5.5
B1	Other contexts, n=12	39.6	17.0	25	5.7
B2	Iron Age, n=8	44.6	14.9	26	6.2
B2	Other contexts, n=4	44.5	18.8	35	4.9
B1+B2	Iron Age, n=17	42.0	14.7	23	5.8
B1+B2	Other contexts, n=16	40.8	17.4	28	5.5
B1	All contexts, n=21	39.6	16.0	23	5.6
B2	All contexts, n=12	44.6	16.2	29	5.7

Table VI.4.3. Disc-shaped weights, arranged by diameter (see* Fig VI.4.*9). D. = diameter; Wt. = weight. Figures in brackets are estimated.

Find	D. in mm	Wt. in g	Phase	Area	Location
385	118	271	Iron Age II	B2	RHE
829	115	266	early post-med V	F1	structure G
528	102	265	Iron Age II	B2	stone platform to SE of RHB
837	98	(150)	Iron Age	K7	clay-walled roundhouse
4476	95	(210)	medieval possibly	K7	upper fill of corn-drying kiln
298	(95)	(130)	post-medieval	B2	ploughsoil
775	(85)	(190)	Iron Age II	B2	outside RHB 1
723	79	(140)	Iron Age II	B2	entrance to RHA 1
310	77	(80)	post-medieval	B2	ploughsoil above RHB
6337	(75)	(150)	neolithic	E	natural hollow

Catalogue of Spindle whorls and Perforated Weights

Spindle whorls

35
Complete stone spindle whorl, brownish grey, fine-grained phyllite. Ground to shape: Form B2, with slightly rounded sides. Spindle hole has a waisted shape, derived from an asymmetrical conical aperture at both ends. Diam. 42.6 mm; Th. 18.0 mm; Wt. 33 g. Spindle hole 7.5-3.5-8.0 mm. Area B1. Context 02064. Post-medieval ploughsoil. Not in RH settlement

61
Complete stone spindle whorl, brownish grey, medium-grained phyllite. Ground to shape, with some irregularities: Form B2, with sides slightly rounded. Spindle hole is almost straight-sided, only slightly constricted in middle. Diam. 45.0 mm; Th. 16.5 mm; Wt. 25 g. Spindle hole 5.5 mm diameter at either end. Area B2. Context 90009. Iron Age/R-B, Phase IV, post-RH. Tumble from wall: passageway to RHA.

132
Incomplete stone spindle whorl, banded grey phyllite. Interpreted as a naturally shaped pebble chipped to shape: Form B2. Spindle hole waisted, conical aperture at both ends. Diam. 50.0 mm; Th. 18.3 mm; Wt. 46 g. Spindle hole 9.0-6.5-9.0 mm. Area B2. Context 90002. Directly over Structure F in post-medieval ploughsoil.

189
Complete stone spindle whorl, grey-brown fine-grained phyllite, asymmetrical, possibly unfinished. Ground to shape, with work-marks (striations) on flat faces; irregular shape, Form B1. Spindle hole slightly waisted, almost straight. Diam. 42.0 mm; Th. 18.7 mm; Wt. 32 g. Spindle hole 7.3 mm at either end. Area B2. Context 90300. Post-medieval, possibly R-B, in layer above, and extending beyond, Structure F.

195
Complete stone spindle whorl, grey phyllite. Ground to shape, shallow Form B1. A first attempt at drilling the spindle hole is visible as a cone-shaped depression on both horizontal faces, midway between the finished spindle hole and the edge of the whorl. The central spindle hole is waisted. There are some incised lines radiating from the spindle hole on both faces, possibly a preliminary attempt at decoration. Diam. 42.0-42.3 mm; Th. 12.0 mm; Wt.17 g. Spindle hole 8.6-6.2-9.5 mm. Area B2. Context 90300. Post-medieval, possibly R-B, in layer above, and extending beyond, Structure F.

201
Complete stone spindle whorl, grey phyllite. Ground to shape, with remaining irregularities, straight sides with rounded shoulders, Form B1. Spindle hole drilled, relatively straight. Diam. 35.5 mm; Th. 19.5 mm; Wt. 21 g. Spindle hole 6.0-6.2 mm. Area B2. Context 90299. Possibly Romano-British, in demolition layer overlying Structure F.

205
Unfinished stone spindle whorl, banded dark grey phyllite. Ground to shape, Form B1. Not quite circular. A conical depression 6.5 mm wide in centre of one face indicates the start of a spindle hole. On the opposite face there appear to be skid-marks where the drill has slipped sideways. Diam. 42.0-44.5 mm; Ht 13.9 mm; Wt. 28 g. Area B2. Context 90021. Iron Age or Romano-British. In tumble from collapse of RHA, interior.

219
Stone spindle whorl, probably unfinished, light grey phyllite. Not a complete circle; sides not fully ground to shape; spindle hole drilled from either side (waisted shape), but uneven. 47.4 x 37.7 mm; Th. 13.5 mm; Wt. 32 g. Spindle hole 9.5-7.0-10.2 mm. Area B2. Context 90501. Possibly Romano-British, Phase IV. From above Structure F, possibly from its collapse.

244
Incomplete stone spindle whorl, chipped on one side, made of phyllite. Partially ground to shape, unfinished, Form B2. Spindle hole off-centre. Diam. 45.0-46.0 mm; Th. 20.6 mm; Wt. 36 g. Spindle hole diam. 8.0-3.8-6.5 mm. Area B2. Context 90466. Post-medieval ploughsoil. 244 lay directly over RHE.

246

Complete small stone spindle whorl, brownish grey phyllite. Ground to shape, Form B1. Spindle hole straight-sided. Diam. 32.3 mm; Th. 15.2 mm; Wt. 13 g. Spindle hole diam. 4.7-4.2 mm. Area B2. Context 90002. Post-medieval ploughsoil. 246 lay over southern (robbed out) area of RHB.

272
Complete stone spindle whorl, grey phyllite. Ground to shape, with rounded sides and upper and lower faces also slightly rounded, Form B2. Large spindle hole, waisted. One smooth surface, probably from use. Diam. 48.4 mm; Th.14.8 mm; Wt 28 g. Spindle hole diam. 12.0-9.0-10.5 mm. Area B2. Context 90646. Iron Age Phase II. Fill of posthole, first phase of RHA.

344
Complete stone spindle whorl, brownish grey phyllite. Ground to shape, one horizontal flat face slightly rounded, Form B1. The rounded horizontal face is smoothed, possibly from wear. Spindle hole drilled with straight side, widest at end with rounded horizontal face. Diam. 38.3 mm; Th.15.0 mm, Wt.21g. Spindle hole diam. 0.55-0.63 mm. Area B2. Context 90883. Iron Age Phase II. Floor surface, second phase of RHB.

362
Complete stone spindle whorl, banded grey phyllite. Ground to shape, Form B1, but asymmetrical when viewed in profile. Spindle hole worked from both faces (waisted); off-centre; work marks radiate from the aperture on one face. Diam. 43.7 mm; Th. 22.4 mm; Wt. 30 g. Spindle hole diam. 9.5-4.5-8.2 mm. Area B2. Context 90002. Post-medieval ploughsoil. 362 lay directly over RHC.

366
Incomplete stone disc, possibly unfinished spindle whorl, pale grey laminated phyllite. Ground to shape, Form B1; damaged afterwards: approximately one-tenth missing. Fine pin-prick marks on one face. Diam. 31.0 mm; Th. 13.6 mm; Wt. 11g. Reconstructed original weight 12-13 g. Area B2. Context 91171. Iron Age Phase II. Fill of posthole in second phase of RHE.

370
Complete stone spindle whorl, grey phyllite. Ground to shape; Form B2. Spindle hole drilled, straight-sided. On one face two, or possibly three incised marks radiating from aperture. Diam. 39.5-40.0 mm; Th. 18.2 mm; Wt. 26 g. Spindle hole diam. 5.9 mm. Area B2. Context 90002. Post-medieval ploughsoil. 370 lay directly above eastern side of RHE.

375
Shaped stone object, possibly an unfinished spindle whorl, banded grey phyllite. Irregularly shaped, almost globular, flattened top and bottom, with a conical depression in largest horizontal face. Diameter 32.6 mm; Th. 28.8 mm; Wt.21 g. Depression is 12 mm deep and 5.5 mm wide at mouth. Area B2. Context 91233. Iron Age Phase II. Fill of pit in passageway to RHA.

386
Complete stone spindle whorl, banded grey phyllite. Ground to shape, irregular, Form B1. Spindle hole worked from both ends, slightly waisted. Diam. 37.5 mm; Th. 15.0 mm; Wt. 19 g. Spindle hole diam. 5.5-4.9-6.3 mm. Area B2. Context 91247. Iron Age Phase II. Fill of posthole in second phase of RHE.

387
Complete decorated stone spindle whorl, grey phyllite. Ground unevenly to shape, upper and lower faces and sides all slightly rounded; Form B1 or B2. Spindle hole almost straight. Rudimentary decoration, on one face there are two, or possible three, grooves radiating from one side of the aperture, with an arc of peck marks encircling the rest of the aperture; and, on the opposite face, seemingly random peck marks. Diam. 35.5 mm, Th.16.7 mm; Wt. 17 g. Spindle hole 6.2-4.7 mm. Area B2. Context 91247. Iron Age Phase II. Fill of posthole in second phase of RHE.

391
Complete stone spindle whorl, grey-brown phyllite. Ground to shape, irregular disc with rounded sides, Form B2. Spindle hole worked from both sides (waisted). Diam. 43.5 mm, Th. 12.1 mm; Wt. 24 g. Spindle hole diam. 9.0-6.5-8.8 mm. Area B2. Context 91247. Iron Age Phase II. Fill of posthole in second phase of RHE.

409

Complete stone spindle whorl, grey phyllite. Ground to shape, Form B2. Some smoothing, perhaps from wear. Spindle hole off-centre with wide conical aperture on one face and irregular work marks on the other. Diam. 50.6 mm; Th. 19.3 mm; Wt. 47 g. Spindle hole Diam. 9.0-6.7-7.5 mm. Area B2. Context 91406. Iron Age Phase II. Fill of posthole in first phase of RHE.

412
Complete stone spindle whorl, grey phyllite. Ground to shape, Form B1. Spindle hole worked from both ends (waisted). Diam. 33.9 mm; Th. 12.7 mm; Wt. 15 g. Spindle hole diam. 8.00-5.0-7.5 mm. Area B2. Context 91367. Iron Age Phase II. Fill of post trench in first phase of RHE.

415
Complete stone spindle whorl, grey, laminated phyllite. Ground to shape, thick disc with straight sides, Form B1. Spindle hole drilled, almost straight, slightly wider at one end. Diam. 53.4 mm; Th. 18.5 mm; Wt. 37 g. Spindle hole diam. 10.3-9.7 mm. Area B2. Context 91343. Iron Age Phase II. Stony deposit. 415 directly over SW quadrant of RHE.

473
Half a stone spindle whorl, grey-brown phyllite. Ground to shape, irregular Form B2. Spindle hole worked from both ends: exaggerated waisted shape. Incised straight lines running diagonally out from centre on both horizontal faces, with addition of an attempt at an encircling line on one of them. Diam. 40.0 mm; Th. 16.0 mm; Wt 12 g. Estimated original weight 24 g. Spindle hole diam. 11.8-6.3-11.0 mm. Area B2. Context 90668. Iron Age Phase II. Fill of posthole first phase of RHA.

525
Complete stone spindle whorl, grey phyllite. Ground to shape, Form B1. Possible signs of wear on one horizontal face. Spindle hole has pronounced waisted shape. Diam. 35.5 mm; Th. 14.0 mm; Wt. 16 g. Spindle hole diam. 7.7-3.5-6.8 mm. Area B2. Context 91474. Iron Age Phase II. Stone surface east of RHE.

531
Incomplete stone spindle whorl, grey phyllite. Ground to shape, Form B1. Two areas of damage and random peck marks on all faces. Spindle hole irregular shape but wider at ends. Diam. 33.8 mm; Th. 17.3 mm; Wt 11 g. Estimated original weight 12-13 g. Spindle hole diam 7.8-6.2-7.5 mm. Area B2. Context 91289. Iron Age Phase III. Floor surface second phase of RHC.

533
Complete stone spindle whorl, grey phyllite. Ground to shape, Form B1. One horizontal surface flat and the other uneven. Spindle hole irregular in shape, worked from both ends. Diam. 39.1 mm; Th. 12.7 mm; Wt. 12 g. Spindle hole approximately 7.0-4.5-6.3 mm. Area B2. Context 91444. Iron Age Phase II. First phase of RHE.

571
Complete stone spindle whorl , light grey phyllite. Ground to shape, slightly asymmetrical Form B2. Horizontal faces irregular with some attempt at smoothing. Spindle hole exaggerated waisted shape. Diam. 41.7 – 44.8 mm; Th. 17.5 mm; Wt. 28 g. Spindle hole diam. 9.7-5.8-9.8 mm. Area B2. Context 90990. Iron Age Phase II. Floor, first phase of RHB.

642
Complete stone spindle whorl, light grey phyllite. Ground to shape, Form B1. Spindle hole wider at one end than other. One aperture pear-shaped as if drilled and re-drilled. Diam. 36.6 mm; Th. 18.2 mm; Wt. 19 g. Spindle hole 4.9-6.8 mm. Area B2. Context 90992. Possibly Bronze Age Phase I. Old ground surface under RHB, possibly introduced by animal burrowing.

769
Complete stone spindle whorl, grey phyllite. Ground to shape, signs of surface smoothing, possibly from wear, on both faces, thin Form B2. Four deep incised radial lines in one quadrant, with some finer crossways lines. Spindle hole has irregular waisted shape. Diam. 51 mm, Th. 6.5 mm; Wt. 17 g. Spindle hole diam. 8.0-4.7-8.0 mm. Area B2. Context 92561. Possibly Bronze Age Phase I. Possibly part of old ground surface. 769 lay outside wall of RHC and possibly introduced by disturbance from RHC.

780

Complete stone spindle whorl, dark grey phyllite. Ground to shape, Form B1. Spindlehole straight-sided, slightly funnel-shaped. Diam. 41.4 mm; Th. 17.0 mm; Wt. 24 g. Spindle hole diam. 5.5-5.9 mm. Area B2/F1. Context 92597. Possibly post-medieval. Stone spread, possibly tumble.

1042
Complete decorated stone spindle whorl, dark grey phyllite. Probably ground to shape, evenly produced, cylindrical with a deep encircling groove, Form B1. Incised ornament on all faces. On one horizontal face a lattice effect created from two triangles, both with the lines of two sides extending beyond the apex of the triangle. On second horizontal face a star shape formed from five deeply carved inward curving arcs, one of which encloses a depressed area. The side of the whorl is plain below the encircling groove, but has incised ornament above the groove, made up of a deep diagonal lines which change to a zig-zag; and fine lines linking the deep diagonal lines but forming crosses between the angles of the zig-zag. Spindle hole slightly waisted. Diam. 42.9 mm; Th. 24.5 mm; Wt. 38 g. Spindle hole diam. 8.7 - 7.0 mm. Area I. Context 21041. Possibly Iron Age, but not in RH settlement. Fill of possible earth oven.

1375
Complete stone spindle whorl, brown, fine-grained phyllite. Evenly produced, method of manufacture unclear; Form B1. Spindle hole straight-sided. Diam. 48.2 mm; Th. 12.8 mm; Wt.55g. Spindle hole diam. 7.2-6.8 mm. Area L3. Context 22183. Possibly prehistoric, but not in RH settlement. Remains of wall or drain capstones to east of small structure.

2217
Stone disc, possibly an unfinished stone spindle whorl, grey, fine-grained phyllite. Ground to shape, smoother on one horizontal face than other; if a whorl, Form B1. Diam. 51.8 mm;Th.. 11.3 mm; Wt. 37 g. Area K5, trench 13. Context 1313. Post-medieval, not in RH settlement. Fill of culvert in area that probably contains RH settlement.

2260
Unfinished stone spindle whorl, grey phyllite. Partially ground to shape, straight-sided where finished, Form B1. Irregularly shaped spindle hole, made up of two off-centre conical depressions. Diam. 33.8 mm;Th. 15.0 mm; Wt. 12 g. Spindle hole 10.0-6.5-10.0 mm. Area F1, Trench 9. Context 904. Romano-British. Fill of large pit containing post-med finds, western edge of RH settlement (RHH and associated granaries).

2261
Complete stone spindle whorl, brown, fine-grained phyllite. Ground to shape, Form B1. Spindle hole straight-sided. Diam. 32.5 mm; Th. 16.2 mm; Wt. 18 g. Spindle hole diam. 5.1 mm. Area B2/F1, Trench 8. Context 801. Topsoil.

4248
Complete stone spindle whorl, dark grey phyllite. Ground to shape, Form B1. Spindle hole has an especially wide, rounded aperture (not conical) on both sides. Diam. 43.5 mm; Th. 12.5 mm; Wt. 26.0 g. Spindle hole diam. 14.0 – 6.0 – 9.5 mm. Area K7. Context 80187. Iron Age. Fill of posthole in clay-walled RH.

5457
Rough-out for a spindle whorl, grey phyllite. Work marks on all surfaces; profile asymmetrical; and spindle hole very roughly gouged out. Probably intended to be a Form B shape. D.52.0 mm; Th. 21.4-31.4 mm; Wt. 49 g. Spindle hole D. 20.00-8.7-20.0 mm. Area F1. Context 93507. Iron Age Phase II. Tumble from structure to east of RHI.

5463
Complete stone spindle whorl, grey phyllite. One face roughly worked, other has rasp marks; sides ground to shape; Form B1. Spindle hole irregular, straight-sided, with rough working marks around one aperture and slight depression around other. D. 41.0 mm; Th. 12.3 mm; Wt. 19 g. Spindle hole D.4.4-7.0 mm. Area F1. Context 93507. Iron Age Phase II. Tumble from structure to east of RHI.

Stone weights
245
Fragment, approximately one-quarter, of a circular stone weight, grey phyllite. Smooth on outer edge, granular surface elsewhere. Possibly ground to shape. On both faces, the central perforation has long sloping sides.

Fragment measures 82 x 39 x 28 mm and weighs 135 g. (Reconstructed as originally D.100 mm D.; ring W. 39 mm; Th. 28 mm; Wt c. 550 g.). Area B2. Context 90466 Post Iron Age. From layer over walls of RHA.

292
Complete or almost complete near-circular stone weight, grey chlorite schist. Surface rough and possibly unfinished. On one face, the central perforation has long sloping sides. D. 120-132 mm; ring W. 47-60 mm; Th. 33-38 mm; perforation D. c.18 mm; Wt. 882g. Area B2. Context 90746. Romano-British Phase IV. Posthole fill in Structure F.

294
Incomplete perforated flat near-circular weight, greenish grey phyllite. Chipped to shape. Perforation is off-centre and close to a broken edge; it has an irregular cone shape on one face. D. 80-92 mm; Th. 15 mm; perforation D. 7 mm at narrowest; Wt. 171 g. (Reconstructed as originally D. 90 mm; Th. 15 mm; Wt. 190 g.). Area B2. Context 90002. Ploughsoil directly above eastern part of RHE.

298
Incomplete perforated flat near-circular stone weight, grey phyllite. Chipped to shape. Perforation off-centre, irregularly formed from two wide cone shapes worked on both faces. D. 80-93 mm; Th. 10 mm; perforation D.c.11 mm; Wt.117 g. (Reconstructed as D.95 mm; Ring W.45 mm; Th. 11 mm; Wt.130 g.). Area B2. Context 90002. Ploughsoil.

310
Half a perforated disc-shaped stone weight, lustrous grey phyllite. Chipped to shape. Perforation smooth, with rounded sides. D.77 mm; ring W. 30 mm; Th. 7 mm; perforation D. c13 mm; Wt.40 g. (Reconstructed as Wt.80g). Area B2. Context 90002. Ploughsoil above robber pit dug into RHB.

314
Natural pebble of brown phyllite with one broken, probably worked, face and a central gouged slit. 65 x 60 x 20 mm. Slit 9 x 4 mm. Wt.79 g. Area B2. Context 90000. Unstratified.

385
Complete perforated near-circular stone weight, brownish grey phyllite. Perforation cone-shaped on both faces. Ground to shape.D. 116-120 mm; W. 45-55 mm; Th. 20-24 mm; perforation D. 14 mm; Wt. 271 g. Area B2. Context 91247. Iron Age Phase II. Posthole fill in second phase of RHE.

528
Complete perforated flat near-circular stone weight, lustrous banded phyllite. Chipped to shape. Perforation is pear-shaped and smooth, perhaps from wear. D.99-105 mm; ring W. 37-45 mm; Th. 12-18 mm; perforation 22 x 27 mm; Wt. 265 g. Area B2. Context 91455. Iron Age Phase II. Stone platform part of original construction of roundhouses.

651
A quadrilateral fragment of stone with a worked perforation, greenish grey phyllite. Only one straight edge has been weathered. The perforation lies towards one end and is cone-shaped on both faces. 155 x 75 x 17 mm; perforation 9.2 x 11.4 mm; Wt. 323 g. Area B2. Context 91109. Iron Age Phase II. Part of stone platform under RHA but built up against RHE.

723
Incomplete or irregularly made perforated weight, greenish grey phyllite. Chipped to shape. Perforation is cone-shaped on both faces, one more exaggerated than the other. D. 79 mm; Th.13-16 mm; perforation D. 10-11 mm; Wt.116 g. Area B2. Context 92190. Iron Age Phase II. Fill of cut at entrance into passageway to RHA 1.

775
Fragment (approximately one-third) of a perforated flat circular weight, greenish grey phyllite. Chipped then ground to shape. Perforation rounded sides, smooth from wear. 78 x 38 x 10 mm; Wt. 63 g. (Reconstructed as D. c.85 mm; W.ring 34 mm; Th. 10 mm; Wt.c.190 g.). Area B2. Context 92569. Iron Age Phase II. Stony deposit under wall of RHC, outside RHB.

829

Complete or near-complete perforated circular weight, greenish grey phyllite. Chipped then ground to shape. Perforation is elliptical with sloping sides on one face only. D.110-120 mm; Th.11-18 mm; perforation 19 x 26 mm; Wt. 266 g. Area F1. Context 92798. Early post-medieval Phase V. Fill of culvert passing western edge of roundhouse settlement.

837
Approximately half of a perforated flat circular weight, green-grey phyllite. Chipped and possibly ground to shape. Perforation is straight-sided to rounded (lacks cone shape seen in other weights). D.98 mm; ring W. 45 mm; Th.8 mm; perforation D.10.3 mm; Wt.76 g (reconstructed as c. 150 g when complete). Area K7. Context 80183. Iron Age. Upper fill of pit/trough 80185 inside clay-walled roundhouse.

4476
Fragment, approximately one-third, of green-grey phyllite object with remains of a perforation on one broken edge. 95 x 48 c 14 mm; Wt.70 g (reconstructed as D.95 mm, Wt.210 g. Area K7. Context 80057. Medieval possibly. Fill of corn-drying kiln.

6337
Fragment of light brown phyllite object with worked outer edge, possibly the remains of a circular weight. Probably ground to shape. Area with perforation absent. 67 x 40 x 13 mm; Wt.44g. (Reconstructed as D.c.75 mm; Th.c 13 mm; Wt.150 g.) Area E. Context 31024. Neolithic. Fill of natural hollow.

Stone counters
407
Complete stone disc, probably a gaming counter, made from grey phyllite. Ground to an irregular disc shape, with especially smooth flat surfaces. Diam. 29.5 mm; Ht. 6.9 mm; Wt. 10 g. Area B2. Context 91334. Iron Age Phase II. Pitfill in second phase of RHE.

515
Complete perforated flat disc, possibly a gaming counter, made from grey phyllite. Chipped to shape. Perforation off-centre and worked from both sides. Diam. 32.0 mm; Ht. 2.8 mm; Wt. 3 g. Perforation diam. 3.7 mm. Area B2. Context 90990. Iron Age Phase II. Floor in the first phase of RHB.

6077
Flat stone disc, probably a gaming counter, made from light grey phyllite with silvery lustre. Ground to shape. D. 30 mm; Ht. 6.6 mm; Wt. 10 g. Area B2. Context 90002. Ploughsoil.

Part VI.5 Stone axes and associated waste pieces made of Graig Lwyd (Group VII) stone

John Llywelyn Williams and George Smith

The excavation produced three complete stone axes, one incomplete axe and a number of stone flakes that derive from the re-working of stone axes. The majority of waste pieces came from the area of the Early Neolithic building in Area H but the axes came from Area B2. The objects, their types, material and location are summarised in Table VI.5.1.

Raw materials

Of these, all but two pieces are of Graig Lwyd rock (Axe Group VII). Only two objects, probably deriving from axes are in other materials, one of flint and one of grey chert. One other stone flake, of quartzite, is most likely just from a pebble. The Neolithic axe factory site at the Graig Lwyd, Penmaenmawr is situated approximately 45 kilometres to the east of Parc Cybi. Although this major axe material source and fabrication site is relatively close, in national terms, it is poorly represented in the lithic assemblage at Parc Cybi. This is surprising, considering that axes of Graig Lwyd material have been found widely across Britain, and as far as southern England. It must also be recognised that the local glacial drift contains numerous erratic pebbles of hard rocks from as far away as Scotland and these could have been used as basis for axes, although there is no evidence of such use. Black chert was also available locally, both from the drift, or beaches or from in situ sources on Anglesey and this could have provided axe-making material but wasn't. Three flakes of Graig Lwyd rock appear to have been struck from pebbles, rather than being quarried material. The Graig Lwyd raw material used was very fine textured for the axes and axe flakes whereas the excavation also produced a perforated mace-head (131) of a very coarse granular texture. The variations are consistent with those observed at the source grading from the chilled margins to the core of the outcrop. (Nevertheless macroscopic identity of the raw material should be confirmed by detailed microscopic analysis, most particularly by thin sectioning the axes.)

Debitage

This is summarised in Table VI.5.2. There are 11 struck flakes of Graig Lwyd rock, 1 of flint and 1 of grey chert that have one or more facets retaining striations of polished surfaces indicating that they came from re-worked axes. There are no flakes indicative of primary axe-making, rather than re-working and none appear to be from axe re-sharpening either. Nevertheless, all are quite small and thin and could have resulted from edge fractures during use. Only one, somewhat larger, but still thin flake from area H seems likely to have been struck from the butt end of a snapped axe. The purpose of the re-working is therefore unclear. However, three flakes, all from Area H, have possible evidence of utilisation of their sharp edges, in the form of microchipping. Two are of Graig Lwyd, 1013 and 6085 and one is of flint, 1671-1, which also has possible use-wear gloss. (Use wear study may confirm/deny this). One flake, 4338, found in a secondary context in Area F1 was a snapped-off axe blade and so, probably broken off in use, rather than re-worked.

Axes

Three are complete (102, 229 and 326) and the fourth (650) is a broken blade end, all of Graig Lwyd rock (Fig VI.5.1). All three examples are distinguished by smoothly tapering bodies from the blade end, where the maximum width is achieved, to the narrower butt. One of the axes (229) exhibits a narrow, ovoid shaped long profile with a markedly sub-rounded body cross section. The other two (102 and 326) have a broader, long profile and a more ovoid body cross section. The blade face of axe 102 is broad and flat, that of axe 326 curved and symmetric and that of axe 229 narrow and flat. The butt end of axe 326 has been broken off in a post fabricating episode. All four examples have been extensively ground and polished, reducing surface flake scars to a minimum on the body. The terminal ends of deeper biting flake scars remain on the sides above and below a conscious attempt to provide each axe with a marked side flange, a typological feature not generally associated with Graig Lwyd axes. Extensive utilization scars are not featured on the blade cutting surfaces and the symmetry of the blades and the absence of re-sharpening evidence would support their relatively little used condition. Two secondary flakes have been removed from the blade area of axe 229, and if preserved would have reproduced the features noted on the flake debitage items described above. Similarly, the jagged broken fractures of the broken axe fragment (650), also replicate in part the traits observed in the fragmented items. Of added interest is the shallow, 'doodle' like, striations preserved on both faces of this axe.

Discussion

The stratigraphic relationship of the items is of cardinal interest. The Neolithic origin of the four axes discovered on site cannot be questioned. The deliberate, chisel-like shaping of axe 229, including grinding of a

flat butt could indicate a later Neolithic date for that piece. The complete shape of the axe fragment 650 had probably been of a similar tapering rectangular shape. However, none of the four came from the area of the Early Neolithic building in Area H and it cannot be assumed that they originated there. They could, for instance, have come from funerary deposits within the Trefignath tomb. Two of the axes (229 and 650) are from stratigraphic contexts within the Iron Age round houses in Area B2, while the other two axes came from post medieval contexts within the same area. The undoubted association of the axes with an Iron Age habitation structure, or within the general area of such structures, is therefore highly intriguing.

The majority of the Graig Lwyd debitage items, however, did come from primary or secondary contexts in the large timber building in Area H and are therefore of Early Neolithic date. Flake 1013, with a markedly different greyish coloured patination to the rest of the objects, may belong to an earlier old ground horizon, possibly marginally pre-dating the building construction. One Graig Lwyd flake, 1281, came from a post-hole in area K1 while another, 5499, from an axe, came from a probable Bronze Age cist-fill in area M4, where, however, nearby was evidence of Early Neolithic activity. Another axe flake, 1823-1 came from a Middle Neolithic pit in area J1. The axe blade flake 4338 came from the fill of a ditch which also contained a Bronze Age gold lock ring. To conclude, the debitage at Parc Cybi is manifestly associated with the Early Neolithic/Mid Neolithic phase of the settlement. It is appropriate to comment that the disfigurement of ground and polished objects at Parc Cybi is associated with the 'domestic' capacity of the house structure and thus differing from the more 'ritual' capacity in which the dismembered detritus of polished axes were placed in Mid Neolithic pits at the broadly contemporary mainland site of Parc Bryn Cegin, only 35 kilometres to the east (Williams et al. 2011). It is significant that no items of Graig Lwyd rock were found in the substantial spread of lithic material found at the excavation of the nearby Trefignath chambered tomb (Smith and Lynch 1987). The main element of that lithic assemblage was believed to belong to settlement activity pre-dating the tomb construction, and associated with a single radiocarbon date of *c*. 4000-3700 cal BC at 2 s.d (HAR-3932). The dates from the Parc Cybi building fall in the range *c*. 3800-3600 cal BC. It seems likely therefore that these dates help to mark the transition period for introduction of the use of Graig Lwyd raw material.

The Neolithic debitage indicates that ground and polished objects were present in, and were coeval, with the earliest stages of occupation on site. Moreover the debitage confirms that such objects were flaked and indeed were forcibly destructed during this phase, and it may be that the four axes may have originally been associated with this Neolithic settlement. It can only be logically assumed that, following a lengthy historical hiatus of approximately three millennia, these objects were discovered or even sought after in the debris of the Neolithic building or the nearby tomb and kept by the occupants of the Iron Age settlement as mementos, rather than practical artefacts. Before the development of antiquarian research such objects were sometimes described as 'elf bolts', and so perhaps regarded as having some special power or significance by the Iron Age occupants, who also appear to have collected other earlier prehistoric objects.

Table VI.5.1 Summary of stone axe related objects

Area	Material	Axe/frag	Flake from axe with grinding striations	Flake probably from axe but without striations	Flake probably from pebble
B2 RHB	Graig Lwyd	1	-	-	-
B2 RHC	Graig Lwyd	1	-	-	-
B2 RHE	Graig Lwyd	1			
B2 Post med	Graig Lwyd	1	-	-	-
F1/FW	Graig Lwyd	-	1	-	-
H	Graig Lwyd	-	8	2	2
H	Grey chert	-	1	-	-
H	Flint	-	1	-	-

J1/J2	Graig Lwyd	-	1	-	-
K1	Graig Lwyd	-	-	-	1
M4	Graig Lwyd	-	1	-	-

Table VI.5.2 Flakes from possible stone axes

Area	Find No	Sub no	Material	Comment
F1 FW	4338	0	Graig Lwyd	3 facets with grinding striations. Possibly blade of axe snapped off in use, rather than re-worked.
H	1013	0	Graig Lwyd	Flake from ground axe, The platform and the non-bulbar face have polish. Micro chipping from possible re-use on one sharp edge.
H	1126	6	Graig Lwyd	Broken flake from surface of a ground axe with striations and remnants of original ground-down shaping flake facets. Appears to have been struck from the butt direction of the axe, so perhaps re-working a broken axe.
H	1197	15	Grey chert	Axe frag? Possible polish striations on platform
H	1382	10	Graig Lwyd	Tertiary flake. No cortex or polished surface so nothing to prove it was from a re-used polished axe.
H	1626	1	Graig Lwyd	Small, tip frag of a broken flake. Outer surface has no striations so could be just from a pebble
H	1649	3	Graig Lwyd	No polished facets
H	1649	5	Graig Lwyd	No polished facets
H	1671		Flint	Unusual good quality matt, light grey flint. Imported? Large flake with microch and gloss on one sharp, concave edge. Three small facets with polish striations suggest this may be from a re-worked polished axe
H	2017	1	Graig Lwyd	Irregular frag, probably a broken flake from a re-worked ground axe, with striations
H	2212	0	Graig Lwyd	Thin, very fresh, curving flake with a small area of smooth 'cortex'. surface, no visible grinding striations, so possibly just from a pebble
H	3010	1	Graig Lwyd	Ground axe frag
H	4391	1	Graig Lwyd	Secondary flake from re-working a polished axe, small facet with striations
H	4391	2	Graig Lwyd	Proximal part of a broken primary flake from re-working of a polished axe.
H	6085	0	Graig Lwyd	Some ground surface. Tip shows microflaking, possible use-wear. The platform may be an axe surface, but not a polished one.
J1/J2	1823	1	Graig Lwyd	Mid part frag of a large, thin flake from a polished axe, with one facet with striations
K1	1281	1	Graig Lwyd	Struck from a pebble. Flat external surface with no striations visible.
M4	5499	1	Graig Lwyd	Two polished facets of which one might be an axe side facet and one might be a face.

Mace and Hammer Heads (Fig VI.5.1)

Four further stone objects fall within this category. Two came from the post-medieval ploughsoil over Area B2. Both are possible mace-heads, one complete (131), the other a probable mace-head fragment (248) (Fig VI.5.1). Another complete perforated hammer or mace head (1145) came from Area Ia, where there was some Neolithic activity. The fourth object is a small fragment of a probable small mace-head and came from an early, possibly Neolithic horizon in Area E (Hollow).

Area B2

Object 131 is a most carefully, and successfully fabricated, circular stone artefact (Fig VI.5.1), 67mm diameter and 43mm deep, made from a small pebble of the coarser grained strata in the Graig Lwyd outcrop [NB. X-ray diffraction proved this to be sandstone not Group VII stone, see part VI.3]. A shallow, dimpled recess has been

lightly ground into both lateral faces allowing for the object to be conveniently held in the hand or as an aid to hafting . The object is without parallel both typologically and chronologically and its use can only be assumed. Size and form precludes its fashioning as a Bronze Age mace head and it is more likely to have been used as a grinder of organic materials rather than as an un-perforated loom weight and associated with the Iron Age roundhouse settlement here. Considerable work has gone into the manufacture of this object suggesting that it had some particular function. Stratified deposits from the settlement produced a considerable number of other worked stone objects, including neatly shaped items as well as irregular perforated and cup-marked discs and slabs. However, none of these other items were manufactured from Graig Lwyd rock, which leaves a question mark over the age of 131, since it is of an imported material and one that was only in use during the Neolithic period. This is compounded by the fact that two Neolithic axes of Graig Lwyd stone were found in direct association with these round houses, and another two within the ploughsoil over the settlement. It could be that this drum-shaped object was a Neolithic object, acquired, like the axes, from elsewhere.

Object 248 is the battered remnant of the outer curved body section of what originally may have been a highly polished Bronze Age shaft-hole implement of the battle axe, axe hammer, or mace head series (Fig VI.5.1). The specimen was shaped on a dark coloured, coarse textured, quartz porphyry pebble (macroscopic identification by D. A. Jenkins). There are no further distinguishing features other than for the body curvature and polished exterior of the fragment, but the fresher of its crushed surfaces would suggest a more recent breakage in the plough soil. The fragment is sufficiently distinctive to be added to the list of shaft hole implements from Anglesey which currently form a corpus of twelve items (Lynch, 1991).

Area B2 was chiefly dominated by an extensive Iron Age Settlement. However, a buried soil beneath the settlement there produced a calibrated radiocarbon date in the Early Bronze Age and there were several features, including ditches, pits and post-holes that pre-dated the Iron Age settlement and which may be associated with the Early Bronze Age date. Such a date would fit suitably with this type of object.

Area Ia

Object 1145 is a small perforated pebble hammer head of fine sandstone and came from the fill of a pit with Middle Neolithic pottery in Area 1a, probably belonging to a settlement area. It is a naturally flattened ovoid pebble, 98mm long, 68mm wide and 37mm deep with a neatly hour-glass drilled perforation. It has some possible grinding striations or minor use-wear on one flat face and is peck-marked from light impacts around the end 'hammer' face (Fig VI.5.1).

Area E (Hollow)

Object 5021 is a fragment of a possible small mace-head. It came from the relict soil in Area E (Hollow), and regarded as possibly from Early Neolithic activity. It is of very decorative banded agate, a unique and almost certainly an imported material here, although it could have derived from the glacial drift. Although only a broken fragment it has parts of a finely polished external surface. Projection of the curves of the external surface allow it to be re-constructed, showing it to have been egg-shaped, being oval in both long and cross sections (Fig VI.5.1), 54mm long and 45mm deep and wide. Although there are no remains of a perforation, the way that it has shattered suggests that it was weakened by a central perforation, whereas if it had been solid it would have simply broken in two.

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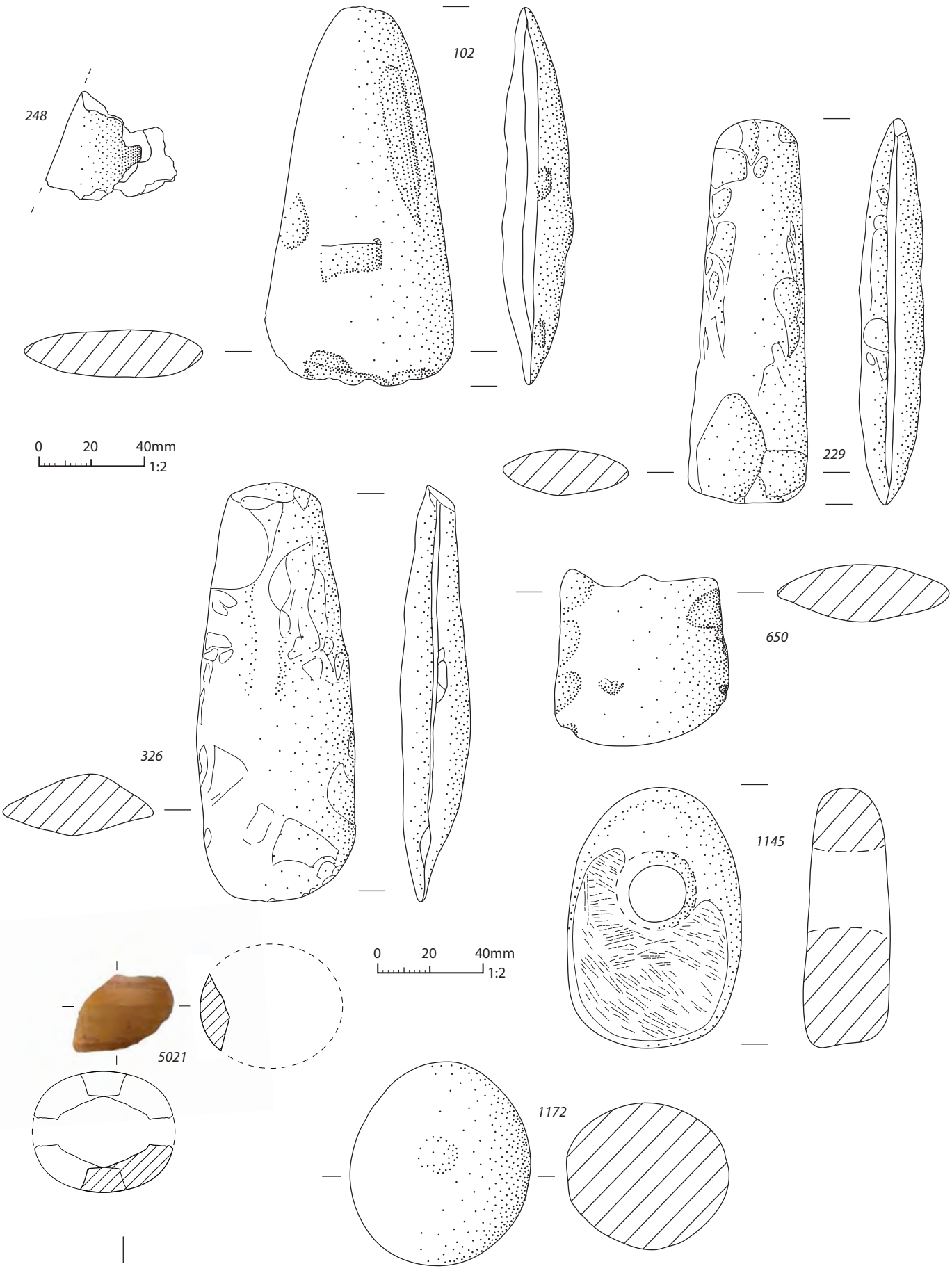

Fig VI.5.1: Stone axeheads and maceheads
sf5021 - fragment of possible macehead from buried soil in the hollow in Area E; sf102, 229, 326, 650 - polished stone axeheads from Area B2; sf1145 - macehead from Area I; sf131- circular object with opposing pecked cupmarks from Area B2; sf248 - fragment of possible macehead from Area B2; sf1172 - pebble with pecked cup-marks from Area I.
(5021 drawn by George Smith, the rest drawn by Tanya Williams)

Part VII: Metal objects

Iron, Copper Alloy and Lead Objects
Evan Chapman

Summary

Forty nine iron, 34 copper alloy and 9 lead or white metal objects were catalogued. There was also one object composed of leather and copper alloy pins and a silver coin. Nine of the objects of Roman and possibly early medieval date were considered of importance.

Methodology

Cleaning and stabilisation of the metal objects was carried out by Cardiff Conservation Services as described below (part XI), and where appropriate objects were x-rayed to inform the assessment. The objects were then inspected by Evan Chapman, described and where possible given a probable date. In many cases dating was not possible and the date was derived from the context in which the object was found. In some cases disparities between the likely date of the object and that of the context encouraged re-evaluation of one or the other.

Results

The full catalogue of metal finds is included below, but nine of the iron and copper alloy objects were considered to be of importance. Some of these are from the building complex in area K9 and securely dated to the Roman period, but some are from the long cist cemetery. It is unclear whether the latter were intrusive and if so which period they belong to. Grave goods are not normal in long cist burials and it may be significant that all the finds from the graves were metal. They may have originated from the smithing activity carried out within the cemetery, which is radiocarbon dated to the late Roman period.

Significant metal finds

Fig VII.1

Area E

Context 31153: fill of smithing hearth (31152)

SF 5517: Copper alloy strip bent round at one end and tapering towards a point at the other. Slightly convex on top and concave underneath, this is more pronounced on the tapered 'pin' than on the loop. Probably a buckle tongue. The context suggests possibly of medieval date. Length 23 mm; maximum width 5 mm.

Area K7 (long cist cemetery)

Context 80013: fill of smithing feature (80044)

SF 4471: Plain, slightly tapering copper alloy strip, bent round to form a small oval loop, narrower at the end where the two ends of the strip meet. Traces of tinning/silvering of the surface survives. The radiocarbon dates on the context suggest a late Roman date. Length 14 mm; maximum width of loop 8 mm; maximum width of strip 4 mm.

SF 6345: Tiny fragment of a narrow copper alloy strip with another, wider, strip bent round it and riveted to it with an iron rivet. The context suggests a late Roman date. Length 6 mm [broken]; width 6 mm; total thickness 2.5 mm.

Context 80015: fill of long cist grave (80068, Grave I)

SF 3005: Copper alloy sheet fragment, with two rectangular slots (5mm by 1mm) at either end of the longest surviving edge. They are set roughly at a right angle to each other: the one nearest the surviving corner is roughly perpendicular to the long edge, while the one at the far end is roughly parallel to the edge. The slots are clearly pushed through from one side, leaving projections on the other. The context suggests an early medieval date, but could be late Roman. Length 34 mm [broken]; maximum width 27 mm [broken]; thickness 0.5 mm. (Fig VII.1, 3006)

SF 3006: Small tanged iron knife. The form would fit with the early medieval date suggested by the context. Total surviving length 80 mm; blade length 43 mm [broken]; blade width 15 mm. (Fig VII.1, 3006)

Area K9 (Roman period building complex)

Context 80901: demolition spread in structure 80527

SF 6064: Narrow, 15mm, iron socketed mortice chisel formed of a rectangular rod tapered to a chisel edge at one end and expanding into a socket at the other. The context suggests a Roman date and chisel of the type have been found on other Roman period sites (cf. Manning 1985, 23). Length 200 mm; shaft 15 by 11 mm; mouth of socket *c.*23 by *c.*20 mm. (Fig VII.1, 6064).

Context 81042: fill of pit 81037 in structure 80527
SF 6166: Small, pyramid headed iron hob-nail. The form is entirely consistent with the Roman date suggested by the context (Manning 1985, 135 Type 10). Length 15 mm; head 8 by 6 mm and 5 mm high.

Context 81258: hearth fill in structure 80527
SF 6186: Small iron cleaver, with large curved blade and a cylindrical socket for a handle. The form is entirely consistent with the Roman date suggested by the context (Manning 1985, 122 Type 2A). Overall length 177 mm; blade length 110 mm; maximum depth 57 mm. (Fig VII.1, 6186).

Area F1
Context 92822: floor of roundhouse H
SF 814, 815 & 816: Iron bar fragments in very poor state of preservation, one piece appears to have a fork or join in it and a number of small rods or nails projecting from it. Probably the remains of fittings from a wooden object: possibly strapping from a box or door furniture. The context suggests an Iron Age date..

Significance

There is very little of any note among the iron and copper alloy objects. Most are fragments or belong to the type of object that is difficult, or impossible, to date in itself. Those objects that do suggest a date for themselves are generally clearly post-medieval and would all fit comfortably with the 18th -20th century farming activity recorded for the site.

There are nine items of interest, most because of the date of the context in which they were found. In particular any material of potentially early medieval or late Roman date is of significance in the context of the scarcity of finds of that date in Wales. The same, to a slightly lesser extent, can be said of the ironwork from the Iron Age context. The three Roman pieces are nicely preserved objects.

The only item of any note among the lead and white metal objects is the very worn silver coin (find no.4440). In its present state no surface detail is visible and the conservation assessment was that the surface was probably too fragile to survive any further cleaning.

Manning, W.H. 1985 Catalogue of the Romano-British Iron Tools, Fittings and Weapons in the British Museum

Catalogue of metal objects

Area	Context	Find No.	Material	Description	Find date	Context period
A	6078	6191	iron	fragments, possibly nails	dated by context	Post-medieval
A	10000	6098	lead	Musket ball	Post-medieval	U/S
B1	8057	6190	iron	U-shaped shackle link	19th - 20th century	Post-medieval
B2	90002	8	Iron	L-shaped bar	dated by context	Post-medieval
B2	90002	9	Iron	curved strip, probably half a horseshoe	dated by context	Post-medieval
B2	90002	69	Iron	curved rod in three pieces	dated by context	Post-medieval
B2	90002	78	Iron	ring, seemingly attached to a bar	dated by context	Post-medieval
B2	90002	84	Iron	fragment	dated by context	Post-medieval
B2	90002	172	Iron	3 joining strip fragments	dated by context	Post-medieval
B2	90002	175	Iron	nail	dated by context	Post-medieval
B2	90002	256	Iron	bar, slightly bent, possibly the remains of	dated by	Post-

				a handle	context	medieval
B2	90002	6333	Iron	short strip in two pieces	dated by context	Post-medieval
B2	90067	6194	Copper alloy	buckle, angular figure-of-eight, part of one end missing	post-medieval	Post-medieval
B2	90067	6195	lead	lead bell	Post-medieval	Post-medieval
B2	90101	106	Iron	fragments	dated by context	Post-medieval
B2	90185	6334	Iron	cylindrical container (tin can)	19th - 20th century	Post-medieval
B2	90261	160	Iron	cylindrical container (tin can)	19th - 20th century	Post-medieval
B2	90295	154	Copper alloy	buckle, with iron corrosion suggest an iron axial bar and probably tongue	post-medieval	Post-medieval
B2	90311	155	Iron	fragment	dated by context	Post-medieval
B2	90331	4095	Iron	two short length of rod, probably the shaft of a nail	dated by context	Post-medieval
B2	90426	165	Copper alloy	thimble, with textured external surface	post-medieval	Post-medieval
B2	90521	240	Copper alloy	buckle fragment, with grooved decoration, and traces of an iron axial bar	post-medieval	Could be post-medieval
B2	90613	273	Iron/leather	sole of shoe or boot Found near buckle above, but in a lower layer that should be IA. Possible contamination from layers above.	19th - 20th century	Iron Age?
B2	90882	340	Iron	nail	dated by context	Iron Age
B2	90883	328	Iron	nail	dated by context	Iron Age
D	61000	6325	Copper alloy	small circular flanged collar, possibly the end of a tube or pipe	post-medieval	U/S
D	61000	6328	Copper alloy	2 small circular buttons, with remains of loops on the back	post-medieval	U/S
D	61000	6329	Copper alloy	sheet fragment	dated by context	U/S
D	61000	6326	Lead	seal, probably from a bag of fertilizer or similar	19th - 20th century	U/S
E	31153	5517	Copper alloy	strip bent round at one end and tapering towards a point at the other, probably a buckle tongue, rather than a brooch pin, particularly given date of context From smithing activity that might be medieval		Med?
E	31221	4440	Silver	very worn silver coin, no surface detail is visible	?	Post-medieval
F1	90002	802	Copper alloy	bent binding strip decorated with stepped edges, perforated hole through it at the centre	post-medieval	Post-medieval
F1	90002	6330	Iron	ring / washer	dated by context	Post-medieval
F1	92822	814, 815 & 816	Iron	bar fragments in very poor state of preservation, one piece appears to have a fork or join in it and a number of small rods or nails projecting from it. Probably the remains of fittings from a wooden object: possibly strapping from a box or	dated by context	Iron Age

				door furniture. Very poor state of preservation		
F3	25051	1103	Copper alloy	slender tapering bar	dated by context	Post-medieval
J	70000	2109	Copper alloy	Victorian halfpenny dated 1862	19th century	U/S
J	70309	4236	Iron	small fragment of sheet	dated by context	Post-medieval?
J3	70439	6376	Iron	long, slightly tapering flat bar, possibly from a piece of agricultural equipment, possibly the coulter from a plough	dated by context	Post-medieval?
J3	70537	6480	Iron	amorphous lump containing traces of a square sectioned rod	dated by context	Roman period
J3	70594	6484	Iron	1 large iron peg, 1 rod, 1 plate, 1 miscellaneous fitting	19th century	Post medieval
K	80000	6206	Copper alloy	button with four holes	19th - 20th century	U/S
K	80000	6207	Copper alloy	plain ring, distorted into an oval	dated by context	U/S
K	80000	6208	Copper alloy	curved sheet fragment	dated by context	U/S
K	80000	6209	Copper alloy	half a buckle	post-medieval	U/S
K	80000	6331	Copper alloy	circular mount, embossed "Lancashire volunteer artillery"	19th - 20th century	U/S
K	80000	6332	Copper alloy	decorative mount	post-medieval	U/S
K	80000	6335	copper alloy	nail, small square shaft and head	dated by context	U/S
K	80000	6205	lead	lead scrap	post-medieval	Post-medieval
K7	80012	2040	Iron	disc with screw passing through it (*from fill of grave, presumably contamination*)	19th - 20th century	Late Roman?
K7	80013	4471	Copper alloy	plain strip, bent round to form a small loop	dated by context	Late Roman
K7	80013	6345	Copper alloy	tiny sheet fragment with an iron rivet	dated by context	Late Roman
K7	80013	2035	Iron	rectangular sectioned bar, probably the shaft of a nail	dated by context	Late Roman
K7	80013	2042	Iron	lump	dated by context	Late Roman
K7	80015	3005	Copper alloy	sheet fragment, with two rectangular holes	dated by context	Late Roman?
K7	80015	3006	Iron	small tanged knife	dated by context	Late Roman?
K7	80280	6126	Iron	fragments of a flat sheet	dated by context	Post-medieval
K7	80280	6189	Iron	hinge plate	dated by context	Post-medieval
K8	80435	5407	Iron	bent bar, 2 fragments	dated by context	Post-medieval
K9	80002	5959	Copper alloy	nail/tack	dated by context	Post-medieval
K9	80002	5959	Iron	large nail and medium nail head	dated by context	Post-medieval
K9	80443	5571	Iron	short bar, probably the shaft of a nail	dated by context	Roman period
K9	80844	6019	Iron	rod fragment, probably the shaft of a nail	dated by context	Roman period

K9	80844	6024	iron	perforated sheet fragment	dated by context	Roman period
K9	80846	6021	Iron	sub-rectangular lump, flat one side domed on other	dated by context	Roman period
K9	80849	6154	Copper alloy	droplet / small lump	dated by context	Roman period
K9	80849	6171	Iron	short length of rectangular sectioned rod, probably the shaft of a nail	dated by context	Roman period
K9	80872	6068	copper alloy	lump/waste	dated by context	Roman period
K9	80901	6064	Iron	long thin object, with a socket at one end; socketed mortice chisel	Roman?	Roman period
K9	80910	6067	Iron	short length of a slender strip, some wood preserved in corrosion products	dated by context.	Roman period
K9	80910	6073	iron	small amorphous lump	dated by context	Roman period
K9	80910	6074	Iron	lump	dated by context	Roman period
K9	81042	6166	Iron	small, pyramid headed hob-nail	dated by context	Roman period
K9	81172	6452	Iron	short tapering length of rectangular sectioned rod, probably the remains of a nail	dated by context	Roman period
K9	81258	6186	Iron	cleaver, large blade with cylindrical socket for handle	dated by context	Roman period
L3	22172	1205	Copper alloy	lump, waste	dated by context	Iron Age?
Not located to area	20000	6102	Copper alloy	sheet fragment, stamped 'DM'	dated by context	Post-medieval
Not located to area	20000	6196	Copper alloy	2 straps with holes bored through them. One strap has one broken edge and two holes, one central and one closer to the top side. The other strap has only half a hole remaining at one of the two broken edges of the fragment	dated by context	Post-medieval
Not located to area	20000	6199	Copper alloy	15 buttons - 1 depicts Britannia in relief, with loop on back;1 large flat button with a ring of triangles on its face, loop on back; 1 medium concave button with a rough face, broken loop on back; 2 small domed buttons; 2 with four-hole perforation; 8 flat disc buttons of various sizes	all post-medieval	Post-medieval
Not located to area	20000	6201	Copper alloy	token (illegible) and sheet fragment	19th - 20th century	Post-medieval
Not located to area	20000	6202	Copper alloy	hinged circular label, presumably for a lighter, “patent no. 1582 raise the lid for small flame, remove the cap for large flame”	19th - 20th century	Post-medieval
Not located to area	20000	6203	Copper alloy	label fragment, probably originally circular, only two embossed letters survive "TR"	19th - 20th century	Post-medieval
Not located to area	20000	6204	Copper alloy	short rod with baluster like decoration. At one end there is a short rectangular sectioned tang, at other it becomes a hollow tube and there is a slight projection. Probably the remains of a key	post-medieval	Post-medieval

Not located to area	20000	6343	Copper alloy	half guinea coin weight, stamped "10/6"	18th century	Post-medieval
Not located to area	20000	6197	lead	bar, tapering towards one end	dated by context	Post-medieval
Not located to area	20000	6198	lead	4 scrap ends of lead	dated by context	Post-medieval
Not located to area	20000	6200	lead	Musket ball	Post-medieval	Post-medieval

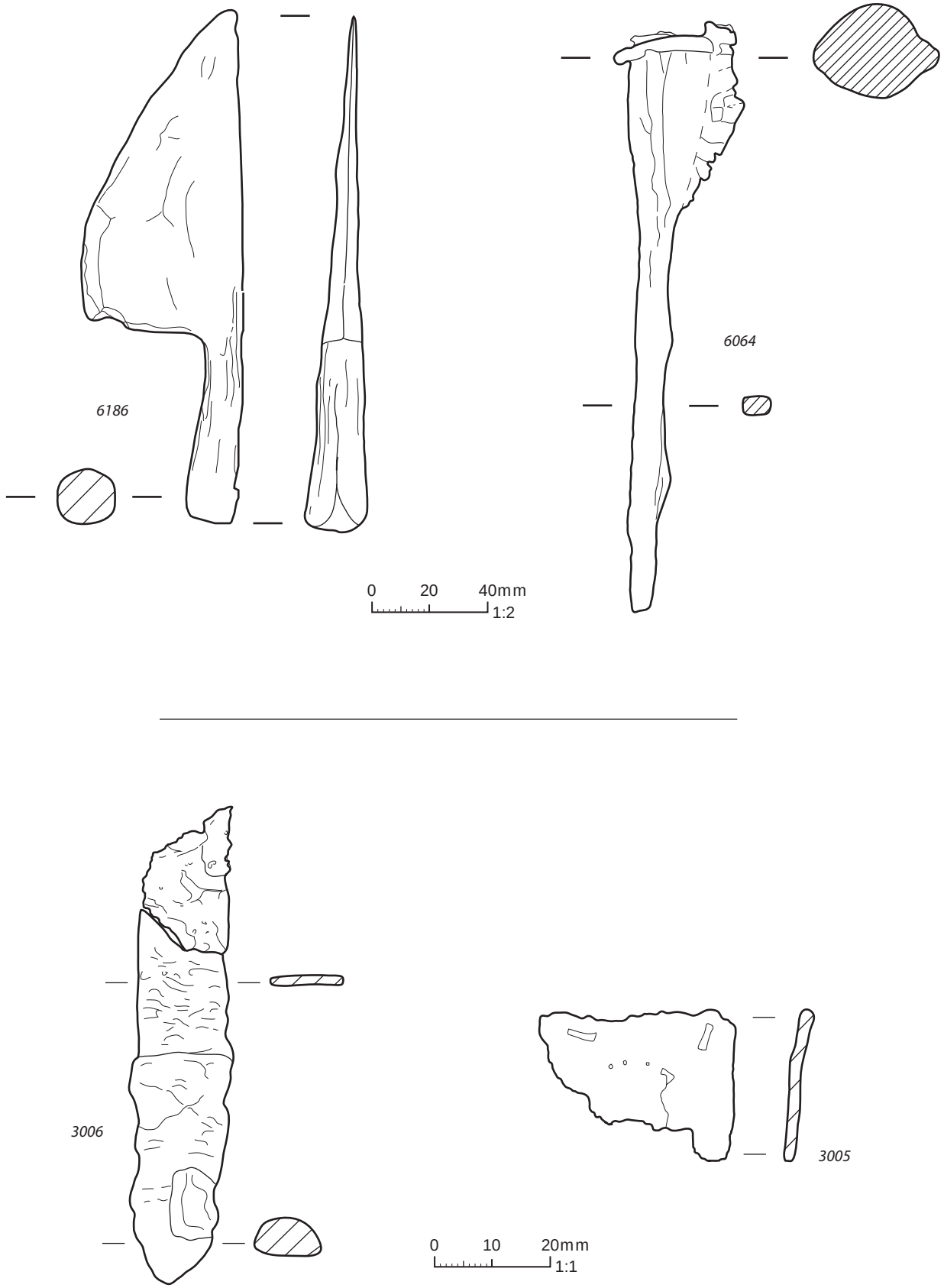

Fig VII.1: Selected metal objects. Sf6186 - iron cleaver, sf6064 - iron mortice chisel, sf3006, iron knife blade, sf3005 copper alloy sheet with slots. 6186 and 6064 were from structure 80527 in Area K9 and 3005 and 3006 were from Grave I in Area K7 (drawn by Tanya Williams).

Part VIII: Shale Objects

Evan Chapman

Summary

Eight shale objects were catalogued including fragments of bangles and annular beads.

Methodology

SF27 was waterlogged when found and was conserved by Cardiff Conservation Services as described below (part XI) to maintain it in a stable condition for storage and display. The other objects were already stable. The objects were inspected by Evan Chapman, described and where possible given a probable date.

Results

Fig VIII.1

Eight shale objects were catalogued including fragments of bangles and annular beads. SF381 was nearly complete but the rest were all broken fragments. SF413 appeared to be a waste piece from making one of these objects and might indicate local production. They all came from probable Iron Age or Roman contexts, with the exception of sf772, which came from a ground surface deposit within the roundhouse settlement and could easily have been trodden into the earlier deposit.

The two bracelet fragments (find nos. 27 and 275) would fit comfortably with an Iron Age/Roman date (Woodward & Sunter 1987, 106-10 & 164-72; Lawson 1976, 247-52). Examples of similar bracelets from north-west Wales include finds at *Segontium* (Allason-Jones 1993, 206); Rhostryfan (Williams 1923, 104); and Penmaenmawr (Harold Hughes, 1922, 352-3). The other shale items are harder to date independently from context. In relation to the small plain rings (find nos. 353, 381, 739 and 772) it is however worth noting a shale ring from Cefn Du (Cool & Bevan 2012, 150, fig.8.9 no.2), which although itself somewhat larger (diameter 60 mm), the parallels cited for it from Glastonbury (Bulleid & Gray 1911, 260-61) and Silchester (Lawson 1976, 256-58) include rings closer in size to those below, thus also suggesting a possible Iron Age/Roman date for them.

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Catalogue of shale objects

Find no. 27 (context 3017) Area B3

Half a plain shale bracelet of roughly oval section. External diameter *c.*75 mm; internal diameter *c.*50 mm; width 17 mm, thickness 11mm.

Find no. 275 (context 90501) Area B2

Fragment of a plain shale bracelet of roughly oval section. Length 30 mm; width 16 mm; thickness 12 mm.

Find no. 353 (context 90712) Area B2

Half a shale annular ring or bead of roughly rectangular section. External diameter 19 mm; internal diameter 9 mm; width 5 mm, thickness 5mm.

Find no. 381 (context 90002) Area B2

Half of a small shale annular ring or bead of pointed oval section. While the inner perforation is neatly cut the outer edge of the ring is noticeably uneven, possibly suggesting that in may have broken during manufacture. External diameter 20 mm; internal diameter 11 mm; width 6 mm.

Find no. 413 (context 91367) Area B2
Irregular flat fragment of shale, probably working waste from making a circular shale object, of 15 mm diameter. Length 29 mm; width 24 mm; thickness 6 mm.

Find no. 739 (context 91922) Area B2
About a third of a small shale annular ring or bead. External diameter *c.*15 mm; internal diameter *c.*9 mm; width 4 mm.

Find no. 772 (context 92572) Area B2
Half a shale annular ring of D-shaped section. External diameter 38 mm; internal diameter 20 mm; width 12 mm, thickness 9mm.

Find no. 2165 (context 81042*) Area K9*
Tiny curved fragment of shale, possibly part of a bead, but perhaps natural.

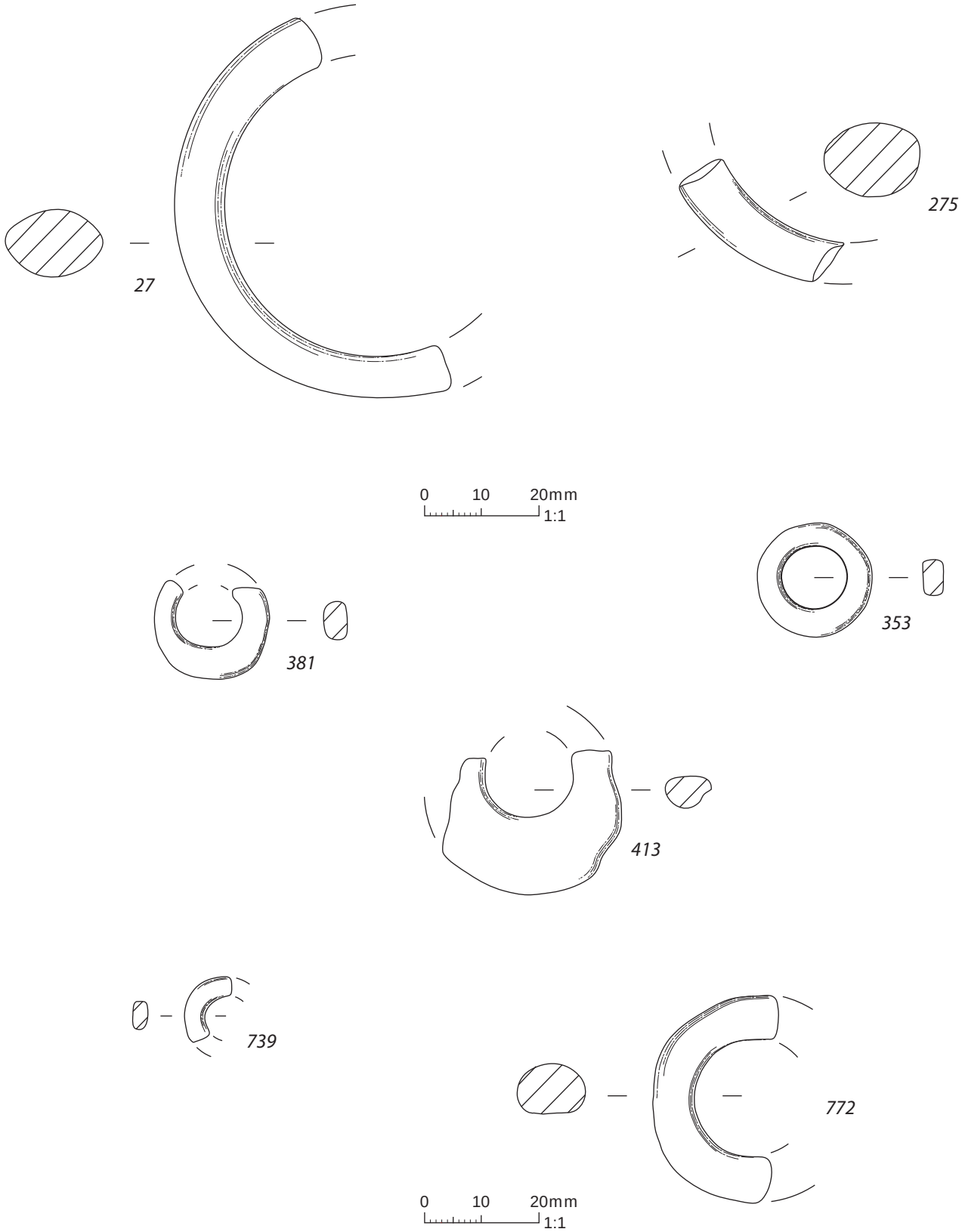

Fig VIII.1: Shale objects from Parc Cybi (sf27 and sf275, parts of bangles, the rest are rings. Sf27 is from Area B3, the rest are from Area B2: sf275 from structure F, sf353 is from the Early Iron Age occupation layer over the stone platform, sf381 from the base of the ploughsoil over roundhouse E, sf413 from inside roundhouse E, sf739 from inside roundhouse C, sf772 from ground surface possibly associated with the use of roundhouse E)

Part IX: Cannel-coal and Amber Beads

Part IX.1 The cannel coal or canneloid shale object from Parc Cybi (SF 1073, context 50012)

Alison Sheridan and Lore Troalen, National Museums Scotland (NMS)

This is an abandoned roughout for a bead (Figs IX.1.1 and 2), found in the fill of posthole 50010, just north of the Early Neolithic Building in Area H. Material from the posthole fill was radiocarbon dated to 4831±23 BP (SUERC-81332, 3656–3534 cal BC) and 4958±29 BP (SUERC-83265, 3790–3660 cal BC). Length: 31.7 mm, width 25.3 mm, thickness 10.5 mm, weight 6g. It is essentially a partly-modified pebble, sub-rectangular in plan, with one flattish (minimally convex) lower side and one naturally-domed upper side (Figs IX.1.1 and 2). The latter seems to preserve some of the pebble's original outer surface, which has a medium to high, satiny sheen which is probably natural: there are no obvious signs that it had been polished. The object is of a black, compact material that has been identified analytically as cannel coal or canneloid shale, most probably the former; see below for details.

The roughout displays a particularly interesting châine opératoire, since there had clearly been a change of plan part-way through its shaping. First, the outer edge of the pebble was ground to create a faceted edge, with several changes in the direction of the facets as the maker worked his or her way around the edge. The faceting extends part way onto the underside. The striations left by this process are clearly visible (Fig IX.1.3). The shape of the lower side was also amended through grinding presumably with the aim of flattening the surface and the multi-directional striations from this process are also clearly visible (Figs IX.1.1 and 2.2). A shallow ground hollow close to one corner of the lower side, and visible at the bottom left of Fig IX.1.2.2, may relate to the removal of a natural inclusion. The top of the domed surface was ground, to level it off, although the grinding has actually created a shallow dished area, 14.5 x 12.2 mm across (Figs IX.1.1, 2.2, and 4). There are also a few multi-directional grinding striations extending beyond the dished area, but not covering the whole of the upper surface, plus a few shallow scratches.

It appears that the maker then started to cut the piece in half along its short axis, since on the upper and lower surfaces there are shallow linear hollows that are cut by a subsequent attempt to drill a hole through the pebble. The linear hollow on the lower, flattish surface is c. 19.6 mm long and c. 2.9 mm wide and it runs virtually to the edge, stopping just short of one of the edge facets (Figs IX.1.1, 2.2, and 5). On the upper surface, the linear hollow just extends across the dished surface, not beyond it (Figs IX.1.1 and 2.2). The shallow, flattened U-shape of the linear hollows suggests that a cord, plus abrasive and water, had been used to effect the cuts. On the lower surface there are also striations, a little deeper than the grinding striations, that run roughly at right-angles to the linear hollow; their purpose is unknown (Figs IX.1.1 and 5).

At this point, there seems to have been a change of plan, from cutting the item in two to perforating it instead, with a hole being initiated roughly at the centre of the object from both sides, cutting through the linear hollows. A broad drill with a pointed end seems to have been used, and rilling from the drill's rotation can be seen in each of the hollows (along with more irregular scratches: Figs IX.1.4 and 5). In neither case is the outer edge of the hole a neat circle. The diameter of the hole's outer edge on the upper side is 7.8 x 6.0 mm, and on the lower side, 6 x 6.8 mm. Around the latter hole there are circular striations that must also be associated with the rotation of the drill. The observed marks could theoretically have been made using a flint drill. For an unknown reason, the process of drilling the hole was abandoned and the roughout seems to have been discarded.

As noted above, the raw material is a compact black material, warm to the touch, and finely laminar. Its laminar nature is shown in a natural surface irregularity on the lower side, close to one corner, featuring small shallow spall scars (Fig IX.1.6), and micro-laminations can be seen on the upper surface (Fig IX.1.7). Elemental analysis using X-ray fluorescence spectroscopy[8] (Fig IX.1.8), confirmed that the material is definitely not jet. The bead contains residual levels of calcium, iron and strontium, and no zirconium was detected. The level of iron detected is consistent with that found in cannel coal, as can be seen from Fig. IX.1.8. (Note that there is also some iron-staining of the natural surface irregularity on the lower side, and at the bottom of the incomplete

[8] The X-Ray Fluorescence analysis was undertaken in the analytical laboratory of National Museums Scotland, using an Oxford ED 2000 air-path instrument, with a rhodium target X-ray tube and the beam collimated to a point of *c* 2 × 1.5mm, coupled to a Si(Li) detector, without any surface cleaning or preparation. The spectra were collected under the conditions "Old XRF". This uses an operating voltage of 46kV and a current of up to 1000 μA (set automatically for a 45% dead time) without a primary beam filter to ensure the detection of all elements of atomic number 19 or above. The analytical time was typically 300 seconds.

perforations; this might relate to precipitation from the groundwater, however). The satiny sheen of the upper surface of the roughout is also consistent with an identification of the raw material as cannel coal. Whether the material had been obtained locally can only be determined by sampling and comparative analysis of superficial material from the Coal Measures on Anglesey, but that is beyond the scope of this study. Cannel coal is available at many locations in Wales; since this item seems to have been made from a water-worn pebble, it may well have been picked up from the coast or a river bed, where it will have stood out by its colour and sheen. It is suspected that the pebble had probably been found within a few kilometres of Parc Cybi.

Discussion

This is a most intriguing object that finds no ready parallel among Early Neolithic artefacts of cannel coal, shale, lignite or jet anywhere in Britain. It does not appear to have been destined to be one of the large, so-called 'monster beads', belonging to the second quarter of the fourth millennium BC, that have been found in various locations in England and Scotland, from Hazard Hill and Hembury in Devon (Houlder 1963, fig. 8.12; Liddell 1932, pl. xvi) to Eyford and Notgrove in Gloucestershire (Clarke *et al*. 1985, figs 7.2 and 7.3), Eton Rowing Lake on the Thames (Sheridan *et al*. 2013), Fengate, Cambridgeshire (Smith 1974) and Flixton, Suffolk (Sheridan 2009) in East Anglia, Bridlington, East Riding of Yorkshire (Kinnes and Longworth 1985, 146, UN.103), Greenbrae, Aberdeenshire (Kenworthy 1977; Clarke *et al.* 1985, fig 3.38) and Leuchars, Fife (Sheridan 2007); this list of findspots is not exhaustive. It differs from these distinctive beads in that it is neither flattish-circular nor elliptical, and its perforation is transverse, rather than longitudinal. Moreover, it is smaller than most 'monster beads'. Nevertheless, the desire to perforate and wear a piece of black, soft stone may conceivably relate to a Neolithic (and later) belief in the apotropaic and/or healing power of jet – and, by extension, to other materials that look more or less like jet (as discussed, for example, in Sheridan 2017). What makes jet special is its ability to float and be burnt, and its electrostatic property. Other similar-looking materials lack jet s electrostatic property, although some including cannel coal can be burnt.

Artefacts of jet and jet-like materials are not associated with the earliest Neolithic in Britain; they appeared several generations later, by which time extensive connections between farming communities were long established. Ideas and beliefs, including beliefs about the specific qualities of certain materials, could have circulated widely around such networks of contacts.

It is impossible to tell whether the cannel coal pebble had been selected because of a belief in its special abilities to heal or protect, or simply because it was unusual, shiny, attractive and easy to work.

Within the broader context of Neolithic jet and jet-like artefacts in Wales, the Parc Cybi bead roughout is the oldest such object. The only other Neolithic objects are a roughout for a Middle Neolithic belt slider found at Ogmore-by-Sea, Glamorgan (Burrow 2011, 30) and two finished belt sliders, described as being of jet, found at Gop Cave, Clwyd, in 1886/7; sadly the latter appear to have been lost (Boyd Dawkins 1901; McInnes 1968; Sheridan and Davis 1998; Sheridan 2012). By analogy with dated examples elsewhere, these are around half a millennium later than the Parc Cybi object, and they are wholly unrelated. As for the pre-Neolithic use of jet-like material in Wales, there is the intriguing Mesolithic find of nearly 700 finished and partly-worked beads, roughly disc-shaped, at Nab Head, Dyfed (David 1997); these are made of local blue-grey shale, and again they are wholly unrelated to the Parc Cybi object. There is no suggestion that the choice of material there had been related to a desire to emulate artefacts of jet.

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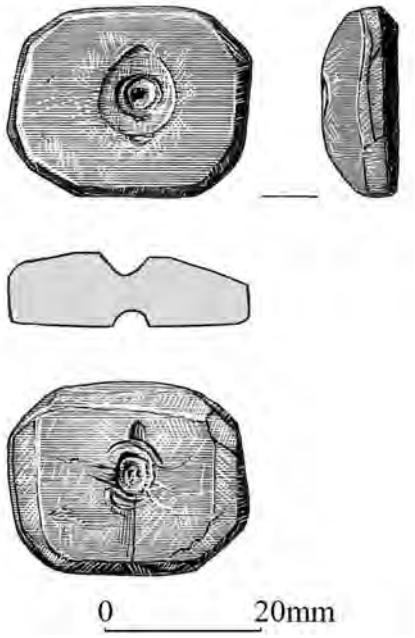

Fig IX.1.1: The cannel coal roughout.
Drawing by Marion O'Neil

Fig IX.1.2: Views of the upper, domed side (1) and the lower side (2) of the roughout.
Photos by Alison Sheridan

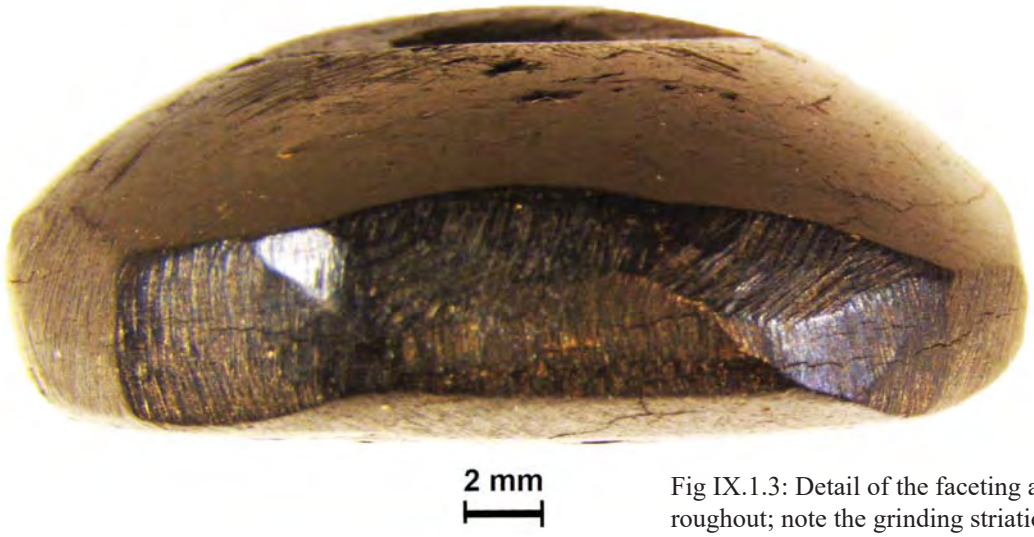

Fig IX.1.3: Detail of the faceting at one end of the roughout; note the grinding striations.
Photo by Alison Sheridan

Fig IX.1.4: Detail showing the dished area on the top of the domed upper surface. Note the linear hollow running across it; the grinding striations beside it; and the shape, rilling marks and iron staining in the perforation that was drilled across the linear hollow.
Photo by Alison Sheridan

Fig IX.1.5: Detail of the underside of the roughout, showing the grinding striations from initial flattening; the shallow linear hollow (running roughly vertically); the striations running at right-angles to this; and the unfinished perforation, with its rilling, its circular grooving outside the borehole, and the iron staining at its bottom.
Photo by Alison Sheridan

Fig IX.1.6: Detail of the natural irregularity on the underside of the roughout (bottom right), showing laminar spalling and iron staining.
Photo by Alison Sheridan

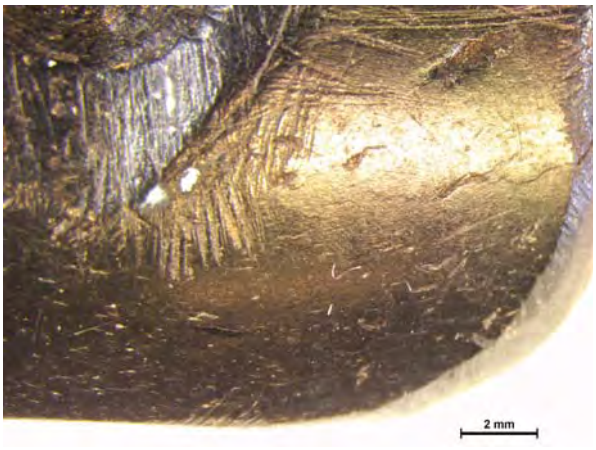

Fig IX.1.7: Detail of the upper surface showing micro-lamination, most clearly visible in the bottom left-hand corner of the image. Note also the multi-directional grinding striations extending

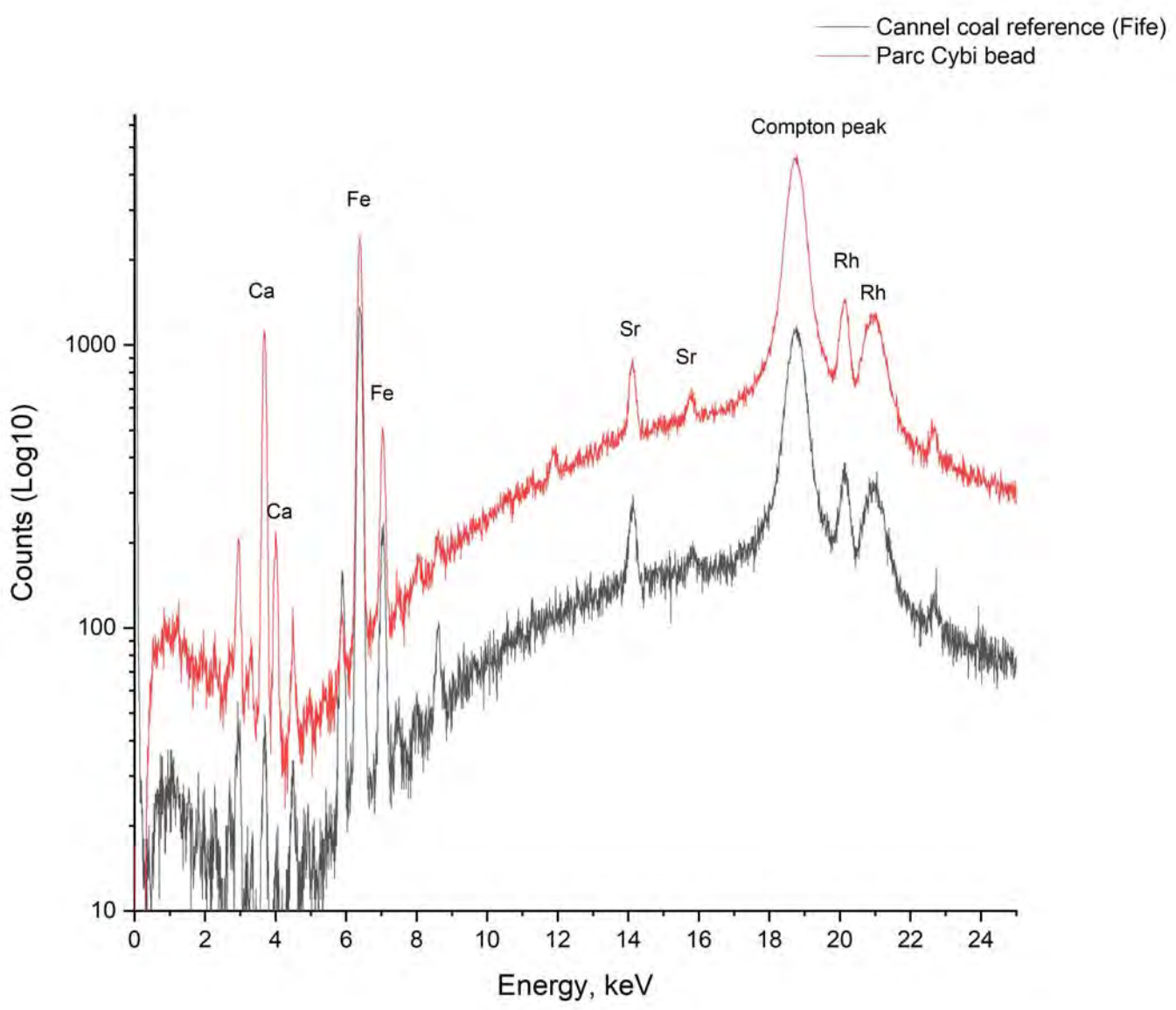

Fig IX.1.8. The XRF spectra for the Parc Cybi roughout and for a reference sample of cannel coal from Fife (E Scotland).
Note the residual presence of calcium, iron and strontium in the Parc Cybi bead; note also that the spectra have been offset for clarity, and are displayed in Log10.

Part IX.2 Amber bead fragment from Parc Cybi (SF639, context 92129)

Alison Sheridan, National Museums Scotland

Description

Fragment constituting around a third of a bulbous, chunky, irregularly-shaped opaque amber bead, measuring 13.7 mm by 19.8 mm, with a longitudinal perforation 2.8 mm in diameter, and weighing 1.64 g (Fig IX.2.1). The bead's overall shape had probably been sub-globular, its irregularity partly due to the shape of the pebble from which it had been made. The outer surface has a low sheen, contrasting with the natural high sheen of the sub-surface as revealed in a relatively recent spall scar beside the perforation, and in an older spall scar. The perforation had been drilled from both ends and there are clear traces of rilling from the rotation of the drill bit; there is also a step which probably indicates where the boreholes had met (Fig IX.2.2). The surviving end of the perforation is partly chipped, but where it is unchipped it is smooth, sloping out to the bead's surface, and its junction with that surface is fairly sharp. There are no obvious traces of use-wear (through rubbing or pulling by the thread or from bead-on-bead abrasion), although the smoothness of the outer edge of the perforation may be due partly to thread-wear (Fig IX.2.3). The bead had broken in antiquity and its fracture surfaces are slightly worn. The cause of the breakage was almost certainly an attempt to cut or saw the bead in half, the saw cut clearly visible as a band of lighter colour beside one of the fracture planes (Fig IX.2.4). (A small spur survives, revealing the narrow V-shape of the cut/saw mark.) The sharpness of the cut, and the compression of the amber surface along the cut, suggests that a narrow metal tool had been used, although examination of the bead at high magnification, plus compositional analysis using a scanning electron microscope (undertaken by Dr Lore Troalen, NMS) failed to reveal any trace of metal residue in the cut.

The amber has oxidised and is a mottled dark butterscotch and yellowish colour, lighter yellow in the recent spall scar (Fig IX.2.5). There is hairline internal cracking and the surface has microscopic crazing, rendering it duller than it had probably originally been. Its opacity may well be due, at least in part, to the process of oxidation: where the subsurface has been revealed in the recent spall scar, it appears slightly translucent.

Discussion

Assigning a date to the bead is not easy, although it can be stated that it is most unlikely to be earlier than Late Bronze Age, both on typological grounds and because the kind of blade used to cut it – assuming that the bead was not very old when it was cut – is unlikely to have existed before that time, if our identification of it as having been effected using a metal tool is correct. Indeed, one cannot rule out a medieval or post-medieval date for the bead, although it is clearly not a medieval rosary bead, nor is its shape that of the 18th–19th century 'lammer' (*l'ambre*) beads that were popular in Scotland (Ross and Sheridan 2013), worn to ward off evil and to cure eye ailments. Amber beads were also worn in Wales for the same purpose, up to the 20th century (Jones 1980, 66; Roolf 1997, 108.) As far as potential *comparanda* are concerned, several Late Bronze Age and Iron Age amber beads are known from Wales (Beck and Shennan 1991), including two Late Bronze Age finds (of five and 16 beads respectively) from hoards at Holyhead and Llangwyllog on Anglesey (*ibid*., 192, 193 and fig. 11.23; Lynch 1970, fig. 68; Sheridan and Davis 1998). The beads from Holyhead were found close to the Ty Mawr 'hut circles'. The Anglesey beads are more slender than the projected shape of the Parc Cybi bead, but are of comparable size. The Iron Age bead from the Caerau promontory fort, Henllan, Dyfed (Beck and Shennan 1991, 192 and fig. 11.22.3) is also more slender than the Parc Cybi example. If the roundhouses at Parc Cybi are found to be of Late Bronze Age or Iron Age date, then potentially the bead fragment could have been contemporary with their use.

As for why the bead was being cut up, it may be that the rarity of amber was such that its owner wished to share this precious object with someone else; the cutting does not seem to have been a deliberate act of destruction (as it would have been far easier to smash the bead by hitting it, if destruction was the aim). It may well be that amber was ascribed special powers and used as an amulet, due to its natural properties of being an unusual type of stone, warm to the touch, capable of floating and being burnt, glowing with the sun's rays and being electrostatic. As noted above, various healing powers have been ascribed to it at various periods up to the present, including a post-medieval belief in rural Scotland of its ability to treat blindness (Ross and Sheridan 2013).

Amber will have been a rare material at any point in the past in Wales and, despite Stephen Briggs' claims for the potentially widespread natural occurrence of amber and similar materials in Ireland and Britain (1997), a local source within Wales is highly unlikely. If the bead is of Late Bronze Age date, then the amber may well have originated in Jutland and have been taken to Ireland for working up into a necklace there.

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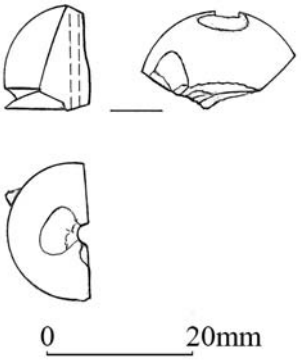

Fig IX.2.1 Line drawing of the amber bead, by Marion O'Neil

Fig IX.2.2 Detail of the perforation showing rilling marks from the drill and a step where the drill-holes from either end met. Photo by Alison Sheridan

Fig IX.2.3 Detail showing the smooth outer edge of the perforation. Photo by Alison Sheridan

Fig IX.2.4 Two views of the saw cut: left: showing the flat area where the saw has cut (on the right of the bead); right: showing the V-shaped profile of the cut. Photos by Alison Sheridan

Fig IX.2.5 Detail of the oxidised surface of the amber bead, and the lighter yellow of the sub-surface as revealed in the recent spall scar. Photo by Alison Sheridan

Part X: Gold penannular ring

Mary Davis and Adam Gwilt

Small find 784; context 92616; fill of ditch 92615

Introduction (AG)

This gold penannular ring was discovered on 5th October 2007, during the course of the ongoing archaeological excavation being undertaken by Gwynedd Archaeological Trust in advance of the Parc Cybi industrial estate development, near Holyhead, Anglesey. The discovery was reported by Andrew Davidson, Director of Gwynedd Archaeological Trust, to Amgueddfa Cymru – National Museum Wales and H.M. Coroner for Gwynedd as a treasure find (Treasure Case 07.23 – Wales). A treasure report was subsequently prepared for the coroner (Gwilt *et al* 2008) and the single artefact was declared treasure on 28th May 2008 and included in the Portable Antiquities and Treasure Annual Report for 2007 (Gwilt 2009a & b). Both Gwynedd Archaeological Trust, as finder, and the Welsh Government, as landowner, waived claim to any subsequent reward. The artefact was donated to Oriel Ynys Môn and accessioned individually as a treasure item (Oriel Môn, Museum Accession Number 9/2016).

Description

(Fig. X.1)

Dimensions: *external diameter (terminals to rear) 14.8mm; external diameter (side to side) 13.6mm; internal diameter (terminals to rear) approx. 9.5mm; internal diameter (side to side) approx. 8.1mm; maximum height of ring 5.3mm; thickness of ring 2.3-3.7mm; gap between terminals approx. 0.7mm; thickness gold sheet approx. 0.3mm. Weight: 1.05g.*

This is a small penannular ring of sheet gold construction with a hollow interior, whose opposing terminals are separated by a narrow gap of approximately 0.7-1.5mm. It is now formed into an unevenly shaped open tube of penannular shape, the internal edges around the internal diameter of the ring being separated by a gap of 1-1.5mm.The terminals are simple, but have been trimmed back and folded at the sides to give a slightly curved profile in plan, and on both sides. There is no evidence of decoration over the surfaces of the ring. The exterior surfaces around the outer circumference have a series of pronounced dints, which are likely to have been created during the shaping of the hollow ring. On a top surface at the back of the ring, there is an angular compression crimp, resulting in a small tear through the sheet along the top and down the interior surface of the sheet-ring.

Analysis of composition and making technology (MD)

Method

Prior to analysis the penannular gold ring was cleaned with water in an ultrasonic tank. This removed ingrained silt/soil from inside the curved area of the ring, much of which was not easily accessible. After removal of the interior silt/soil, the edges of a small crack near to the centre of the ring were more visible. Cleaning also enabled an accurate weight of the ring to be established.

The object was examined both visually (low powered light microscopy; SEM) and analytically (SEM-EDS). Original surface analysis by pXRF[9] appeared to show very depleted levels of both copper and silver in relation to the gold content; such base metal depletion has also been observed on gold from the Burton Hoard (Gwilt/Davis forthcoming). Permission was given to scrape a very small area of the gold surface with a scalpel, which would allow microanalysis of the gold below the depleted surface layer; this was undertaken adjacent to the crack (Fig. X.2).

Analysis was carried out using a CamScan Maxim 2040 scanning electron microscope (SEM) fitted with an Oxford Instruments energy dispersive spectrometer (EDS); this allowed quantities of major and minor, but not trace elements to be determined. Operating conditions employed a 30° take-off angle, and a 20kV accelerating voltage. The samples were analysed for 100 seconds live time with a beam current yielding a count rate of c.4000 counts per second when on a metallic cobalt standard. The energy dispersive spectrometer was calibrated using pure elements.

[9] Bruker AXS Tracer III-SD portable XRF with a rhodium tube and silicon drift detector (SDD); with a 10 × 8 mm elliptical spot size. Each analysis was undertaken using 40kV and 9.6 μA with a 25 μm titanium/300 μm aluminium filter, and run for 100 seconds live time. Data were processed using S1CalProcess v.2.2.32 with empirical calibrations to produce weight % elemental compositions. Empirical calibrations were calculated from gold standards and supplied by Mike Dobby (Bruker).

The area was analysed several times. Although the scraped area was not polished, care was taken to optimise the readings on the flat scraped region. Most results were generally consistent; the three most acceptable results, which totalled 100% + 1.5%, were then normalised to 100% for ease of comparison.

Metallurgical composition

element	copper	silver	gold	total
mean average	5.6	14.4	79.9	100.0

Table X.1: SEM EDS average composition for the Parc Cybi gold ring

When plotted against other analysed Bronze Age artefacts from Wales (Fig. X.3), this ring shows a composition similar to both Middle and Late Bronze Age gold artefacts, in an overlapping zone, where artefacts contain 3-6% copper (Davis 2005, 36, Fig. 4). On compositional grounds, the Parc Cybi ring is consistent with an artefact spanning from the Penard phase of the Middle Bronze Age to the Ewart Park phase of the Late Bronze Age (1300-800 BC).

Microphotography and making technique

In many respects the Parc Cybi ring bears close resemblance to a C-sectioned sheet gold penannular ring included in the Middle Bronze Age gold jewellery and bronze tool hoard from Burton, Wrexham (Gwilt *et al* 2004, No. 5; 2007, No. 4; Gwilt 2005; Barton 2011; AC-NMW Mus. Acc. No.2005.68H/8). This C-sectioned penannular ring has a diameter of 12.2-12.7mm and a weight of 1.09g, providing similar size and weight comparisons (Fig. X.4). However, the Burton ring is much more finely executed, with the sheet being evenly curved but with a C-shaped section and open on the interior side, whereas it is difficult to gauge what was the intended final shape of the Parc Cybi ring, which was inexpertly shaped.

In relation to the Parc Cybi ring, it is possible that a strip of gold was originally hammered into a swage to form the rounded 'D' shaped profile; however the next stage of bending the round strip into a ring has not been done proficiently. There are several points on the inside of the ring where the metal had been pushed out to help form the curved shape of the ring (Figs. X.5 and X.6); this can be seen at point 'A' and 'C' in the images - though at other areas the points are not always in the same place for each face (e.g. 'D'). The major points where the ring has been bent in on the inner surface gives the internal diameter a squarish profile. The point at 'C' is so severe as to have caused the metal to crack, and stress marks in the gold surface are visible (Fig. X.7).

It is also possible to see relatively crude small 'hammer' marks round the outside of the ring (Fig. X.8), which attempt to help push the gold into a ring form from the outer surface. These 'hammer' marks have left distinctive impressions all around the outer surface, where a tool with at least one squared off edge seems to have been used.

The interior of the ring shows relatively rough working, consistent with hammering the gold into the swage with a stone tool (Barbara Armbruster *pers.comm.*), and remains unpolished (Fig. X.9). There is no evidence from the inner surface that the interior ever held a core, and the distortion of the gold when it was shaped into the ring indicates little resistance by the gold to the tools used from both the interior and exterior.

There is some indication that the edges of the ring were folded over to create a neatened edge at the terminal (Fig. X.10), but not for the majority of the ring (as in the Burton example), however, the edges do seem to have been neatened and flattened with a small tool, providing some indication that the maker was not seeking to close the ring (Fig. X.11).

Contextual and independent dating information (AG)

The gold penannular ring was discovered toward the base of the single fill (context 92616), of ditch 92615. This ditch, circa 17m in length, is located to the immediate south-west of the main settlement. On its northern end, it is aligned north-north-west to south-south-west, curving to the south-west at its southern end. At its northern end, the ditch cuts an earlier semi-circular gully (92652), while in the south, it cut an oval stone-lined pit (92761), interpreted as a possible tree throw. No further artefacts were discovered in this ditch fill and no associated organic samples were submitted for radiocarbon dating analysis.

The basis for the excavator allocating this ditch to a pre-settlement Bronze Age phase (Phase I) is tentative but has relied upon two spatial and stratigraphic observations. Firstly, the curved ditch (92515) has an apparent counterpart linear ditch boundary (91445/92799) located to the immediate south, aligned north-east to south-west. Where ditch 92615 curves to the south-west, it forms a funnel-shaped field exit, 5m wide, running in

parallel with ditch 91445/92799, strongly suggesting the two ditches were contemporary and part of the same field system and possibly used in herding cattle and other livestock. In turn, ditch 91445/92799 has been shown as stratigraphically earlier than, underlying and cut by features associated with the main settlement, from which a series of radiocarbon dates spanning the Earliest to Middle Iron Age have been obtained. Accordingly, a probable Bronze Age date has been ascribed to these stratigraphically early ditches. Secondly, the ditch cuts an earlier semi-circular gully (92652), and the excavator has tentatively suggested the possibility that this early feature might represent the truncated remains of a ring-ditch burial monument of Bronze Age date, pre-dating the curved ditch 92615, which cut it. If this hypothesis were to be preferred, the penannular ring might feasibly have been disturbed from an earlier central burial, only to become redeposited as residual within the fill of the later ditch. However, the authors argue here, on the basis of the probable Middle to Late Bronze Age date of the penannular ring and the wider available evidence for gold artefacts deposition practices at this time, that this is an unlikely scenario.

In this report, we draw more heavily in favour of a Middle to Late Bronze Age, or possibly Earliest Iron Age, field entrance, preceding the excavated settlement, in the lower fill of which the penannular gold ring was deposited, possibly intentionally. The discovery of a broken amber bead of possible Late Bronze Age date in an old ground surface to the east of the settlement (Sheridan, *this volume*) provides tentative supporting evidence consistent with a possible later Bronze Age phase of occupation and field system in this general vicinity.

Discussion (AG & MD)

In style and making technique, this small sheet gold penannular ring of hollow construction invites parallel both with small ring forms (composite rings, corrugated sheet rings and C-sectioned sheet rings) of the Middle Bronze Age (e.g. Eogan 1967, 149-51; 1983, No. 28, Fig. 15E; 1994, 59; Taylor 1980, 55-7, 78; Eluère 1982, 26-7, 187; Varndell 2007; Gwilt 2005; Gwilt *et al* 2007; Finds of the Month June 2018) and also with 'hair-rings', also sometimes termed 'ring-money' in the archaeological literature, which flourished during the Ewart Park phase of the Late Bronze Age (Armstrong 1920, 79-84, Pl. XIV; Eluère 1982, 52-3; Eogan 1997; Hobbs 2003, 102-7; Meeks *et al* 2008; Murgia *et al* 2014; Learey 2018).

In Wales, a close parallel, in terms of style, size and technique, with the Parc Cybi ring has been found with a small C-sectioned pennnular ring of sheet construction in the Middle Bronze Age gold jewellery and bronze tool hoard from Burton, Wrexham (Gwilt *et al* 2004, No. 5; 2007, No. 4; Gwilt 2005; 2009c; Barton 2011; Davis & Gwilt *in prep*.; AC-NMW Mus. Acc. No.2005.68H/8). Also found in this hoard were a small penannular ring of corrugated sheet construction and a small composite penannular ring, made of three solid gold wires fused together, illustrating a variety of contemporary ring-making techniques in association. This hoard of sixteen artefacts also included a flange-twisted torc, twisted wire bracelet, necklace pendant, round and biconical beads, a wire with terminal, all of gold, two transitional palstaves and a trunnion tool of bronze and a ceramic vessel base and may be securely dated to the Penard phase of the Middle Bronze Age (1300-1150 BC). While simple C-sectioned rings, such as the Burton example, are rare in Britain, one appears to have been found in Windsor, Berkshire, threaded together with four double composite rings onto a double-strand, twisted gold wire ornament with plain loop terminals (Byard 2009); there is also another recent find from Norfolk recorded by the Norfolk Heritage Recovery Group (Finds of the Month June 2018). Very similar gold penannular rings, formed of two or three C-sectioned rings soldered together to give a composite and corrugated cross-section have recently been discovered and recorded at Wix, Essex; Gayton Le Marsh, Lincolnshire and on the Isle of Wight (Basford 2005; McLean 2009; Daubney 2011). These small gold penannular rings of Middle Bronze Age date were probably items of personal adornment, although their precise location on the body has not been defined or specified. Where found in hoards, they have repeatedly been discovered threaded onto larger gold torcs, bracelets or gold bars (e.g. Eogan 1967, 141-3 & 149-51; 1983, No. 28, Fig. 15E; 1994, 59; Taylor 1980, 55-7, 78; Varndell 2007; Byard 2009).

Despite these observed similarities, the Parc Cybi penannular ring also shows divergent characteristics, making the parallel with the Burton C-sectioned sheet penannular ring less than entirely conclusive. The inward curve in the sheet on the interior side, to generate an irregular-shaped open tube, might in some ways appear to anticipate the development of round-sectioned hair-rings with solid cores. Furthermore, the quality of working and forming of this hollow ring has been executed in a more rudimentary and inexpert way, with repeated tool dints around the exterior, and angular and irregular points along the interior circumference, where the gold was pushed out from the inner surface. These characteristics could be consistent with two further possibilities: firstly, that the penannular ring may be an early predecessor of hair-rings proper and made in the later Middle Bronze Age or early part of the Late Bronze Age (1300-1000 BC); or alternatively, that this is an atypical variation on the hair-ring theme, made during the period of their main currency during the Ewart Park phase of the Late Bronze Age (1000-800 BC) and illustrating the diverse making techniques and styles present in Wales.

Hair-rings were probably used as hair, ear or nose ornaments, as their small internal diameters and thick cross-sections preclude their use as finger- or toe-rings. They are abundant in Ireland, where over 130 have been recorded (Eogan 1997, 308 & Fig. 1; Raftery 2004, 87). However, during the last twenty years, and since the enactment of the Treasure Act 1996 and the existence of the Portable Antiquities Scheme in England and Wales, many more examples have been discovered and reported as single finds and hoard associations, where approaching 100 examples are now known (e.g. DCMS 2008, 21-2, Nos. 17-25; British Museum 2009, 50, Nos. 44-7 Murgia *et al* 2014; Learey 2018). To this may be added around 25 examples from Scotland (O'Connor, *pers. comm.*), with further recent finds also reported here (e.g. O'Connor *et al* 2008), now showing them also to have been common small adornments across Britain. Their distribution also extends into north-eastern France, Belgium and The Netherlands, where they are commonly found in Late Urnfield cremation graves (Eluère 1982, 52-3; Eogan 1997). While some of the British examples are formed of plain, solid gold rods, others had base metal or clay cores covered with gold foil, frequently with electrum spiral wire or plating, forming either narrow or broad decorative stripes (e.g. Meeks *et al* 2008; Leary 2018). However, this example from Parc Cybi is unusual by virtue of its hollow sheet gold construction, the continuous unclosed gap in the sheet around the internal edge and in its inexpert shaping.

Dating the development and currency of hair-rings in Britain remains problematic, especially for the large number of recently discovered single metal-detector finds. However, the existing hoard associations and independent radiocarbon dating evidence does indicate a concentration during the Late Bronze Age, and particularly the Ewart Park phase (1000-800 BC), with some evidence of their continued deposition into the Earliest Iron Age (800-600BC) in Scotland and on a few hillfort sites (Eogan 1997; Learey 2018, 28-32). However, in recent years, the evidence for their possible earlier development and currency in Britain and Ireland has been growing. A number of simple 'hair-rings' of solid gold rod construction have been found within a gold hoard near Cirencester (Needham 2007, 26-33, Figs. 17.3-4). These were directly associated with twisted torc and bracelet fragments also belonging to the Penard phase of the Middle Bronze Age. In Ireland, 'hair-rings' have been discovered at excavated sites at Rathgall, Co. Wicklow and Ballypriorbeg, Co. Tyrone have also been radiocarbon dated to 1290-1040 cal BC and 1373-1019 cal BC respectively (Dunne 2003; Suddaby 2003, 82-4, 88; Raftery 2004, 87-8). This raises the possibility that the Parc Cybi ring could have been made as early as the Penard phase of the Middle Bronze Age (1300-1150 BC).

The current known number of hair-rings in Wales still remains modest at five certain examples of known provenance, one further poorly reported example of uncertain provenance, and the gold foil deriving from one possible additional example, in addition to this Parc Cybi ring. Six of these eight discoveries have been reported over the past two decades as treasure finds, including four metal-detector finds and two finds including the Parc Cybi ring, made during the course of archaeological excavations. In 2013, a hair-ring of solid gold construction with inlaid electrum, forming wide spiral surface decoration and weighing between 18-19g was reported as a metal-detector find in Cwm Cadnant Community on the south –east side of Anglesey (Gwilt *et al* 2014; Gwilt 2015). Semi-quantitative surface analysis of this artefact suggested a composition of approximately 78.5% gold, 17.5% silver and 3% copper (Gwilt *et al* 2014), however in the light of the recent identifications of surface depletions of copper within certain Bronze Age gold artefacts in Wales, further analysis of the interior composition of this gold artefact is now merited. This hair-ring was a component of a probable Late Bronze Age scattered hoard association, also comprising three fragments of copper plano-convex ingots of probable Ewart Park date (1000-800 BC), found scattered in the immediate vicinity of the gold ring (Gwilt *et al* 2014). A further single hair-ring was discovered around 1970 on Graianog Farm, near Llanllyfni, Gwynedd (AC-NMW - Accession number 1985.127H). This example, weighing 11.22g, has a bronze core covered with gold plate or foil, with an inlaid electrum strip, giving a narrow striped surface decorative effect (Green 1988). Analysis of the surface gold, by wavelength dispersive electron probe microanalysis, indicated a copper composition of 6.33% (Green 1988, 88).

In south Wales, three hair-rings have been discovered as single metal-detector discoveries and reported as treasure: Brynmill, Swansea Bay, Swansea (Gwilt & Davis 2002; Gwilt 2004), Port Eynon, Gower, Swansea (Gwilt 1999; 2000; Williams 2006) and St Donats Community, Vale of Glamorgan (Gwilt & Davis 2012; 2013; Gwilt 2014; Parol & Richardson 2014). These have similar diameters (16.4-17.0mm) and weights (6.5-7.5g), all with copper cores, but with a variety in surface decorative effects. The Brynmill example has a gold foil and is plain. The Port Eynon and St Donats examples have a gold foil surface, into which has been inlaid an electrum strip in spiral formation, forming wide stripes. The similarities between these three examples affords tentative suggestion of a regional style preference in south Wales. Analysis of the composition of the gold foil on the Port Eynon hair-ring suggested a copper composition of 3.9% (Northover 1999), while semi-quantitative analysis of the gold foil on the Brynmill example indicated an approximate figure of 10% copper (Gwilt & Davis 2002). A

fragment of gold foil, possibly from a hair-ring missing its core, was also discovered during excavations of a Later Bronze Age settlement at Llanmaes, Vale of Glamorgan (Gwilt & Lodwick 2008; 2010; Gwilt *et al* 2009; 2016, 302). Semi-quantitative analysis of the gold suggested an approximate composition of 4.5% copper in this foil (Gwilt *et al* 2009). In August 2006, a further hair-ring with a copper alloy core and a plain gold foil surface, weighing 8.7g, stated as from 'Carmarthenshire', was offered for sale online but was never directly seen or reported (e-Bay – Anglo Antiquities, August 2006, Item Number 260016707230) and its precise provenance cannot be verified or clarified. This review illustrates the variety of size, weight and decorative traits evident in the hair-rings from Wales, which echo the wider observed pattern of diversity in style and technique across Britain and Ireland.

Further analysis of the metallurgical composition of the Parc Cybi ring (Davis, *this report*) was undertaken, in part, with the hope that it might provide further supporting evidence to inform the likely date of the ring's manufacture. In general terms, increasing levels of deliberate copper additions are observed within gold artefact alloy compositions, as the Bronze Age progresses, from Early to Middle and Late (Davis 2005, 36, Fig. 4; Fig. X.3). During the Chalcolithic and Early Bronze Age, copper levels in gold may be minimal and are typically at less than 1%, with copper levels increasing typically to 3-6% by the later Middle Bronze Age and in the range of 4-10% by the Late Bronze Age. Therefore, identifying the amount of copper observed within the Parc Cybi ring had the potential to provide independently derived information to inform the wider technical and stylistic dating discussion.

Analysis of the gold composition of the ring in a small scraped area and beneath the copper depleted surface has indicated normalised mean gold and silver compositions of 79.9% and 14.4% respectively, with a normalised mean copper composition of 5.6% (Davis, *this report*). This has illustrated the importance of not relying solely upon surface analyses of gold artefacts to provide accurate data on gold alloy compositions. In this instance, comparison surface and sub-surface analyses has indicated a five- to six-fold depletion in the percentage of copper present in the surface alloy composition has been observed and a four- to five-fold depletion in the percentage of silver. Unfortunately, this observed copper composition of 5.6% is observed to sit within the overlap zone characterising the compositions of both late Middle Bronze Age (1300-1150 BC) and Late Bronze Age (1150-800 BC) gold artefacts in Wales (e.g. Hartmann 1970; Hartmann 1980; Green 1983; Hook & Needham 1989; Northover 1995; Aldhouse Green & Northover 1994; 1996; Davis 2005, 34-5). Therefore, it is not possible to suggest a probability of one date of manufacture over the other, from this evidence. Consequently, the possibilities of either a late Middle Bronze Age date or a Late Bronze Age date, raised in preceding technical and stylistic discussion, both remain tenable.

The consistent level of both copper and silver depletion on the outer, worn surfaces of all the gold artefacts from the Burton hoard (Davis & Gwilt, *in prep.*), and on the Parc Cybi ring (Davis, *this report*) are interesting. It was noted that the depletion occurred on the 'polished' outer faces of the Burton objects, for example on the external area of the twists on the torc, but not on the less worn inner faces of the twisted gold. This implies that the silver and copper depletion is occurring due to contact of the outer areas where worn next to the skin, which has also helped to give the gold a smoother and more polished appearance, visible under the SEM.

The depositional context, in which this gold penannular ring was found, was the lower fill of a ditch, forming a paired funnel-shaped field exit, preceding the Earliest to Middle Iron Age settlement to the east and cutting an earlier truncated ring-ditch (*see above*). As a discovery made during the course of a modern archaeological excavation, this is an unusual discovery of wider significance. In Britain, Middle and Late Bronze Age rings and hair-rings have most frequently been discovered as single metal-detector finds, whose original depositional contexts unfortunately remain unknown. They have also been repeatedly found as components of hoards, sometimes as multiple ring associations, and sometimes in association with other artefacts. Whereas in France, Belgium and The Netherlands, they are frequently associated with cremation burials as grave goods (Eogan 1997), in Britain, known associations with human remains are extremely uncommon (Learey 2018, 33, Fig. 14). Caves and wetland associations are known upon occasion, but associations of hair-rings on settlement and hillfort sites in Britain are so far unknown (Learey 2018, 34-5, Fig. 15), with the possible exception of the gold foil from a possible hair-ring discovered beneath a Late Bronze Age working surface at Llanmaes, Vale of Glamorgan (Gwilt & Lodwick 2010; Gwilt *et al* 2016, 302). On the basis of this wider observed pattern, it would seem unlikely that the penannular ring was disturbed from an earlier burial within a truncated ring-ditch monument, whereas its deposition in association with a Middle or Late Bronze Age field system seems most plausible. While no further diagnostic artefact or ecofact finds were made in association with the ring, it is possible that the field entrance, marking the transition between the interior and exterior space was viewed as symbolically and socially significant to the community farming in this landscape locality. As such, it is possible that the ring may have been intentionally placed as a single artefact, representing a structured deposit at the

internal corner of the funnel field entrance. The penannular ring could have been an heirloom, in circulation for centuries before being buried, or equally it may have had a short use-life, therefore being of similar date to the use and infilling of the field boundary. Structured deposits have not yet been identified in significant numbers on Later Bronze Age sites in Wales, in large part due to the ephemeral character of these landscape features and settlements, although have been noted recently on the Middle Bronze Age to Earliest Iron Age settlement at Llanmaes, Vale of Glamorgan (Gwilt *et al* 2016). However, research has demonstrated the potential for future study in this area, involving the placing of human remains, querns, pots, hoards and metalworking residues (e.g. Brück 2001; Webley & Adams 2016), and structured deposition is now widely attested and researched within Iron Age studies.

The Parc Cybi gold penannnular ring provides an interesting addition to the known Bronze Age gold finds from Anglesey. If made in the Middle Bronze Age, it would be the earliest and single gold artefact of this date known from the island, whereas if of Late Bronze Age date, it would add to the diversity of the rich corpus of gold artefacts known from the island. All of the other known thirty gold artefacts are contained within four Late Bronze Age hoard associations: three bracelets and a bulla (or lock-ring) in the Llanfflewyn hoard (Way 1856; Wheeler 1925, 173; Taylor 1980, 95, Nos. Ag 7-10; Lynch 1991, 239; Northover unpublished Cat. No. H9), eleven penannular bracelets and twelve lock-rings from the Gaerwen (Cae Capel Eithin) hoard (Way 1856; Wheeler 1925, 173 & Fig. 1&2; Taylor 1980, 95, Nos. Ag 3-6; Lynch 1991, 239-42 & Fig. 67.1-4, 365-6; Smith 1999, 68-9 & Figs. 18-19; Northover unpublished, Cat. No. H10), two penannular bracelets from the Beaumaris hoard (Wheeler 1925, 173 & Fig. 67.5; Lynch 1991, 240-2 & Fig. 67.5-6; Taylor 1980, 95, Nos. Ag 1-2; Northover unpublished, Cat. No. H2) and a solid gold decorated hair-ring and three copper plano-convex ingot fragments in the Cwm Cadnant Community hoard (Gwilt 2015; Gwilt *et al* 2014; Oriel Môn Accession Number 8/2016.1-4). The many lock-rings, Irish Type penannular bracelets and possible bulla in three of these hoards have strong Irish connections and form the core of a wider north Wales coastal depositional focus in Britain, complemented by similar gold artefacts in the Pigeon's Cave, Great Orme's Head hoard, the Rossett 1 and Rossett 2 hoards (Savory 1958; 1980, 127, Figs. 40 & 47, Cat. 307; Eogan 1994, 94 & 100, Figs. 39 & 41; Gwilt *et al* 2005, 40 & Fig. 5; 2013; 2014; Gwilt 2012; Oakden 2013).

In terms of the depositional contexts of these gold finds, little is known about the precise circumstances of the Llanfflewyn and Beaumaris hoards, as early finds, and the Llanfflewyn artefacts are now lost (Lynch 1991, 239 & 242). Remarkably, new light was shone upon the probable find-spot of the large and unparalleled Gaerwen hoard of eleven bracelets and eleven lock-rings, originally discovered in 1856, during more recent archaeological excavations at Cae Capel Eithin in 1980-81 (White & Smith 1999). A further crushed lock-ring was discovered displaced in the vicinity of a rectangular prehistoric rectangular stone cairn (White & Smith 1999, 24, Fig. 2; Smith 1999, 68-9 & Figs. 18-19) and is now part of the collection at Oriel Môn. It was thought to have been buried with the rest of the hoard in a large pit (Pit R) to the immediate east of the stone cairn. It is noteworthy, that the chosen burial context for this exceptional gold hoard was in the immediate vicinity of an earlier ceremonial and burial focus, of Early and Middle Bronze Age date, which continued to have religious and burial associations in later Roman and Early Medieval periods. This additional lock-ring find also raises the possibility that there may originally have been twelve gold bracelets in this hoard to complement the twelve lock-rings. Only two of the original lock-rings and two of the original bracelets from the Gaerwen hoard survive within the collections of The British Museum, where the two bracelets from Beaumaris also reside. The archaeological burial context of the dispersed artefacts in the Cwm Cadnant Community hoard (a solid gold decorated hair-ring and three copper plano-convex ingot fragments), is not yet understood, but merits further investigation in the near future.

While questions and uncertainty must still remain, for the present, around the date and technology of this small and unexpected gold artefact discovery, it has nevertheless proved an interesting and unusual gold object and repaid the effort of careful study and contextualisation.

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Fig. X.1: Illustration of the gold penannular ring (AC-NMW; Scale 2:1) (drawn by Tony Daly)

Fig. X.2: SEM BSE and photo-micrograph image showing 'scraped' area at edge of crack where analysis was undertaken (arrow on SEM BSE image)

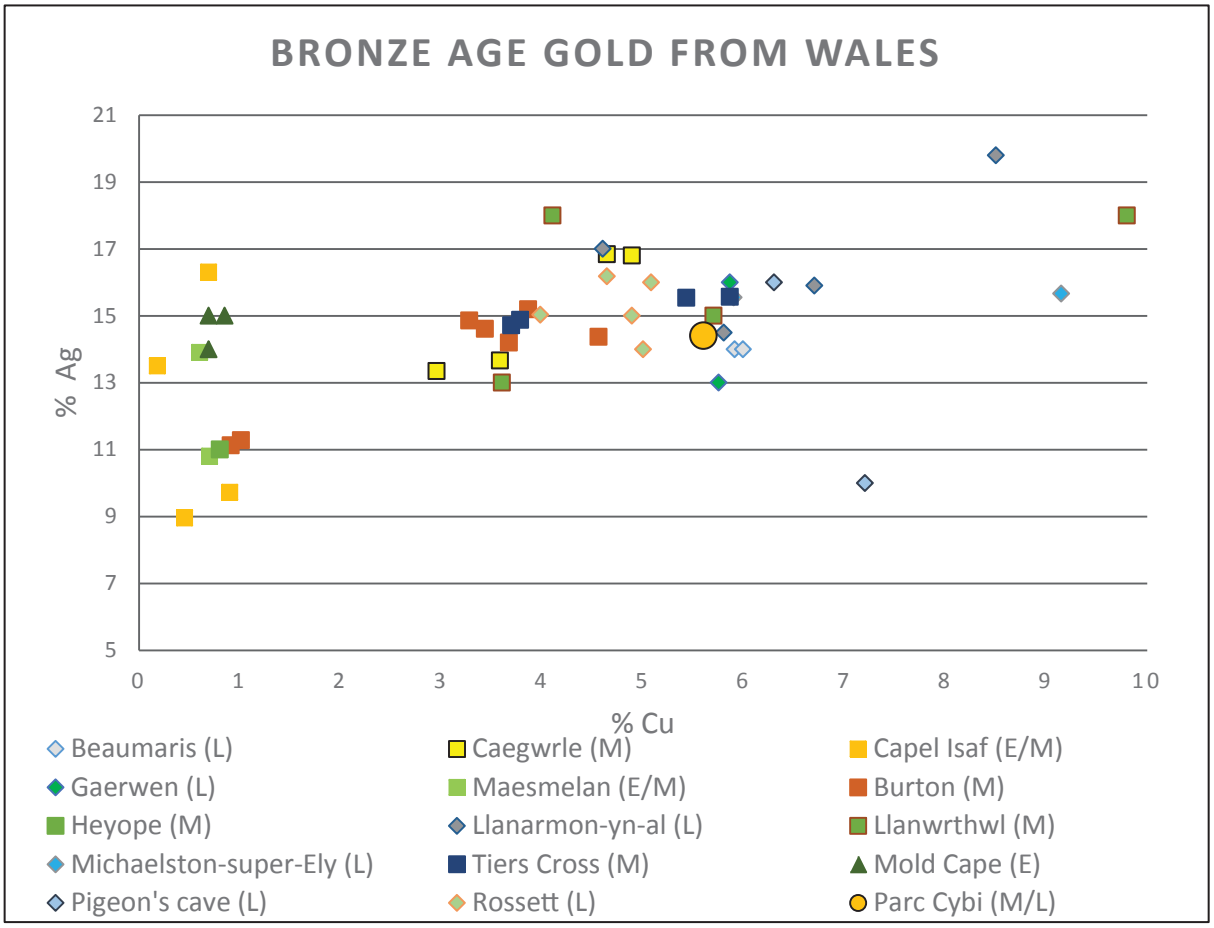


Fig. X.3: Copper and silver compositions of Bronze Age gold artefacts (single objects and hoards) from Wales (Key: E = Early Bronze Age; E/M = Early to Middle Bronze Age; M = Middle Bronze Age; M/L = Middle to Late Bronze Age; L = Late Bronze Age)

Fig. X.4: Gold C-sectioned pennanular ring from the Burton hoard (right), showing similarity in size and shape to the Parc Cybi ring (left), but showing different levels of workmanship

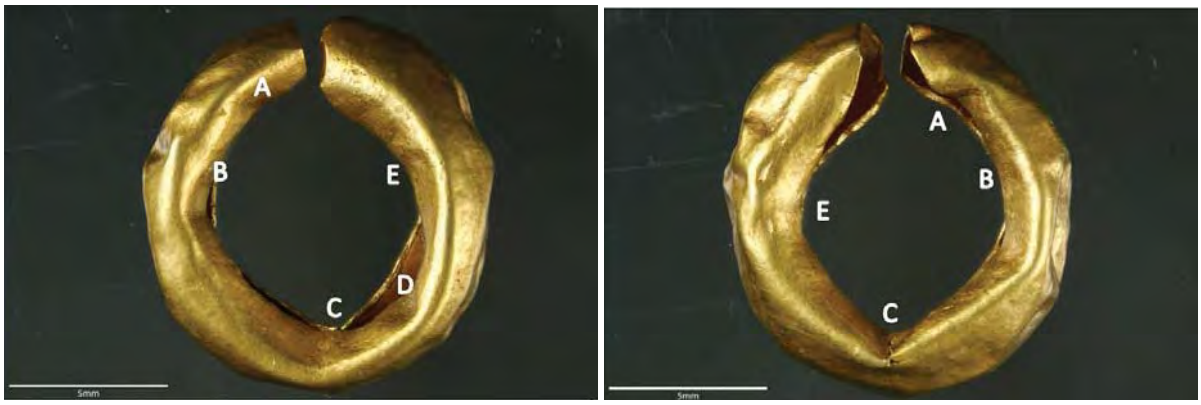


Fig. X.5: Photograph showing areas of where the gold has been pushed out from the inner surface

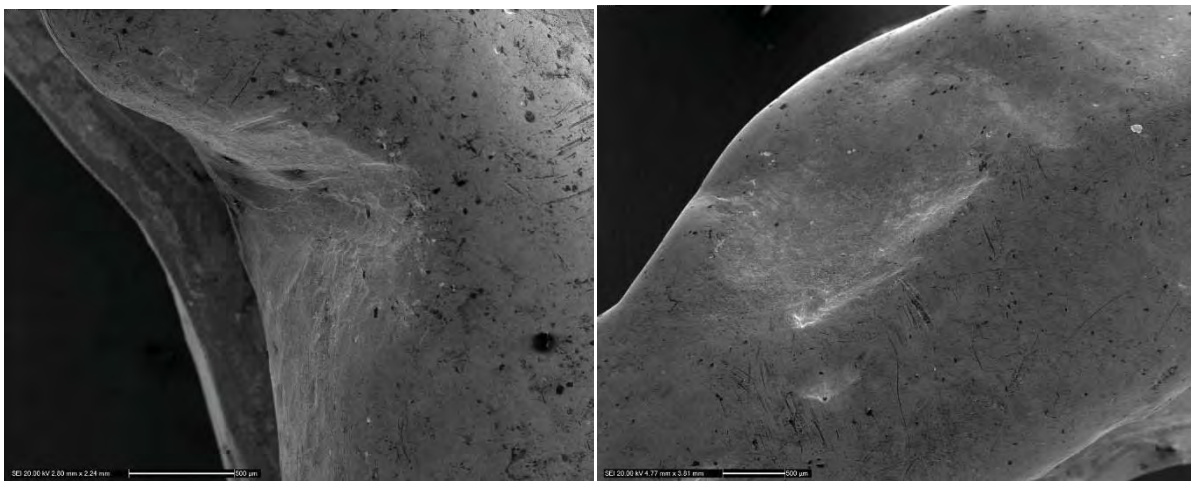


Fig. X.6: SEM SEI showing the surface of the gold at 'point E' where it has been pushed in to help form a curved shape; plus tool/hammer indentation occurring due to shaping from the outside

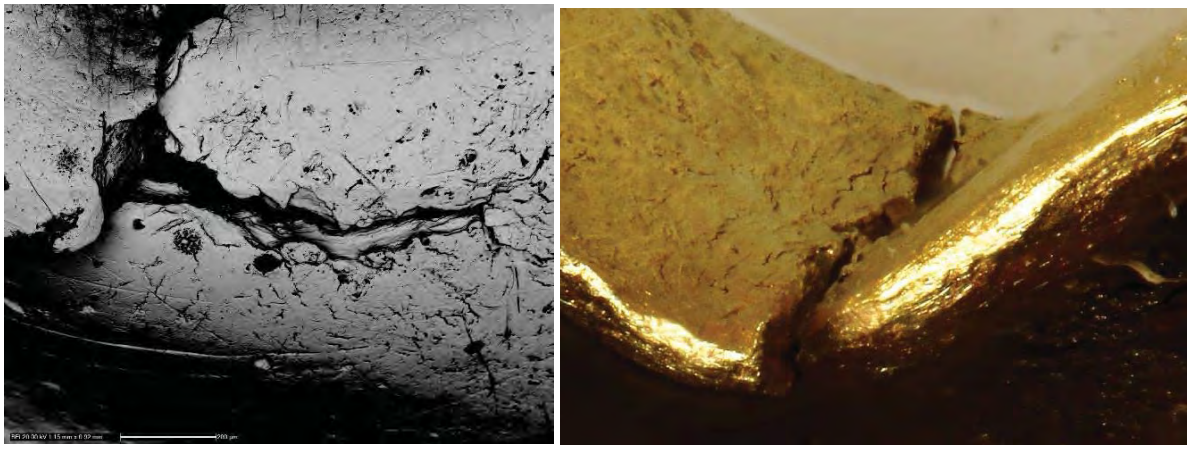
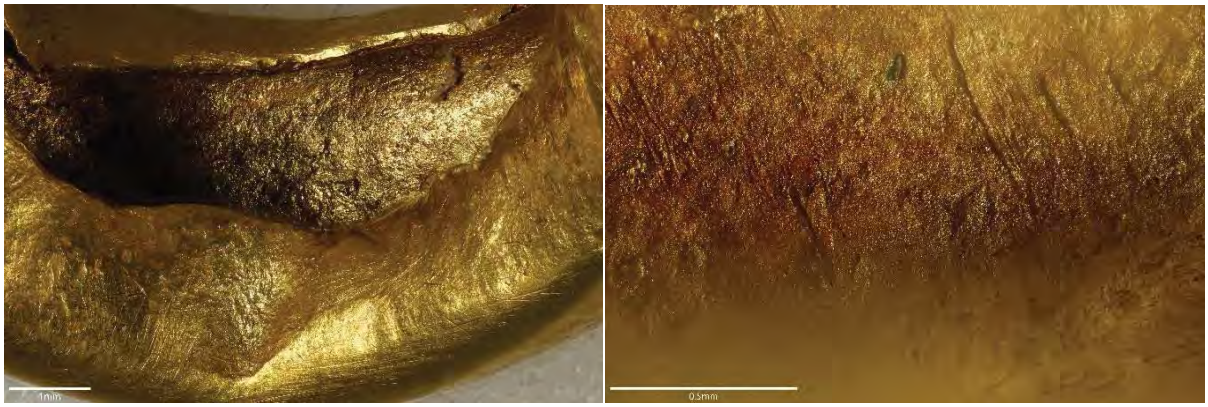
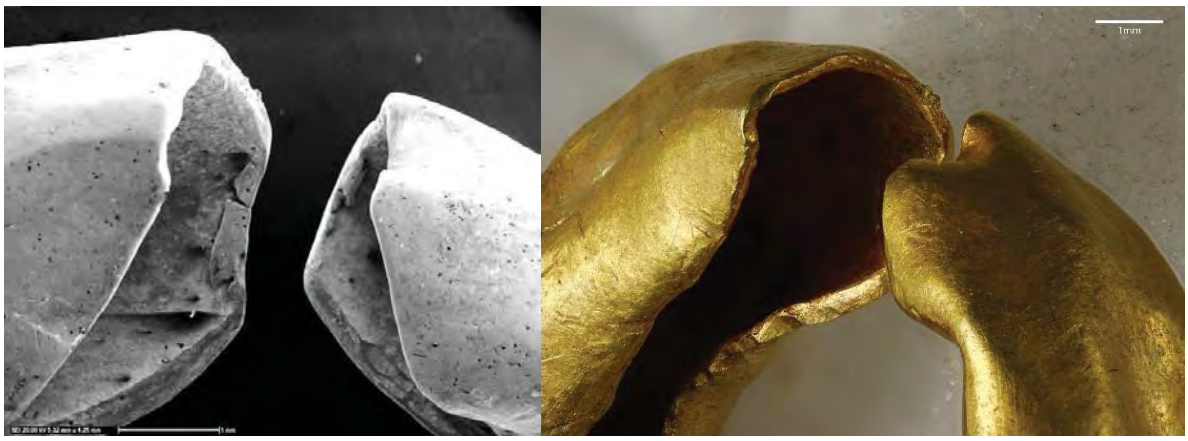


Fig. X.7: SEM BSE image and micro-photograph showing visible stress marks at and near the fracture in the gold

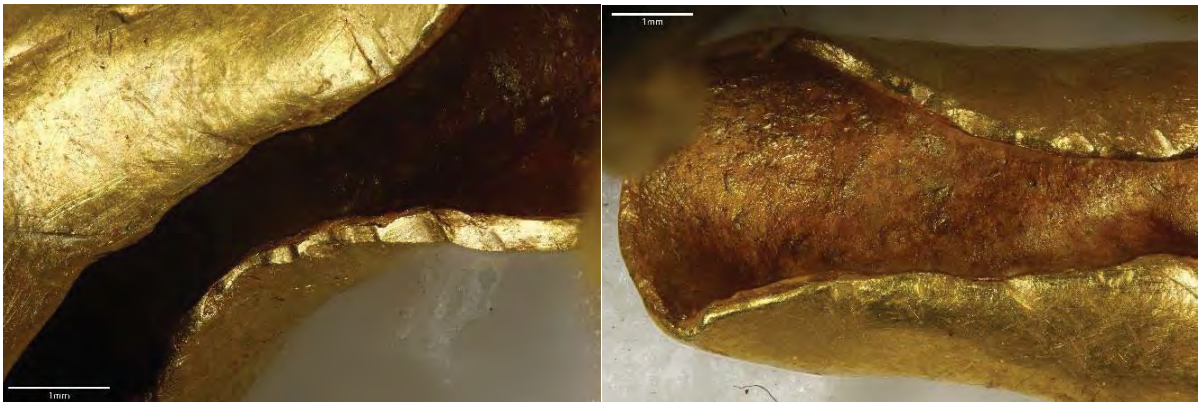
Figs. X.8: Views of outer surface of the ring showing hammer marks on the outer surface used to help shape the gold into a ring



Figs. X.9: Images of the interior of the ring after cleaning, showing rough tool marks on the surface of the gold



Figs. X.10: SEM BSE image showing fine sections of the gold folded over at the terminal



Figs. X.11: Fine tool marks visible along the length of the edge of the ring

Part XI: Conservation

Treatment record for shale bangle SF 27 (Lab No 6029/00)

Phil Parkes (22/05/2008)

The bangle was received packaged in water, which had maintained the waterlogged condition. It was in excellent condition, very hard with a spilt and a crack at one end. The bangle was treated by consolidation with Polyethylene Glycol 40000 wax. It was immersed in a 10% solution of PEG 40000 in water in a covered container and kept in an oven at 40ºC. The mixture was gradually topped up with PEG 4000 wax as the water evaporated until a solution of 100% PEG 4000 was reached. It was then kept in this solution for 4 weeks. On removal excess wax was wiped off the surface and the bangle was placed into a high humidity environment. This was gradually reduced to approximately 50% relative humidity. The bangle has been successfully treated and is in a stable condition for storage and display.

Iron objects from excavations at Parc Cybi, Holyhead (Cardiff Conservation Services Report No. DEV/401/1)

Phil Parkes

Background

The objects were discovered during excavations south of Holyhead at a stone-built roundhouse settlement. The corroded iron objects were discovered in the floor deposits of a circular stone-built structure (roundhouse H). Due to their fragile condition they were lifted by the archaeologists as blocks of soil / stone wrapped with plaster bandage as a support. The objects were lifted as three blocks, 814, 815 and 816 (*Fig XI.1*). They were then delivered to Cardiff University for examination by X-radiography.

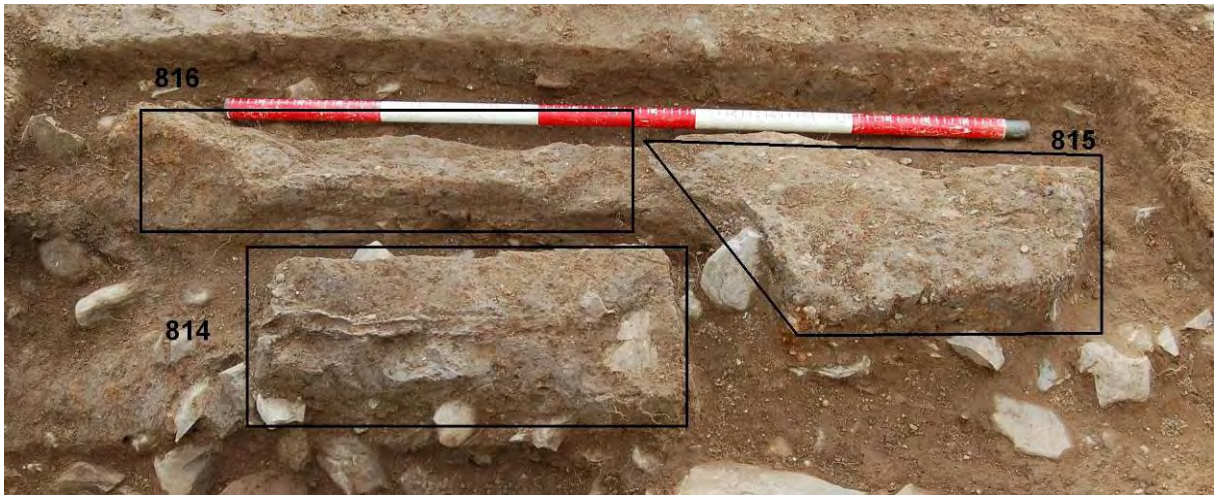


Fig XI.1: The objects in-situ.

Initial examination

The three soil blocks arrived at Cardiff University wrapped in plaster bandage and cling film and supported on wooden boards. Initial examination involved the X-radiography of one of the blocks. Unfortunately due to the large amount of soil and stone that comprised the block, and the extremely corroded nature of the iron within, the x-rays did not show any discernible features. The decision was made to try and remove the iron objects from the blocks before x-raying again.

Removing the objects from the soil blocks

814

The plaster bandage was still damp under the cling film offering little support to the soil block. As a result much of the block has collapsed within the cling film wrapping, with the result that little of the iron object survives (*Fig XI.2*). Two larger fragments were consolidated using Paraloid B72 in acetone and Japanese tissue paper prior to removing them from the soil block. A number of smaller fragments were recovered from within the broken soil block, but much of the object has been lost due to the break-up of the soil block.

Fig XI.2: Collapse of soil block 814 within plaster bandage.

Fig XI.3: Consolidation of the two large fragments remaining.

Fig XI.4: Surviving fragments of iron object 814, with Japanese tissue paper support where necessary.

815

This block has remained almost intact within the plaster bandage, although there are one or two large cracks running through it. Cleaning shows the remains of a hollow tube, or possibly half-tube, with a branch leading off at one end (*Fig XI.5*). The object is extremely fragile. In order to remove it from the block applications of Paraloid B72 in acetone were made to the corrosion remains. A strip of Japanese tissue paper was applied on top of this, with further applications of Paraloid B72. On top of this layer, in order to act as a support, an epoxy resin (Araldite 215) was applied. The soil around the object was removed and eventually the object could be lifted from the block.

X-radiographs of the object were taken both from above and the side. These indicate that there are possibly 2 rods / nails rising out of the main rod (i.e. vertical when viewed from the side). The ends of these can be seen on the object itself, one with a circular cross-section, the other half-circular although this may be due to damage. However, little more can be distinguished due to the combination of the porous corrosion, overlying dirt and the need for an epoxy support.

Fig XI.5: Cleaning to reveal forked object 815.

Fig XI.6: The epoxy resin support.

Fig XI.7: Reverse of 815 after removal from block showing soil and stone accretions. The forked end is to the right in this image.

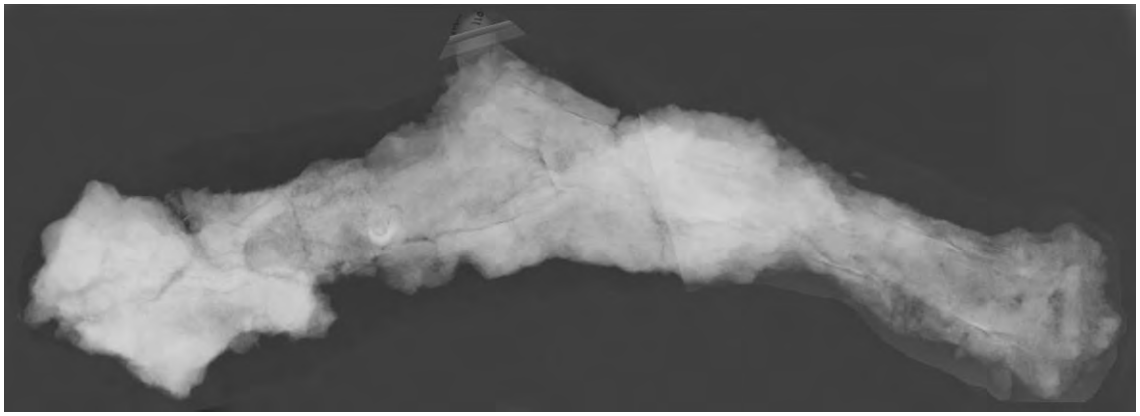


Fig XI.8: X-radiograph of 815 from above (two images stitched together digitally).

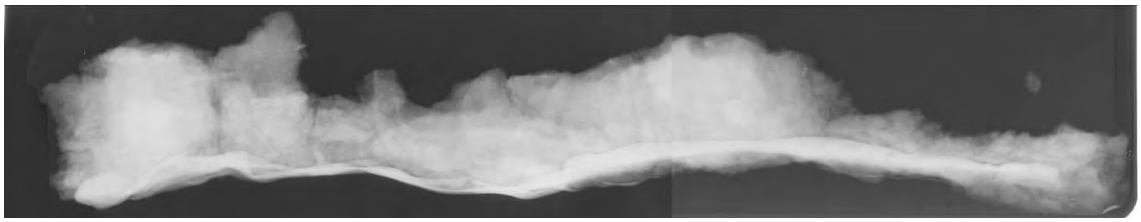


Fig XI.9: X-radiograph of 815 from side (two images stitched together digitally).

816

As with 814 the plaster bandage was still damp under the cling film offering little support to the soil block. As a result much of the block has collapsed within the cling film wrapping, with the result that little of the iron object survives (*Fig XI.10*). Fragments were consolidated using Paraloid B72 in acetone prior to removing them from the soil block. Much of the object has been lost due to the break-up of the soil block.

Fig XI.10: Collapse of soil block 816 within plaster bandage.

Fig XI.11: Surviving fragments of iron object 816.

Summary

The iron objects revealed by excavations at Parc Cybi, Holyhead are extremely corroded and have only survived the block lifting as fragments in many cases. They would appear to have been lengths of iron, possibly tubes, one of which appears to have a fork or join to it. This piece also appears to have other iron elements, in the form of smaller rods or nails attached to it. Further work would be necessary to determine how these joined the main structure, but this may not be possible due to the nature of the corrosion.

Recommendations for further work

The objects have been lifted from the soil blocks and consolidated as necessary in order to stabilise them for long-term storage. In some cases (in particular 815) this has hidden the surviving metal. Many of the fragments still have the remains of dirt attached to them.

One option for further work on the objects is to remove the extraneous dirt from all fragments, revealing the corroded iron surface. Due to the nature of the corrosion this would be a slow process that may have limited benefits as in many cases the fragments would not reveal further information. The surface to be revealed is not a distinct corrosion layer, such as the black magnetite Fe_3O_4 layer that is usually revealed on archaeological objects, but a much less dense layer of iron oxides. If the fragments did have this work carried out they would also require extensive consolidation in order to strengthen them.

The removal of dirt and stones from 815 may reveal the features hinted at by the x-rays, although again there is no guarantee of this due to the nature of the corrosion. If this were done it would also be necessary to construct a permanent support for 815 due to the fragility of the object.

X-ray assessment and treatment of metal small finds from Parc Cybi

Phil Parkes

Metal finds from Parc Cybi, Tw Mawr, Holyhead (GAT G1701) were x-rayed using a Faxitron 43805 x-ray machine with Industrex AA400 x-ray film. Below are notes on information provided by the x-rays.

Small find number	**Xray number**	**Notes**
240	H156	Fibula fragment with grooved decoration and iron pin remains through body. Clean to investigate further.
1205	H156	Copper alloy waste / slag?
2035	H157, H158	Nail shaft? Clean to investigate further.
2040	H157, H158	Fixing / fastening? Metal disc / washer with remains of a screw through hole in centre. Clean to investigate.
2042	H157, H158	Concreted iron, x-ray suggests something remaining within corrosion, straight lines / pattern – clean carefully to investigate further.
3005	H156	Copper alloy sheet fragment with 2 rectangular holes. Clean to investigate further.
3006	H157, H158	Knife blade? In two pieces with tip missing. Readhere and clean to investigate.
4236	H157, H158	Object? Clean to investigate.
4440	H156	Silver coin, worn.
4471	H156	Small loop, broken in two pieces. Readhere.
5517	H156	Brooch pin.
5571	H157, H158	Nail shaft?
6019	H157, H158	Nail shaft.
6021	H157, H158	Domed metal object, does not appear to be a nail head.
6024	H157,	Square nail head, shaft missing.

Small find number	Xray number	Notes
	H158	
6064	H154, H160	Iron tool? With chisel-style tip and a socket for a handle. Recommend cleaning to further investigate.
6067	H157, H158	Nail shaft?
6068	H156	Copper alloy waste? Appears very pitted / porous from x-ray.
6073	H157, H158	Object?
6074	H157, H158	Object?
6154	H156	Copper alloy waste / droplet?
6166	H157, H158	Small nail / tack with domed head. Clean to show shape.
6171	H157, H158	Nail shaft?
6186	H155	Cleaver with socket for handle. Recommend limited cleaning / x-sections for information.
6345	H156	Copper alloy fragment with iron rivet. Treat to stabilise.

Recommendations have been made for further investigation / cleaning to reveal features which will aid identification / clarification by a finds specialist.

Treatment Record: metal objects

Conservator: P. Parkes. Date: 21/5/10

Eight copper alloy, 16 iron, 1 leather and 1 silver object were received for investigative conservation as listed below.

Lab No	Find no	Context No	Material	Description
6101/01	240	90521	Cu alloy	Brooch fragment
6101/02	1205	22172	Cu alloy	Slag?
6101/03	3005	80015	Cu alloy	Thin plate
6101/04	4471	80013	Cu alloy	Small hoop
6101/05	5517	31153	Cu alloy	Brooch pin
6101/06	6068	80872	Cu alloy	Object
6101/07	6154	80849	Cu alloy	Droplet?
6101/08	6345	80013	Cu alloy	Rivet with small piece of sheet
6101/09	4440	31221	silver	Coin
6102/01	273	90613	iron	Possible shoe sole frg
6102/02	2035	80013	Iron	Nail?
6102/03	2040	80012	iron	Fitting?
6102/04	2042	80013	iron	Object
6102/05	3006	80015	Iron	2 pieces of blade
6102/06	4236	70309	Iron	Object
6102/07	5571	70443	Iron	Object
6102/08	6019	80844	Iron	Nail frag
6102/09	6021	80846	Iron	Object
6102/10	6024	80844	iron	Nail head
6103/01	6064	80901	Iron	Tool
6103/02	6067	80910	iron	Nail shaft?
6103/03	6073	80910	iron	Object
6103/04	6074	80910	Iron	Nail head and shaft
6103/05	6166	81042	Iron	Nail/tack
6103/06	6171	80849	Iron	Nail shaft
6103/07	6186	81258	Iron	Cleaver

The iron objects were cleaned mechanically using an air-abrasive machine with aluminium oxide powder to remove corrosion and reveal the dark grey/black magnetite layer. Other treatment is listed below.

Find No.	Lab No.	Treatment Record
240	6101/01	The object is part of a brooch, with grooved decoration and the remains of an iron pin. The object was cleaned using a scalpel to remove dirt and overlying corrosion, revealing the grooved decoration and a smooth patinated surface. After cleaning the object was degreased with swabs of industrial methylated spirits and had a coating of 10% incralac in toluene applied by brush.
1205	6101/02	The object was lightly cleaned mechanically to remove some of the overlying dirt, but appears to be a piece of copper alloy waste or slag so cleaning was halted.
3005	6101/03	The object was cleaned mechanically using a scalpel to reveal two complete rectangular holes punched through the sheet from one side, with the remains of a third hole visible on the broken edge.
4471	6101/04	The object was broken in two pieces when received, and was readhered using HMG paraloid B72. It was mechanically cleaned using a scalpel then degreased with swabs of industrial methylated spirits and had a coating of 10% incralac in toluene applied by brush.
5517	6101/05	The object was mechanically cleaned using a scalpel then degreased with swabs of industrial methylated spirits and had a coating of 10% incralac in toluene applied by brush.
6068	6101/06	The object was lightly cleaned mechanically to remove some of the overlying dirt, but appears to be a piece of copper alloy waste or slag so cleaning was halted.
6154	6101/07	The object was lightly cleaned mechanically to remove some of the overlying dirt, but appears to be a piece of copper alloy waste or slag so cleaning was halted.
6345	6101/08	The object was mechanically cleaned using a scalpel then degreased with swabs of industrial methylated spirits and had a coating of 10% incralac in toluene applied by brush. Cleaning revealed a folded fragment of a sheet of copper alloy with a small blob of iron corrosion on one side. It is unclear whether this corrosion is simply attached to the surface of the sheet or is a small pin/ rivet that passes through the sheet. There is no evidence of iron corrosion on the other side.
4440	6101/09	The coin has a powdery surface, with the x-ray showing little evidence of significant remains of decoration. The surface was stabilised by applying a coating of 10% incralac in toluene applied by brush. Attempts were made to remove some of the surface dirt, but the powdery nature of the surface made this difficult and given the evidence that little coherent surface remained, cleaning was stopped.
273	6102/01	The object is two pieces of leather with several copper alloy pins remaining in it. The leather appears to be the remains of 2 or 3 sheets / cuts of leather held together by the pins. The pieces had been packaged in a damp environment to maintain the leather structure. However, they are in a fragile condition, with the leather fragmenting and dirty. The leather also appeared to be hard and brittle, with cracks and breaks visible. Light cleaning was carried out by brushing the surface to remove loosely adhered dirt, then using cotton wool swabs dampened with water/ims and cocktail sticks. The leather was consolidated using a 10% solution of Lascaux 498HV (methyl methacrylate / butyl acrylate with acrylic butyl ester) in water applied by brush and allowed to slowly air dry. The two pieces were then readhered using HMG

Find No.	Lab No.	Treatment Record
		Paraloid B72.
2040	6102/03	Cleaning revealed the screw threads on the shaft passing through the washer.
2042	6102/04	Cleaning revealed small fragments of iron sheet within a soil / organic? Matrix. There was no definite shape to the object and it appears to be a concretion of metal fragments.
3006	6102/05	The two pieces were readhered with araldite 5 minute epoxy resin. The knife was cleaned to reveal the blade and the organic remains of the handle.
4236	6102/06	Cleaning revealed no definite shape, the object has corroded into a hollow 'blister'.
6064	6103/01	The object is a chisel with a socket for a wooden grip, the remains of the original wooden grip can be seen in the socket. The unusual formation on side of the socket appears to be a corrosion bubble / blister.
6067	6103/02	The rectangular cross section suggests that this may be the tang of a small knife / tool rather than a nail shaft?
6186	6103/07	The object was cleaned to reveal a cleaver with a socket for a wooden handle.

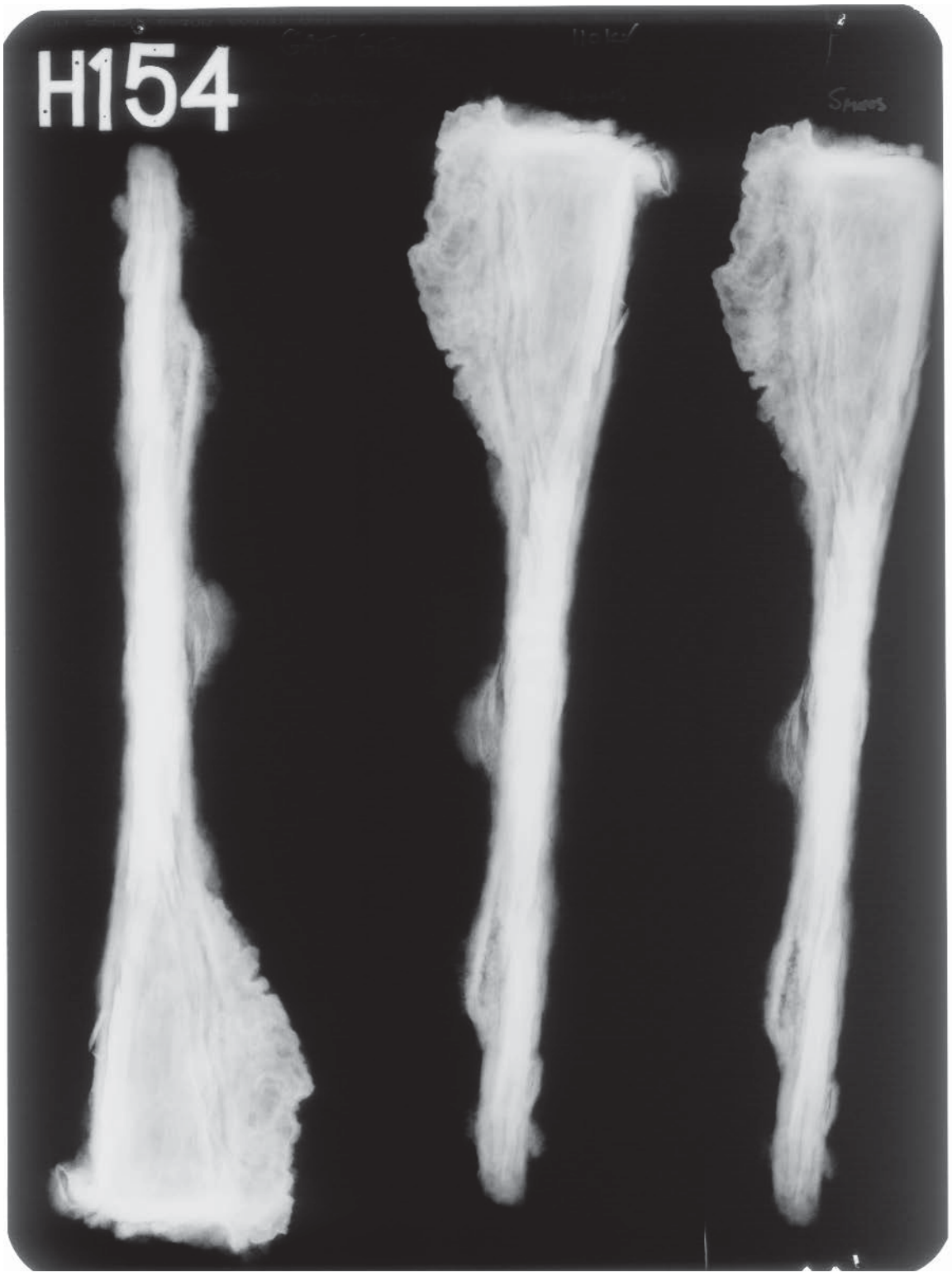
Treatment Record: Early Bronze Age pots

Conservator: P. Parkes. Date: 12/11/18

One complete (sf2038) and one largely complete (sf4102) vessel were cleaned and consolidated and sherds of sf4102 were adhered. Both vessels were cleaned with cotton wool s/deionised water (50/50) and the sherd edges consolidated with 5% w/v Butvar B98 (polyvinyl butyral) in IMS. The sherds of sf4102 were adhered with 40% w/v Paraloid B72 in acetone. The base of sf4102 was lined with aluminium foil, cast in dental plaster support, allowed to dry and removed. This was consolidated with Paraloid B72 in acetone, attached with Primal WS 3978 to the base and inpainted with Windsor And Newton acrylic paints.

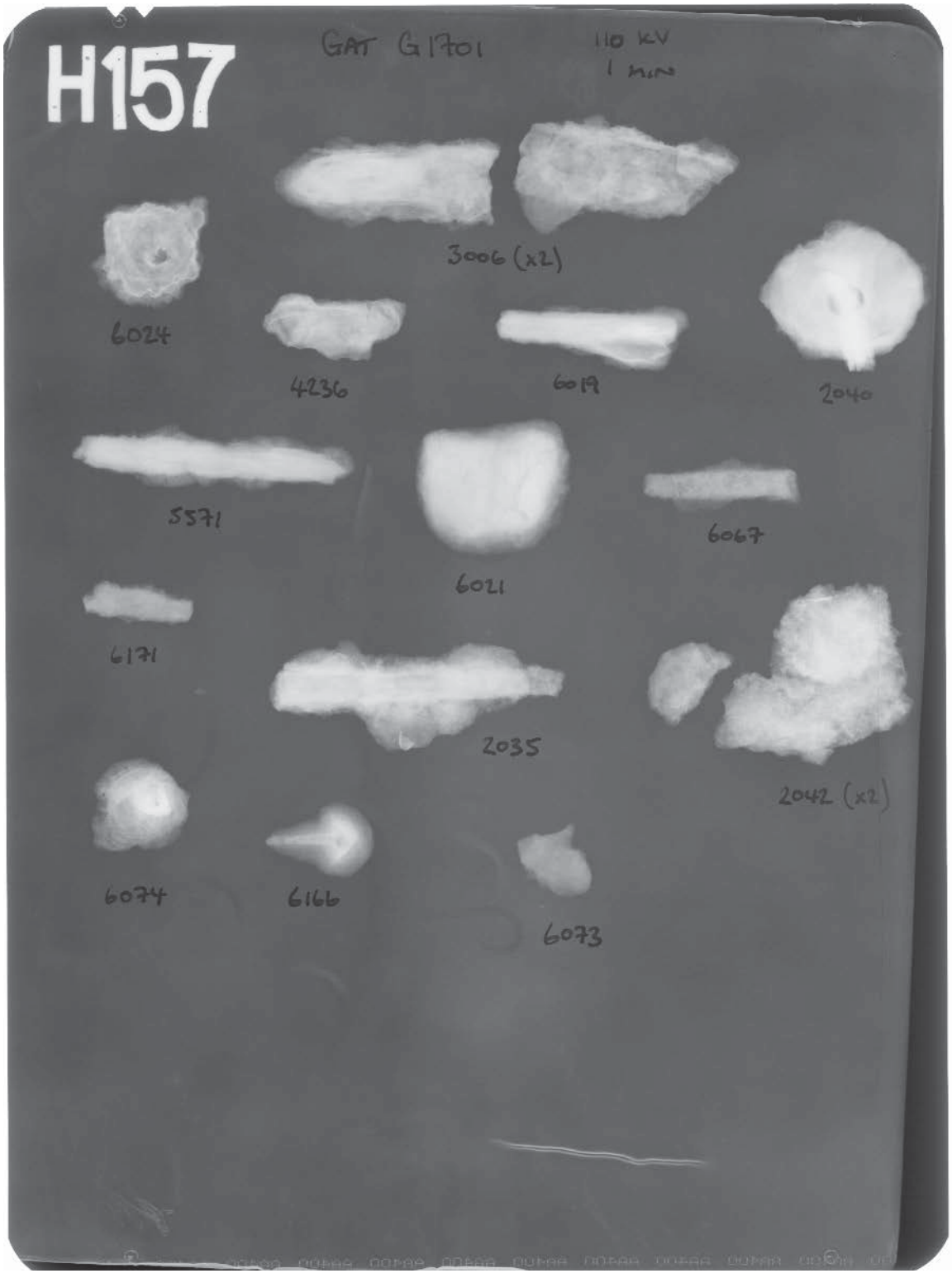
Post treatment photographs of sf2038 (above) and sf4102 (below)

Appendix I: x-rays



H155

H156
6154
3005
6154
3005
6154
3005


H157
GAT G1701
110 kV
1 min
3006 (x2)
6024
4236
6019
2040
5571
6021
6067
6171
2035
2042 (x2)
6074
6166
6073

H158
2040
2042 (x2)
110 kV
3 mA
2040

H160

Part XII: archaeometallurgical residues

Part XII.1. Evaluation of archaeometallurgical residues from Parc Cybi, Holyhead

Dr Tim Young & Thérèse Kearns (GeoArch Report 2010/21)

Summary

The submitted samples include a variety of archaeometallurgical materials, including approximately 3.6kg of identifiable smithing hearth cakes (SHCs), 1.5 kg of iron slag probably from smithing, 4.9kg of hammerscale and other smithing microresidues and 0.6kg of vitrified hearth lining. Materials that were probably not of metallurgical origin included16.8kg of fired clay and much of the 0.8kg of 'fuel ash slag' (FAS).

The macroscopic smithing slags and the hammerscale together provide evidence for iron working (blacksmithing) in three distinct locations: in Area E associated with a pit and circular gully, in Area K7 associated with a stone-lined feature, some pits and with residues in the adjacent grave fills and in an area of B2 in which residues occur dispersed in various post-medieval features. The smithing in areas E and K7 was charcoal-fuelled, whereas that in area B2 was mainly coal-fuelled. The occurrences in areas E and K are not dated, but the moderately large size of the SHCs would suggest a Roman or younger date. If the features identified in the field as hearths in areas E and K7 are confirmed, then a post-medieval age would be less likely, since a tradition of late floor-level hearths is not known in Britain (although is common in Ireland). In Area K7 the smith also worked with copper alloy objects. A small quantity of residue is associated with various "Iron Age" roundhouses (e.g. in Area B2), but is not indicative of any particular focus and re-evaluation of the contexts may be required to determine whether these occurrences are in-situ or possibly contamination.

The low density fuel ash slag resembles material produced in long-lived fires, particularly where the hearth is cut into a calcareous substrate. These slags are not indicative of metallurgical activity and the contexts in which such slags have been found on other sites include corn-drying ovens and long-lived domestic hearths (particularly of Iron Age date).

It is likely that there is no one single origin behind the large quantity of fired clay. The most common type of fired clay was a coarse, dense, silty clay, with abundant gravely temper and occasionally organic temper, which occurred in blocks often showing a single well finished, smooth, planar face. The opposing surface of the blocks appeared to grade into less well-fired material. This material seems likely to have been employed structurally, possibly as flooring and possibly often within hearths and kilns. This facies of fired clay occurred within many areas of Iron Age occupation.

One source of the fired clay debris will have been the repair and destruction of a variety of low temperature hearths, including domestic hearths, corn dryers and the 'furnace' in the Romano-British roundhouse [80527]. This hearth appeared to have been used at only a rather low temperature and was constructed in an unusual way, with a massive hearth-surround of granite boulders, lined with the clay. There was no evidence for this structure reaching the temperatures required for most metallurgical operations and it is tentatively suggested that it the base of a dyeing apparatus, with the boulders carrying the weight of the dye vat, either of lead, as is normal in Roman dyeing, or of stone like the small bowl found adjacent to the structure. Another source of fired clay debris is suggested by the large rounded fired clay artefact from Roundhouse E, which is tentatively suggested to have been a very large loom weight.

In summary the residues provide very slight evidence for iron smithing in the Iron Age(but for which no focus has been located), for a variety of low temperature processes in the Roman period, for two smithies of uncertain age(areas E and K7) and for smithing in the post-medieval period (Area B2), focused on a group of post-medieval features.

Methods

All materials were examined by visual inspection and with a low powered binocular microscope. Samples were individually weighed, described and recorded to a database. The summary catalogue is given in Part XII.2 appendix A.

As an evaluation, the materials were not subjected to any high-magnification optical inspection, nor to any form of instrumental analysis. The identifications of materials in this report are therefore necessarily limited and must be regarded as provisional.

Results

Description of Residues
Fired clay
Approximately 16.8kg of mainly lightly oxidised-fired clay was recovered from the site. The clay was present in a variety of shapes and sizes from small rounded pebbles to larger more angular chunks.

Although a variety of forms of fired clay were present, the majority of the material is a gravely fired clay, with a single, well-finished smooth surface. This type occurs widely in the area of the Iron Age roundhouses and also is associated with the Romano-British structures.

Most of this facies appears not to have been noticeably tempered with organic inclusions (although organic inclusions of various types were noted locally), nor does most of it show diagnostic surviving form, beyond larger pieces showing a single. None of this material has been fired to the point of vitrification (unlike the hearth lining described below).

Fragments of fired clay were recovered from all areas within the site in varying quantities, however a number of areas yielded particularly large amounts. In some cases the clay from those different areas shows different properties, suggesting different origins for the various assemblages:

Approximately 4.8kg were recovered from Iron Age contexts (mainly [92073] [92075] [91321] [91666] [92112]) within area B2 (the passageway). A further 0.5kg was retrieved from area B2-RHB, 1 kg from B2-RHC, 0.5kg from B2-RHD. 0.5kg from F1-Fe, 0.6kg from F1-FE and 0.8kg from area I. 1.8kg was also found in B2-RHE, where the principal occurrence was a broken block of fired clay with a form suggesting that it comprises about 70% of a discoidal body, with a diameter of 200mm and a maximum thickness of about 70mm, a regularly curved cross section with the two sides rather asymmetrically arranged, one reaching 15mm off the plane of maximum diameter and the other 55mm (all measurements made without reassembling the object, and dimensions may vary slightly when it is properly reassembled). The surviving section of the object weighs 1.7kg.

Approximately 4.8kg of fired clay were recovered from the interior of a Romano-British structure [80527] in the south eastern section of area K9. Much of this material (1.9kg) came from a series of linings and fills [80840] [80866] [80869] of a possible furnace [80839] and a further significant quantity (1.7kg) came from the immediately surrounding areas [81166] [80843] [8910]. The material from the Romano-British contexts was in general perhaps slightly more dominated by coarse sand inclusions than for the Iron Age material.

Smithing Hearth Cakes (SHC)
SHCs were mainly identified from three areas of the site, with just small fragments found elsewhere:

1. Approximately 3.3kg of fragments of SHC were recovered from post-medieval contexts - area B2 ([90002] & [90036]) and area B2 Laneside ([90323], [90437] & [90501]). Of the 12 SHCs apparently represented by these fragments, at least 4 have flat tops, 3 at least have reddened tops, 3 contained good evidence for the use of coal fuel of which one showed both coal and charcoal and a further cake showed charcoal alone. These cakes are dense and mainly roughly sub-circular, although there is variation. The recorded weights (or estimated reconstructed weights) of 6 fairly complete SHCs are 175g, 300g, 350g, 595g, 600g and 600g.

2. in area E ([31384] and [31163]) 1.3kg (5 pieces) were associated with deposits with microresidues. One reasonably complete cake (750g) was estimated as roughly 90% of the original – giving an original weight of around 830g. This cake and a second partial cake contained charcoal.

3. area K7 yielded about 8 small SHC fragments totalling approximately 170g from deposits dominated by microresidues. These fragments provide little information on the morphology of the original SHCs.

Apart from these concentrations of material there were single small fragments from B1 [11021], B2-RHC ([91926], Area F1-E [92862] and Area F1 RHG 21g fragment [92633]. These fragments add little to the understanding of the SHC morphology.

Indeterminate iron slag
Approximately 2kg of material has been classified as indeterminate slag, meaning that the process(es) from which it is derived is not certainly identifiable. The majority of this was retrieved from post-medieval contexts and so is very likely to be derived from smithing and may include less diagnostic fragments of SHC and slag which formed within the hearth but outside the main SHC. It may potentially include slag from within the fuel bed, slag from around the blowhole and also lining slags generated from melted ceramic.

Smithing microresidues
The site yielded approximately 4.9kg of smithing microresidues, predominately flake hammerscale, although a moderate quantity of spheroidal hammerscale was also present. Also within these microresidue assemblages are large quantities of slag flats (this slag films from the surface of the workpiece that are distinctly thicker than flake hammerscale), slag blisters (as flats, but with a blister-like morphology) and slag spheroids (larger than spheroidal hammerscale and probably mainly slag droplets from within the fuel bed).

The majority of the micro-residues were recovered from within the site of the small early medieval cemetery in area K7. Approximately 550g was recovered from the fills of a series of grave cuts [80020, 80043, 80050, 80052, 80063, 80078, 80091 and 80094] within the cemetery. A further 3.3kg were recovered from the fill [80013] of a partially stone lined feature [80044], with much of this showing secondary cementation into the concretionary material known as "smithing floor". Such concretionary material is commonly associated with smithy floors (hence the name) where it builds-up around the anvil. It is not however restricted to such an origin, but may form wherever accumulations of smithing debris contain decomposing fragments of iron.

Two further pits or hollows within the cemetery (Pit c80055, fill c80054; pit c80104, fill c80103) produced 0.186kg and 0.537kg of microresidues respectively; feature 80104 was adjacent to feature 80044.

The fill [31153] of a pit [31152] in area E, supposedly of post-medieval age, yielded approximately 650g of hammerscale. This assemblage was again dominated by flake hammerscale and included many pieces cemented into "smithing floor".

A small assemblage of flake hammerscale and blisters, with a little spheroidal hammerscale and amorphous particles was recovered from post-medieval ditch fill [90036] in area B2.

'Fuel Ash Slags' (FAS)
Approximately 650g of 'FAS' were recovered from two contexts (92622 & 92624) in area F1 RHG. The majority ([92622] 550g) of these were composed of large chunks of highly vesicular, pale grey to pale green material which was brittle and sharp to touch at broken edges. The remainder ([92624] c.100g) was in the form of smaller lumps which were more rounded in appearance and slightly more friable.

Smithing Hearth Lining
Some of the fired clay was much more highly fired than the bulk and had a vitrified, sometimes slagged surface. This material can be identified as vitrified hearth lining –and indeed more specifically almost all the fragments come from the lining immediately adjacent to the blowhole. The impingement of the hotzone of the hearth on the wall around the blowhole results in maximum damage to the hearth wall occurring here, resulting in the need for frequent repair.

One piece (find #2, from within the ploughsoil (90002) over roundhouse B in area B2) showed the blowhole to be at least partially surrounded by a "boss" of clay applied to the surface of the hearth wall. This fragment, like several others, showed an abundant organic temper, in contrast to the organic-poor nature of the Iron Age fired clay materials.

Copper alloy residues
The evidence for the working of copper alloy is in the form of three pieces of copper alloy contained with the "smithing floor" concretions from fill [80013] of pit [80044], area K7. One of the copper alloy pieces (missing – just present as a mould in the concretionary material) was a small curved piece of strip, 18x9mm. The other two were tightly folded pieces of tiny copper-alloy strip. One was badly broken and the other incomplete – but possibly a bifurcated rivet.

The only other possible copper-alloy residue was a small droplet of brownish glassy slag from area K7, deposit [80334]. This deposit was a charcoal-rich layer within structure 80248, one of the probable clay-walled roundhouses.

Coal residues
Small scraps of coal were found in many contexts, mainly but not entirely of post medieval age. Earlier contexts containing coal may need to be checked, although all coal particles were very small and therefore easily capable of being moved by worm action.

Residues from coal burning include the cindery, porous material left after incomplete combustion, classified here as coke. Organic materials other than coal that have been partially burned may also produce very similar material and some occurrences of coke in pre-Roman horizons may be other burnt organic materials.

The inorganic coal residues that have been heated to melting are termed clinker. These may be produced by non-metallurgical processes (such as in the fireboxes of the boilers of agricultural steam engines) and may therefore be widespread in modern soils. However they also grade through into the residues formed in coal-fuelled smithing hearths. Clinker particles are often grey to black glassy slags, with inclusions of vitrified sandstone and shale, often bleached white, with the dark slag typically having a maroon surface colour.

Miscellaneous materials
Approximately 235g of an obsidian-like material was recovered from area H (sf1008 from 02070, 47g and sf1017 fromc2093, 63g). These pieces were found within the area of the Early Neolithic building but were from ploughsoil and the old ground surface not from features. In K1125g of similar material came from a probably medieval corn drying kiln [21052] and 0.2g from a posthole [18172], one of a pair. Some of this was seen as an even-texture black glass, but two specimens show evidence for a flow lobed upper surface and several show relict clasts, possibly of quartzite.

Despite the superficial similarity of this black glass with obsidian, the texture of the clast-bearing material is unlike natural obsidian (and the presence of obsidian would be extremely unusual on British sites as there are no known obsidian deposits in the southern UK). This material is therefore interpreted as a slag, but its precise nature is currently uncertain. One possibility to be investigated is that these may be slags generated during lime-burning- this might even imply that the medieval “kiln” could have been for lime-burning rather than corn drying. An alternative interpretation might be that these are post-medieval or modern industrial materials and therefore evidence for contamination of their contexts.

The two pieces from area H were from within the area of the Neolithic building, but a Neolithic date is incompatible with the various possible interpretations of this unusual material.

Pottery was identified in two contexts: 80900, R-B pottery in oxidised fabric with the junction of a strap handle onto the body of a pot, and 19100, reduced fired prehistoric pottery. These will be studied by the relevant pottery specialist.

Distribution of residues
In **Area B1** possible prehistoric contexts 8046, 14028 and 14038 yielded very small amounts of coke, with 14038 also yielding a small collection of fresh coal. Contexts of unknown age 4001, 5054, and 7054 also yielded coke. Context 1044 produced a small fragment of probable clinker as did 13014. As all these pieces were small they could be contamination and of no use for dating the features. However, contexts 8046 and 1044 were from pits with charcoal rich fills within pit group 25046, 13014 and 5054 were from features close to this group of pits and 14028 and 14038 were fills of a gully running from adjacent to this group. Context 11021 produced a probable part of a smithing hearth cake. This context was a fill of one of the pits in group 25046 and may indicate smithing in this area suggesting an Iron Age date at the earliest for the pit group.

In **Area B**2 a series of pit fills of post-medieval date produced small quantities of slag and coke, with a large collection of both micro- and macro- smithing resides coming from ditch fill 90036, and tiny quantities of coal residue and hammerscale from pit fills (91691, 91657). The plough-soil in this area produced further examples of smithing slags, with evidence for both coal and charcoal as fuel.

B2-Laneside produced further SHC material from post-medieval contexts, with an assemblage of smithing slags from a feature forming part of the probably Roman period hearth c90437.

B2-PW produced a large quantity of oxidised fired clay from Iron Age contexts.

RHA produced no significant residues (beyond a couple of spheroids and some possible fuel ash slag) apart from fired clay, including 1 piece of vitrified hearth lining (probably from a smithing hearth) from c90479 (possible demolition debris from the roundhouse).

RHB produced no significant residues apart from fired clay.

RHC likewise produced only one significant piece of hearth lining and one piece of iron slag besides a moderate quantity of fired clay.

RHD also yielded just traces of iron-working with some vitrified hearth lining and a very small number of microresidues, but again a moderate quantity of fired clay.

RHE yielded no certain metallurgical residues, but did contain a significant quantity of fired clay which may have been a loom weight.

Area B3 yielded only a few slag spheroids from c3027 and c22156.

Area D3 yielded no significant residues

Area E yielded some ashy material from Neolithic contexts.

Post-medieval pit fill c31153 (1000g), gully c31163 (1152g) , ditch c31384 (134g), pit fill c31172 (212g) and undated pit fill c30083 (43g) produced large quantities of smithing residues. The material from the gully c31163 included a moderately large SHC with an original weight of between 800 and 900g. Pit c31152 is likely to have been a smithing hearth or a closely associated pit. None of this supposed post-medieval material contained coal or coal residues.

Area F1 – structure G yielded a quantity of fuel ash slags, some in large blocks, from contexts c92612, c92622 and 92624. These are all related to the 6 post granary structure (93004). The overlying stone layer (c92633) yielded a small scrap of iron slag.

Area F (other features) – No other residues came from area F1 with the exception of a single tiny slag fragment from a prehistoric context (c92862).

Area H. Pit c50400 yielded a small amount of residue from coal burning. Various Neolithic features in the same area produced burnt organic matter. More problematic is the occurrence of lumps of a black glass in c2070 and c2093 which are surely intrusive here.

Area I yielded no metallurgical residues, but a moderate quantity of fired clay.

Area Ia yielded some metallurgical microresidues from c21224 (undated pit), c21216 (2 fragments in Late Neolithic pit – probably intrusive).

Area J1/2 yielded some possibly slag and coal in a probable Neolithic pit fill c70182.)

Area J3 yielded no significant residues.

Area K1 produced more of the black glass seen in area H, within the medieval(?) corn drying kiln [21052] (125g) and posthole [18172] (0,2g).

Area K7 produced significant evidence for iron working:

Grave [80043]: tiny amount of flake hammerscale.
Grave [80050]: tiny amount of slag and spheroids
Grave [80052]: tiny amount of slag and spheroids
Grave [80063]: 330g of spheroid rich residues
Grave [80078]: 346g of residues, mainly spheroid rich

Grave [80083]: possible clinker fragment
Grave [80091]: tiny quantity of spheroids
Grave [80094]: tiny amount of flake and spheroidal hammerscale
Grave [80020]: spheroids plus some flake in small amounts

Associated pits contained more material, and may include the primary metallurgical features:
Pit [80044] fill [80013]: 3.45 kg mainly microresidues
Pit [80055] fill [80054]: 0.186kg of microresidues and other debris.
Pit [80104] fill [80103]: 0.537kg of microresidues with abundant spheroids

In the same area
Pit c80056 fill 80058 nub of fuel ash slag in corn dryer
Pit c80116 fill 80115 yielded coal burning residues and slag

A piece of SHC was found in 80266 (possible RH wall). A tiny piece of smithing concretion was recovered from posthole 80200 fill 80201.

Area K9A produced no significant residues

Area K9B produced mainly a large quantity of fired clay, 4 occurrences of coke (but all very small) and one tiny piece of indeterminate slag (c81172)

Area L3 produced a single piece of vitrified hearth wall (c22172) and a single spheroid (c22181). Both contexts are provisionally identified as prehistoric, but this feature is close to the pit group 25046, and they might all be Iron Age or later if smithing was being carried out here.

Area M3 produced no residues.

Area M4 produced coke from several post-medieval contexts and tiny smithing microresidue assemblages from c40001 (undated pit), 40022 (BA ditch), undated pit fill c40118,

Interpretation

The above data show several concentrations of different materials in different areas, but also a low background level of occurrence of archaeometallurgical residues across the site. Such low level occurrences are hard to interpret. Finds of hammerscale in Bronze Age features (e.g., the single spheroid from [40022]) can be reasonably certainly be due to contamination. In particular spheroidal hammerscale is often of just the preferred diameter to be selected by earthworms for lining their aestivation burrows, carrying the particles down from their original stratigraphic occurrence. The spreading of ash on fields may also ensure a wide geographic spread of micro-residues from the original source.

The pyrotechnological residues from Parc Cybi can be resolved into three groups: (1) oxidised fired clay, (2) low density fuel ash slag and (3) smithing residues (macroscopic and microscopic):

Fired clay - As described above, the oxidised fired clays (excluding the certain hearth lining) do not include vitrified material (indicating that the firing temperature was well below that encountered in most metallurgical structures) and do not occur together with any other class of metallurgical residue. This argues strongly against an association of these fired clays with metallurgy.

There are a number of possible origins for the fired clay. Small quantities are clearly the result of *in-situ* burning in hearths (operating at lower temperatures than metallurgical hearths) and the material from the Romano-British round house [80527] in area K9B has a clear association with the 'furnace' [80839] and associated hearth, in part forming a lining to the granite boulders which provide the framework for the "furnace" and with loose material possibly being either the remains of a superstructure, or debris resulting from relining of the structure. The same area also has evidence for other clay-built structures, including corn dryers.

Rather similar material from the Iron Age contexts may also represent the remains hearth or 'furnace' lining and superstructure. The lack of a 'reverse' to this material, perhaps suggests that this clay was applied to produce

floors of some kinds too. At least some of the Iron Age fired clay shows carbonaceous residues on the planar surface – perhaps indicating that the floor of hearths was the most usual use of this clay.

Several mentions are made in the stratigraphic summary of clay floors. Such floors might become fired to the grade exhibited by this assemblage when fires occurred upon them – either deliberately or accidentally.

Another possibility is daub, however very few of the fragments (from any context) bear the impressions of wattle to which it would have been attached, and very few contain evidence of significant use of organic temper which is common in daub. Daub is not therefore considered to be a major contributor to the assemblage.

The material from RHE includes what appears to be part of dense fired clay body of discoidal shape, perhaps 200mm in diameter and 70mm thick. Although this might be part of a 'pad' to support a hearth, an alternative explanation is that this object is an artefact – for which the most likely interpretation would be a large loom weight (although large discoidal loom weights are more commonly associated with the Middle Saxon period than the Iron Age).

Discussion of the origin of the fired clays requires discussion of the purpose of the unusual Romano-British 'furnace' in area K9B. The fired clay lining to the so-called 'furnace' [80839] forms a lining to the supporting framework provided by a series of granite boulders. The remaining *in-situ* clay is mainly oxidised fired on the sides, but is barely, if at all, fired and white on the base of the structure. The firing temperature was fairly low, so the term 'furnace' is itself probably misleading and inappropriate. The narrow upright form of the structure is unlike any normal domestic hearth, and the presence of the boulders suggests that they were intended to be load-bearing. The structure might have served some purpose such as support for a water vat. Various possibilities exist in which such a heater might be required, but the most similar structures seem to have been employed for the heating of a dye vat – the weight of such a vat could be carried by the boulders and the temperature of the fire in a reconstruction of a Roman dyeing apparatus was only around 600°C (Hopkins 2007, 2008, 2010; Hopkins *et al*. 2005). The associated stone bowl would also potentially fit into a reconstruction of this fire as part of a dyeing apparatus, although it is probably too small to have been the vat itself, this is not impossible.

The second class of residues, the **low density fuel ash slags**, are not attributable to any particular process with certainty. They are formed through the fluxing actions of the alkali elements, usually derived from the fuel (wood) ash, but also possibly from a calcareous substrate into which a hearth has been cut, allowing the partial melting of the hearth substrate, or of soil material introduced with the fuel. Some of the fuel ash slags recorded in this project (e.g. in Area K7) are associated with smithing hearths, but some recently-described examples of such slags have been associated with corn drying kilns (Young 2005, 2010a), and similar materials have been described as 'Iron Age grey slag' and were possibly generated in continuously-burning cooking hearths.

Materials such as these are commonly (although probably frequently erroneously) described as being fuel ash slag which is one in which the slag is dominated by material derived from the inorganic component of the fuel.

The interpretation of FAS within archaeological sites has long been problematic. Chemical analysis of similar material from other sites has suggested that the dominant elemental input may actually be from material closely related to the local substrate. Analyses indicate that a high content of alkali elements such as potassium and calcium have acted as a flux to permit melting, fusion and sometimes flow of the precursor material at relatively low temperatures (possibly well below 1000°C). These elements may be contributed by wood ash, but are also locally major components of soils.

The intensely vesicular nature of the material is suggestive of significant gas release from the precursor material, rather than just the inclusions of burning fuel particles. The volatiles most likely to be involved are water (from a wet precursor or more likely from structural water within the minerals) and carbon dioxide (from breakdown of carbonate minerals such as calcite).

Some recent work into similar material has shown that it may be derived from processes such as corn drying (Young 2010), however the FAS from Parc Cybi has no clear association with a corn dryer although the remains of corn drying structures are present on the site.

Similar materials may also be generated during cooking in pits, particularly in situations where the fire is maintained for long periods of time (such as may be the case particularly in some mid- to late- Iron Age settlements).

There is no structural evidence to provide additional support for either of these interpretations here, and the origins of the FAS therefore remain uncertain, although it is extremely unlikely to be of metallurgical origin.

The third group of residues are from true metallurgical activities and include both the **macro- and micro-residues from iron working** (blacksmithing). The evidence from within the Iron Age roundhouses hints at smithing in this period, but the amount of material involved is very small, so contamination might be an issue and review of the context of these finds would be desirable.

Smithing is well attested in area K7, with most residues being recovered from pits, but some also from the adjacent grave fills. Various scenarios of relative dating could be considered here, so review of the grave fills yielding significant residue would be desirable (to ascertain whether contamination is possible – e.g. by sagging), as, of course, is direct radiometric dating of the smithing residues. Review of the pits is also important, in order to determine whether they were smithing hearths, or merely depositories of waste from the smithy. The occurrence of such large amounts of hammerscale in the grave-like pit, and the associated 'smithing floor' concretion would be unlikely within a hearth.

The occurrence of copper-alloy waste in the "smithing floor" concretions is important, and relatively unusual. The occurrence of tiny scraps of folded copper-alloy strip is suggestive of the bifurcated rivets commonly used in the construction and repair of sheet metal vessels. The occurrence of deposits like this (predominantly smithing remains, with evidence for some use of copper alloy, including as rivets) is recorded elsewhere, with that at the 15th-17th century site at Ballykillaboy, Co. Kilkenny, Ireland, being of particularly similar character (Young 2010b). The use of bifurcated rivets has a long history from the early medieval to post-medieval periods.

The second smithy of the site is in area E, where a pit contains abundant microresidues and macroscopic slags also occur in related features. The occurrence of the slags in "circular gullies" is suggestive of an early medieval or earlier age for this activity, rather than the post-medieval date proposed. Direct dating of the hearth deposits is clearly desirable. The provisional description of the contexts implies that fill [31153] is within a hearth. If this is confirmed, it would also suggest an earlier date, since floor level hearths are not generally found in British smithies after the Middle Ages (although they do persist in Ireland: Young *in prep*.; Stevens forthcoming.).

Post-medieval smithing is more positively suggested by finds of macro- and micro- residues in area B2. Unlike the smithing in areas K7 and E, this activity appears to have mainly employed coal as fuel.

The utility of the comparison of the size of the SHCs from Parc Cybi with those from other sites is limited by the very small size of the present assemblage. The size of the probable post-medieval SHCs from Area B2 (175g, 300g, 350g, 595g, 600g and 600g) is compatible with what little is known of SHC assemblages from late medieval and post-medieval blacksmithing undertaken in a hearth with a ceramic tuyère (as evidenced here). The closest comparisons of assemblages are those from sites such as Moyveela, Ballykillaboy, Garryleagh and Mucklagh in Ireland (see Table 2); there are no British assemblages which have been described in a comparable manner. After the introduction of iron tuyères (18th – 19th centuries) the slagging processes in the hearth were changed and smithing residues are generally unconsolidated masses of clinkery slag.

The single SHC from the undated smithing activity in area E (830g) is larger. It is larger than SHCs recorded from Iron Age sites, even those from bloomsmithing (300-400g is reported from Crawcwellt by Crew, 1998, for bloomsmithing slags). It lies (Table 2) at the very maximum end of the size spectrum for Roman sites such as Carmarthen and Marsh Leys Farm and also for medieval smithies at Cricklade and Worcester (Mill Street/Willow Street), but lies well within the range of late medieval (13th century and later) sites in Worcester and Burton Dassett . The evidence from Ireland is somewhat different, with earlier medieval sites producing large SHCs (e.g. Coolamurry, Navan and Moneygall; Table 2) even on blacksmithing sites, probably because raw iron was circulating in the form of incompletely refined blooms. Since nothing is known about the nature of iron distribution in Anglesey, therefore, although the English evidence would suggest that a late medieval or younger age is likely for the Area E SHC, the evidence from Ireland would suggest a wider age range is possible. The occurrence of the smithing in Area E in association with circular gullies may be an indication of a much earlier age for these deposits than currently envisaged.

Evaluation of potential

The various types of fired clay and the fuel ash slags probably have little potential for the generation of useful information through further analysis.

Light might be shed on the purpose of the 'furnace' in Area K9B through investigation of the chemical composition of drain residues in the area, but if the suggestion of a dye works is correct, then archaeobotanical investigations would probably be more likely to produce useful results.

The smithing residues do have potential for further analysis to help illuminate the changes to smithing over a considerable time period. Such interesting information is partly dependent on the dating of the various areas of smithing activity, and on a reassessment of the security of the stratification of the residues from Iron Age contexts. At best the data from Parc Cybi might allow snapshots of approaches to smithing from the Iron Age through to the post medieval period, which would be a very useful contribution to the understanding of regional practice.

The work that could be done on the residues is to some extent limited by the paucity of the macroscopic slag assemblages, compared with the rich assemblages of microresidues, particularly in Areas E and K7. Understanding of microresidue assemblages is improving markedly at present, and the investigation of these assemblages would be useful addition to that process.

Detailed definition of a programme of work involving the analysis of the smithing residues should however ideally follow the determination of the age of the various occurrences and also a thorough reappraisal of the site records to identify the possible nature of the archaeometallurgical features (hearths, postholes, gullies, waste pits...) in Areas E and K7. Investigation of excavation records to help determine whether the residues from the grave fills in Area K7 represent likely contamination from younger deposits or residual material from an earlier smithing phase is also very important.

A likely scheme of work would involve chemical and microstructural comparison of both macro- and micro-smithing residues from the distinct phases of smithing activity.

An additional area in which further laboratory analysis would aid understanding of the site would be in the identification of the black glass residues from areas H and K1, which may be a modern industrial contaminant.

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Table XII.1.1: Residue classes measured in grammes by area of excavation.

area	coal & coal residues	smithing slags: indet. and charcoal	smithing slags: coal	smithing microresidues	hearth lining	glassy slags	FAS	gravely fired clay	other fired clay	total smithing residues	total residue
B1	89	64		13					22	77	188
B2	134	2083	625	5	50	12	5	4	69	2763	2986
B2 E Area	9							7	1	0	17
B2 LS		392	475					47	93	867	1007
B2 PW	10							4791		0	4801
B2 RHA					39			358	19	39	416
B2-RHA/E									2	0	2
B2 RHB						1		525	304	0	830
B2 RHC		99			37		22	950	21	136	1129
B2 RHD					3			549		3	552
B2 RHE		80			6		5	1790		86	1881
B3				2						2	2
D3	1									0	1
E	1	1549		825	337	18	1		7	2711	2737
F1 FE		11						548		11	559
F1 FW								593		0	593
F1 RHG		57					656	29		57	742
F1 RHH										0	0
H	1					110		134	59	0	304
I								844		0	844
Ia										0	0
J	4						1		46	0	50
J3									5	0	5
K							1			0	1
K1						125			5	0	130
K7	1	711		4038	66	7	131		72	4815	5025
K9	1				2					2	3
K9B	24								4760	0	4783
L3	1				16				143	16	160
M3										0	0
M4	10			5						5	15
total	282	5046	1100	4889	556	273	820	11168	5628	11590	29761

Table XII.1.2: comparative occurrences of similarly-sized SHCs

	Ireland						
	Moyveela P-med.	Ballykillaboy C16-17	Garryleagh 13th-14th	Mucklagh 18th–19th	Coolamurry 10th-12th	Navan E. Med.	Moneygall E.Med- Med.
count	15	113	25	66	41	17	22
min	44	50	84	98		60	114
max	388	478	802	1206	2588	2990	1800
average	134	139	331	373	386	507	527
<500	100%	100%	76%	77%	83%	82%	55%
<1000	100%	100%	100%	95%	95%	88%	95%
>1000	0%	0%	0%	5%	5%	12%	5%
Modal class	0-100	100-200	100-200	100-200	100-200	100-200	200-300
	Young 2009a	Young 2010b	Young 2009c	Young 2008c	Young 2008a	Young 2007a	Young 2008d

	Britain							
	Marsh Leys Farm Roman	Carmarthen Roman	Worcester 35 Mill Street 12th C	Worcester Willow Street 12th C	Prior Park Cricklade 11th-15th C	Worcester Deansway 11th – 13th C	Worcester Deansway 13th-15th C	Burton Dassett 14th- 15th C
count	30	136	23	28	17	61	32	60
min		100	74	86	156	168	144	130
max	824	820	782	770	794	1490	1800	1670
average	333	227	233	327	329	492	499	550
<500	77%	94%	91%	82%	82%			
<1000	100%	100%	100%	100%	100%			
>1000	0%	0%	0%	0%	0%			
>3000	0%	0%	0%	0%	0%			
Modal class	100-200	100-200	100-200	(100-300)				
	Young 2005a	Crew2003	Young 2007a	Young 2009a	Young 2008b	McDonnell & Swiss 2004	McDonnell & Swiss 2004	McDonnell 1992

Part XII.2. Archaeometallurgical residues from Parc Cybi, Holyhead

Dr T. P. Young (GeoArch Report 2018/26)

Abstract

The Parc Cybi excavations yielded blacksmithing residues with ages stretching from prehistoric to post-medieval. Detailed investigations were made of the three richest assemblages, from three separate locations: area K7 (of late Roman age), area E (probably late medieval) and area B2 (post-medieval).

The assemblages were poor in macroscopic slag residues, therefore the investigation employed innovative approaches for the examination of microresidues (hammerscale). The analytical programme addressed the possibility of detecting differences in the smithing technology or application from the microresidues, to determine whether the character or purpose of the rural blacksmithing had changed over time.

The analysis demonstrates the importance of the hearth lining in controlling both the composition of the smithing slag and, more surprisingly, the evolution of the hammerscale. For the coal-fuelled smithing in area B2, the fuel ash was also an important control on slag composition. The variable use of a quartz-rich smithing flux was also suggested by the bulk composition of the scale and was particularly clear in the evidence from area K7. The bulk analyses of particles from Area K7 also showed some contamination from the working of copper alloy (as also evidenced by the macro-residues and finds from the area).

The microanalyses also suggest that the phosphorus content of the scale was largely inherited from the iron from which it formed, although the precise relationship between the concentration of phosphorus in the scale and that in the precursor iron remains to be determined. The manganese in the scale was similarly probably also inherited from the iron. The scale from area K7 showed high levels of phosphorus and slightly elevated manganese; that from area E was similar, with very slightly lower average phosphorus, but with the manganese contents of a few particles of spheroidal hammerscale being particularly strongly elevated. These data suggest that the iron worked in these areas was mostly bloomery iron smelted from a bog iron ore. The levels of manganese and phosphorus were generally lowest for the samples from area B2 (although two examples of flake hammerscale showed high phosphorus). It is unclear whether this indicates the use of a different bloomery iron or an industrial wrought iron.

The smithing hearth cakes from areas E and B2 were relatively large indicating a considerable loss of iron to the hearth during the work-periods they represent. Such cakes will be generated during intense and prolonged activity, more usually encountered in continuously-working busy forges, than in smithies of low-status rural settlements.

In summary, the smiths of Area K7 were working in metals including both copper alloys and phosphoric bloomery iron. The ironworking was accomplished with the common use of silica-rich flux, possibly suggesting the use of carbon steels too. In Area E, the smithing was also of high phosphorus bloomery iron, but with either a higher manganese content, or perhaps larger slag inclusions, in at least some of the iron being worked. In both areas K7 and E, the smiths employed charcoal as fuel and worked in clay hearths. In contrast the ironworking in Area B2 apparently mostly, but not entirely employed a low-phosphorus, low-manganese iron, compatible with a low-Mn, low-P bloomery iron or with a post-medieval fined wrought iron, but not with a modern bulk steel.

In both areas E and B2 the large SHCs indicate intense activity, which would not be likely to indicate that the smithing was being undertaken on an occasional basis by local farmers. The sparse assemblages do not appear to be compatible with the existence of busy permanent smithies in those areas, nor is there any structural evidence for smithies. One possible explanation is that the smithing was undertaken by itinerant smiths. The location of the Roman smithing phase of Area K7 within a cemetery may also possibly suggest an occasional activity and itinerant workers.

Methods

Project rationale and history

The material described here derives from excavations at Parc Cybi, Holyhead, Ynys Môn, conducted by Ymddiriedolaeth Archaeolegol Gwynedd/Gwynedd Archaeological Trust (GAT project No. 1701). This project was commissioned by Jane Kenney.

The material was assessed and catalogued (the catalogue is reproduced in Appendix XII.2 as Table A1), following visual inspection. See part XII.1 for assessment report was produced in July 2010 (Young & Kearns 2010).

The assessment recommended that:
"The smithing residues do have potential for further analysis to help illuminate the changes to smithing over a considerable time period. Such interesting information is partly dependent on the dating of the various areas of smithing activity, and on a reassessment of the security of the stratification of the residues from Iron Age contexts. At best the data from Parc Cybi might allow snapshots of approaches to smithing from the Iron Age through to the post medieval period, which would be a very useful contribution to the understanding of regional practice. The work that could be one on the residues is to some extent limited by the paucity of the macroscopic slag assemblages, compared with the rich assemblages of microresidues, particularly in Areas E and K7. Understanding of microresidue assemblages is improving markedly at present, and the investigation of these assemblages would be useful addition to that process.
…
An additional area in which further laboratory analysis would aid understanding of the site would be in the identification of the black glass residues from areas H and K1, which may be a modern industrial contaminant".

The commissioned analytical programme addressed the recommendation primarily through the detailed investigation of suites of microresidues from each of areas K7, E and B2, supported by microstructural/ microanalytical studies on samples from two contrasting smithing hearth cakes. Innovative approaches to the study of the hammerscale were developed to obtain as much information about the smithing process and materials as possible. The dark glass was investigated through analytical investigation of a single specimen.

Analytical methods
The selected samples (Table XII.2.1) were slabbed on a diamond saw and subsamples used firstly for preparing a polished block for use on the SEM and secondly for crushing for preparation of a whole-sample chemical analysis.

Bulk chemical analysis was undertaken using two techniques. The major and minor elements (Si, Al, Fe, Mn, Mg, Ca, Na, K, Ti, P and S) were determined on a fused bead using wavelength-dispersive X-Ray-fluorescence (WD-XRF). Whole-specimen chemical analysis for thirty-six trace elements (Be, 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, Th, and U) were undertaken using a sample in solution by Inductively-coupled Plasma Mass Spectrometry (ICP-MS). Both XRF and ICP-MS analyses were commissioned from ChemoStrat Ltd (Welshpool, UK).

For XRF analysis, samples were ground using a tungsten carbide shatter mill, dried at 105 C overnight and then 0.5 g was mixed with 6.5g of 50:50 LiT/LiM flux and fused to produce a glass disk using a Claisse M4 Fluxy automatic fused disk maker. The samples were analysed using a Bruker S4 WDXRF using the default wavelengths for the elements identified. Calibration was via a selection of iron slag reference materials and geological reference materials.

With the present materials, the analytical totals are poor (typically too high). There is a particular relationship between the very high analytical totals and samples with high sulphur contents, but it is unclear whether this due to a problem with calibration of sulphur, or perhaps more likely that these samples contained particles of coke that have caused problems with the analytical technique. The results of the XRF analysis must be treated therefore, with a degree of caution and where areal EDS analyses are available for a sample, these are to be preferred as an estimate of elemental composition.

Samples for ICPMS analysis were drawn from a second aliquot of the powdered material to establish trace element using the alkali fusion method (Jarvis & Jarvis 1992a and 1992b; Pearce *et al*. 1999). Once prepared, the samples were then all subjected to ICP-MS analysis using a Thermo Scientific XSERIES 2. Data quality was strictly monitored in terms of precision and accuracy by five international rock standards of known concentration and varying compositions which are run after every 20 unknown samples. In addition, external monitoring of data quality is carried out four times a year via the GeoPt round robin proficiency testing program (http://www.geoanalyst.org/ overview.html).

For several samples (PGI1, PGI4 and PGI6) the analytical laboratory reported incomplete dissolution of the ICP-MS sample, which left "solids adhering to the base of the crucible". This appears to suggest that there was an issue with the dissolution technique for samples extremely rich in magnetite and/or wustite. These same three

samples, together with PGI2, show a marked negative terbium anomaly on the Upper Crust normalised REE diagrams and this is assumed to be a result of the same analytical problem. Other samples show a very slight Tb anomaly that may indicate the same problem, but a much lesser degree. Similar problems have been encountered with other laboratories previously when attempting to analyse similar material. It is probably prudent to regard all the trace element analyses of the very high-iron samples as 'suspect' and their results regarded as indicative only.

The results of the chemical analyses are presented in Tables XII.2.2, 3 and 4 of this report.

Polished blocks for investigation on the SEM were prepared in the Earth Science Department, The Open University. Electron microscopy was undertaken on the *Zeiss Sigma HD Field Emission Gun Analytical Scanning Electron Microscope (aSEM)* in the School of Earth and Ocean Sciences, Cardiff University. Images presented here include backscattered electron photomicrographs (BSEM) to illustrate microstructures and secondary electron images (SEI) for the recording of loci of microanalysis. Microanalysis was undertaken using the system's energy-dispersive x-ray analysis system (EDS) controlled by Aztec software. The assistance of Dr Duncan Muir is gratefully acknowledged.

The GeoArch site code used for the samples is PGI. Locations of EDS analyses are presented as combinations of sample, area and spectrum number (e.g. PGI1 area 2 #432), with individual electron images being referred to by number (e.g. EI 430). The microanalytical data and BSEM images of all areas are included in the project digital archive.

All EDS analyses were collected with all elements analysed (including oxygen, but not carbon; all samples were carbon-coated). Area analytical totals were frequently far from 100%, because the analytical system is designed to provide totals of 100% from spot analyses in the centre of the field. The area analyses required for this project are not standardised in the same way and will diverge from a total of 100% (either above or below, depending on the location of the area with respect to the centre of the field). In order to make the microanalytical results simply comparable across materials (and also sites), no attempt has been made to adjust for the oxidation state of elements with variable valency. The figures employed in the report have therefore been constructed with elements expressed as oxides in weight% calculated stoichiometrically and normalised, except for mineral structure calculations, where the measured oxygen has been used.

Analyses of olivine have been quoted using the following convention: the proportions of iron and magnesium have been used to first define the relative proportions of forsterite (Fo; Mg_2SiO_4) and fayalite (Fa; Fe_2SiO_4) in the form Fa_nFo_m, where n+m = 100. The proportions of calcium and manganese have then been taken to calculate percentage substitutions into the olivine. As an alternative approach, some of the late-stage olivine, which is essentially an iron-calcium olivine, has also been quoted in the form Fa_nK_m. where n+m = 100 and K is the kirschsteinite end member ($FeCaSiO_4$). The substitution of phosphorus for silicon was calculated as atoms per formula unit (APFU), based on four oxygens and where the formula unit ideally has a single silicon atom. Values of more than 0.03 APFU phosphorus are defined as phosphoran fayalite (Boesenberg & Hewins 2010); no analyses within the current project exceeded that figure. Throughout this report standard mineral terminology is applied to both natural and anthropogenic materials – although artificial phases are no longer strictly considered to be minerals.

Assessment of porosity within the spheroidal hammerscale particles was undertaken solely as a measure of pore space within the plane of the 2d-section seen under the SEM. The images were digitised to measure the area of all clearly-visible vesicles and an approximate area for the major shrinkage porosity down to a pore size of approximately 20µm. No attempt was made to correct a 3d porosity and pore space below 20 µm is not accounted for.

This project was commissioned by Jane Kenney of Ymddiriedolaeth Archaeolegol Gwynedd/Gwynedd Archaeological Trust. The analysis was undertaken in November/December 2018.

Archaeometallurgical background

Ironworking, at its simplest, entails heating iron, typically up to a yellow heat (approximately 1000C to 1300C) so that it becomes malleable, in order to fashion it. At the top of this temperature range and into white heat (over 1300C) iron may be forge welded to effect a strong and permanent join. The exploitation of these extremely valuable properties is complicated, however, by the rapid oxidisation of hot iron. Smiths control the heating of the iron to minimise oxidation (and hence iron-loss and damage to workpiece) but some is inevitable.

The oxide scale that forms on the surface of the iron during oxidation has been studied in detail, particularly because of its importance to the modern hot strip industry. In this context, the scale is typically known as millscale. The scale may become detached from the metal substrate spontaneously, from deformation or by cleaning. In other contexts, scale generated by the same mechanism may also be termed forge scale or hammerscale. The term flake hammerscale is usually employed in archaeology because most ancient scale that is encountered was generated during working processes involving hammering. Young (2012a) provided an overview of the literature on scale generation and its relevance to archaeological material. The scale generated on the surface of ancient ironwork may differ from that discussed in the modern literature because of key fundamental differences in the physical and chemical nature of early ferrous materials (carbon and phosphorus contents, presence of slag inclusions, lack of alloying elements common in modern mild steel) and modern materials (for the strip mills most commonly investigated these would be low carbon, low phosphorus, steels without slag inclusions). Indeed, it must be remembered that smiths in the past may have employed a diverse array of ferrous materials (bloomery iron of varying phosphorus contents, carbon steels of varying carbon content and alloys containing both carbon and phosphorus, all with varying proportions of slag inclusions of differing compositions)

As iron is heated its speed of oxidation increases. Even from relatively low temperatures (500C) the diffusion of oxygen into the iron surface develops a film of iron oxides known as scale. At higher temperature above 700C the scale develops rapidly, most characteristically resulting in a three-layered scale (from inner to outer formed of wustite, magnetite and haematite; typically in a thickness ratio of 95:4:1).

When the temperature is raised still further, then melting may start. This may occur in one of a number of situations, including reaching the solidus (the temperature at which a given composition at equilibrium starts to melt) within the FeO-SiO_2 system (approximately 1180C, but potentially lower depending upon the minor elements present), particularly pertinent when a quartz-rich flux is used, reaching the solidus of slag inclusions (at approximately the same temperature). In phosphorus-rich systems, a layer rich in iron (II) phosphate may form on the scale-iron interface at temperatures below 940C, but above that temperature a eutectic melt is generated, which penetrates the wustite grain boundaries and above 950C phosphorus pentoxide may be generated leading to cavity formation and scale buckling.

The further heating of the material is complicated by the presence of adjacent binary eutectic points in the Fe-C and Fe-P systems (4.26 wt% C at 1146C and 10.2% P at 1050C) and a ternary Fe-P-C eutectic (at 953C). These result in rapid lowering of liquidus (the temperature at which a given composition at equilibrium is fully molten) and solidus temperatures away from pure iron. As the melting of a ferrous alloy is approached, then oxidation will accelerate into rapid burning (with the emission of the familiar ‘sparklers’). Since this is to be avoided during ironworking, the temperature for welding remains at least 100C below the melting point – so, for instance, dropping from 1300-1400C for pure iron to 1000-1100C for a high-carbon steel.

The presence of oxide scale may inhibit the proper closing of a forge weld (also known as a fire weld). The scale may be expelled from the weld as it closes if the scale is molten, allowing the sides to close cleanly. For low carbon ferrous materials, the welding temperature may be sufficiently high that the dominantly wustite scale may be largely molten. The melting of the scale may be encouraged (i.e. the liquidus temperature lowered) by the presence of even small quantities of siliceous material. This effect is known as fluxing. Material may be deliberate added to promote this effect, with a quartz rich fine sand or silt commonly employed as a smithing flux. The use of a flux may become increasingly important as the carbon content of the iron increases (and hence the welding temperature lowers).

The molten material expelled from the weld will chill in flight (or sometimes on impact) to form spheroidal hammerscale. Contrary to some early work where spheroidal hammerscale was linked specifically to bloom compaction, it is closely linked to forge welding, thus forming in a narrower range of conditions than flake hammerscale. The two forms of hammerscale may also have a rather different distribution, with flake hammerscale falling from the workpiece mainly around the anvil, but also around the hearth, whereas the melt forming spheroidal hammerscale is expelled with force and the scale may be sprayed several metres from the anvil.

The flake and spheroidal hammerscale are the two dominant components of most assemblages of smithing microresidues, but other types of particle may also be encountered. Most of these other forms are generated within the hearth itself. They are mostly associated with the loss of oxidised iron from the workpiece within the hearth. Most of the iron lost is probably due to rapid loss of scale from the previous heating cycle when iron is reheated (following its cooling when being worked). Despite a smith’s best efforts to maintain the iron in a

reducing part of the hearth some iron will also be oxidised during heating. Further losses may occur from mechanical loss of loose edges, or from cracking of the iron, and rapid iron loss will occur if the iron is over-heated and starts to burn.

As with the scale, the movement of iron oxides away from the workpiece may be enhanced by fluxing effects. These may include the result of the application of smithing flux (the sand is typically sprinkled on to the workpiece within the hearth when it is at a low yellow heat, at which temperature the flux will stick to the iron), but other sources of siliceous material will also have the same effect. These other materials may include ceramic from the hearth (or tuyère if used) and, for coal-fuelled hearths particularly, the fuel ash. The fluxing process works the other-way-round too – with iron oxide that comes into contact with the hearth lining encourage the lining to melt by lowering its liquidus temperature. These two routes ensure a supply of a mixture of iron oxide and melted hearth lining (with the fuel ash and dirt from coal fuels, if appropriate) into the hearth. These materials will commonly accumulate a small 'puddle' below the hot-zone of the hearth (i.e. just below the blowhole) where thy may further react and homogenise, cooling to form a slag mass known as smithing hearth cake (SHC).

The interpretation of smithing residues, both macro- and micro-scopic, entails the evaluation of their chemical composition, the physical form and the microstructure/mineralogy to attempt to understand the pathways described above, with the aim of interpreting the nature of the material(s) being worked and the process(es) of working. It must be remembered however, that although a single piece of spheroidal hammerscale will have been generated during a single hammer-blow and chilled in a fraction of a second, assemblages of something residues will be an aggregate of material formed over time, possibly from multiple processes and multiple types of materials.

Results

Distribution of residues

The distribution of the residues from across the Parc Cybi investigations was described in the assessment report (Young & Kearns 2010 (this volume part XI.1). Evidence for metalworking was recovered, mostly in very low density, from a wide range of locations and is attributable to a very wide range of ages.

In Area B1 a probable SHC fragment was recovered from context (11021) of possible prehistoric age.

Area B2 produced blacksmithing residues from a range of contexts including (90002), (90036) (the source of the material analysed in detail from B2), (90323), (90339), (90437), (90479), (90501), (91444). Most, if not all, of these contexts are currently interpreted as being of post medieval age.

The roundhouse settlement produced a few small scraps of residue from RH C (contexts (91516), (91603), (91926)). The post-excavation assessment report comments on the similarity of the structure to the 'snail-shaped' structure at Bryn y Castell (Crew 1987), but says there was no evidence for metalworking. It actually appears (despite the tiny quantities involved) that RH C was the only roundhouse that did produce any metallurgical residues – though not enough to justify interpretation as a smithy.

Area B2 produced some smithing residues, produced using coal as fuel, possibly associated with a hearth (90454) in structure F of probable Roman age.

Area B3 yielded only a few slag spheroids from c3027 and c22156.

Area E produced smithing hearth materials from context (30083), but it is unclear if this deposit was itself a hearth. This feature is currently ascribed a Roman age.

Area E fill (31384) of ditch [31385] (post medieval?) produced smithing slag.

Elsewhere in area E smithing residues were recovered from a pit (possibly hearth) [31152] together with two successive ring ditches to its north. These features form the source of the Area E assemblage analysed in detail and interpreted to be of medieval age.

Area F produced a single tiny slag fragment from a prehistoric context (c92862). Area F1 context (92633), also prehistoric, yielded a small scrap of iron slag.

In Area H contexts (2070) and (2093) yielded fragments of a black glass in which are surely intrusive here.

Area Ia yielded some metallurgical microresidues from c21224 (undated pit), c21216 (2 fragments in Late Neolithic pit – probably intrusive).

Area K1 produced further examples of the black glass seen in area H, within the medieval(?) corn drying kiln [21052] (125g) and posthole [18172] (0.2g).

Area K7 produced a piece of SHC from context (80266), a possible roundhouse wall. A tiny piece of smithing concretion was recovered from fill (80201) of posthole [80200]. The most significant group of residues from K7 were associated with the cist cemetery of late Roman age, which this formed the K7 assemblage investigated here.

Area L3 produced a single piece of vitrified hearth wall
(22172) and a single spheroid (22181) – both contexts are provisionally identified as prehistoric.

A piece of copper allow waste or slag and a single piece of vitrified hearth wall were recovered from the clay floor patch (22172) and a single spheroid representing smithing activity came from feature (22182) in Area L8.

Area M4 produced coke from several post-medieval contexts and tiny smithing microresidue assemblages from c40001 (undated pit), 40022 (BA ditch), undated pit fill c40118,

There is therefore evidence for smithing having been undertaken on the site, at least at intervals, between the Iron Age and the post-medieval period. Most of the evidence derives from the central area of the site, but the finds of archaeometallurgical resides were dispersed over a wide area. There is no certain focus for the activity during most periods – the only unequivocal recognised focus of smithing is that in Area K7, currently dated to the Roman period.

Classification of microresidues

To facilitate the description and interpretation of the microresidues from Parc Cybi a descriptive classification has been created. For FHS there are two main variables: the degree of melting and the degree of deformation. These are illustrated in Fig XII.2.1. Codes ‘u’, ‘p1’, ‘p2’, ‘p3’, ‘c’ (as employed on Tables XII.2.5, 9, 13) indicate progressive degrees of melting of the wustite from essentially unmelted (e.g. Fig XII.2.1c), through variously partially-melted scale (e.g. Fig XII.2.1a, b, e, f, g) to completely melted (e.g. Fig XII.2.1d). Deformation is described by ‘d’ for disruption of a partially melted texture and ‘cat’ for a cataclasite – a scale showing indications of compaction of disparate solid fragments (Fig XII.2.1h). Low degrees of brittle cracking (Fig XII.2.1g) and ‘thrust fault-like’ lateral movement of partially melted scale (Fig XII.2.1f) are both very common and have not been coded.

Determination of the degree of melting of the primary magnetite layer is more difficult to demonstrate. The outer face of almost all FHS particles shows a continuous magnetite zone, and this is compatible with the majority of the zone remaining unmelted (the melting point of magnetite is 1596C). In some examples the magnetite zone includes an inner part with a textural continuity with the melted material within. In these cases it is likely that the magnetitisation of hot wustite-rich scale has occurred, perhaps during slow cooling.

For SHS Fig XII.2.2; Tables XII.2.7, 10 and 14) codes ‘p’ for partial and ‘c’ for complete are used to describe the evidence for melting. Solid particles inherited by the spheroidal scale include pieces of FHS adhering to the outside, forming part of the external crust or as inclusions. Probable evidence for relict material, inherited as a solid by the spheroidal hammerscale, includes polygonal regions of wustite (Fig XII.2.2a) and ‘brain’ texture (a complexly rounded morphology of wustite; Fig XII.2.2c). Certainly new-formed texture of wustite includes dendrites (both stout e.g. Fig XII.2.2b and fine e.g. Fig XII.2.2c and Fig XII.2.2e). Fig XII.2.2d illustrates the roundedly irregular dendritic forms referred to here as pseudo-dendrites. These particles may also have inherited cores, leading to these irregular growth forms on cooling.

As part of this project the degree of visible pore space within the grains was estimated (mostly being vesicles and excluding the very fine intergranular voids that cannot be estimated). The measurement of pore space is purely a 2d-determination in the plane of the section; no attempt has been made to model the true 3d-porosity. The vesicularity was also described, differentiating between porosity that was mainly central to the grain and porosity that was dispersed. The dispersed porosity was also subdivided into general and marginal (in which

small ores are distributed just inside the crust of the particle. Central porosity was subdivided where possible into rounded (evidence for a single 'bubble') and multicuspate (where the central cavity has evolved from coalescence of a frothy texture). Interrogation of the database of SHS texture failed to produce any meaningful correlation with observed composition or likely precursor metal type. This area requires further research to determine whether it contains archaeologically-useful information.

No investigation of the importance of size within the SHC populations has been attempt, since experimental work suggests that only around 1% of SHS particles are sufficiently large to be retained on the 1mm mesh used for sampling. The vast majority of SHS is thus lost during sample processing.

Ironworking residues from Area K7

General

The sampled smithing residues from Area K7 were from context (80013), the fill of the 400mm diameter eastern (smaller) compartment of possible grave cut [80063], which produced 3.3kg out of the 4.6kg of residues from Area K7. Despite this significant quantity of residues only 175g of this total was contributed by fragments likely to be from SHCs. The rich assemblage of microresidues included much that was cemented into the concretionary material sometimes referred to as 'smithing floor'. This assemblage is likely to have accumulate on the floor of the smithing area (or smithy), although the contexts from which it was recovered do not necessarily represent that surface.

This assemblage was sampled through four sub-samples of microresidues from (80013) <733> and an example of hearth lining from (80018) <811> (a fill of Grave K). The microresidues were sampled as samples PGI1 to 4, as samples of spheroidal hammerscale, flake hammerscale, droplets and larger rounded particles respectively. These four sub-samples were used both to provide bulk elemental analyses and material mounted for investigation using the aSEM. The ceramic sample was used for a bulk elemental analysis only.

Flake hammerscale

Morphology: thirteen examples of flake hammerscale (F1-F13) were examined (11 from PGI2 and 2 from PGI4; Table XII.2.5). These showed a high degree of melting, with only one being almost intact primary scale and a second showing only a low degree of melting.

Mineralogy/microstructure: details are provided in Table XII.2.5. The sampled FHS is rather variable, but mostly wustite-dominated. The most common form of scale is highly melted, with secondary wustite dendritic growths in glass, an embayed rear face, a smoothly-irregular surface and small relicts of primary wustite 'floating' within the secondary texture. Two of the thirteen flakes showed development of iscorite. One flake showed inclusions of, probably, hearth lining material (see discussion below).

Bulk elemental analysis: the bulk elemental analyses show a slightly elevated copper content (interpreted as contamination from the hearth) and a similar effect with tin. The REE profile of PGI2 (Fig XII.2.6; discussed further below) shows a strong negative Tb anomaly that is believed to be an artefact of sample preparation.

Elemental analysis of particles: a summary of the areal analyses providing estimates of bulk particle composition is provided in Table XII.2.5, with summary statistics in Table XII.2.6. The analyses are presented on SiO_2-Al_2O_3-FeO ternary diagram in Fig XII.2.3. Most major elements show a positive correlation with silicon (in other words the particles are a mixture of iron and a siliceous material carrying those elements) but, interestingly the SiO_2:Al_2O_3 also increases with silica (Fig XII.2.15; see interpretation). It may be significant that this collection includes several pieces of SHS with SiO_2:Al_2O_3 ratios that are higher than the typical bulk trend (with SiO_2:Al_2O_3 ratio of approximately 7.9; the overall ratio is 8.1 for the SHS and 7.1 for the FHS). Four examples of SHS and three of FHS show SiO_2:Al_2O_3 ratios greater than 10. This suggests the use of a siliceous flux (see interpretation section).

The CaO:MgO ratio for the FHS is low (Fig XII.2.13), a trend partly continuing with the SHS, but with a high degree of variability.

Spheroidal hammerscale

Morphology: thirty-six examples of spheroidal hammerscale were examined (all from PGI1). Eighteen of the particles showed a dominant central vesicle, but only one showed a particularly thin shell (S17; with 85% 2d

porosity). This group of particles showed 25%-85% 2d porosity (mean 54%). Other spheroids showed less and more dispersed porosity, ranging from 3% to 40% 2d porosity (mean 40%). The overall mean 2d porosity was 38%.

Mineralogy/microstructure: details are provided in Table XII.2.7. Just 4 of the 36 particles showed a magnetite-dominated mineral assemblage, all others showed a wustite-dominated assemblage except for three almost entirely of fayalite. Almost all particles had a magnetite crust, passing into inward-growing skeletal dendrites of magnetite.

Bulk elemental analysis: details are provided in Table XII.2.7, with summary statistics in Table 5 and some discussion has been made of the particle composition in the previous section. Copper is slightly elevated in the SHS compared with other samples, but tin much less so than in the FHS.

The REE profile of PGI 1 (Fig XII.2.6; discussed further below) is very similar in form to those of PGI 2 (but the REE at very slightly elevated levels) and PGI4. All three show a strong negative Tb anomaly that is believed to be an artefact of sample preparation.

Elemental analysis of particles: details are provided in Table XII.2.6. The particles show a wide range of iron contents from 56% to 95% expressed as FeO. The SiO_2:Al_2O_3 ratio is on average higher than for the FHS (8.1 as opposed to 7.1).

The CaO:MgO ratio for the SHS partly continues the low value of the FHS (Fig XII.2.13), but with a high degree of variability.

Other microresidues

General: besides the hammerscale, the prepared samples contained twelve other analysed particles. Two particles were of bloated ceramic, seven particles were droplets of slag, one particle was of slag with a contact with iron, one was a droplet of melted ceramic and one was an iron bearing particle with a pyroxene slag. Details are provided in Table XII.2.8.

Slag droplets: these span a wide range of composition. Four of the particles carry inclusions of partially-melted ceramic and five carry relicts of oxide scale. They have a composition which is identical with the SHS, but extends further towards the ceramic composition.

Slag particle: one particle was of iron slag with a planar surface with thin oxide surface layer, suggestive of contact between the slag and an iron surface. Such materials might be associated with the iron of the workpiece or of the smith's tools. The slag composition was similar to that SHC analyses from area E.

Ceramic particles: three particles show bloated and partially-melted fine grained ceramic, and one is a more fully melted ceramic.

Pyroxene-bearing slag particle: a single particle (PGI3 P7) had a shell of inwardly bulbous radial growths of pyroxene, locally bearing small fragments of relict quartz. The inner part of the spheroid was an aluminous weathered material, rich in magnesium and phosphorus.

Hearth lining

Bulk elemental analysis: sample PGI16 was drawn from the assemblage from context (80018) to assist with understanding of the mass balance. Although aspects of its elemental composition (e.g. the SiO_2:Al_2O_3 ratio) fits well with the compositional trends in residues from Site K7, there are some features that are unusual. Firstly, the magnesium content is very high (15.5% MgO). This feature is seen in other residues from Parc Cybi, but not particularly those from Area K7. It seems likely that particular geological contributions to the hearth material control this, and it is a regular but sporadic feature amongst the smithing hearths. The second unusual feature of this analysis is the concentration of the trace metals nickel (1970 ppm) and chromium (700ppm). This most likely reflects the presence of some unusual (probably natural) grains in the ceramic, but contamination by a fragment of alloy steel is perhaps also possible (though the relative proportions of the two trace metals are the inverse of their relative concentrations in a stainless steel).

Ironworking residues from Area E

General
Various cut-features in Area E produced residues from smithing.

Fragments of hearth lining associated with microresidues were recovered from (30083), the fill of hollow [30082], currently interpreted as being of Phase IV (Roman) date. This lies at some distance from the other features in Area E and is not considered further in this section.

Within the main zone of finds of metallurgical residues in Area E, two contexts yielded most of the material.

Deposit (31153), a fill of pit [31152] provided a modest assemblage of microresidues (780g), much concreted, corroded iron, small slag fragments and small fragments of hearth lining. This pit (31152) measured 1.3m by 0.7m and was 0.25m deep. It contained a probable copper alloy buckle tongue (sf5517). This pit was interpreted as a smithing hearth (Kenney *et al.* 2011, 113).

Fill (31163) of sub-circular gully [31162] (internal diameter approximately 3.2m) produced pieces of vitrified hearth lining and fragments of three SHCs (including the sampled specimens PGI9 and PGI10). This gully lies some 10m to the north of pit [31152].

The sampled material comprised microresidues from (31153) and samples from two SHCs from (31163).

Flake hammerscale
Morphology: twelve fragments of flake hammerscale were examined (9 from PGI6 and 3 from PGI8). One piece (PGI6 F4) was essentially primary scale, and one fragment showed local areas of preservation of primary structure between areas of melting (PGI6 F8). One fragment had a magnetitised cataclastic texture. All others showed variable evidence for substantial melting.

Bulk elemental analysis: the bulk analysis of PGI6 (Table XII.2.2) shows a very high iron content. broadly similar to that of the flake particles from Area K7, but had very slightly elevated MnO, MgO and CaO amongst the major elements, with elevated REE (at approximately twice the concentration of their occurrence in PGI1). The analysis lacks the contamination by copper and tin as seen in equivalent material from area B2. The analysis shows slightly elevated cobalt and nickel, but is otherwise comparable with other materials from the site.

The upper crust-normalised REE profile for PGI6 is very similar to that for PGI2, differing only in rather flat, rather than decline light REE section.

Mineralogy/microstructure: details are provided in Table XII.2.6. The material was broadly similar to the FHS described above from Area K7. There is a single occurrence of arsenide inclusions (PGI6 F7). One thick (2400µm) scale showed a cataclastic texture. Two of the twelve flakes showed development of iscorite.

Elemental analysis of particles: details are provided in Table XII.2.9, with summary statistics in Table XII.2.5. The composition of the particles form a subset of the range of compositions of the FHS from Area K7. The mean iron content is higher than that of equivalent material from Area K7 (Table XII.2.5).

The average SiO_2:Al_2O_3 ratio is 5.9. The CaO:MgO ratio for the FHS is low 0.72 (Fig XII.2.13).

Spheroidal hammerscale
Morphology: Twenty-five examples of spheroidal hammerscale were examined (23 from PGI5 and 2 from PGI7). Eight of the particles showed a dominant central vesicle, but none showed a particularly thin shell. This group of particles showed 15%-80% 2d porosity (mean 45%). Other spheroids showed less and more dispersed porosity, ranging from 2% to 50% 2d porosity (mean 15%). The overall mean 2d porosity was 25%.

Bulk elemental analysis: the bulk analysis (Tables XII.2.2-4) is very similar to that of equivalent material from Area K7. The manganese content is slightly higher, however, as are those for magnesium, calcium and sodium. The REE profile for PGI5 is similar to that of PGI6, but lacks such a large negative terbium anomaly.

Mineralogy/microstructure: details are provided in Table XII.2.10. Only one particle had magnetite as the dominant oxide phase. The other twenty-four were dominated by wustite, with typically a rather low degree of melting. Four of the particles showed polygonal textures, at least in part. Three others had 'brain' textures. A total of seventeen particles showed pseudo-dendritic structures. Two particles possessed a purely coarse

dendritic texture and one a fine dendritic texture. The examples with fine dendrites (both magnetite and wustite) in glass showed extremely low porosity.

Elemental analysis of particles: details are provided in Table XII.2.10, with summary statistics in Table XII.2.5. Although the overall range of compositions is similar, the majority of particles lie just within a subset of the range possessed by the SHS from Area K7. The mean iron content is higher than that of equivalent material from Area K7 (Table 5).

The average SiO_2:Al_2O_3 ratio is 6.5.

As with that of the FHS, the CaO:MgO ratio for the SHS is low (1.07), but slightly higher than that for scale from Area K7 (Fig XII.2.13). There are however a few grains of SHS that show anomalously high calcium contents. The same grains show anomalous manganese and phosphorus contents (Fig XII.2.17). This phenomenon is interpreted as being due to expulsion of inclusions of smelting slag and is discussed further below.

Other microresidues

General: besides the hammerscale, the prepared samples contained five other analysed particles. Two particles were high-iron slag droplets (PGI7 P3, P4), one particle was of melted ceramic with a moderately high iron content (PGI5 S16), and two were of melted ceramic with relict quartz, mainly glass bearing early Mg-olivine followed by pyroxene (PGI 7 P1, P2) and with a low iron content. Details are provided in Table XII.2.11.

Slag droplets: particle PGI7 P4 is an iron-rich, dimpled droplet. It resembles SHS in many respects, but its dimpled form is usually associated with in-hearth residues (the dimple forming from contact with a fuel particle). It contains rounded wustite relicts, probably scale fragments. It lacks any indication of formation of a distinct crust, which (usually of magnetite) is a characteristic feature of SHS.

The second large droplet, PGI7 P3, is more unusual. It too has a slightly dimpled form, has a wustite-dominated mineralogy and bears fragments of relict scale. It also has a pervasive distribution of tiny voids interpreted as the locations of former particles of metallic iron. Iron metal is better preserved as an irregular complex crust to the particle. The presence (and former presence) of the iron as thin films suggests the iron was produced by reduction of the iron in the slag within the hearth.

Ceramic particle:.this unusual particle was dominantly of glass, bearing skeletal olivine dendrites with measured compositions ranging from Fa36 to Fa40 with very low levels of calcium and manganese substitution. Close to the margin, more granular olivine was recorded with compositions ranging up to Fa71 and with up to 2.8% calcium substitution, 0.10-0.15% manganese substitution and 0.006 to 0.027 APFU phosphorus. In a small bulge on the margin there were similar olivines and also small crystals of diopside, but in very much lower quantities that in the main group of pyroxene-bearing particles described below. The glass locally bears small prills of both iron and iron sulphide. The grain bears an unusual, slightly spikey, iron oxide crust that may possibly be a film of altered metallic iron.

Pyroxene-bearing slag particle: these two particles showed much similarity being mainly of glass bearing early Mg-olivine followed by pyroxene (PGI 7 P1, P2) and with a low iron content. PGI7 P2 also contained abundant tiny prills of very high phosphorus iron (with compositions clustered around of the iron-phosphorus eutectic at 17at%P (a eutectic at 1048C).

Hearth lining

Bulk elemental analysis: this ceramic sample (PGI11) was highly siliceous (75% SiO_2) and with only very low quantities of magnesium (1.4% MgO) and calcium (0.33% CaO), but moderately elevated sodium (1.4% Na_2O). The sample shows slightly elevated levels of zinc. There is a very high recorded level of tungsten (2137ppm) but this is believed to the result of contamination during sample grinding.

Smithing hearth cakes

*Morphology: j*ust five fragments of SHCs were recovered from this general area (total 1.3kg) of which only three were from a feature [31162] moderately spatially associated with the deposit (31153) with microresidues (and even so at 10m distance). One reasonably complete SHC from (31163) weighed 770g was estimated as roughly 90% of the original – giving an original weight of around 860g. This SHC measured 100mm x 100mm x 50mm deep. This example was sampled as PGI9. This cake and a second partial cake contained charcoal

clasts. This second SHC fragment weighed 368g (and was approximately half of the original cake); it as sampled as PGI10.

Elemental analysis: bulk elemental analyses for two examples of SHCS, samples PGI9 and PGI10, were obtain by XRF/ICP-MS. These analyses are similar in general character, although the iron contents were different (69% and 48% for PGI 9 and 10 respectively, when expressed as FeO), leading to different dilutions of the other elements. Both samples show relatively elevated concentrations of magnesium, calcium and strontium. The SiO_2:Al_2O_3 ratio is 7.2 and 6.6 respectively, only slightly higher than that of a sample of hearth lining (PGI11) from a related context. The U:Th ratio is 0.47 and 0.61 respectively (compared with a much lower 0.23 in hearth lining PGI11). The reported total REE is 52ppm and 93ppm respectively, with the upper crust-normalised profiles showing a fairly flat HREE section and slightly depleted LREE, even slightly more depleted than the lining PGI11 (although rather similar to the ceramic PGI16 from area K7).

For sample PGI9, SEM mounts were made of the upper (9a) and lower (9b) sections of the cake (Fig XII.2.5) permitting areal analyses by EDS to document variation through the SHC. These data (Table 12) show an upward decrease in the proportion of iron and manganese present, with all other elements increasing upwards proportionately. The ratios of Mn:Fe (approximately 0.003) and SiO_2:Al_2O_3 (approximately 7) are reasonably constant or very slightly increasing upwards through the cake. When considered on an iron-free basis (a means of examining the input to the hearth from sources other than workpiece) sodium and calcium show slight upwards increases, whereas manganese shows an upward decline. Other parameters show little evidence for a trend.

Mineralogy/microstructure: the microstructure of SHC PGI9 was examined in detail with two samples, PGI9b from the lower part of the slag bowl and PGI9a from the upper part.

The base of the bowl was marked by heavily altered (oxidised) material, including a layer of laminated secondary iron oxides and a complex basal layer to the cake itself. Some of the textures were suggestive of oxidised particles formerly of metallic iron, but this could not be demonstrated. The tubular vesicles that characterise this sample originate from close to the base of the bowl, where they are continued as gaps between the primary wustite dendrites. Some of the area of these gaps is occupied by coarse euhedral/subhedral olivine of up to 300μm. This was strongly zoned and very magnesian, being Fa_{52-87}, with calcium substitution of 1.5% – 2% rising to 9.1% on the margins, manganese substitution of 0.35% - 0.60%, and a low phosphorus content of <0.01 APFU. The material interstitial to the olivine was too weathered for analysis.

Slightly higher in the cake a similar, but better preserved, area on the margin of a tubular vesicle showed coarse olivine of Fa_{69-90}, with calcium substitution of 3.2% – 8.9%, manganese substitution of 0.42% - 0.53% and with phosphorus mostly <0.01 APFU, abruptly overlain by an overgrowth of Fa 91-94, with calcium substitution of 37.3% - 37.5%, manganese substitution of 0.35%, and with phosphorus of 0.03-0.05 APFU. The interstitial material here was a glass (with up to 11% Na_2O) bearing a fine phase, probably also kirschsteinitic olivine.

Very similar compositions were recorded thorough sample PGI9b, with the tubular vesicles lined by large complex, subhedral skeletal olivine with grains of up to 1mm. In all cases, similar highly magnesian cores became slightly less magnesian on the margins and commonly showed calcic overgrowths and fine interstitial olivine (with grain sizes of up to 150μm) also of a calcic composition (with calcium substitution of up to 42%) These late olivine generations showed a very slightly phosphoran character, but the bodies of the coarse generation always had a very low-phosphorus composition. The most magnesian composition recorded through this section of the cake were of Fa_{50}.

The upper part of the cake where sectioned did not have continuations of the tubular vesicles, which appeared to merge into horizontally tabular voids at mid-section and near the top, but out of the cut section (but the mid-section void may be represented in some form by the array of particularly large euhedral olive crystals along the lower margin of PGI9a).. The upper part of the cake (accordingly shows very little porosity, most of which is in the form of small spherical vesicles. Sample PGI9a comprises three sub-horizontal zones. The lower, 7mm thick, shows primary wustite dendrites that are reasonably homogeneous across the sample, the second, 5mm thick, also has primary wustite dendrites but they occur inhomogeneously, with denser areas of dendrites picking out partially-reacted iron rich clasts, and the third, 5-7mm thick, is dominated by euhedral olivine, but with areas of wustite dendrites, pseudo-dendrites and even polygonal grains, marking partially reacted iron oxide scale.

The lower zone shows olivine grading from Fa_{67} in the core to Fa_{80} on the margins, with from 2.8% to 4.2% calcium substitution, 0.32-0.43% manganese substitution and <0.01 APFU phosphorus. The coarse-grained olivine appeared to grade from isolated euhedral grains through to blocky dendrites where the individual grains formed part of a larger structure of at least 800µm. The very fine interstitial olivine Is difficult to analyse but in one area was Fa_{84}. With 27% calcium substitution and 0.36% manganese substitution with 0.04 APFU P. As with the coarse generation, these were a little larger than higher in the SHC, forming delicate elongate crystals with lengths of up to 150µm.

Despite the different texture, the upper zone shows olivine of a rather similar compositions, typically grading from Fa_{50} to Fa_{89}, with 1.5% to 8.1% calcium substitution, locally with overgrowths of Fa_{94} with 41% calcium and 0.28 manganese substitutions and 0.05 APFU phosphorus. The strongly zoned euhedral olivine was here of up to 300µm. A second generation of olivine had an elongate, skeletal morphology of up to 200µm in length. The fine interstitial olivine as analysed as $Fa_{93\text{-}95}$, with 30%-38% calcium and, 0.3% manganese substitution and with 0.045 APFU phosphorus, was in the form of elongate crystals and feathery dendrites of up to 20µm.

In one area very close to the top of the cake, the core of the euhedral olivine was as magnesian as Fa_{22}, but otherwise the microstructure was similar. The strongly zoned euhedral olivine was here also of up to 300µm.

Ironworking residues from Area B2

General
The evidence for smithing in area B2 was dispersed between various cut features (including fragments of 12 SHCs, with a total weight of 3.3kg, from five separate contexts), with fill (90036) of pit [90037] comprising the most significant component. This fill provided the analysed samples, but only yielded a very small quantity of microresidues.

Flake hammerscale
Morphology: Twenty-five fragments of flake hammerscale were investigated (24 from PGI13, 1 from PGI12; Table XII.2.13). No fragments suggested primary scale, although six showed survival of the outer parts of the sale despite melting of the inner. Thirteen particles showed complete, or almost complete melting, of which two had microstructures suggestive of shock induced structures during a stage of partial melt. Five further fragments, variably magnetitised, showed cataclastic textures indicative of brittle deformation and compaction.

Mineralogy/microstructure: details are provided in Table XII.2.13. Four of the 25 particles were magnetitised cataclasites. All FHS particles showed a high degree of melting, with four showing unusual fine intergrowth structures on the melting front. Eight of the 25 showed strong development of iscorite.

Elemental analysis of particles: details are provided in Table XII.2.13, with summary statistics in Table XII.2.5. This assemblage shows a restricted range of iron contents from 78% to 99% (expressed as FeO), with only one particle less than 86% FeO. Phosphorus contents are generally low, except for two particles. Sulphur contents are high.

The SiO_2:Al_2O_3 ratio for the FHS (Figs XII.2.7, 15) is approximately 3.5.

Spheroidal hammerscale
Morphology: Eleven examples of spheroidal hammerscale were examined (Table XII.2.14). Four of the particles showed a dominant central vesicle, but none showed a particularly thin shell. This group of particles showed 20%-80% 2d porosity (mean 46%). Other spheroids showed less and more dispersed porosity, ranging from 1% to 37% 2d porosity (mean 17%). The overall mean 2d porosity was 27%.

Mineralogy/microstructure: details are provided in Table XII.2.14. The particles were mostly fully melted, with only one of those recorded as a partial melt showing certain unmelted scale fragments. Two of the eleven particles bore iscorite and three showed a dominance of magnetite over wustite. Porosity was generally low.

Elemental analysis of particles: particles show bulk compositions ranging from 64% to 96% FeO, forming a more tightly clustered assemblage than the FHS from the other areas with a higher average iron content (92.4% expressed as FeO). Summary analyses are presented in Table XII.2.13. Sulphur contents are high (up to 1.36% S), although generally much less. The composition of the particles is relatively aluminous with an average

SiO_2:Al_2O_3 ratio by 3.2, with both aluminium and silicon present in much higher average amounts than in the SHS from the other areas.

Other microresidues

General: other materials examined included four droplets of iron-rich slag, one of iron-poor lining slag and two chips of more conventional lining slag.

Slag droplets: four sub-spheroidal particles are suggested to be slag droplets rather than SHS. Particle PGI12 s4 is a rather poorly-mixed material in an irregular hollow droplet, with what appears to be a quenched margin. It bears a quartz grain and the slag has a SiO_2:Al_2O_3 ratio of 4.1. The more siliceous parts contain a skeletal olivine, the majority is wustite-dominated.

Particle PGI12 s8 was a highly unusual particle formed of a finely granular and very homogeneous mixture of iron oxides and hercynite, with a significant proportion of iron sulphide. The SiO_2:Al_2O_3 ratio is just1.9, a very low value even for the materials from area B2.

Like PGI12 s4, particle PGI12 s10 was rather inhomogeneous. The SiO_2:Al_2O_3 ratio is slightly higher (5.1, rather than 4.1 in s4). It shows some similarity in composition, and in bearing large zoned olivine, with the SHC material from the same area.

PGI12 s12 is a glassy particle with a slightly irregular shape (hence its grouping with the droplets), but might just possibly be a low-iron SHS particle. It is dominantly glassy, with fine magnetite dendrites and carries some relict quartz.

Lining slag droplet: PGI12 s14 is an irregularly-shaped droplet bearing partially melted quartz in a fine groundmass with plagioclase (Or10Ab25An65; labradorite) and a poorly-characterised very fine phase, probably an iron-rich pyroxene, together with very small iron sulphide prills. The margin of the particle bears indented droplets of porous iron oxide-rich material with a thin skin of similar material between the indented blebs. The SiO_2:Al_2O_3 ratio is 3.1, comparable with other materials from this area, particularly the conventional lining slag chips (see below).

Lining slag fragments: PGI13 f3 and f4 were fragments of glassy material. F3 was vesicular and bore partially-reacted fragments of both quartz and clay. The glassy matrix bore delicate spiders web-like dendrites of hercynite, particularly prominent close to the ceramic clasts where the glassy was also very aluminous. F4 was slightly more iron-rich and showed a magnetite crust (similar to that which occurs on SHS particles) and bore magnetite dendrites in its glassy matrix. The SiO_2:Al_2O_3 ratio of both particles was similar (3.2).

Smithing hearth cakes

Morphology: Of the 12 SHCs apparently represented by these fragments, at least 4 have flat tops, 3 at least have reddened tops, 3 contained good evidence for the use of coal fuel of which one showed both coal and charcoal and a further cake showed charcoal alone. These cakes are dense and mainly roughly subcircular, although there is variation. The recorded weights (or estimated reconstructed weights) of six fairly complete SHCs are 175g, 300g, 350g, 595g, 600g and 646g. The examples sampled as PGI14 was the largest of these.

PGI14 was an irregularly transverse SHC that measured 95mm x 130mm x 70mm deep (of which 50mm was the bowl) overall. It possessed two distinct layers: a lower bowl of prilly slag (at least marginally) with coke fragments and a smaller upper dense pad of slag with clinkery prills, coal shale fragments and a dimpled upper surface, separated by a coke rich layer above the bowl. There is a slight distal extension in the form of a rod. The base shows a shale-rich boss of accretion.

Elemental analysis: a single example of a SHC was selected for analysis (PGI14). This cake had a distinct lower bowl and an upper, fine-grained, pad separated by a layer dominated by coal fuel debris. The bowl was sampled as PGI14b and the pad as PGI14a.

The two bulk elemental analyses by XRF/ICP-MS are similar in general character, although the iron contents were different (69% and 48% for PGI 9 and 10 respectively, when expressed as FeO), leading to different dilutions of the other elements. Both samples show low concentrations of manganese, magnesium and calcium. Sulphur is strongly enriched at 1.4 and 3.5 wt% S respectively. There is also a slight enrichment, compared with the other bulk analyses, of elements associated with sulphide minerals and with organic matter, including vanadium, nickel, copper, molybdenum, lead and uranium. The SiO_2:Al_2O_3 ratio is 2.8 and 2.6 respectively,

markedly lower than for the other bulk analyses and showing the influence of the aluminous coal shale. The U:Th ratio is 0.46 and 0.51 respectively (similar to the ratio measured in the other bulk analyses). The reported total REE is 147ppm and 65ppm respectively, with the upper crust-normalised profiles showing a somewhat flat profile, with a low hump in the middle REE in sample PGI14b and to a lesser extent PGI14a. A MREE 'hump' has been reported as a feature of analyses of coal (Rose 2001).

The relative original positions of sub-samples PGI14a and PGI14b as mounted for SEM examination, may be reconstructed and the location of the EDS areal microanalyses determined to provide a transect through the SHC (Table XII.2.16; Fig XII.2.9). The pattern of elemental distribution is particularly complicated because of the poorly-mixed materials in the lower part of the upper pad (see below). Some elements show an overall concentration gradient through the SHC and for many of these the trends are the reverse of those observed in PGI9 (see above). Elements such as sodium, magnesium, aluminium and titanium show an overall upwards increase. Silicon, sulphur and potassium also show an upward increase between the two components, but are more constant within each section leading to a sudden jump in concentration across the central fuel zone. In the case of potassium. The lower bowl shows potassium concentrations similar to those seen in sample PGI9 (<0.5%), but the upper layer shows a greatly enhanced concentration (1.5 to 2wt%). Two elements, iron and manganese show an upward decline with a break across the central fuel zone. Phosphorus also has an upward decrease, but does so more continuously through the thickness of the slag cake. The behaviour of these three elements, all of which would have some association with the metal being worked, thus shows a pattern which is quite different from that shown by analyses of the concentration in PGI9. The ratios of MnO:FeO, P_2O_5:(P_2O_5+FeO) and SiO_2:Al_2O_3 all show an upwards decline through the SHC, rather than the upwards increase that they display in PGI9. The SiO_2:Al_2O_3 ratio shows a sudden change at the interface from a value (5 to 7) close to that of PGI9 in the lower part, but dropping to a gently upwards declining value of approximately 3 through the upper pad (a pattern not reflected in the bulk elemental analyses reported above). These features suggest that the lower part is largely the product of reaction between iron oxides and the hearth lining, but that the upper pad shows a very strong influence from the coal fuel ash.

Mineralogy/microstructure: sample PGI14b shows a basal contact with a thin (up to 700µm) layer of concretionary material that has probably formed post-depositionally. The base of the SHC is formed by a zone of variable thickness (100-400µm) with a very high iron content. This zone appears rather weathered, but similar material occurs abundantly through the levels up to 4.5mm higher in the sample with a morphology of rounded drips and swirls of up to several mm across. These show a margin of coarse wustite, passing inwards into a very fine complex cotectic structure of wustite, with an uncertain phase. The material visually resembles the morphology of wustite-leucite cotectic structures, but no leucite was observed in these particles, merely patches of siliceous glass and rare olivine inclusions. The ion rich blebs are, however, locally overlain by large grains of leucite, locally associated with siliceous material (it is unclear if this is a weathering product of the leucite or an original silica polymorph). These materials are interpretable as a slightly unusual form of oxidised iron. It is unclear whether the iron had entirely oxidised before descending, whether molten iron had dropped through the slag, altering as it descended., or whether these clumps represent iron reduction from the slag around fuel particles.

The matrix to the unusual blebs is a slag with very sparse coarse primary wustite, but a more significant generation of early euhedral hercynite (typically 80-86% hercynite with variable contributions from spinel *s.s.* and more significant levels of magnetite) of up to 100µm), followed by olivine (typically bearing further cotectic hercynite) of up to 200µm. The main olivine is Fa_{97-100}, with 1.7-3.3% Ca substitution and 0.43-0.82% Mn substitution. The interstices of the olivine bear further finer skeletal olivine of broadly similar composition in a matrix rich in silica and associated with the uncertain phase overgrowing the leucite on the iron-rich blebs. None of the olivine was classifiable as being phosphoran. Large voids within the examined section, in both this and the layer above, represent 'lost' fragments of partly reacted burnt coal.

The hercynite-olivine layer was overlain by a zone up to 8mm thick, dominated by wustite (with an increased iron content, but markedly lower aluminium). The primary phase in this zone is formed by large euhedral zoned hercynite of up to 100µm. An analysed typical example of these showed up to 18% spinel s.s. in the core (80% hercynite), then a zone with traces of Cr overlain outwards by material of 80-87% hercynite with traces of Ti and V, with the balance being formed by magnetite. The stout wustite dendrites of up to 1mm follow and have an unusual (and unfortunately rather weathered) interstitial material, including phases associated with the iron rich blebs lower in the section: highly siliceous weathered glass, fine growths of wustite resembling a wustite-leucite cotectic but lacking any surviving leucite and fine feathery or skeletal olivine.

The upper most layer in the bowl section of the SHC was a thin (typically approximately 1mm) bearing coarse euhedral zoned hercynite (of similar composition to those escribed above) of up to 100µm, followed by skeletal olivine ($Fa_{70\text{-}100}$, 3.3-4.2% Ca substitution. 0.65% Mn substitution and 0.05-0.06 APFU phosphorus) of up to 300µm length, locally in a cotectic with wustite. The interstitial material is again material texturally resembling a wustite-leucite cotectic and weathered siliceous glass.

The top of the bowl has a thin lamina of probable magnetite along the abrupt contact with the overlying ferruginous conglomerate of coal and coke particles.

The base of the upper pad (sample PGI14a) is irregularly lobate and the lower part (10mm thick) of the pad is formed of vertically oriented flow foliated zones of quenched slag (variously glass or finely crystalline), bearing partly reacted and partly melted clasts of lining slags, shale and coke. This zone also carries swirls of iron-rich composition, surrounding cavities with fills of weathering products. These swirls locally pass into an almost continuous thin zone along the base of the pad.

The iron-rich patches show a variable texture with open cells surrounded by a fine eutectic intergrowth, in some cases with a texture suggesting that the cells may have been filled by a primary dendritic phase. The contents of the cells are locally zoned botryoidal secondary iron oxides around the margins, but generally a strongly foliated material. In some areas the cells are poorly developed, and the iron rich zones comprise mossy masses of the intergrowth texture.

The glassy zones locally bear tiny dendrites of hercynite and droplets of iron of up to 10µm with sulphidised surfaces.

The uppermost 4-5mm of the SHC are markedly coarser-grained, with a fairly abrupt contact. This zone of slag is free from inclusions, even against the steep margin along which there are many inclusions of fuel and lining in the layers below. Within the upper slag layer, the primary phase is formed by dendrites of hercynite (approximately 80% hercynite, bearing up to 2% Ti, the remainder dominantly magnetite). This is followed by elongate (frequently vertically-orientated) fayalite (of up to 600µm length) in a glassy matrix that bears small sulphide prills.

Dark glass from areas H and K1

Morphology: these glasses were only recovered as angular, fracture-bound, fragments. Two showed hints of a slightly flow-lobed surface and most showed a strong flow-foliation. The glass was dark, but reasonably translucent, despite the inclusions see on visual inspection. These visible inclusions were quartzose, provisionally and tentatively identified as of quartzite during the assessment. Representative microstructures are illustrated in Fig XII.2.10.

Elemental analysis: the elemental composition of this sample was only assessed through EDS analysis, so no trace element data are available. A simple average of the areal analyses taken from the sample shows a somewhat aluminous composition (Fig XII.2.11), with a SiO_2:Al_2O_3 ratio of 4.19 (a value lower than for most materials from this project, but higher than the ratio for materials from coal-fuelled smithing from site E2). The areal analyses show a strong negative correlation between the SiO_2:Al_2O_3 ratio and the concentrations of calcium, titanium and magnesium, but a positive one with iron, manganese and phosphorus. The CIPW norm corresponding to a typical glass includes (by weight) 13.8% quartz, 29.6% anorthite, 34.8% diopside, 5.0% hypersthene, 3.2% albite and 10% orthoclase.

The very high calcium content (12.5% - 17.6%, average 14.2%; expressed as CaO) is the most notable feature of the bulk composition, and a feature not paralleled in any of the other analysed materials from the project. Sulphur is present at low levels (0.14% to 0.49%; expressed as S) in the bulk samples, despite the widespread abundance of the tiny iron sulphide prills (see below). Magnesium is also moderately abundant (3.8% to 5.2%, average 4.5%; expressed as MgO). Iron is present at modest levels (6.5% to 9.2%, average 7.6% in the bulk analyses; 8.9% to 10.2%, average 9.5% in the array of point measurements described below; expressed as FeO), close to the levels observed in the samples of hearth lining (levels which are less than those typically seen in the glassy slag on the lining of iron furnaces).

Mineralogy/microstructure: sample PGI17 shows a marked (flow?) foliation parallel to the slightly lobate surface. Analysis shows this foliation is associated with inverse correlations between two groups of elements: sodium, potassium and silicon in one group and aluminium, magnesium, calcium and titanium in the other.

These may, perhaps, be interpreted as reflecting the influence of furnace/hearth ceramic and coal fuel on the other, but it could also be a reflection of a coarse-grained feldspar/quartz component. The laminae show a variation in SiO_2:Al_2O_3 ratio of 4.2 to 5.6. These observations demonstrate small-scale variation in the same manner as the larger scale variations demonstrated by the areal analyses.

There are pale inclusions visible to the naked eye. These mostly appear to be relicts of quartzose material, including relict grains and parts of the area of former grains picked out by the distribution of new-formed crystals of a silica polymorph (Fig XII.2.10a, b).

The sample also shows small 'clots' of anorthite, of very elongate habit, with a matrix of either glass or augitic clinopyroxene (Fig XII.2.10c). Analyses of the pyroxene proved problematic, but the best attempt at solving the mixing of the pyroxene with other phases suggested $Ca_{0.48}$ $Fe_{0.62}$ $Mg_{0.87}$ as the main octahedral substitutions on the basis of six oxygens.

The glassy matrix of the sample bears abundant spherical or sub-spherical (where attached to vesicles) prills (Fig XII.2.10 c, d, e). Analysis of the smaller prills suggests that most were iron sulphide, with persistent trace levels of copper and nickel. The EDS analyses also suggest a slight excess of iron over sulphur (compared with stoichiometric FeS), possibly indicating that the sulphide is mackinawite. Some of the larger examples of prills were examined in detail and proved to be rather complex. They had a matrix of similar nickel- and copper-bearing iron sulphide, but this bore blebs and dendrites of highly phosphoric (2.2 to 2.5 atom% P) iron, also with trace levels of nickel.

Interpretation

Chemistry of the ceramic component

There are four likely inputs of elements other than iron (and its alloyed elements) into the residues:
- the hearth lining
- the slag inclusions with the iron
- any smithing flux
- the fuel ash

Evidence for the ceramic input into the residues derives from:
- elemental analysis of samples of fired hearth ceramic
- EDS analysis of ceramic particles, and components of particles, within the microresidues
- modelling of the composition of the residues

Relevant analytical data from materials with a high input from a ceramic component are plotted on the SiO_2-Al_2O_3-FeO ternary diagram in Fig XII.2.11. This representation of the data is somewhat simplistic, for many of the ceramic materials also have high levels of the alkali and alkaline earth elements. The distribution of calcium and magnesium is illustrated by Fig XII.2.13.

The hearth lining has been investigated directly through the bulk elemental analysis of single samples from each of Area K7 (PGI16) and Area E (PGI11). These samples show similar SiO_2:Al_2O_3 ratios (5.6 and 5.8 respectively) and despite an order of magnitude difference in abundance, a similar CaO:MgO ratio (0.28 and 0.21 respectively). None of the residues shows a ratio as low as this, so hearth linings of this type cannot have been the dominant contributor of calcium and magnesium.

Calcium and magnesium show a strong positive correlation in the analyses of ceramic materials within the microresidues (Fig XII.2.13). There are a few outliers in this general trend amongst the examples from Site K7 which have elevated values of either calcium or magnesium oxides off the main trend, but otherwise the analyses on the main trend show those from Area E showing higher CaO and MgO than those from Area K7 and with a lightly greater CaO:MgO ratio.

The main trend of the analyses from K7 shows a CaO:MgO ratio of 0.79, although there is a high degree of variability for contents of either above 1%. The FHS has a ratio of 0.81 and the SHS a ratio of 0.83.

The residues from Area E show an overall CaO:MgO ratio of approximately 0.95. The FHS has a ratio of 0.81 and the SHS a ratio of 0.84, if a few high calcium outliers are excluded or 1.25 if they are included. The CaO:MgO ratio is 0.83 for the main slags of SHC PGI9.

The material from Area B2 shows extremely low calcium and magnesium contents, but the average for the FHS is 2.3 and for the SHS is 1.9. This compares with an average of 1.9 for the upper part of SHC PGI14 and 1.4 for its lower part.

It is hard to draw firm conclusions on the basis of this evidence, but it is clear that simple mixture of iron and hearth lining of the composition of the two bulk samples cannot account for the observed microresidue compositions. The locally-elevated calcium and magnesium contents, most clearly expressed by the pyroxene-bearing droplets (more common in E than K7) suggest some additional input.

What is clear, is that the residues from area B2 show a clearly different composition in terms of SiO_2:Al_2O_3 ratio, CaO:MgO ratio and the REE profile, amongst others. The total range of silica and alumina in the microresidues from area B2 (Fig XII.2.15) is not very different from that in those of Areas K7 and E, yet the content of calcium and magnesium is less, indicating a contribution from a different ceramic. That component is the coal shale and dirt. This is likely, on the basis of analyses of coal residues analysed from elsewhere, to be alkaline-earth poor, aluminous and possessing a 'humped' REE profile.

The unresolved issue with the earlier sites K7 and E is to separate the relative inputs from charcoal ash, hearth lining and flux. This is developed further in the following sections.

The dark glass from areas H and K1

This material has an unusual distribution within the site: approximately 235g was recovered from areas H (from ploughsoil (2070, 47g) over, and the old ground surface (2093, 63g) under the Early Neolithic building) and K1 (medieval corn drying kiln [21051], 125g and posthole [18172], 0,2g). The interpretation of the analytical data is therefore of importance.

The observed microstructures and compositions clearly indicate that the material is anthropogenic and the suggestion in the assessment that it was just possible that this is a natural obsidian-like glass can be excluded. The textural evidence suggests that the glass may have formed as a deposit of the walls of a hearth or furnace. Neither the minute prills contained in the glass not the bulk composition showed any significant concentration of copper, so an association with copper metallurgy appears unlikely.

The determination of the origin of the glasses has four main threads of evidence: the patterns of bulk elemental composition, the high calcium content, the nature of the inclusions, the nature of the metal-bearing prills.

The bulk SiO_2:Al_2O_3 ratio is low. The variations in bulk composition suggests that the glass was formed from at least two components – one identified above as being dominated by elements typically associated with the siliceous ceramic of hearth/furnace linings, the other with a more aluminous ceramic. The luminous component might possibly be coal shale/dirt, but in theory other sources of aluminous clay would be possible and partial melting of hearth ceramic would also generate a melt more aluminous than the bulk ceramic.

The very high calcium content (12.5% - 17.6%, average 14.2%) is not directly paralleled by other analysed materials. The average CaO:MgO ratio for the glass is approximately 3.2. The composition does, however, lie closest to the trend exhibited by the microresidues from area B2. The average CaO:MgO ratio for the FHS for instance was 2.3 and or the SHS and the upper part of SHC PGI14 was 1.9.

The inclusions included quartzose materials, largely reacted and recrystallizing as an unidentified silica polymorph. Such siliceous inclusions could be present as part of the hearth contents, as debris from a smithing flux, or as material derived from the hearth wall. Estimating the temperature of formation of the analysed sample is difficult, because of the varied elemental assemblage, but the degree of melting of the quartzose clasts hints that a temperature of perhaps as much as 1500C may have been reached.

The anorthite-pyroxene clots may reflect poorly mixed areas of relict elevated calcium content. The anorthite-diopside eutectic may provide some indication of the likely temperature above which these clots must have formed, and the temperature of that eutectic is 1274C.

The prills present in the sample showed intimate mixtures of iron sulphide and phosphoric iron. These prills are perhaps paralleled by those in one of the pyroxene-bearing slag spheroids from Area E (PGI7 P2) and, more tenuously, by the bulk iron and phosphorus contents of the weathering products in the altered core of the pyroxene-bearing particle PGI3 P7. Indeed, the pyroxene bearing spheroids from Areas K7 and E occupy a similar position with respect to the array of analyses of hammerscale from those areas as does sample PGI17 to the array of hammerscale analyses from area B2. The prills present in PGI17 are somewhat sulphidised, but are specifically related in composition to the iron-phosphorus eutectic at around 17at%P.

Synthesis of the arguments presented above suggests that the glass is of a composition compatible with having been generated in a smithing hearth of similar aspect to that producing the residues recovered from area B2. The texture suggests the glass was held at high temperature (therefore probably originating near the blowhole) and probably underwent a very viscous down-wall flow. The prills represent droplets of iron-phosphorus eutectic released into the hearth during heating of a phosphoric iron. The high calcium content of this suite of residues might be associated with the fuel (if the coal was contaminated by fragments of coal ball for instance), but it is at least as equally possible that it formed part of the hearth lining – as part of a conventional ceramic or perhaps as part of a hearth structure involving a lime mortar.

It is not possible to relate the glassy materials specifically to the same smithing event/operation that produced the residues in Area B2, although that is very likely. The one key element in which the evidence from the dark glasses differs from that from most (although not all) of the evidence from Area B2, is that the iron-phosphorus eutectic prills imply that the working of highly phosphoric iron.

The pyroxene-bearing droplets

The high Ca/Mg ceramic includes two different types of material: the almost fully melted droplets (on the main trend PGI5 S16, PGI7 P1, PGI 7 P2, PGI3 P4 ; off the main trend PGI3 P7) and parts of partially melted inclusions within FHS particles (PGI2 F4, PGI4 T3)

Pyroxene was been identified as significant component in the four particles (one from area K7 and three from area E2): PGI3 p7, PGI5 s16, PGI7 p1 and PGI7 p2. One further particle (lining slag droplet PG12 s14; Area B2) probably bears an iron-rich pyroxene alongside a calcic plagioclase and has a bulk iron content (expressed as FeO) of 19.4%.

PGI7 p2 and PGI12 s14 share the feature of having porous iron oxide blebs forming a halo around the outside of the grain.

The suite of spheroidal droplets identified above with low iron contents, but elevated contents of calcium and magnesium has been demonstrated to be the product of melting (or partial melting) of the hearth ceramic in the vicinity of the blowhole. They show a rather low degree of reaction with iron, although in at least one case they appear to have been associated with a droplet of iron and in two to be rimmed by iron oxides.

Where iron is present in these materials it appears to be associated with elevated levels of phosphorus, possibly reflecting the role of droplets of iron-phosphorus eutectic as a vector in the movement of both iron and phosphorus within the hearth.

It would appear likely that these Ca-, Mg-rich particles were generated within the hearth and probably indicate one of the modes of transfer of matter from the hearth wall into the zone of reaction with the iron/iron oxides.

Glass films in primary FHS

The general model for oxide scale formation is well-known, but most studies have dealt with modern materials, with a low slag content and low phosphorus content. The published accounts (e.g. Svedung *et al*. 1976; Ahtoy *et al.* 2014) include some discussion of the role of phosphorus in the detachment of scale, but only within the context of rather low-phosphorus, slag-free, homogeneous metals.

Observation of ancient flake hammerscale (e.g. Young 2011) shows that a substantial slag may develop on the rear of the scale and that thin glass films may extend between the grains of unmelted wustite towards the front of the flake. This glass must represent the solidified melt that was in contact with the wustite as the scale was melting. The detailed analysis of this glass preserved within the pores and intergranular cracks of the primary FHS is likely to provide information concerning both the nature of the fluxing materials acting upon the scale and of aspects of the metal composition.

Detailed analysis was undertaken on several particles; those from the four investigated in most detail are illustrated in Fig XII.2.14. The four examples comprise one from Area K7, two from Area E and one from Area B2. The analyses are illustrated recast on an iron-free basis, to avoid the problem of 'contamination' of the microanalyses by the adjacent wustite.

This approach revealed that the glass films show a systematic and coherent variation across the thickness of the scale. The composition of the glass was, moreover, rather unexpected, not only being high in phosphorus in some cases, but also in the alkali and alkaline earth elements.

The four illustrated examples show many differences (particularly in the absolute concentration of the various elements), but also show significant similarities in terms of trends. In all cases, the relative concentration of Na_2O, CaO and K_2O increase towards the front (outside) of the scale, whereas SiO_2, Al_2O_3 and S decrease towards the front. Some examples show P_2O_5 decreasing very slightly towards the front and probably MnO also. The SiO_2:Al_2O_3 ratio may decrease slightly towards the front of the scale, but may be elevated in the glass inclusions near the front. Some of the examples, and possibly all, contain larger 'pools' of glass immediately to the rear of the magnetite layer. These inclusions have compositions that do not always lie on the trend of the connected films and in particular they may contain elevated levels of phosphorus.

The absolute values are markedly different between the scales; for instance, the scale PGI13 f9 from area B2 showed much lower level of MgO than the other three, one scale from area E (PGI6 f5) showed a P_2O_5 content over five times any of the others, and the scale from Area K7 together with one from Area E (PGI2 f5 and PGI6 f6) showed elevated levels of manganese.

Table 18 presents two sets of data for each example of FHS investigated with preservation of appropriate textures. The first column indicates the values reached in isolated (or apparently isolated in the 2d section) blebs (these blebs are often present as small holes in the surface of the specimen, meaning these analyses should be regarded with some caution because of the interaction of the microtopography with the geometry of the X-Rays produced), the second column gives a subjective estimate of the typical value at the head of the connected glass-filled cracks. The quoted values are given as wt% calculated on an iron-free basis. Table 18 also includes some aspects of the analysis undertaken as an estimate of typical whole-particle composition in each case.

There is some degree of correlation within the data in Table XII.2.18 between the composition of the whole scale and of the glass films (e.g. for sodium), less good for some other elements (phosphorus, manganese). The differences may result from the local inhomogeneities within the scale, the volumetric dominance of the inner slag on the bulk composition as well as the relationship between the glass and the distribution of the elements in the precursor metal (e.g. the role of inclusions versus generalised.

There are no precisely equivalent experimental observations with which to compare these data. Current investigations by the author into the origin of SHS has generated some limited data on FHS, but because the experiments were dealing with forge welding, the scale was mostly formed at high temperature leading to a high degree of melting in most examples. A three examples of less-altered scale were, however recorded, providing very limited comparative data. These three, all from different metal/fuel/flux combinations all showed similar gradients in the composition of the connected films and a discrete population of typically phosphorus rich pools just below the magnetite layer.

It would appear likely that the compositional gradient across the thickness of the scale exhibit by the slag films is the result of mixing between the developing rear slag and pre-existing inclusions near the front face (and in some examples also dispersed through the scale). The inner slag dominates the non-iron composition of the scale, and it is this that produces the overall trend in, for instance, the SiO_2 – Al_2O_3 content of scale. It is more difficult to ascribe an origin to the pre-existing inclusions (typically rich in phosphorus, sodium, potassium and calcium), however. Several distinct possibilities exist:

1. direct derivation from inclusions within the precursor metal
2. through concentration of elements incompatible with wustite/magnetite from the metal and its inclusions during the formation of the scale
3. from the remnants from the phosphorus-rich detachment zone of previous scaling at the same location.

Further work to determine the processes contributing to these features is clearly desirable, but would need investigation of much larger populations of scale from known processes.

Further work to determine the concentrations of, for instance, phosphorus and manganese in FHS produced from metals of particular compositions under particular types of working and fluxing, would also be desirable.

Further melting of the FHS

Further melting of the oxide scale would have been from the rear, either because the wustite has a lower melting point than the magnetite and haematite on the scale's outer face, or because that melting point has been further reduced through the fluxing action of the hearth lining/smithing flux.

Incomplete melting of the scale is demonstrated by both the in-situ and ex-situ preservation of areas of relict primary scale, but also because of the survival of small wustite pieces that will form the cores of the 'brain' and pseudo-dendritic textures on cooling.

The highest degrees of melting appear to leave a magnetite zone intact on the front face, although to what extent at least a part of this is new-formed during cooling is hard to evaluate. In some examples cooling in oxidising conditions is marked by oxidation ('magnetitisation') of pre-existing new-formed wustite.

The melting of the scale occurs in a dynamic environment where movement, striking and deformation of the underlying iron may produce both disrupted textures during crystallisation (the 'd' category) and brittle deformation (the 'cat' category).

Morphology of SHS

The microstructure and mineralogy of the SHS particles will depend on a number of factors:
- the composition of the material
- the completeness of the melt from which it was generated
- the degree of subsequent oxidation of the particle during flight
- the evolution of a gas phase from the melt during cooling

Previous work (Young 2011) suggested that the more siliceous particles exhibited lower porosity and that very iron-rich particles tended to demonstrate the highest porosities and a shell-like form. Although the maximum porosity does appear to decline with reduced iron content, a high proportion of the high iron SHS exhibited very low porosity. No relationship of this form was found in the present data and there may be other factors controlling the previous observations.

Relationship of SHS and FHS compositions

The data presented in Table 6 show significant and consistent differences in the average composition of FHS and SHS from the same deposit. These differences vary in magnitude between the different assemblages.

Scale generated experimentally also shows consistent differences in composition (author's unpublished studies). Unlike the material from Parc Cybi (and archaeological material in general), the experimental material was generated during one particular process (forge welding) with one particular metal-type, one particular fuel and one particular use of smithing flux. Nonetheless, the limited experimental data may assist with the interpretation of the archaeological material.

Fig XII.2.16 illustrates the average silica and alumina concentrations of pairs of related FHS and SHS samples. Silica and alumina form useful variables for this analysis because the SiO_2:Al_2O_3 ratio for sand flux, hearth lining and coal ash are quite different.

In the experimental material, both the amount of SiO_2 present in the scale and the magnitude of the difference between the concentrations of SiO_2 in the FHS and SHS are increased by the use of a sand flux. The difference between the FHS and SHS compositions is seen particularly by an increase in silica for charcoal-fuelled samples (i.e. the tie-line between FHS and SHS is close to being parallel to the x (silica) axis, whereas the coal-fuelled example shows a greater difference in the alumina content (because the relatively alumina-rich coal ash is also playing a fluxing role). It might be expected that these parameters would be different in the archaeological material, where not all the forging would have been associated with welding.

On this basis it would appear likely, however, that the smithing in Area K7 employed more flux, on average, than that of area E2. Area B2 may also have been undertaking forging with the use of silica flux, but within the context of the use of an apparently rather 'dirty' coal.

Evolution of the SHCs

Area E

The analyses of the assemblage of both macroresidues and microresidues from Area E formed a compositionally coherent group. The SHCs are indicative of formation in a charcoal-fuelled hearth with a blowhole in a ceramic wall or tuyère. It is not certain whether pit [31152] was a smithing hearth or an associated feature; the dimensions given are rather large for a smithing hearth.

The morphological evidence provided by the three SHC fragments from the circular gully [31162] is similar, with the two smaller fragments both compatible with SHCs of the general size of the almost intact example sampled as PGI9. PGI9 showed a bulk analysis by XRF with 69% FeO, and an average areal EDS analysis with 62% FeO, whereas PGI10, from the burr region of its cake (which would be expected to have a higher contribution form the lining) gave an analysis by XRF containing 48% FeO. At an original weight of 860g, SHC PGI9 would represent the loss of approximately 430g of iron to the hearth.

PGI9 shows the development of prominent large tubular vesicles. These cavities provide vertical conduits for the movement of volatiles from the base of the SHC upwards, although they do not reach the upper surface. The upper surface of the SHC is largely very smooth, showing that the air blast from the blowhole probably played directly onto the top of the slag cake in its final development.

The presence of tubular vesicles is a feature which, in SHCs from Ireland, is strongly associated with bloomsmithing or bloom refining (e.g. Young 2009d). The smooth blown top of the present example suggests it was not generated during a hearth refining technique but it might have been formed during conventional bloomsmithing. The deep cake, which must have been hot through its entire thickness, the large size and the high iron loss all point to this cake having been formed during very hot working, if not actually during bloomsmithing. The partial SHC PGI10 is also suggestive of very hot working because of the large size of the burr (the zone of interaction of the slag with the hearth wall, where the two react and slag eats into the wall forming a rounded protuberance on the proximal side of the SHC).

The SHC weights of 860g and c. 740g as described above are large for residues from early blacksmithing in a charcoal hearth. Rather few medieval assemblages have been described in detail, but assemblages from Tidworth and Worcester (from the earlier part of the Middle Ages) have ranges of 80 – 680g and 74 – 782g, with means of 265g and 285g respectively (Young 2007, 2009b, 2016). A later medieval assemblage from Cricklade (Young 2008) had a range of SHC weight from 156 – 794g with a mean of 329g. A late medieval smithy at Garryleagh (Co. Cork; Young 2009e) produced an SHC assemblage ranging from 84 – 802g, with a mean of 331g. Closer to Parc Cybi (although probably rather earlier) is the assemblage from Hen Gastell with a range of 72 – 1000g, with a mean of 260g; Young 2016c), again a rather similar distribution. Similar statistics have also been recorded for earlier, Roman, assemblages from urban and military sites, for instance Carmarthen (Crew 2003; maximum SHC weight 820g), Neath (Young 2014a; 74 – 630g , mean of 244g) and Ware (Young 2014c; maximum of 952g), whereas most rural sites produce assemblages of smaller SHCS, for instance Exminster (Young 2014b; 32 – 482g, maximum of 482g).

Area B2

The evidence from the composition, the cake sizes and presence of vitrified hearth wall material from related contexts, all suggests that the SHCs from Area B2 were formed in a hearth blown through a ceramic tuyère, or more likely a blowhole in a clay wall.

The SHC assemblage from area B2 was small, so comparison with the weight-frequency statistics of other assemblages can only be tentative, nonetheless although the maximum SHC weight of 646g is similar to that from some coal-fuelled SHC assemblages, the average SHC weight of 444g is much higher than in other assemblages. Described comparative assemblages of post-medieval date are almost absent from Britain, but several have been described from Ireland, including a smithy at Gorteens Castle (Dabal & Young 2011; 52 – 748g, mean of 206g, mixed fuel), but many rural sites produce might lighter assemblages, for instance Moyveela (Young 2009b; range 44 – 388g, mean 134g) and Cuffsborough (Young 2009a; SHC weight range 107 – 420g, mean 260g, coal-fuelled). The difference may be due to some taphonomic factor, with small SHCs being absent from the preserved/recovered assemblage at Parc Cybi, but it may be a genuine difference.

The presence of large SHCs with iron contents averaging 60% (expressed as FeO) shows that there was considerable iron loss during each work period. For the SHC PGI14, the 646g SHC with 60% FeO corresponds

to an iron loss of approximately 300g. If the iron-rich blebs and swirls in the lower part of PGI14 do represent oxidised iron, then they rather graphically show the incorporation of this lost metal into the slag.

The SHC PGI14 shows some unusual features in its elemental composition. The description above notes that for many parameters there is a sudden break across the central coke horizon. Below that horizon, for instance, the SiO_2:Al_2O_3 ratio is markedly higher than above. Indeed, the lower section of the cake has a general elemental composition not strongly distinct from that of the charcoal-fuelled residues from the site. Above the coke horizon the analyses lie on a common compositional trend with the microresidues from the area. Precisely why this pattern should exist is unclear. It may be that the lower part of PGI14 was produced during use of a particularly 'clean' batch of coal, with the upper part being much dirtier (rich in shale). The inclusions visible in hand-specimen certainly suggest that that the lower part also used coal as fuel (although dual fuel use was noted on other SHCs from the area). It may, alternatively, simply be that the hearth had a through clean before the start of the work period, but that it got rapidly dirtier during the period. The coke-rich parting may indicate that the SHC was pushed down into the hearth between two different work periods – the first focussing on higher temperature work than the second.

The great loss of iron to the hearth during the formation of PGI14 (particularly of its lower part) might be suggestive of a period of higher-temperature work. The evidence from the microresidues, discussed above, may indicate that his was not typical of the work undertaken in Area B2, with the residues probably indicating somewhat lower temperature work than in the earlier phases. Another slightly contradictory facet is the relatively high concentration of phosphorus in the lower part of the PGI14, at only slightly lower concentrations than in PGI9. The most likely explanation for this would be the production of the lower part of PGI14 during the processing of phosphoric iron.

The evidence from Area B2 is thus rather mixed. The current dating evidence suggests a later post-medieval date and the microscopic smithing debris suggests the dominant use of a low-phosphorus iron compatible with a post-medieval forge-iron, the product of fining cast iron. There are some high-phosphorus scale particles in the assemblage and the investigated SHC PGI14 suggests that its lower part may indicate the working of iron with a moderate to high phosphorus content. The scale composition and the SHC composition both suggest the use of a very poor-quality dirty coal rich in shale fragments. The residue analyses and the finds of vitrified ceramic suggest the use of a blowhole in a clay wall. Even from the later medieval period the use of iron tuyères had been growing and they are documented in small forges in the 17th century (Moxon 1683). The spread of this technology into rural areas is not well understood. In Ireland, the survival of ceramic blowholes/tuyères is known certainly into the 17th and probably into the 18th century.

The metal worked

The interpretation of the metal being worked during the production of the three studied residue assemblages rests largely on the interpretation of the microresidues, since no pieces of raw material or semi-product were identified.

For the FHS, a role for both alloying elements and slag inclusions may be postulated alongside any smithing flux, for the development of the slag below the oxide scale. This slag (the 'inner slag' of Young 2011) will play a major role in the detachment of the scale from the underlying iron. In modern steels, the phosphorus content of the metal has been shown to play an important role (Ahtoy *et al.* 2014). These authors demonstrated that a eutectic between FeO and $Fe_3(PO4)_2$ occurs at a composition of 65.5% FeO - 34.5% P_2O_5 and a melting point of 940°C. In the oxidising conditions prevalent during scale formation this means that solid iron phosphate forms along the metal-oxide interface at temperatures below 940C, but above that temperature a melt will form, infiltrating grain boundaries and loosening the scale. According to Svedung *et al*. (1976) gaseous P_2O_5 may be generated above 950C, leading to scale buckling and detachment.

It is clear from the analysis undertaken for this project that elevated phosphorus contents may be detected in bulk areal analyses of scales (both FHS and SHS), in the intergranular glass phase in primary FHS and in the tiny glassy inclusions with the oxide in FHS. A comparison between these datasets is presented in Table 17 and the frequencies of scale particles within binned ranges for each assemblage in Table 18. Although it might appear likely that the P ratio (P ratio = $P_2O_5/(P_2O_5+FeO$; all in wt%) would be related directly to the phosphorus content of the precursor ferrous alloy, this has not yet been demonstrated experimentally. That this provides at least an indicative measure of the amount of phosphorus in the iron (a total of that in the metal and in the inclusions) would, however, seem very likely.

On this basis, it is considered significant that the average concentration of phosphorus in the scale from Area B2 is much less (less than half) that in the scale from areas K7 and E. Nonetheless, phosphorus is still a significant element in the scale from Area B2, and the piece PGI13 F2 that was investigated in detail showed very high concentrations in its glassy inclusions and films.

A similar statistic may be constructed for the concentration of manganese in the scale. There is little detailed experimental data on the behaviour of manganese during scale formation on comparable materials, but the work of Hayashi *et al.* (2009) appear to show manganese broadly being conserved from iron to scale in studies of modern steel. In the early ferrous materials considered here, the manganese will be largely carried in the inclusions of smelting slag, rather than MnS inclusions as in modern steels.

Data for manganese are presented in Table XII.2.19, which shows lower manganese contents in the scale from Area B2 than for areas K7 and Area E. The data from Area E are marked by the occurrence of some extremely manganese-rich outliers amongst the SHS, possibly because these particular particles formed largely from expelled smelting slag inclusions.

Fig XII.2.17 illustrates the relationship between these ratios of phosphorus and manganese oxides to iron oxide.

Elevated manganese and phosphorus concentrations are typical of (but not restricted to) smelting processes associated with the working of bog iron ore. There is only a very limited database of analysed early smelting slags from Wales, with probable Roman exploitation of bog iron ore from Johnston (elevated manganese, low phosphorus) and Llandefaelog (elevated manganese, elevated phosphorus) in South Wales (Young 2014d), early medieval exploitation at South Hook (strongly elevated manganese, elevated phosphorus; Young 2010b), Brownslade (slightly elevated manganese and phosphorus; Young 2010a) and Llandre (strongly elevated manganese, low phosphorus; Young 2016b) in South-West Wales), together with medieval evidence from Llwyn Du in North Wales (strongly elevated manganese, low to slightly elevated phosphorus; Charlton 2007, Table 9.3; Charlton *et al.* 2010).

Limited experimental work (author's unpublished investigations) has shown the manganese oxide (MnO) content of the SHS that forms from modern mild steel produces a ratio (as calculated above) for manganese in the range of 0.8 to 1.3% and for phosphorus mostly below detection, but with a few examples ranging upwards to 0.2%. For a sample of wrought iron (of uncertain origin) a similar experiment produced SHS with 0.10% to 0.25% MnO and mostly less than 1% P_2O_5, a distribution not unlike that of the scale from Area B2.

The evidence from areas K and E shows higher degrees in enrichment in both manganese and phosphorus. This is particularly clear in the scale from Area E, with its outliers rich in both. The pattern of phosphorus and manganese in the scale from Area E shows a degree of similarity with that observed at Hen Gastell (Young 2016c), compatible with the possibility that both sources might have been of relatively local origin. The scale from area K7 differs only subtly from that of Area E, with the possibility that its inputs were slightly lower in manganese.

Discussion

The Parc Cybi project provided evidence for multiple phases of blacksmithing on the site between the Iron Age and the post-medieval. The quantity of evidence for three of these phases of blacksmithing since the late Roman period was sufficient to permit useful further investigation. There was little direct evidence for the nature of the artefacts produced or for the nature of ferrous alloys being worked, so investigation of the macro- and micro-residues from the smithing was undertaken to provide evidence for the evolution of rural blacksmithing over this period.

The programme of work described above is innovative in its scope and intent. There has been little or no previous discussion in the published literature of key aspects of the development of smithing residues. This project has expanded and developed the ideas of Young (2011) in order that the processes of origin of hammerscale may be better understood and that understanding be applicable to the generation of archaeologically significant interpretation. That is not to say that all the compositional evidence can, at present, be explained unambiguously, but plausible and justifiable interpretations may now be made of the three main suites of archaeometallurgical residues from Parc Cybi.

Area K7

The first phase of blacksmithing, that in area K7 currently interpreted to be of late Roman age, provided the only identified metallurgical features. The most significant of these is the grave-like cut [80063], divided into two by stone slabs. The eastern compartment was approximately 400mm square, the fill of which (80013) yielded the microresidues investigated here. The western compartment also contained charcoal-rich fills. To the north of this 'grave' was an irregular hollow [80104] filled by deposits with charcoal and smithing residues. Some 6m to the NW was pit [80055] which had fills with *in situ* burning and contained residues. Many of the graves produced smithing resides, suggesting that those graves post-date at last some of the metalworking. If feature [80063] was a grave (either used or unused), then it would imply that the metalworking post-dates at least the onset of the cemetery. If cut [80063] was not a grave, or was perhaps a grave-cut abandoned on encountering the stones of an earlier feature, then the cemetery could, in theory, post-date the metalworking. The grave containing most residue was Grave K, in the opposite corner of the cemetery to cut [80063]; this produced 346g of material (including the hearth lining fragment sampled as PGI16). This suggests that either the smithing activity was multi-focal, or the residues were dispersed over a wide area. The abundance of residues in the 'eastern compartment' of [80063] suggests this may have been either a hearth or anvil base; in either case the distance from probable hearth [80055] would strongly support the multi-focal model.

The stone setting (80045) of the 'eastern compartment' of [80063] suggests some similarity with the early medieval smithing hearths at Gelligaer (Young 2015) and Pontardulais (Ward 1978), both of which were elongate cuts (albeit of different sizes) at one end of which was a smithing hearth, the other a stone setting interpreted as an anvil base.

The smithy has uncertain detailed stratigraphic relationship with the cist cemetery but may have been broadly contemporary. An association of areas employed as cemeteries with ironworking appears to have been common in early medieval Ireland, but there is no recognised association within Roman Britain. An association with a cemetery suggests an occasional activity – with cemeteries sometimes acting as focal points for community gatherings or fairs.

Besides a rich assemblage of microresidues and other materials likely to have accumulated on the smithy floor (using the term smithy in its broadest sense – there is no evidence these deposits represent a building or other roofed structure), these features produced some small fragments of metalwork indicating the working of both iron and copper alloy, with sheet metalwork, rivets and nails. The hammerscale composition suggests a more significant level of use of a siliceous flux than in the other areas, perhaps, but not certainly (some smiths just chose to use more flux than others) indicative of the need to weld carbon steel. If so, the smiths of area K7 were employing a very wide range of metals – a much more diverse range of activities than there is evidence for at the other areas. The composition of the scale suggests, however, that the dominant ferrous alloy was a phosphorus bearing iron with some manganese (within smelting slag inclusions). Such a phosphoric iron is most likely to have smelted from a bog iron ore.

There were no significant pieces of macroscopic slag recovered and these residue facies must have been deposited elsewhere. The abundant microresidues are indicative of a significant period of activity, but further quantification is limited by lack of significant waste dumps.

Area E

The second phase of blacksmithing evidence from area E is of uncertain age but is currently interpreted as being late medieval. The residues were recovered from a series of cut features, but none of these was certainly identifiable as being of metallurgical origin. These features partly underlay the farmyard of Tyddyn Piodan which appears on the estate map of 1769. A possible timber barn(?), however, intervenes stratigraphically between the evidence for smithing and features known from the 18th century. An age of late medieval has been assumed for the smithing, but in the suppose hearth [31152] and the circular gullies (haystacks?) with which it was associated the only direct dating evidence was supplied by an associated copper alloy object, probably a buckle tongue (sf5517).

The metal being worked appears to have been dominantly a bloomery iron of moderate phosphorus and manganese contents, suggestive of iron smelted from a bog iron ore. The general pattern of manganese and phosphorus distribution in the residues resembles that observed at Hen Gastell (Young 2016c), although the overall residue composition is rather different because of the differing hearth ceramic at the two sites. The composition of this ceramic at Parc Cybi resulted in elevated magnesium and calcium in the residues, as in those from area K7.

The later history of bloomery iron production in North Wales is almost entirely unknown. The industry in upland Merioneth is known to have survived into the early 15th century (Smith 1995; Crew 2009), but it is unclear if similar activities continued elsewhere. The first blast furnaces appeared in N Wales in the late 16th century, but the industry is poorly known for this period. The late medieval smelting slags from Llwyn Du contained an average of 9.7% MnO (Charlton 2007, Table 9.3; Charlton *et al.* 2010) so slags of this type would be capable of providing the high-Mn SHS particles from Area E, but the phosphorus content of the Llwyn Du slag was on average only 0.2%. The high-P SHS particles show a higher phosphorus content than is typical for smelting slags, so unless a very unusual source was employed, they probably reflect either the partitioning of the phosphorus from the iron into high-P inclusions during bloom refining or concentration from metal to melt during scale formation (potentially the mixing of a melt produced from smelting slag inclusions with a eutectoid iron oxide-phosphorus oxide melt).

The assemblage comprised a small number of substantial SHCs and a suite of microresidues, from separate contexts (and thus not certainly derived from a single phase of activity, although this is likely). The SHCs are towards the upper end of the range of blacksmithing SHC weights, with a loss of 430g of iron to the hearth during the work period presented by SHC PGI9. This is not the total amount of iron lost during that work period, because much would also have been lost as scale at the anvil. A substantial amount of iron must therefore have been processed in the work period, probably with a high proportion of high temperature work.

The composition of the scale suggests that the smith did not make as much use of sand flux as did their predecessor in Area K7. The difference may be simply personal choice, or it may be that the smiths of Area E were making less use of carbon steels (that would have required more extensive flux use; Young 2011).

It might be viewed as slightly unusual that such a small assemblage is indicative of such intense activity. SHCs of the kind seen in area E would normally be seen as the waste from a full-time smithy rather than a sparse rural activity. On that basis, it might be possible that this assemblage is related to a specific event rather than to an intermittent activity of the farm. It is also possible that the sporadic high-manganese/high phosphorus scale particles, taken with the SHC morphology, suggests a component of working down of not fully refined bloom iron.

Area B2

Area B2 produced a assemblage of blacksmithing residues of rather different character from the earlier two phases. This phase of smithing, interpreted to be of post-medieval age, showed clear evidence for the dominant, although perhaps not exclusive, use of coal as fuel. The scale chemistry suggests, mainly, the working of an iron much lower in manganese and phosphorus than that employed previously in areas K7 and E This is compatible with a switch from using relatively locally-sourced bloomery iron, to a fined bar (wrought) iron (or just possibly to a low manganese, low phosphorus bloomery iron). Some evidence for high-phosphorus iron continues, both in some of the scale from B2, but also in the dark glassy slags from Area K that are probably associated.

The SHCs from this phase of activity were not as large as those from Area E, but again indicate iron loss greater than that typical of relatively low-status rural smithies. The SHCs would not be compatible, for instance, with just intermittent farrier work. As with Area E, it is possible (but not certain) that the iron working represents a specific event (e.g. a building project), rather than a long-lived farm activity. The very low quantity of residues recovered during excavation would argue against either phase being a persistent major activity of a permanent smithy.

The residues are interpreted as showing influence from hearth ceramic, indicating the use of a clay wall (or tuyère) with blowhole, rather than the use of an iron tuyère that was probably usual by the 18th century, if not rather earlier. This, together with the slightly elevated phosphorus content of the iron suggests an earlier date rather than a later post-medieval age and the low manganese content of the scale makes a later 19th century or younger age very unlikely.

General

Taken together, the three phases of smithing investigated here show some similarities, perhaps not least the sparsity of evidence for each. This observation is even more pronounced when the evidence for smithing in all the other parts of the Parc Cybi site, at other periods, is also considered. Not one of these phases/occurrences has convincing evidence for more than a short-lived activity, and none has convincing evidence for a metallurgical structure of any sort (a smithy). Unless Tyddyn Piodan had a medieval precursor, none of the occurrences appears to have been particularly lose to domestic habitation. This raises the question of whether the smiths were actually inhabitants of the site, or perhaps instead visitors.

It is unlikely that the intense work (indicated by the large size of the SHCs from areas E and B2) would be that of a part-time smith. Usually the heavy, welding-intensive, tasks would be the realm of a professional craftworker, not a farmer dabbling in ironworking. The evidence from K7 is different, but again hints at a craftworker working with multiple metals, ferrous and non-ferrous. Although Roman settlements and estates commonly show evidence for such activities, it is unclear, at best, whether rural estates would have afforded enough work for the continuous employment of a suitable specialist. This is interpreted to be the reason behind the difference in a residue assemblages recovered from rural and urban sites.

Thus, both the Roman and later evidence, both the style of metalworking evidence and its dispersed geographical distribution, may hint that the metalworking at Parc Cybi was undertaken by itinerant metalworkers.

Supplementary Note

After completion of reporting on this project, two radiocarbon determinations were obtained from Area E, context (31153), the fill of feature [31153], interpreted as a smithing hearth. This context contained abundant archaeometallurgical residues from which samples PGI5 to PGI8 were drawn for the analytical investigations. The two determinations give similar calibrated ages (SUERC 87442 cal AD1020-1160; SUERC 87443 cal AD1020-1190) spanning much of the 11th to 12th centuries.

This new dating strengthens the significance of the similarity of the evidence for the iron source from the hammerscale of Area E to that from Hen Gastell (Young 2016c), with which the smithing activity is broadly contemporary. The evidence suggests the use on both sites of iron with a very similar composition of slag inclusions.

The weights of the SHCs from Area E (estimated as approximately 740g and 860g) are high for blacksmithing assemblages of this date from England (a Saxo-Norman blacksmithing assemblage from Tidworth, Wilts., contained SHCs with a maximum weight of 680g and mean of 265g, Young 2019c; two adjacent sites in Worcester produced SHCs with a maximum weight of 782 and a mean of 260g, Young 2007, 2009b). What appears to be an early medieval specialist iron production site in Burlescombe, Devon, but which is currently undated, produced a heavier assemblage ranging up to 3115g, with a mean of 510g. The only assemblages of comparable date from Wales are from South Hook, Pembrokeshire (Young 2010a and 2010c; a probably 8th – 10th century iron production site that produced five intact SHCs ranging from 704g – 1440g) and from Hen Gastell (Young 2016c; ab assemblage ranging up to 1000g, with a mean of 260g).

These very limited data suggest that the SHCs of Area E were generated during end use blacksmithing, rather than bloomsmithing, but with a rather high iron loss. This high iron loss might be attributable to heavy smithing activities (entailing a high proportion of welding perhaps) or perhaps to a situation where the raw iron arrived at the smithy in a less than fully processed form. Such a pattern of distribution has been suggested for the early medieval of Ireland (e.g. Young 2009e, 2019) and has been documented for the medieval period in Denmark (Pleiner 2000, 241-2). This mode of distribution may be particularly associated with the production of split blooms (for Irish example see Evans 1948), which provides a mechanism for dividing blooms of increased size into parts still suitable for hand-working. No examples of split blooms are known from Wales, but the *dozen* divided into 6 *pieces* (each of about 2lb) were widespread units for iron in late medieval Wales and the value of *piece* iron suggests it was a semi-finished material (Smith 1995, Crew & Crew 1995). Blacksmithing operations using *piece* iron as a starting material would fit very well with the operations both at Hen Gastell and Parc Cybi Area E.

The similarity of the provenancing evidence from Area E and Hen Gastell is complicated by the influence of very different hearth clays on the two sites. Although the iron employed on the two sites had similar characteristics (strongly elevated manganese and phosphorus) this merely indicates that both sites were employing iron from similar bog iron ore sources, but is insufficient to determine whether they were using iron from the same source. At present no 11th – 12th century smelting sites are known in Wales with any certainty, although some of the activity in eastern Llwn (Cefn Graianog - Dolbenmaen area) may be of this age. Other currently unrecognised sources are very likely to have existed, potentially even within Anglesey.

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Glossary

Blacksmithing: the working of iron and steel. Often restricted to the secondary smithing – i.e. the smithing of iron to produce or repair artefacts, as opposed to the smithing involved in the production of billets or bar iron from raw iron blooms.

Bloomery: a furnace for smelting iron from ore in which iron is produced as a solid material. The bloomery process was employed mainly prior to the introduction of the later blast furnace from the late 15th century.

Bloomsmithing: The process of reworking a raw bloom, through repeated reheating and hammering, to reduce its content of slag, to remove unwanted inclusions and to draw out the remaining slag into elongate inclusions. The end product may be a bar or billet. Usually taken as an alternative term for bloom-refining.

Blowhole: A hole through a furnace or hearth wall through which air is blown.

Cotectic: crystallisation of a liquid to produce two phases at the same time.

Dendrite: a branched crystal form, often associated with rapid growth.

End member: a limit of a solid solution. E.g. forsterite and fayalite are the magnesium and iron end-members of the substitution forming solid solution in the Fe-Mg olivines.

Euhedral: a crystal shape in which the crystal has developed its faces, indicating its growth was unobstructed by previously formed phases.

Fayalite: the iron-rich end member of the olivine group, Fe_2SiO_4. Abbreviated to Fa.

Flake hammerscale (FHS): fine, thin flakes, of iron oxides spalled from the surface of the workpiece. They result from the oxidation of iron at high temperature. They typically have shiny surfaces.

Forsterite: the magnesium-rich end member of the olivine group, Mg_2SiO_4. Abbreviated to Fo.

Hammerscale: material, usually detached, formed by oxidation of the surface of hot iron. Closely related terms forge scale and mill scale are also often sued for modern materials.

Haematite (hematite): anhydrous iron (III) oxide, Fe_2O_3

Hercynite: an iron-aluminium member of the spinel group of minerals: $FeAl_2O_4$

Iscorite: a mineral (ideally Fe_7SiO_{10}) with iron in both +2 and +3 valence states.

Lining Slag: Slag formed from the complete or partial melting of hearth or furnace lining.

Liquidus: the liquidus is the line on a phase diagram above which a particular composition is completely liquid (molten).

Magnetite: ideally Fe_3O_4; the iron end member of spinel group

Olivine: a group of silicate minerals of the form $(M^{2+})_2SiO_4$ where M can commonly be iron, magnesium, calcium (up to half the M^{2+} ions) or manganese.

Phosphoran: a mineral name qualifier for a phosphorus rich variant (usually in substitution for silicon). Applied to iscorite and olivine (including fayalite) amongst others. Phosphoran olivine has >0.03 atoms per formula unit phosphorus (Boesenberg & Hewins 2010).

Smelting: a process involving the reaction of raw ore to produce a metal,

Smithing: the activity involved in forming a metal object, including, but not limited to, forging metal and joining metal by welding.

Smithing hearth cake (SHC): a typically plano-convex slag mass that forms below the blowhole in a smithing hearth from the reaction of iron/iron oxides lost from the workpiece, melted hearth ceramic and fuel ash.

Solidus: the solidus is the line on a phase diagram below which a particular composition is is completely solid (crystallized).

Spheroidal hammerscale (SHS): are very small (<2mm diameter) spheroidal droplets, with a shiny surface, formed by chilling in air of droplets of melted iron oxides forcibly expelled from workpiece during hammering. They may be generated purely from the melting of the superficial oxide film (as generated the flake hammerscale), from the expulsion of melted slag included within the iron, and their generation may be enhanced by the use of a smithing flux

Spinel: a mineral group with the general formula $X^{2+}Y^{3+}{}_2O_4$, which includes, amongst many others, the minerals hercynite and magnetite.

Subhedral: a form of crystal growth which is impeded by some pre-existing phases to permit only some of the crystals faces to be developed.

Substitution: the process or pattern of replacement of one ion by another within a crystal lattice.

Vesicle: a void or pore, usually rounded and formed as a preserved gas bubble in a solidified melt.

Wustite: an iron II oxide, nominally FeO, but frequently non-stoichiometric.

Figures

Fig XII.2.1: Flake hammerscale, BSEM images.

a. Scale preserving much primary texture (classified as 'u'). Planar magnetite zone (mid grey) below outer face, approximately 10µm thick. Outer part of wustite (pale) zone shows abundant exsolved magnetite (mid grey). Limited slag formation on rear face, particularly around embayments, glass (dark grey) with fine wustite dendrites and locally (right) fine iscorite (elongate mid-grey plates) in areas with some magnetitisation of wustite. Intergranular slag films extend only locally to rear of magnetite zone. Scalebar 100µm. PGI6 particle f8.

b. Scale preserving much primary texture (classified as 'p1'). Planar magnetite zone (mid grey) below outer face, approximately 15µm thick. Outer part of wustite (pale) zone shows abundant exsolved magnetite (mid grey). Extensive, but irregular melting along embayed rear face with wustite present in these areas as rounded 'pseudo-dendritic' growths in glass. Intergranular slag films extend only locally to rear of magnetite zone, probably associated with cracking. Scalebar 500µm. PGI2 particle f5.

c. Scale preserving much primary texture (classified as 'p1'). Planar magnetite zone (mid grey) below outer face, approximately 35µm thick. Outer part of wustite (pale) zone shows abundant exsolved magnetite (mid grey). Inner part of wustite shows development of thick intergranular glass films with pore-lining iscorite fringes. Intergranular slag films extend only to mid-thickness. Some magnetitisation of wustite along rear margin. Scalebar 100µm. PGI2 particle f10.

d. Scale preserving little or no primary texture (classified as 'c'). Planar irregular magnetite zone (mid grey) below outer face, approximately 35µm thick. Wustite (pale) zone completely melted and regrown as pseudo-dendritic texture with abundant areas of plate-like iscorite. New-formed wustite locally overprinted by magnetitisation extending inwards from magnetite zone. Some roundedly tabular porosity within slag. Scalebar 100µm. PGI13 particle f12.

e. Scale preserving primary texture only in isolated blocks 'floating in slag (classified as 'p3'). Planar irregular magnetite zone (mid grey) below outer face, approximately 35µm thick. Slag comprises wustite dendrites and pseudo-dendrites followed by fayalite laths. Some minor rounded vesicles within slag. Scalebar 500µm. PGI6 particle f1.

f. Scale showing a high degree of lateral variability. Overall classified as 'p3', but has some areas (left of centre) with preservation of in-situ primary scale. Slag comprises wustite dendrites and pseudo-dendrites followed by fayalite laths. In the external protuberance (right) the slag is dominantly magnetite followed by fayalite, with a thick secondary magnetite layer. Some minor rounded vesicles within slag. scalebar 500µm. PGI2 particle f6.

g. Scale preserving little or no primary texture (classified as 'c'), although there is a minor are of poorly preserved polygonal texture lower left of centre. The new-formed texture shows stout wustite dendrites with little glass (i.e. this scale must have experienced high temperatures to have undergone melting since the fluxing effect would have been low). The scale shows the development of fractures indicating brittle deformation (at high temperature, since the glass phase has flowed into the cracks locally). Scalebar 500µm. PGI2 particle f3.

h. Scale showing cataclastic texture. Angular fragments with a wide variety of textures from primary to recrystallised are muddled and cemented by a slag containing equant olivine crystals. This texture has been produced through the effects of the smith's hammering. Scalebar 100µm. PGI13 particle f19.

Figures

Fig XII.2.1

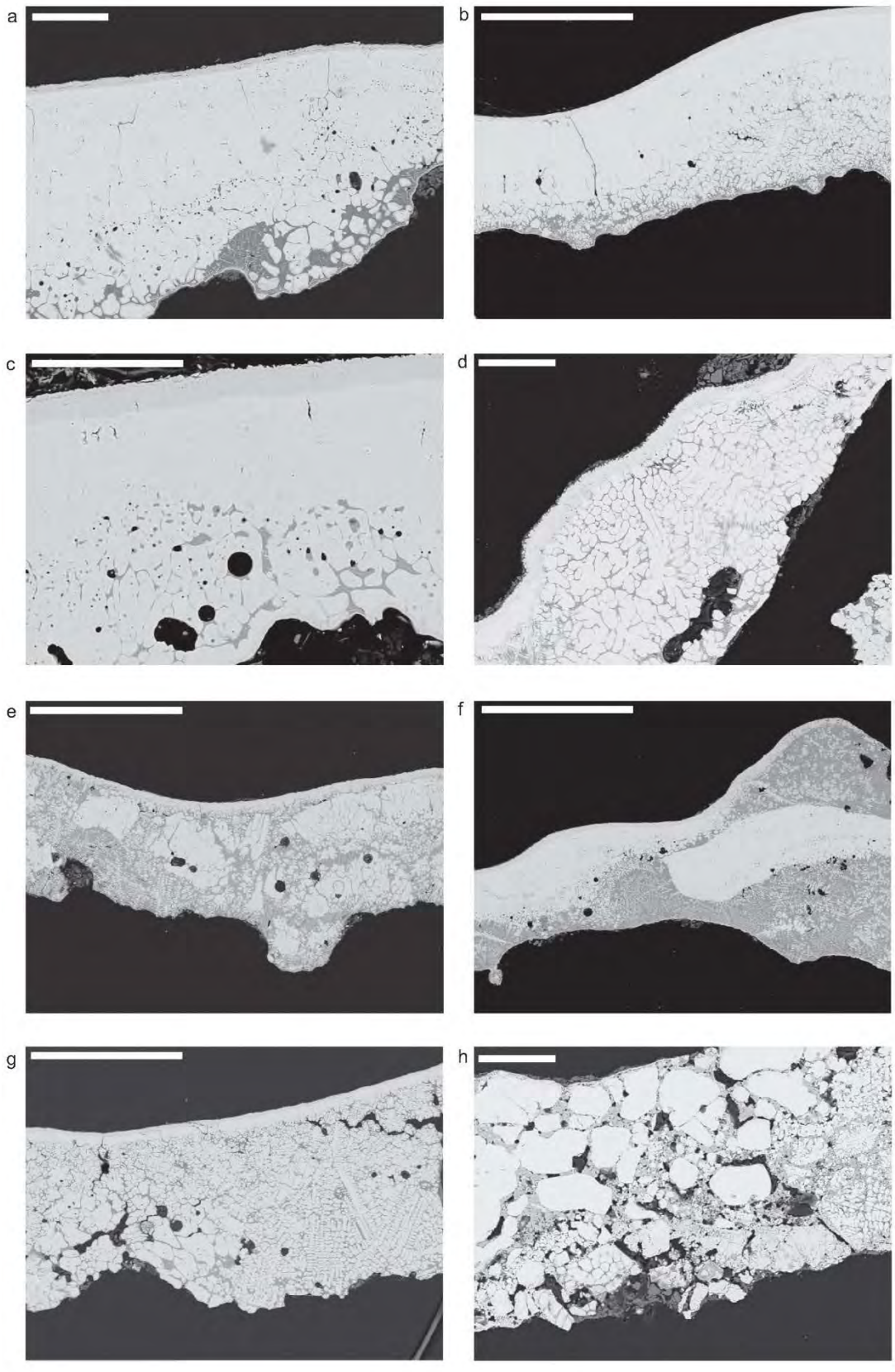

Fig XII.2.2: Spheroidal hammerscale, BSEM images

a. High-iron spheroid (96% expressed as FeO), with 20µm magnetitised crust cross-cutting wustite structure, then polygonal to dendritic wustite. The form of the dendrites is visible in the vesicle lower right that has not become filled with resin on mounting the sample. Scalebar 100µm. PGI5 particle s5.

b. High-iron spheroid (96% expressed as FeO), coarse subhedral magnetite marginally, passing into wustite pseudo-dendrites and dendrites with little glass. Scalebar 100µm. PGI12 particle s16.

c. Low-iron spheroid (70% expressed as FeO), 10µm magnetite crust, then fine wustite dendrites in glass growing off 'brain' fragments. Scalebar 100µm. PGI5 particle s7.

d. Medium-iron spheroid (84% expressed as FeO), very thin crust, then densely packed wustite pseudo-dendrites and dendrites in minor glass. Scalebar 100µm. PGI5 particle s22.

e. Medium-iron spheroid (82% expressed as FeO), thin crust supporting coarse skeletal magnetite dendrites, internally fine wustite dendrites in glass. Scalebar 100µm. PGI12 particle s3.

f. Low-iron spheroid (60% expressed as FeO), very thin crust with minor oxide dendrites, but dominated by feathery olivine dendrites. Scalebar 100µm. PGI1 particle s29.

Fig XII.2.2

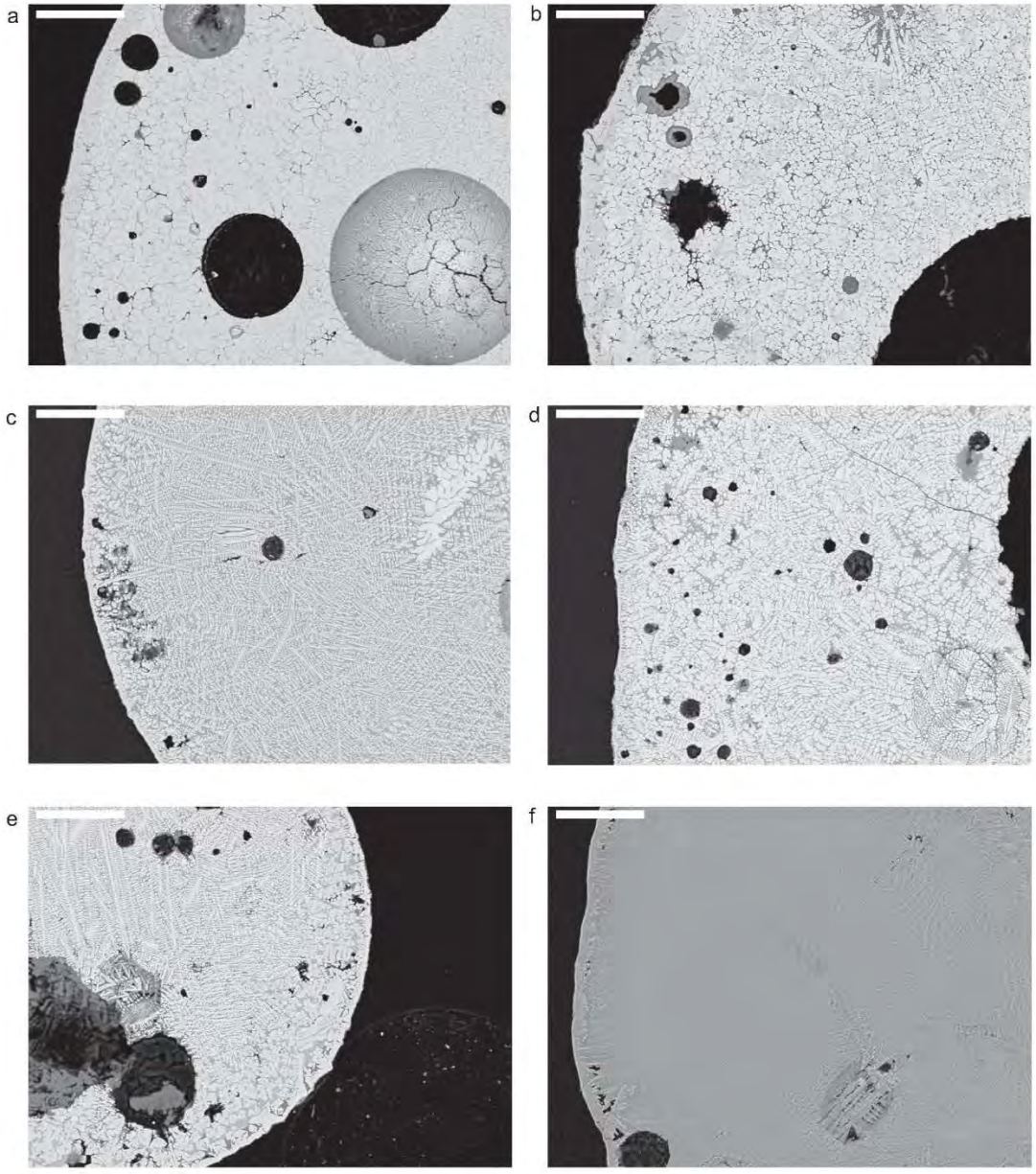

Fig XII.2.3

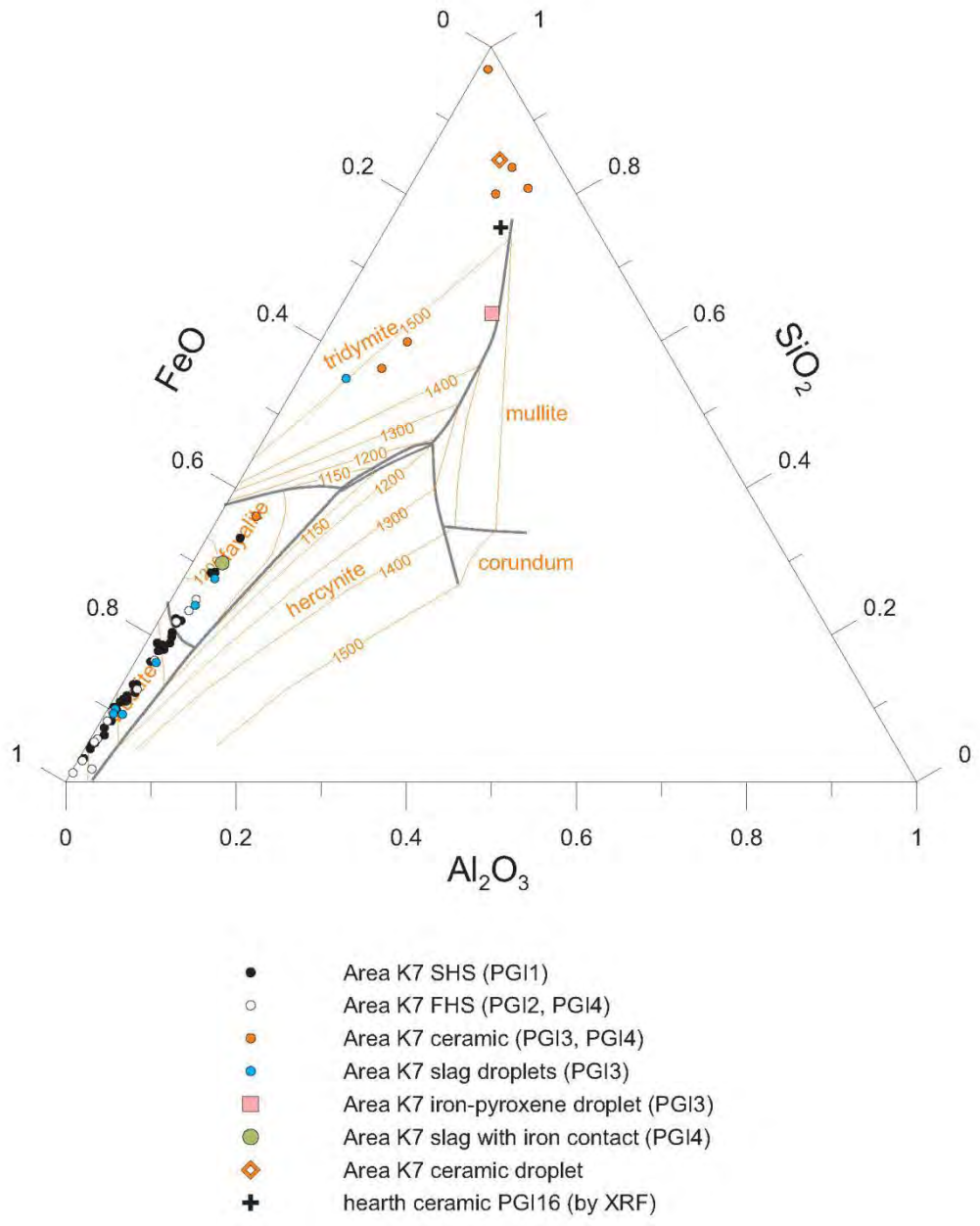

Fig XII.2.3: SiO_2-Al_2O_3-FeO ternary diagram (after Schairer & Yagi 1952) for analyses of samples from Area K7. The higher-iron residues form a very strong linear array with an average ratio for SiO_2:Al_2O_3 of 7.9.

Fig XII.2.4

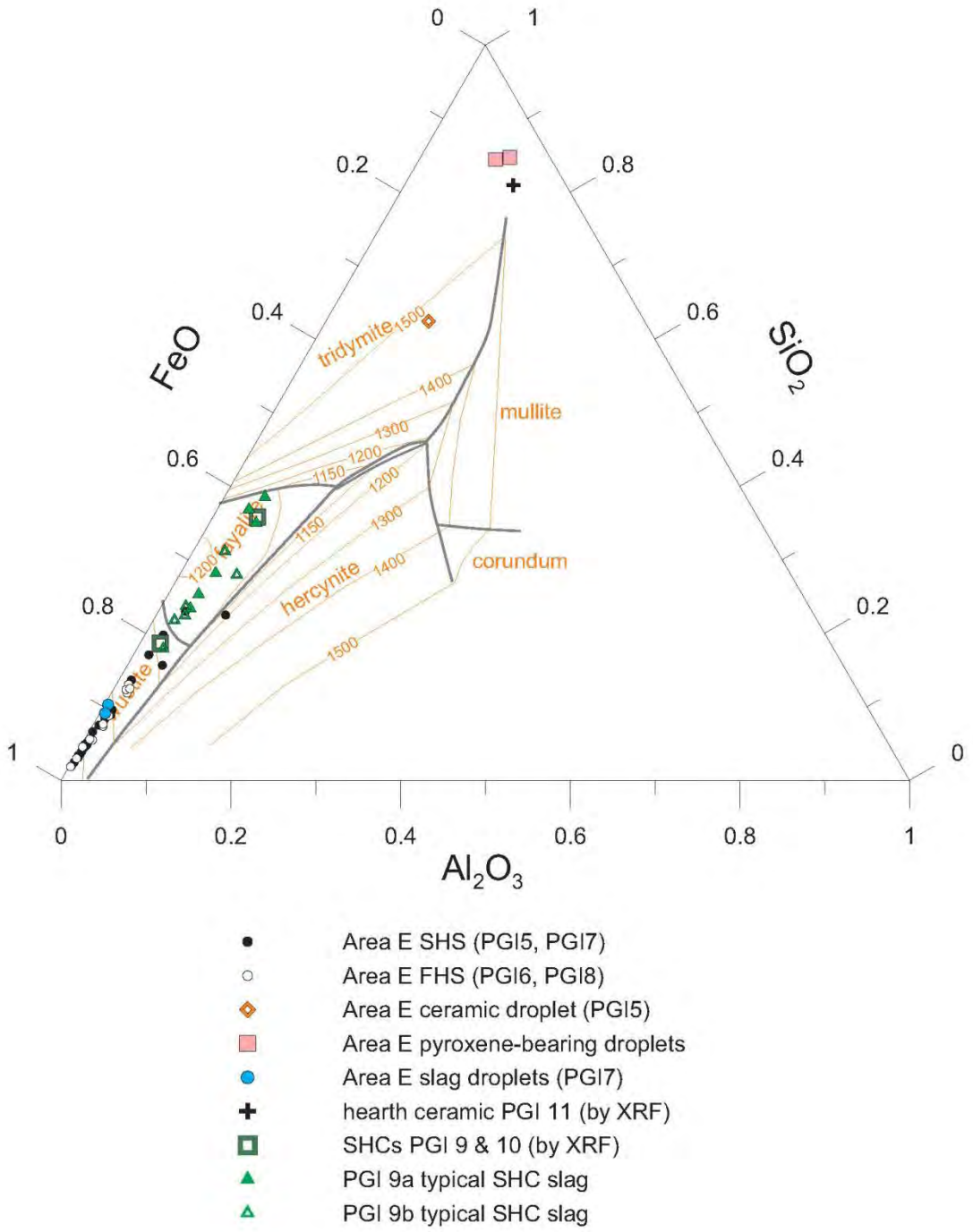

Fig XII.2.4: SiO_2-Al_2O_3-FeO *ternary diagram* (*after Schairer & Yagi 1952) for analyses of samples from Area B2.* The higher-iron residues form a very strong linear array with an average ratio for SiO_2:Al_2O_3 of 6.8.

Fig XII.2.5

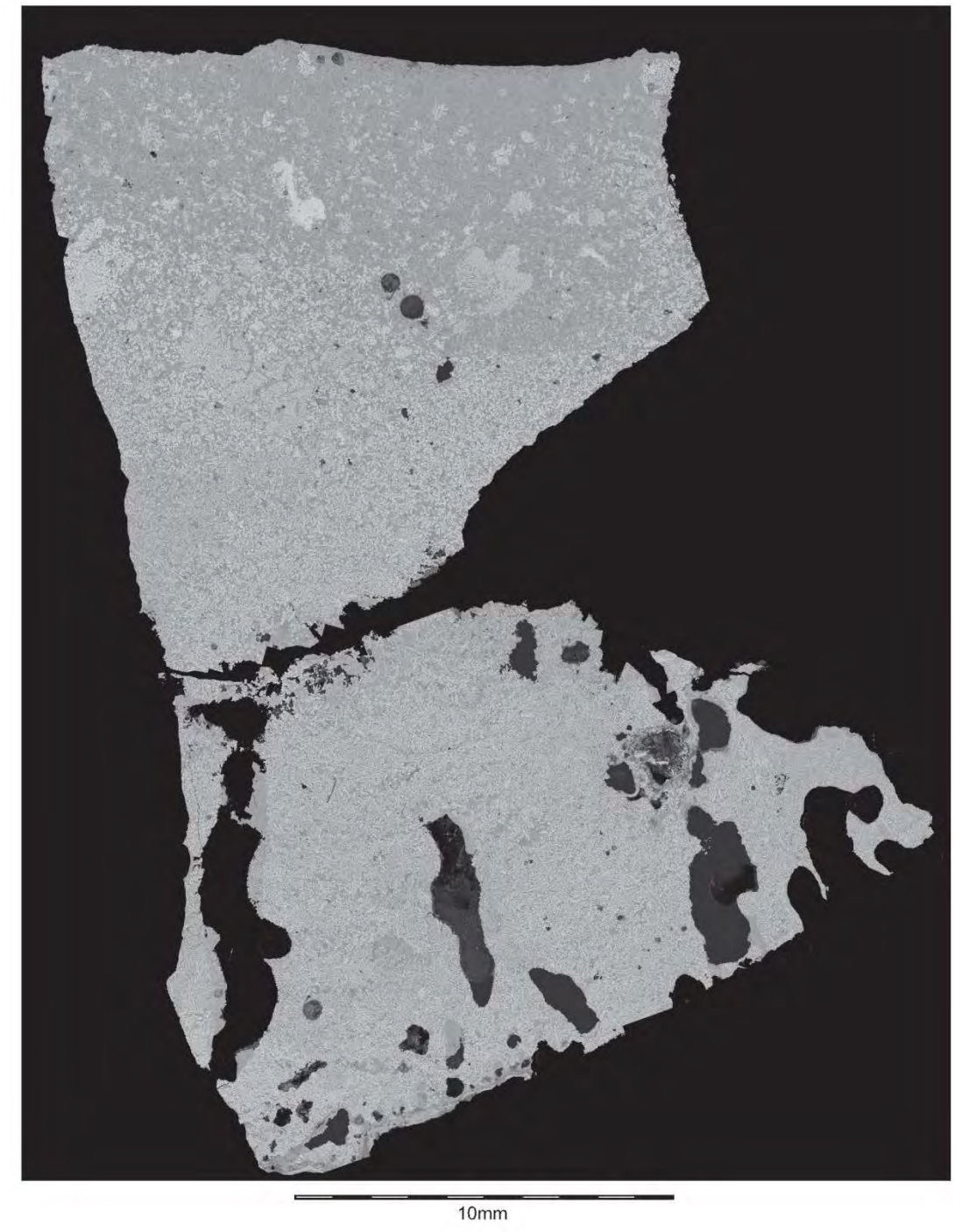

Fig XII.2.5: montage of BSEM images of SHC PGI9.
The SHC is illustrated with its top uppermost. The two samples (PGI9a lower and PGI9b upper) are illustrated in approximately their original relative locations

Fig XII.2.6

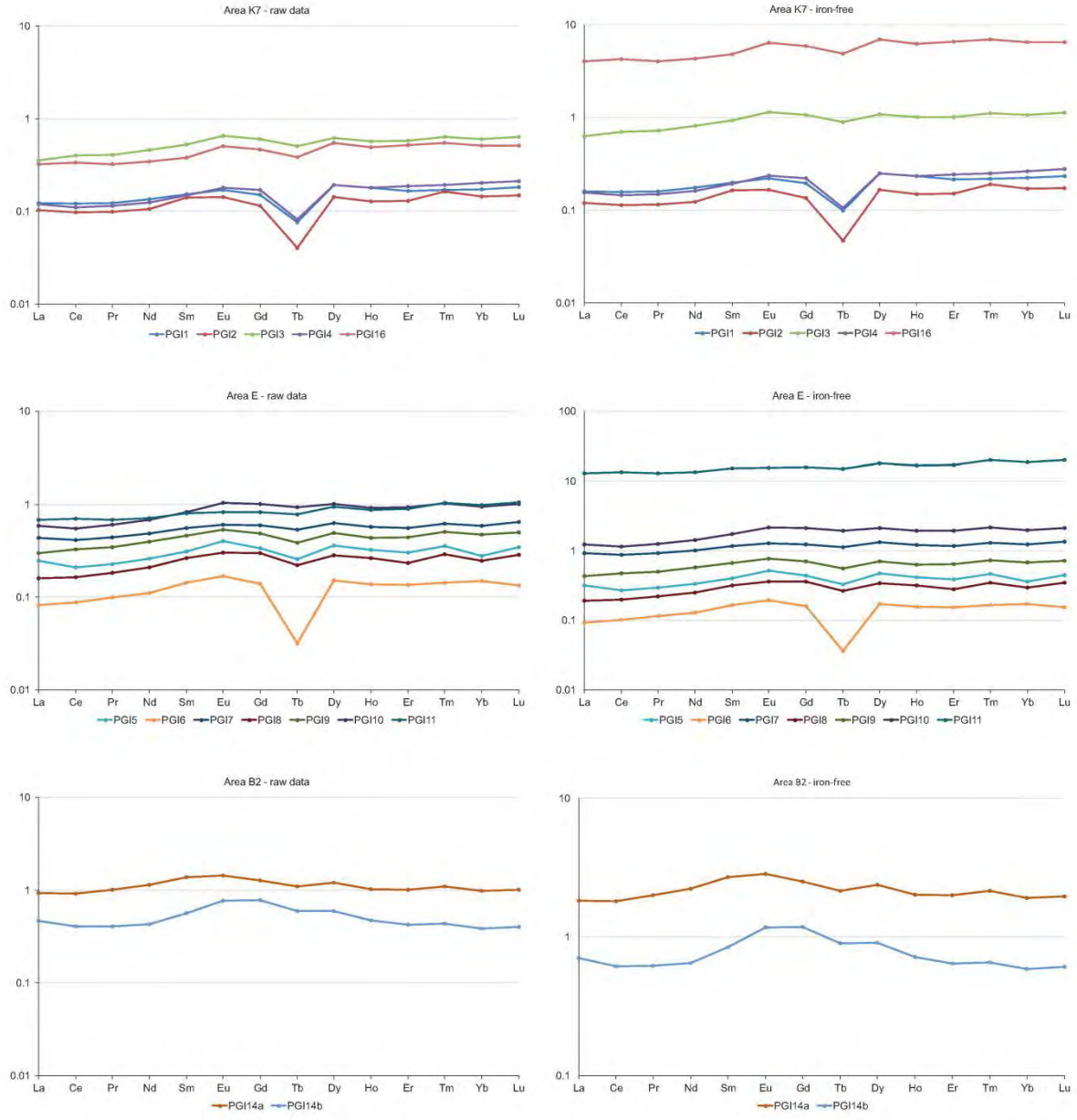

Fig XII.2.6: Upper Crust-normalised REE data for samples from Parc Cybi. The normalisation factors are after Taylor and McLennan 1981.

The diagrams on the left illustrate the raw data, those on the right the data recalculated on an iron-free basis (which may allow for ease of comparison of the non-iron input in the slag).

Fig XII.2.7

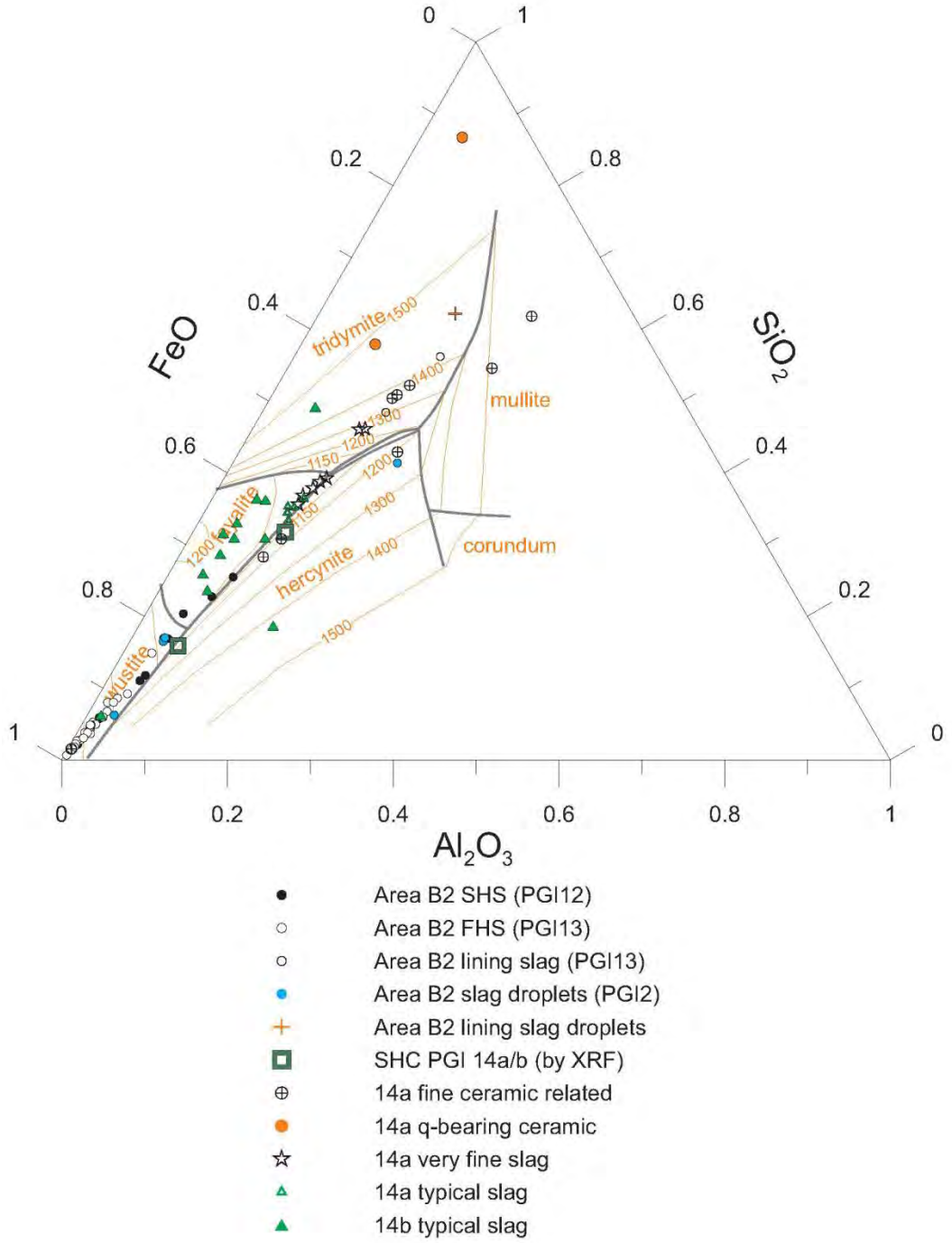

Fig XII.2.7: SiO_2-Al_2O_3-FeO *ternary diagram* (*after Schairer & Yagi 1952) for analyses of samples from Area B2.*

The residues include a very strong linear array with an average ratio for SiO_2:Al_2O_3 of 3.3 (including most of the microresidue analyses and those of the upper part of SHC PGI14), but some data, most notably some of the analyses from the lower part of SHC PGI14, possess an average ratio for SiO_2:Al_2O_3 of 6.8.

Fig XII.2.8

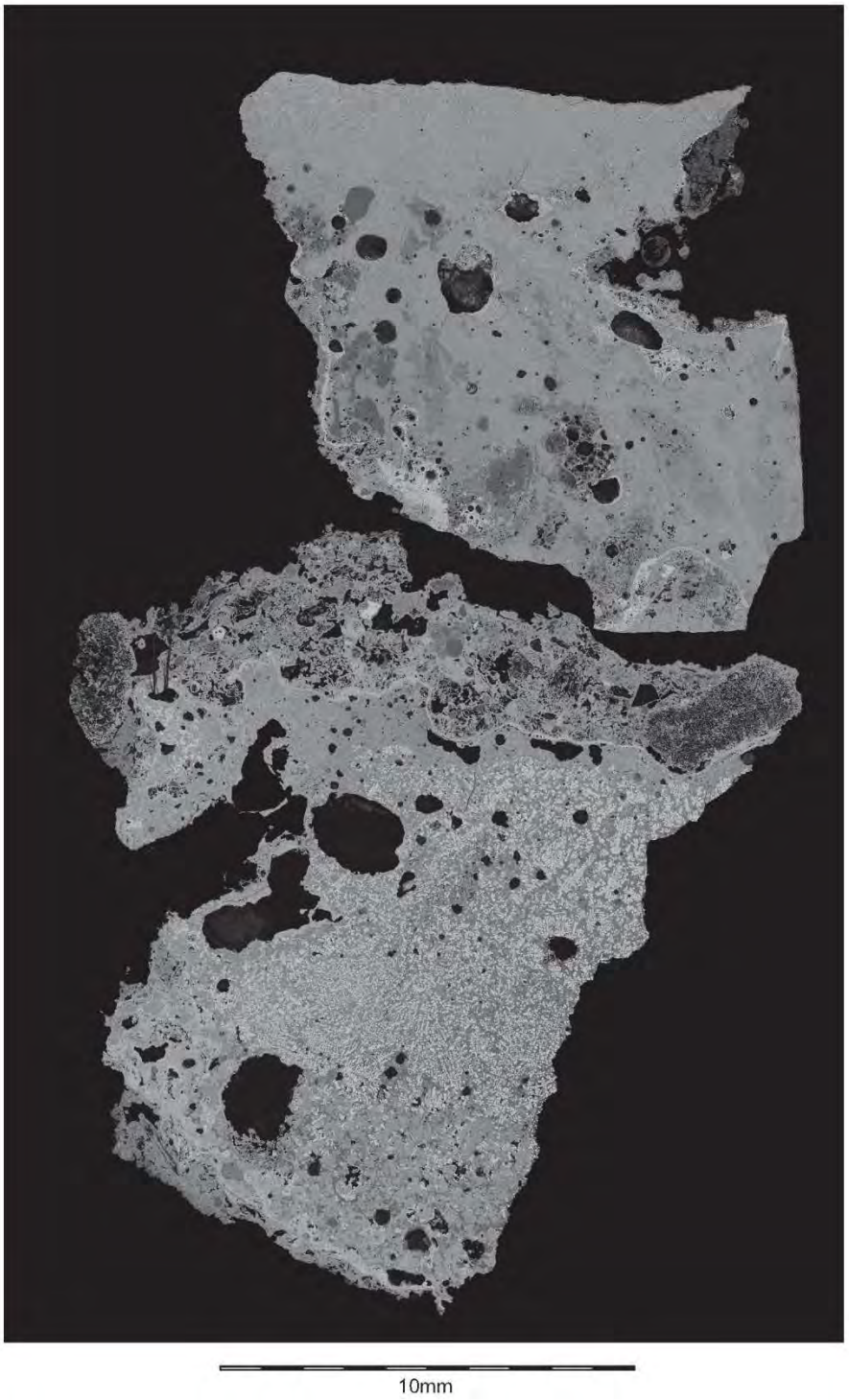

Fig XII.2.8: montage of BSEM images of SHC PGI14.
The SHC is illustrated with its top uppermost. The two samples (PGI14a lower and PGI14b upper) are illustrated in approximately their original relative locations, which has necessitated the reversal of the image of PGI14b. The two samples reflect an original division of the SHC into two components, divided by a layer rich in spent coal fuel in a ferruginous matrix.

Fig XII.2.9

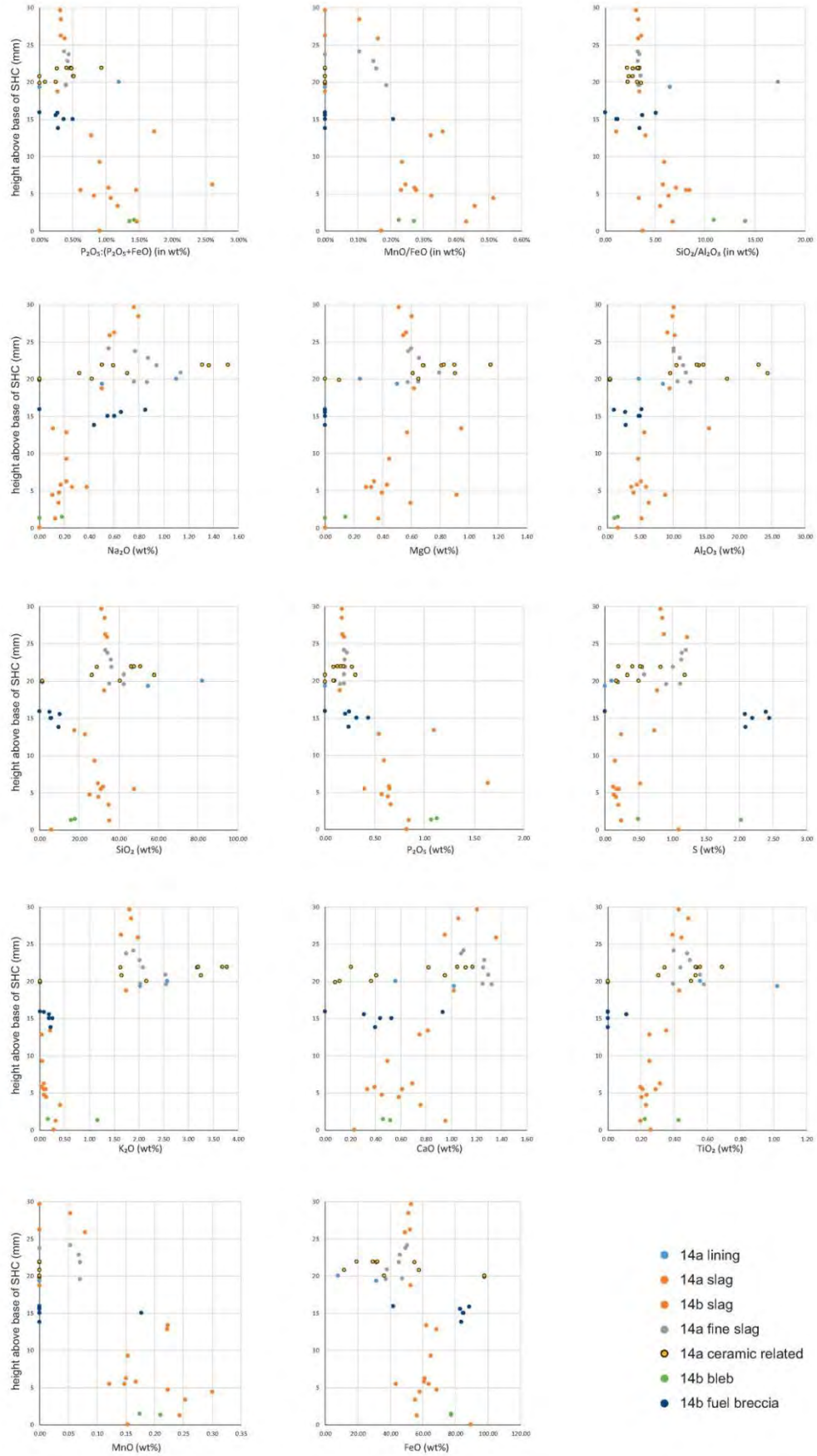

Fig XII.2.9: the variation through the complex SHC PGI14 for various elements, elemental oxides and oxide ratios.

Fig XII.2.10

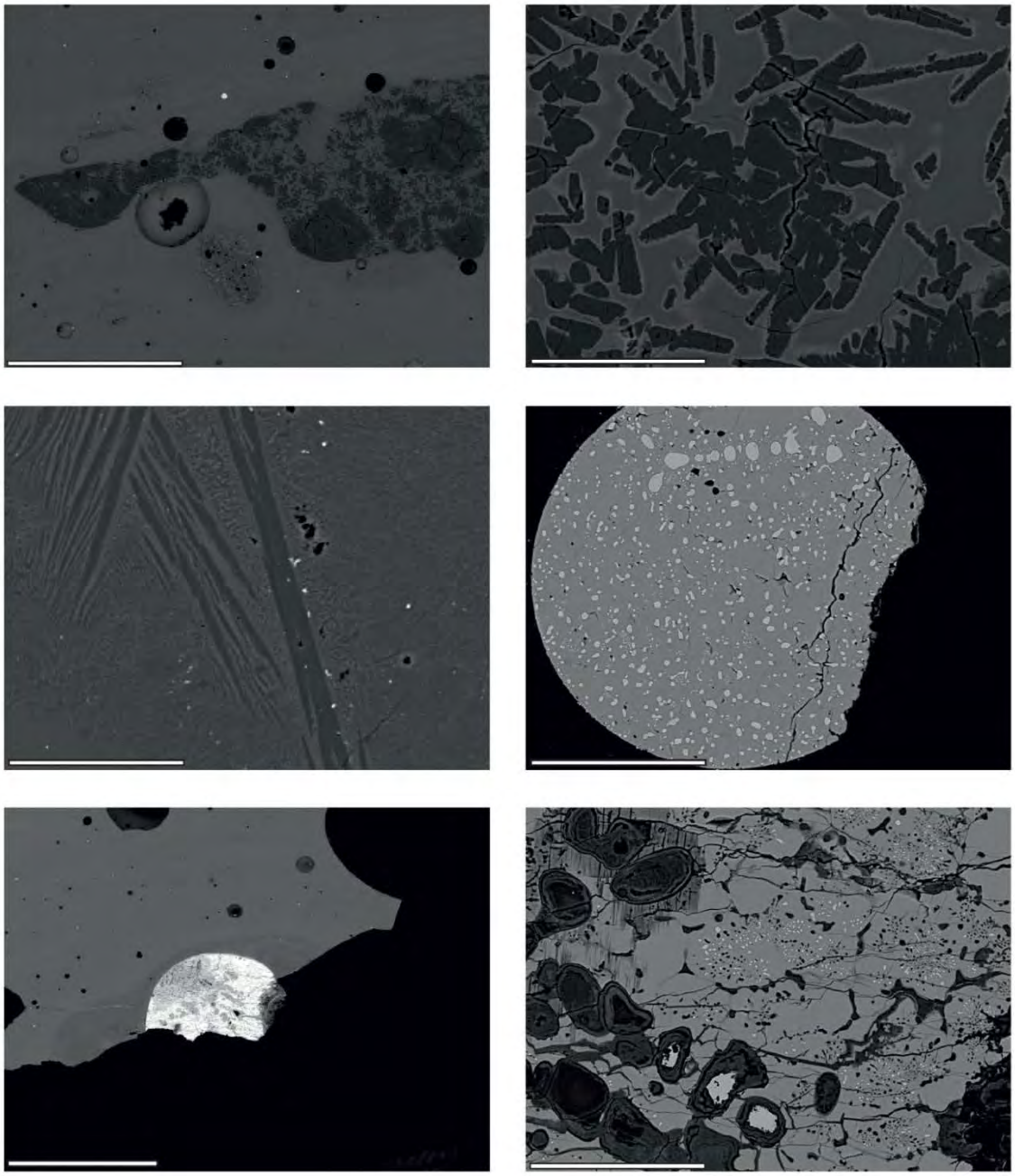

Fig XII.2.10: Glass PGI 17, BSEM images

a. Glassy matrix bearing bright prills of iron/iron sulphide. The large discontinuous clast is a relict of a large grain of a quartzose material, the smaller clot (just below the centre) is a calcic area dominated by anorthite. Scalebar 1mm.

b. Detail of part of a siliceous clast showing the new-formed crystals of a high-temperature silica polymorph. The cracking of the siliceous mineral is probably associated with the volume changes associated with the polymorph transitions. Scalebar 100µm.

c. Detail of a crystalline clot in the mostly glassy sample. This clot has elongate anorthite (dark) fringed with dendrites of pyroxene (mid-tones). The bright blebs are prills, mainly of iron sulphide. Scalebar 50µm.

d. Prill of a complex eutectic featuring dendrites of phosphoric, nickel-bearing iron, in iron sulphide. Scalebar 100µm.

e. Complex prill in glassy matrix. Scalebar 1mm.

f. Detail of complex prill in (e) showing weathering around dendrites of phosphoric iron and along the grain boundaries of the iron sulphide. The iron and the sulphide are intergrown on at least two scales. Scalebar 100µm.

Fig XII.2.11

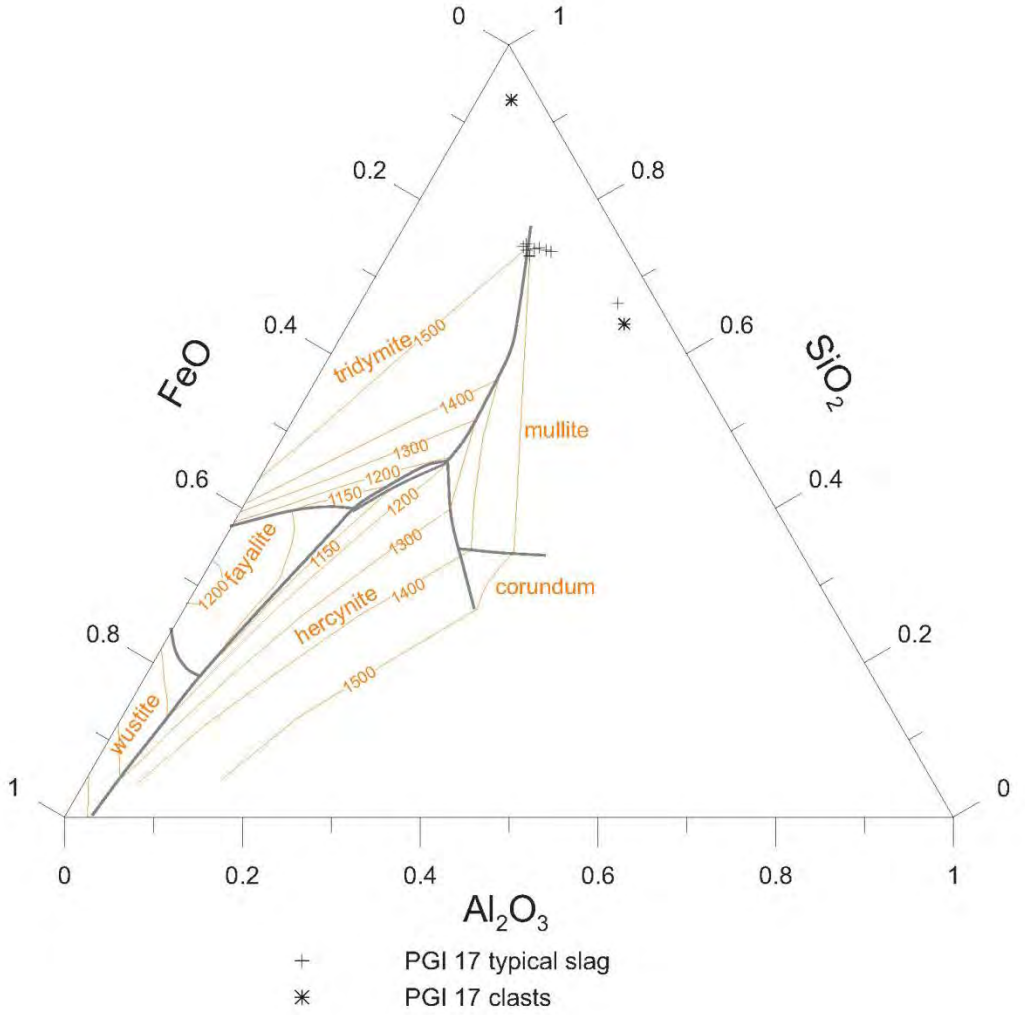

Fig XII.2.11: SiO_2-Al_2O_3-FeO ternary diagram (after Schairer & Yagi 1952) for analyses of sample PGI17. The illustrated data include analyses of bulk glass (crosses) and bulk analyses of two recrystallised inclusions, one silica-rich (probably originally mainly quartz) and one more aluminous and strongly calcic (an anorthite-pyroxene clot). The bulk material has an average SiO_2:Al_2O_3 ratio of approximately 4.5.

Fig XII.2.12

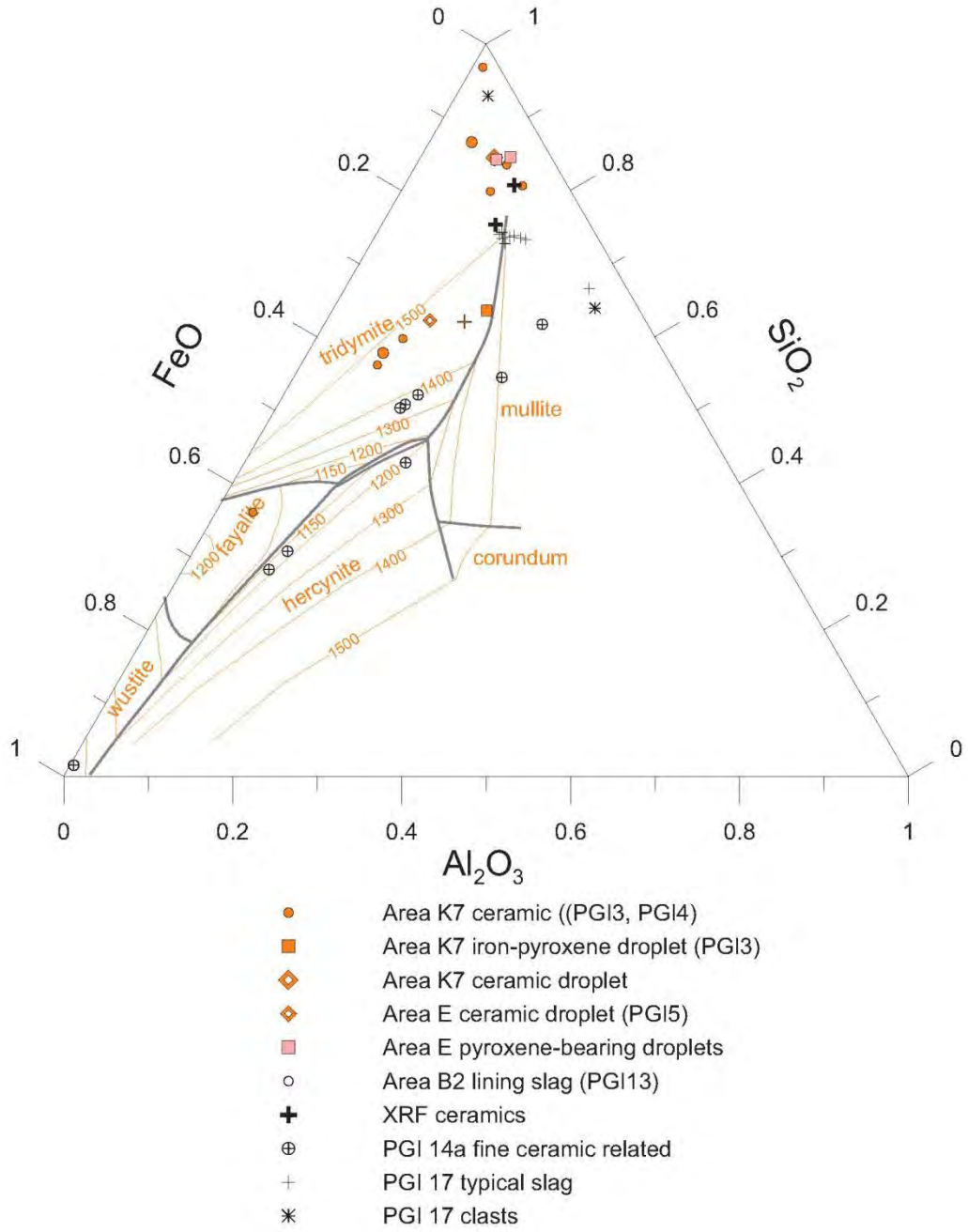

Fig XII.2.12: SiO_2-Al_2O_3-FeO *ternary diagram* (*after Schairer & Yagi 1952) for analyses of samples of ceramic materials.*

Fig XII.2.13

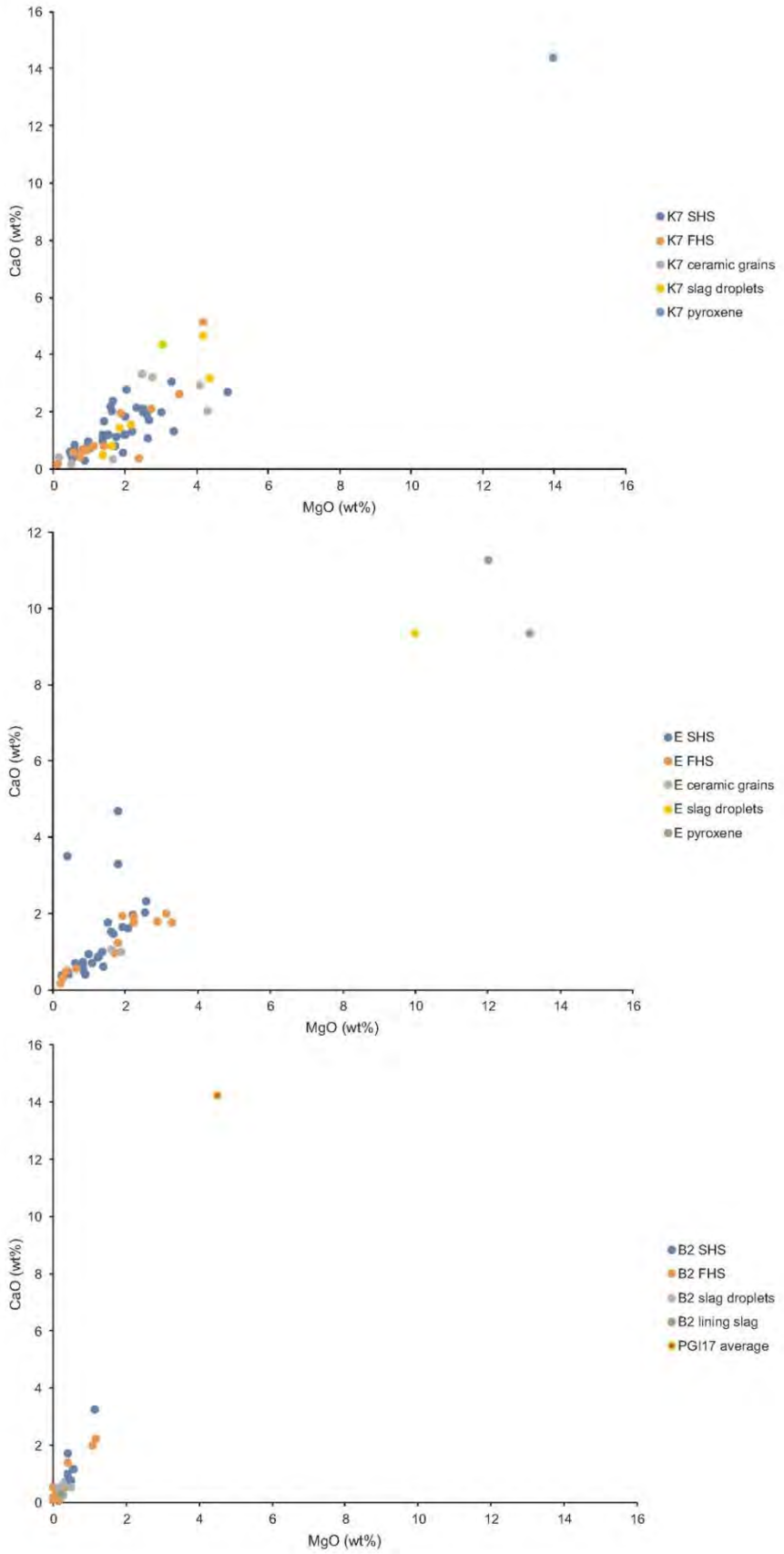

Fig XII.2.13: CaO plotted against MgO (both wt%) for analyses of residues from Parc Cybi.

Fig XII.2.14

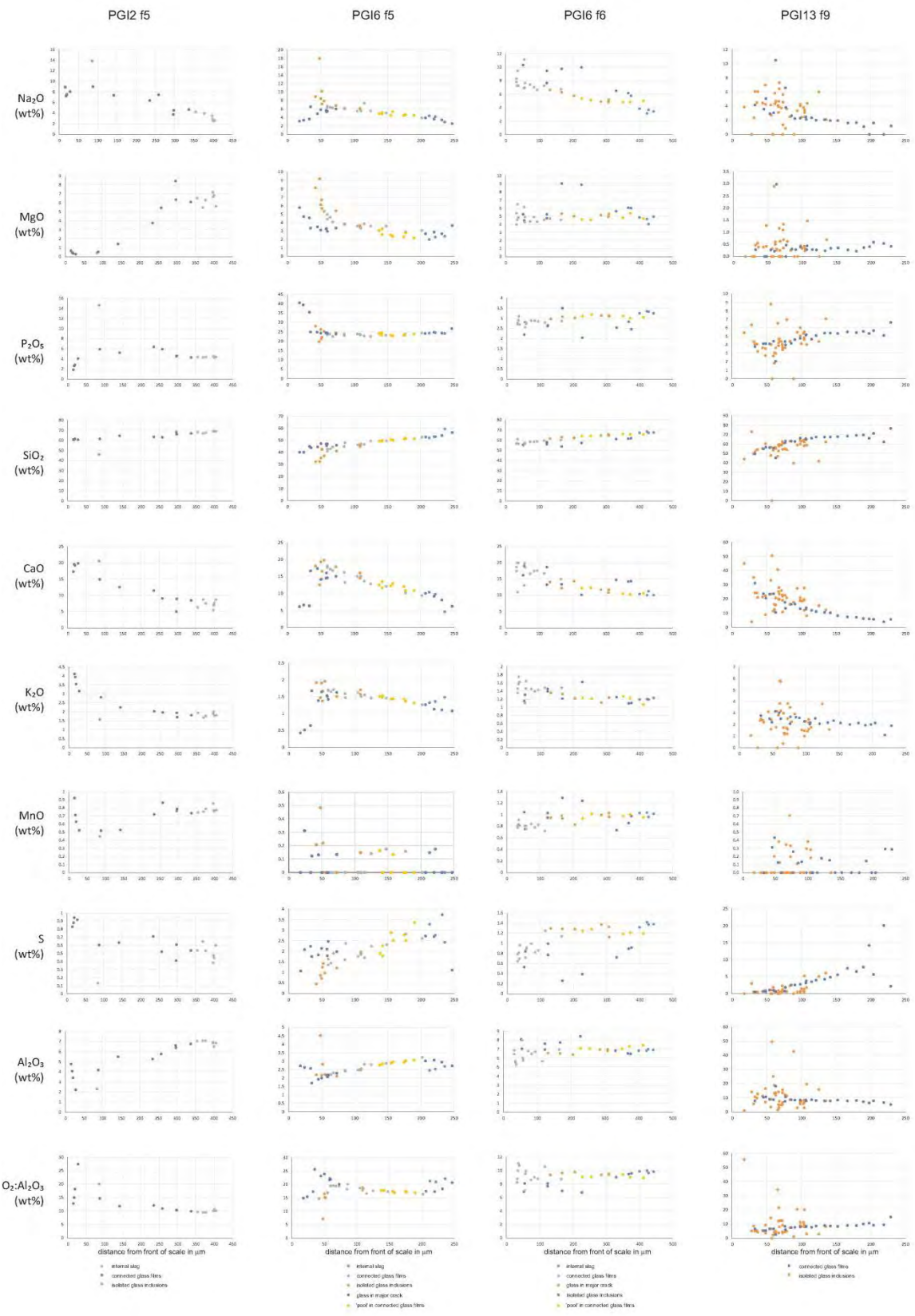

Fig XII.2.14: Variations in various elements, elemental oxides and oxide ratios plotted against distance from the from (outer) face of flake hammerscale for four particles.

Fig XII.2.15

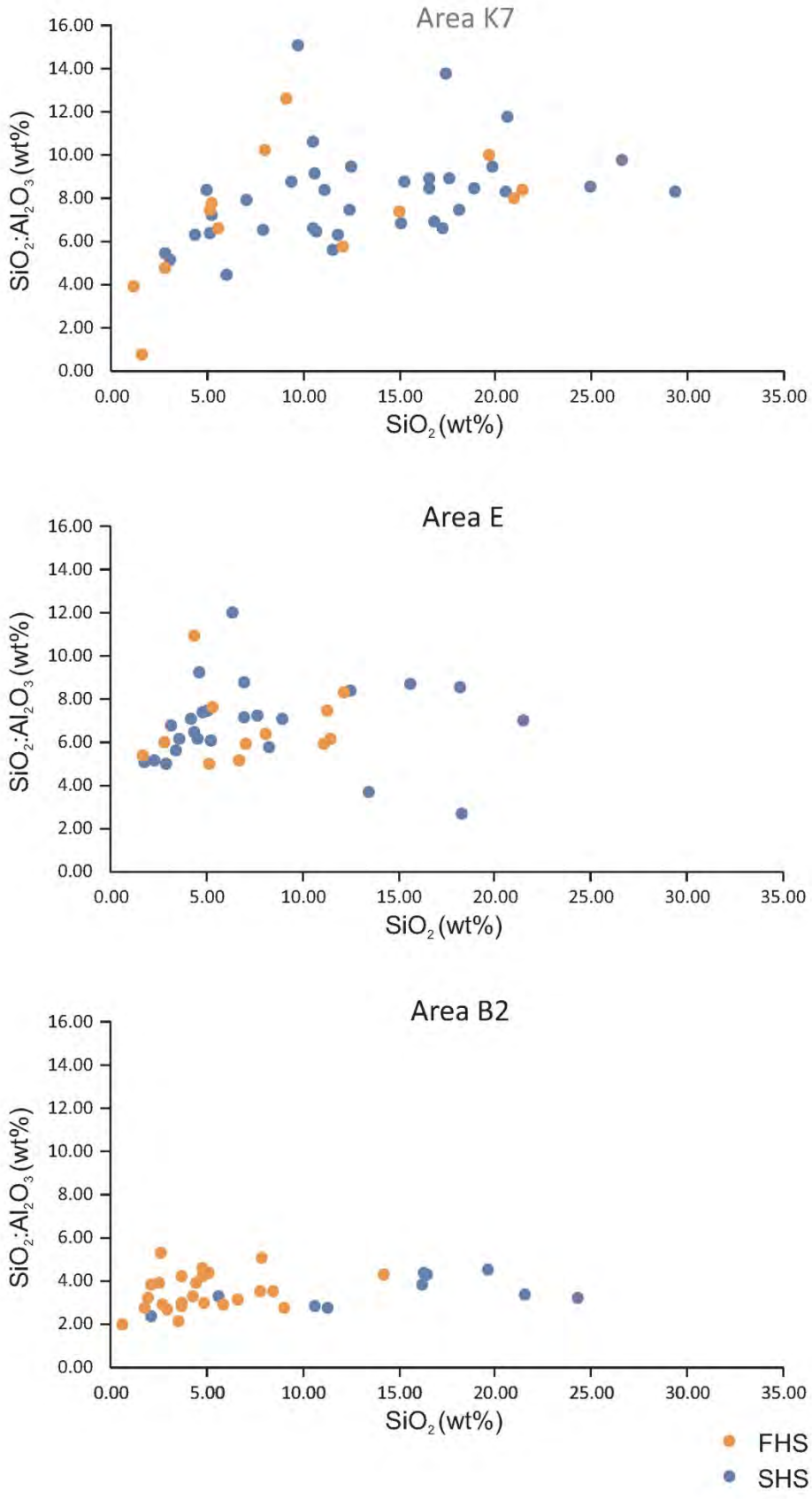

Fig XII.2.15: variation in the SiO_2:Al_2O_3 ratio of analyses of hammerscale particles plotted against their SiO_2 content (all values wt%).

Fig XII.2.16

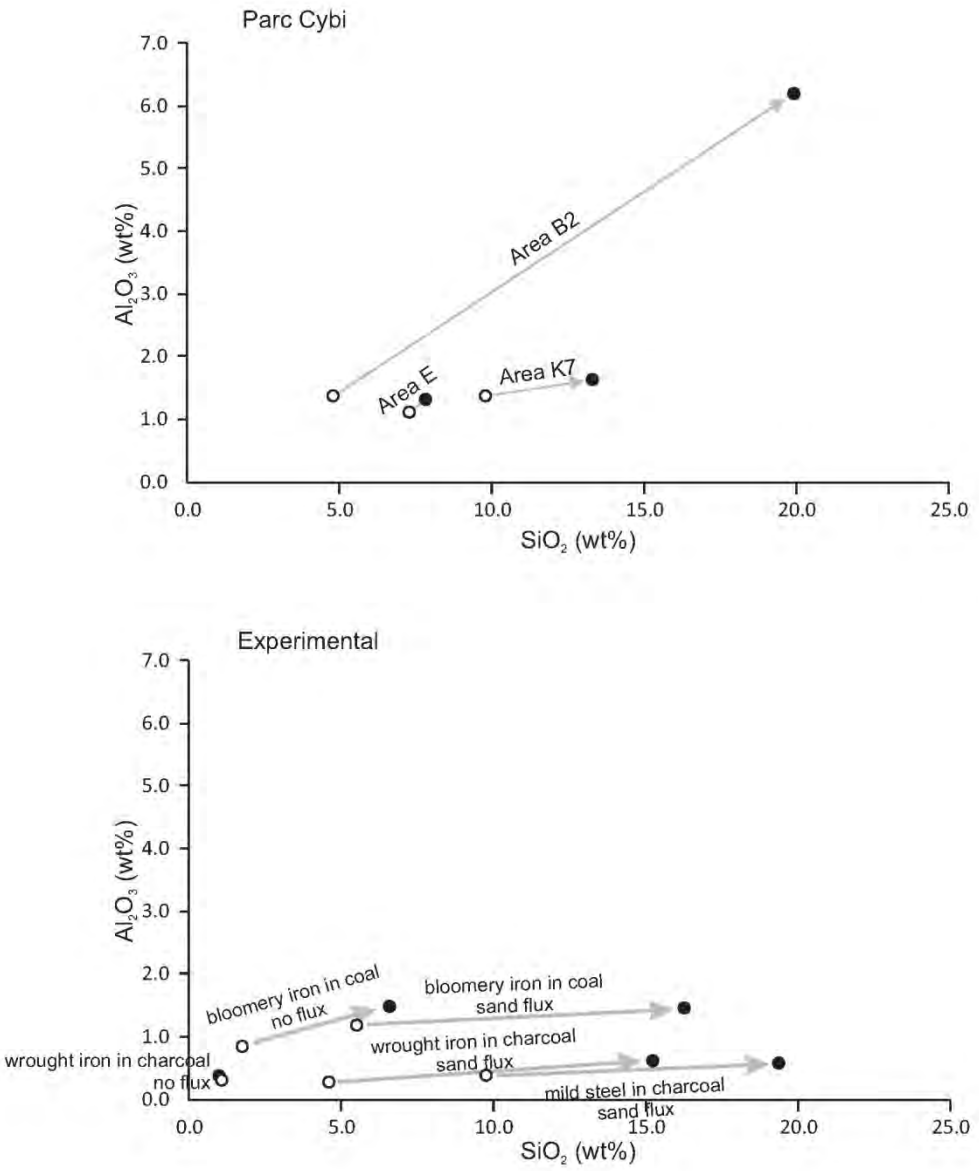

Fig XII.2.16: Plots of Al_2O_3 against SiO_2 for the average composition of associated assemblages of FHS (open circle) and SHS (filled circles).

The upper diagram illustrates the assemblages from the three investigated areas at Parc Cybi. The lower diagram shows data from a series of experimental forge welding sessions. The forge hearth employed for the experimental one was of modern design, so lacks significant contamination by hearth ceramic.

Fig XII.2.17

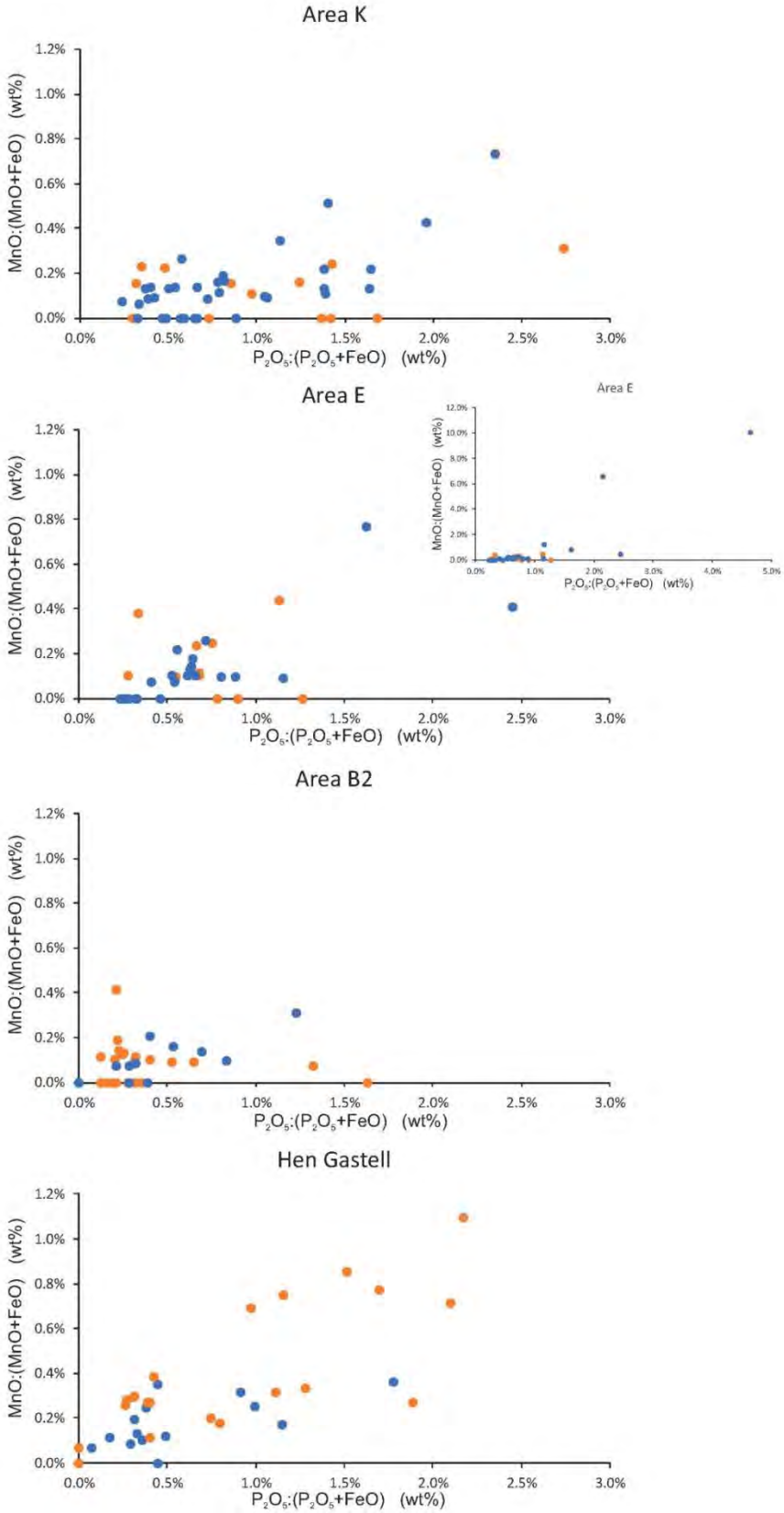

Fig XII.2.17: Comparison of phosphorus and manganese contents of spheroidal hammerscale (blue) and flake hammerscale (orange).

Phosphorus and manganese are illustrated as a percentage of their total including iron. For Area E the inset diagram allows presentation of high outlying values outside the range of the other plots. Comparative data from Hen Gastell after Young, 2016c.

Tables

Table XII.2.1: samples selected for analytical investigation

Sample		C	SF	S	photo	chem	SEM	notes
Smithing in Area K7 (Roman)								
PGI1	SHS	80013	733		y	y	y	
PGI2	FHS	80013	733		y	y	y	
PGI3	droplets	80013	733		y	y	y	
PGI4	flats	80013	733		y	y	y	
PGI16	lining	80018	811			y		
Smithing in Area E (medieval?)								
PGI5	SHS	31153	878	5551	y	y	y	
PGI6	FHS	31153	878	5551	y	y	y	
PGI7	droplets	31153	878	5551	y	y	y	
PGI8	flats	31153	878	5551	y	y	y	
PGI9	SHC1	31163	922			y	y (9a: upper)	2 halves of dense well-formed plano-convex SHC (100x100x50mm) 90%? effectively complete, charcoal inclusions, 770g.
							y (9b: lower)	
PGI10	SHC2	31163	922			y		proximal end of SHC with deep burr and slightly prilly base, probable charcoal inclusions, 368g
PGI11	lining	31172	920			y		200g piece
Smithing in Area B2 (post-medieval)								
PGI12	spheroidal	90036	84	5907	y		y	
PGI13	tabular	90036	84	5907	y		y	
PGI14	SHC1	90036	600			y	y (14a: upper pad)	95x130x70(50)mm, transverse irregular SHC, badly weathered, dished top with raised central dimpled lump, this pad (dense clinkery prills and coal shale fragments) overlies a coke rich layer forming the top beyond its extent, rod extends distally, local shale-rich boss of accretion on base. Main body of slag comprises prills and coke. 646g
						y	y (14b: lower body)	
Glass, Area H								
PGI17	glass	2093	1017				y	

Table XII.2.2: major element analyses by XRF expressed as wt%. Raw numerical values, except for calculated columns for FeO (as an alternative to Fe_2O_3) and S (as an alternative to SO_3).

Sample	**SiO_2**	**Al_2O_3**	**Fe_2O_3**	**FeO**	**MnO**	**MgO**	**CaO**	**Na_2O**	**K_2O**	**TiO_2**	**P_2O_5**	**SO_3**	**S**	total plus LOI
PGI1	10.39	1.46	86.17	77.54	0.04	1.52	1.24	0.57	0.24	0.16	0.60	0.00	0.00	97.11
PGI2	6.97	1.14	95.49	85.92	0.06	1.09	0.64	0.40	0.15	0.12	0.60	0.00	0.00	101.12
PGI3	28.77	3.67	63.10	56.78	0.06	3.74	3.05	1.50	0.63	0.32	0.99	0.24	0.10	101.96
PGI4	12.39	1.79	85.83	77.23	0.04	1.29	0.84	0.72	0.24	0.17	0.55	0.00	0.00	98.38
PGI5	10.49	1.60	85.88	77.28	0.23	2.08	1.76	0.77	0.31	0.16	0.93	0.00	0.00	98.54
PGI6	6.08	1.01	96.99	87.27	0.12	1.38	0.95	0.47	0.13	0.10	0.63	0.22	0.09	102.23
PGI7	36.91	3.94	52.97	47.66	0.10	4.38	3.95	1.73	0.75	0.34	0.96	0.27	0.11	103.27
PGI8	8.63	1.34	92.58	83.31	0.11	1.77	1.59	0.65	0.17	0.12	0.74	0.29	0.12	102.30
PGI9	18.00	2.49	76.86	69.16	0.17	4.01	4.03	1.32	0.30	0.24	0.75	0.96	0.39	103.14
PGI10	32.09	4.83	53.07	47.76	0.24	5.68	5.17	1.99	0.72	0.39	0.81	1.05	0.42	102.05
PGI11	75.19	12.10	5.84	5.25	0.05	1.44	0.33	1.40	1.82	0.75	0.07	0.00	0.00	100.05
PGI14a	31.41	11.06	56.69	51.01	0.02	0.72	0.86	0.50	1.54	0.43	0.17	3.43	1.37	105.31
PGI14b	14.89	5.76	73.48	66.12	0.17	0.35	0.73	0.06	0.42	0.23	0.64	8.81	3.53	114.02
PGI16	59.29	10.60	8.80	7.92	0.28	15.50	4.12	0.98	1.16	0.30	0.22	0.00	0.00	103.60

Table XII.2.3: trace element analyses by ICP-MS (part 1). Raw numerical values in ppm.

Sample	Be	V	Cr	Co	Ni	Cu	Zn	Ga	Rb	Sr	Y	Zr	Nb	Mo	Sn	Cs	Ba
PGI1	0.07	17.27	11.59	53.07	41.59	93.12	5.21	4.02	3.33	114.30	4.09	38.37	1.69	10.11	15.88	-0.20	57.90
PGI2	0.38	15.34	10.45	96.55	90.50	91.75	5.57	5.17	3.26	65.70	3.53	33.02	1.37	11.82	54.24	-0.14	50.33
PGI3	0.87	28.96	31.62	56.37	49.06	76.82	6.04	6.09	14.56	330.86	12.80	123.55	5.16	10.71	13.77	0.30	162.25
PGI4	0.04	21.98	11.27	56.62	52.60	40.47	5.49	3.84	4.06	126.27	4.44	41.05	1.93	5.38	3.43	-0.10	55.23
PGI5	0.59	49.55	15.00	93.58	51.42	26.59	33.19	3.94	7.84	178.21	7.85	49.34	2.49	5.66	5.37	0.14	129.20
PGI6	0.26	4.77	10.96	142.50	92.99	32.68	6.07	3.69	2.66	101.63	3.31	29.34	1.17	10.87	3.31	-0.13	79.09
PGI7	1.04	37.41	31.22	95.12	41.05	35.16	14.45	5.07	19.01	404.47	13.61	124.09	5.38	9.71	2.64	0.46	232.14
PGI8	0.30	16.11	10.69	137.51	100.16	35.68	11.57	3.55	3.81	172.28	6.20	41.12	3.23	5.15	1.35	-0.01	100.03
PGI9	0.46	17.64	15.73	81.61	67.44	23.60	-1.33	4.33	5.64	401.61	10.52	86.10	3.81	3.13	0.23	-0.04	202.87
PGI10	1.36	44.68	34.03	53.89	29.15	25.21	8.67	4.35	20.62	535.65	21.89	145.73	6.13	7.94	0.43	0.75	270.72
PGI11	1.37	53.09	80.77	96.15	27.89	17.03	66.23	12.92	60.71	52.75	20.35	235.00	9.34	2.32	1.75	2.40	287.50
PGI14a	5.70	130.34	68.20	54.85	115.57	84.57	9.96	12.18	58.91	195.38	23.34	114.83	7.49	22.86	0.41	4.63	306.43
PGI14b	2.93	117.15	41.72	22.10	45.69	118.89	17.28	8.71	10.02	164.81	11.00	67.03	3.90	13.00	0.35	0.56	231.32
PGI16	0.59	74.37	1969.95	111.92	700.70	20.60	108.71	7.87	20.48	28.66	11.62	89.12	3.86	1.07	0.85	0.88	81.85

Table XII.2.4: trace element analyses by ICP-MS (part 2). Raw numerical values in ppm.

Sample	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Tl	Pb	Th	U
PGI1	3.71	7.76	0.87	3.54	0.69	0.15	0.58	0.05	0.68	0.14	0.38	0.06	0.38	0.06	0.95	0.15	580.00	-0.03	7.68	1.09	0.47
PGI2	3.09	6.23	0.70	2.75	0.63	0.13	0.44	0.03	0.50	0.10	0.30	0.05	0.32	0.05	0.86	0.11	131.20	-0.02	19.93	0.90	0.36
PGI3	10.65	25.59	2.89	11.96	2.38	0.57	2.29	0.32	2.16	0.46	1.33	0.21	1.33	0.20	3.22	0.38	606.20	-0.02	10.90	3.50	1.41
PGI4	3.62	7.12	0.82	3.24	0.67	0.16	0.65	0.05	0.68	0.14	0.43	0.06	0.45	0.07	1.08	0.15	238.60	-0.02	6.96	1.45	0.56
PGI5	7.37	13.30	1.61	6.72	1.40	0.35	1.28	0.16	1.27	0.26	0.69	0.12	0.61	0.11	1.29	0.20	835.50	-0.02	7.15	1.66	0.76
PGI6	2.45	5.64	0.71	2.89	0.65	0.15	0.53	0.02	0.53	0.11	0.31	0.05	0.33	0.04	0.77	0.13	759.10	-0.02	1.51	0.85	0.38
PGI7	13.09	26.43	3.12	12.61	2.51	0.53	2.25	0.34	2.21	0.46	1.28	0.20	1.30	0.21	3.16	0.48	1369.10	-0.01	3.06	3.52	1.58
PGI8	4.79	10.47	1.30	5.44	1.18	0.27	1.13	0.14	0.99	0.21	0.54	0.10	0.54	0.09	1.03	0.15	218.80	0.05	0.85	1.46	0.61
PGI9	8.99	20.83	2.46	10.31	2.08	0.47	1.84	0.25	1.71	0.35	1.02	0.17	1.04	0.16	2.16	0.25	144.80	-0.01	0.07	2.57	1.22
PGI10	17.50	35.17	4.28	17.71	3.70	0.91	3.85	0.59	3.55	0.73	2.14	0.34	2.08	0.32	3.66	0.46	745.80	-0.01	1.11	4.25	2.60
PGI11	20.56	44.97	4.86	18.48	3.63	0.72	3.13	0.50	3.31	0.70	2.06	0.34	2.15	0.34	6.05	0.92	2137.10	0.37	13.56	7.27	1.69
PGI14a	27.89	59.07	7.21	29.64	6.17	1.27	4.84	0.70	4.22	0.82	2.33	0.36	2.15	0.32	3.03	0.56	680.10	0.15	23.73	8.22	3.80
PGI14b	13.98	25.86	2.90	11.12	2.52	0.68	2.96	0.38	2.09	0.38	0.97	0.14	0.85	0.13	1.70	0.26	105.30	0.03	20.49	3.79	1.92
PGI16	9.64	21.63	2.28	8.94	1.70	0.44	1.77	0.25	1.92	0.39	1.19	0.18	1.13	0.16	2.30	0.33	854.00	0.00	10.09	2.46	0.58

Table XII.2.5: statistics of areal elemental analysis (expressed in the species as shown) by EDS for SHS and FHS populations from each investigated area.

sample	n	normalised oxides														
		Na_2O	MgO	Al_2O_3	SiO_2	P_2O_5	S	Cl	K_2O	CaO	TiO_2	V_2O_5	Cr_2O_3	MnO	FeO	
K7 SHS	36	1.02	1.78	1.63	13.26	0.66	0.13	0.01	0.27	1.37	0.13	<	<	0.11	79.64	mean
		0.54	*0.97*	*0.75*	*6.66*	*0.35*	*0.07*	*0.01*	*0.25*	*0.73*	*0.08*		*0.01*	*0.11*	*9.58*	*std. dev.*
		0.16	0.45	0.51	2.78	0.23	<	<	<	0.29	<	<	<	<	55.88	min
		2.51	4.85	3.53	29.36	1.77	0.29	0.05	1.21	3.03	0.33	<	0.05	0.54	95.25	max
K7 FHS	13	0.85	1.70	1.38	9.79	0.86	0.15	0.02	0.20	1.39	0.10	0.01	0.01	0.10	83.45	mean
		0.66	*1.26*	*0.85*	*7.32*	*0.53*	*0.11*	*0.02*	*0.19*	*1.46*	*0.08*	*0.03*	*0.02*	*0.09*	*11.59*	*std. dev.*
		<	0.10	0.29	1.12	0.27	<	<	<	0.15	<	<	<	<	62.47	min
		2.11	4.16	2.62	21.36	2.07	0.36	0.06	0.54	5.12	0.22	0.11	0.06	0.23	97.52	max
E SHS	25	0.57	1.31	1.32	7.82	0.73	0.12	0.01	0.21	1.40	0.08	<	<	0.59	85.86	mean
		0.35	*0.66*	*1.41*	*5.56*	*0.59*	*0.05*	*0.01*	*0.36*	*1.10*	*0.08*			*1.55*	*10.07*	*std. dev.*
		0.14	0.26	0.36	1.82	0.19	0.04	<	<	0.36	<	<	<	0.00	56.84	min
		1.30	2.57	6.80	21.52	2.77	0.24	0.04	1.61	4.69	0.34	<	<	6.34	95.90	max
E FHS	12	0.95	1.73	1.12	7.28	0.60	0.11	0.01	0.14	1.24	0.07	<	0.01	0.12	86.65	mean
		0.44	*1.11*	*0.54*	*3.58*	*0.28*	*0.05*	*0.01*	*0.08*	*0.70*	*0.05*		*0.02*	*0.13*	*6.16*	*std. dev.*
		0.19	0.22	0.33	1.74	0.24	0.04	<	<	0.17	<	<	<	<	79.56	min
		1.44	3.30	1.89	12.15	1.21	0.19	0.04	0.25	1.98	0.14	<	0.06	0.35	97.01	max
B2 SHS	11	0.26	0.33	3.67	12.64	0.28	0.73	0.01	0.51	0.65	0.16	0.01	<	0.07	80.68	mean
		0.14	*0.13*	*2.08*	*7.42*	*0.15*	*0.39*	*0.02*	*0.46*	*0.33*	*0.08*	*0.03*	<	*0.05*	*10.62*	*std. dev.*
		<	0.14	0.89	2.08	<	0.11	<	<	0.06	<	<	<	<	63.59	min
		0.44	0.54	7.61	24.23	0.56	1.36	0.05	1.36	1.16	0.27	0.09	0.00	0.13	96.47	max
B2 FHS	25	0.08	0.13	1.38	4.77	0.34	0.37	0.02	0.12	0.32	0.05	<	<	0.06	92.35	mean
		0.12	*0.10*	*0.80*	*2.95*	*0.35*	*0.23*	*0.02*	*0.11*	*0.26*	*0.06*			*0.09*	*4.18*	*std. dev.*
		<	<	0.30	0.58	0.12	0.05	<	<	0.09	<	<	<	<	78.47	min
		0.38	0.40	3.33	14.21	1.57	0.77	0.07	0.50	1.40	0.19	<	<	0.39	98.51	max

Table XII.2.6. Investigated FHS particles from Area K7 (80013). Melt types: u = unmelted, p = partial (p1>50% thickness unmelted, p2<50% thickness unmelted, p3 relict fragments dispersed in slag), c = complete, d = deformed. Elemental areal analyses by EDS presented as normalised results cast as oxides, except for S and Cl. < = below detection.

sample	#	type	melt	description	normalised oxides													
					Na_2O	MgO	Al_2O_3	SiO_2	P_2O_5	S	Cl	K_2O	CaO	TiO_2	V_2O_5	Cr_2O_3	MnO	FeO
PGI2	F1	FHS	cd	<800µm, pseudo-dendritic to blebby wustite, locally with iscorite near faces, followed by fayalite; magnetitised outer face does not appear to be primary texture	0.40	0.81	0.84	5.57	0.78	0.13	0.03	0.06	0.67	0.05	<	<	0.14	90.52
PGI2	F2	FHS	cd	<1000µm, irregular thickness, large embayments from rear, internally rather chaotic wustite followed by fayalite, magnetitised outer surface abrupt, superimposed, various internal scale relicts	0.30	1.13	0.78	7.94	0.65	0.10	<	0.05	0.78	0.07	<	<	<	88.21
PGI2	F3	FHS	p2	sinuous, 700µm, polygonal relicts and very large stout dendrites, sharp superimposed magnetitised zone, minor glass, cracks, inner face iscorite on wustite, outer face relict wustite and magnetite	0.57	0.54	0.69	5.13	1.55	0.32	<	0.11	0.54	<	<	<	<	90.55
PGI2	F4	FHS	p3	<700µm, chaotic siliceous slag with coarse olivine, scale fragments, lining slag inclusions	2.11	4.16	2.56	21.36	0.89	0.36	0.03	0.54	5.12	0.22	0.11	0.06	<	62.47
PGI2	F5	FHS	p1	<800µm, sheet has slaggy rear with olivine and wustite dendrites, covered with variably preserved flake scale, brecciated and overlapping to form peaks	0.88	0.95	2.08	12.04	0.40	0.11	<	0.23	0.67	0.15	<	0.04	0.18	82.25
PGI2	F6	FHS	c	<700µm, chaotic mixed wustite pieces in olivine slag, deep embayments from rear and vesicles, with thin magnetitised front probably original	0.75	1.39	0.72	9.09	0.84	0.09	0.03	0.14	0.77	0.09	<	<	0.09	86.00
PGI2	F7	FHS	p1	<600µm, of which 400µm largely original, breaking down into pseudo-dendrite-bearing slag to rear	0.28	0.76	0.57	2.73	0.33	0.04	<	0.06	0.41	<	<	<	0.21	94.61
PGI2	F8	FHS	p3	<800µm, rather chaotic blebby pseudo-dendrite rich wustite-dominated slag with flake fragments, fronted by thin magnetitised layer	0.77	0.90	0.67	5.17	0.27	0.08	0.06	0.09	0.65	0.05	<	<	<	91.28
PGI2	F9	FHS	p3	<900µm, coarse fayalitic slag bearing wustite as debris from scale, including substantial 150µm slab towards (locally on) front of cracked flake	1.63	3.50	1.97	19.65	0.86	0.19	0.03	0.39	2.61	0.14	<	<	0.11	68.93
PGI2	F10	FHS	u	<400µm well-formed flake scale with embayed rear, just starting to slag to rear, here locally iscorite bearing	0.31	0.10	0.29	1.12	0.31	<	<	0.06	0.15	<	<	<	0.15	97.52
PGI2	F11	FHS	p3	<600µm, chaotic pseudo-dendrite and other coarse wustite in fayalitic slag matrix, fronted by thin magnetitised zone	<	2.38	2.15	1.58	1.27	0.07	<	<	0.37	0.15	<	<	<	92.03
PGI4	T3	FHS	p3	siliceous slag sheet, with basal thin oxide crust, slag with wustite dendrite patches after scale inclusions and large extents of surviving scale, local zones of partially melted ceramic	1.76	2.76	2.62	20.91	0.96	0.19	0.03	0.53	3.19	0.19	<	<	0.16	66.71
PGI4	T4	FHS	p3	complex slagged sheet with scale layers and slags with dominant fayalite (with both wustite and magnetite)	1.30	2.72	2.03	14.93	2.07	0.21	<	0.34	2.10	0.19	<	0.06	0.23	73.81

Table XII.2.7. Investigated SHS particles from Area K7 (80013). Melt types: p = partial, c = complete. Elemental areal analyses by EDS presented as normalised results cast as oxides, except for S and Cl. < = below detection.

sample	#	type	melt	vesicularity	v total	description	normalised oxides													
							Na_2O	MgO	Al_2O_3	SiO_2	P_2O_5	S	Cl	K_2O	CaO	TiO_2	V_2O_5	Cr_2O_3	MnO	FeO
PGI1	S1	SHS	p	dispersed 20%	20	dominantly wustite, with mixed 'brain', pseudo-dendrites and dendrites	1.19	0.59	1.59	10.48	0.48	0.12	<	0.30	0.84	<	<	<	<	84.42
PGI1	S2	SHS	c	central multicuspate 85%d, minor small dispersed	75	dominantly wustite, mostly tightly-packed dendrites, has external scale fragment	1.01	0.46	0.68	4.28	0.37	0.07	<	0.09	0.61	0.07	<	<	0.12	92.23
PGI1	S3	SHS	c	central multicuspate 75%d, moderate dispersed	60	dominantly wustite, but appreciable glass, mostly dendritic	0.94	1.99	1.15	10.55	0.61	0.11	0.03	0.16	1.20	0.06	<	<	0.07	83.13
PGI1	S4	SHS	p	dispersed 30%	30	dominantly wustite, with mixed brain, pseudo-dendrite and dendrite	0.79	1.70	1.06	9.35	0.43	0.08	<	0.12	0.79	0.11	<	<	0.11	85.46
PGI1	S5	SHS	c	central rounded void, 70%d, minor small dispersed	55	magnetite crust, 70µm thick magnetite zone with dendrites in glass, then w stout dendrites in glass	1.45	2.50	1.86	16.50	0.44	0.10	<	0.26	2.09	0.12	<	<	<	74.68
PGI1	S6	SHS	p	moderate dispersed 30%	30	magnetite crust, then densely packed blebby/pseudo-dendritic wustite	0.63	0.93	0.72	5.16	1.27	0.19	0.03	0.09	0.74	0.09	<	<	0.10	90.05
PGI1	S7	SHS	p	moderate dispersed 40%	40	magnetite crust with 40µm of dendrites, then wustite pseudo-dendrites, some glass	1.17	1.74	2.05	11.48	0.26	0.15	<	0.28	1.11	0.10	<	<	<	81.66
PGI1	S8	SHS	c	dispersed 10%	10	magnetite? crust, then fayalite/wustite/glass in fine dendritic texture	0.27	3.35	1.26	17.35	1.77	0.19	<	0.04	1.30	0.24	<	<	0.54	73.70
PGI1	S9	SHS	c	central, angular 35%, and minor	15	magnetite crust then 140µm stout magnetite dendrites in	1.67	3.00	2.10	19.76	0.63	0.14	<	0.35	1.97	0.21	<	<	<	70.17

sample	#	type	melt	vesicularity	v total	description	normalised oxides													
							Na_2O	MgO	Al_2O_3	SiO_2	P_2O_5	S	Cl	K_2O	CaO	TiO_2	V_2O_5	Cr_2O_3	MnO	FeO
				dispersed		glass, then fine probable wustite dendrites														
PGI1	S10	SHS	c	central rounded void, 70%d, minor small dispersed	55	thin magnetite crust then 40µm with some magnetite in glass then fine wustite dendrites in glass	1.75	1.97	2.48	20.46	0.41	0.15	<	0.43	1.18	0.21	<	<	0.19	70.79
PGI1	S11	SHS	c	moderate dispersed 25%	25	thin crust then 40-200µm of magnetite dendrites then wustite dendrites, both followed by fayalite	1.14	2.32	1.75	20.59	0.56	0.15	<	0.36	2.14	0.12	<	<	0.08	70.78
PGI1	S12	SHS	c	central multicuspate 85%d, minor small dispersed	75	thin magnetite crust then 100µm with magnetite dendrites in glass then fine probably wustite dendrites in glass	1.70	1.64	2.23	18.81	0.48	0.12	<	0.42	2.35	0.22	<	<	0.10	71.93
PGI1	S13	SHS	c	off centre large rounded 65%d, moderate dispersed	55	magnetite crust and thin dendrite zone, then variable wustite dendrite, pseudo-dendrite and brain followed by olivine	0.28	1.95	0.64	9.69	0.76	<	0.04	<	0.56	0.11	<	<	<	85.96
PGI1	S14	SHS	c	central multicuspate, 50%d, minor dispersed	25	thin crust, porous outer magnetite/wustite zone 80µm, then tight packed blebby wustite in glass	0.76	1.41	1.21	7.82	0.41	0.12	<	0.12	1.66	0.11	<	<	<	86.38
PGI1	S15	SHS	p	moderate finely dispersed 30%	30	dominantly wustite, with mixed brain and pseudo-dendrite	0.23	0.87	0.58	4.88	0.55	0.10	<	0.04	0.29	0.07	<	<	<	92.38
PGI1	S16	SHS	p	moderate coarse dispersed	30	dominantly wustite, with mixed brain, pseudo-dendrite and dendrite	0.48	0.60	0.79	5.07	0.45	0.13	<	0.08	0.59	<	<	<	<	91.80
PGI1	S17	SHS	c	large, slight multicuspate	85	appears to be equant magnetite in glass	0.49	0.49	0.99	10.48	0.71	<	<	0.15	0.46	0.07	<	<	0.14	86.01

sample	#	type	melt	vesicularity	v total	description	normalised oxides													
							Na_2O	MgO	Al_2O_3	SiO_2	P_2O_5	S	Cl	K_2O	CaO	TiO_2	V_2O_5	Cr_2O_3	MnO	FeO
				central 90, minor dispersed																
PGI1	S18	SHS	c	central mainly multicuspate, 65%d, minor dispersed 15%	55	thin crust, porous outer magnetite/wustite zone 100µm, then stout wustite dendrite in glass	0.98	1.53	1.86	11.74	1.13	0.20	0.03	0.19	1.19	0.15	<	<	0.17	80.82
PGI1	S19	SHS	c	low dispersed	15	external flake, then stout wustite dendrite in glass	1.62	2.66	2.21	15.07	0.59	0.13	<	0.35	1.71	0.19	<	<	0.12	75.33
PGI1	S20	SHS	c	large dispersed	30	thin crust, then magnetite dendrites in glass to 200µm, then equant magnetite in glass with interspersed finer dendrites	1.07	2.04	1.96	16.55	0.49	0.11	<	0.26	2.75	0.14	<	<	<	74.64
PGI1	S21	SHS	p	round central 60%d, fine dispersed	50	thin magnetite crust, then wustite with mixed brain, pseudo-dendrite and dendrite in glass	1.57	1.36	1.98	17.54	0.50	0.07	<	0.46	1.19	0.14	<	<	<	75.18
PGI1	S22	SHS	c	round central 53%d, very little dispersed	30	thin magnetite crust, then very fine dendrites in glass, outer 100µm lacking glass	1.63	2.61	2.43	18.11	0.76	0.28	0.03	0.45	1.89	0.18	<	0.05	0.07	71.52
PGI1	S23	SHS	c	large dispersed	30	very thin crust with minute dendrites, mostly feathery olivine	2.51	3.29	3.53	29.36	0.93	0.11	<	0.96	3.03	0.28	<	<	0.12	55.88
PGI1	S24	SHS	p	some shrinkage cracking, very little dispersed	3	30µm magnetite crust then wustite dominates with mixed brain, pseudo-dendrite and dendrite in minor glass	0.71	1.03	0.88	7.02	0.48	0.08	<	0.04	0.71	0.05	<	<	0.12	88.87
PGI1	S25	SHS	c	multicuspate	40	all magnetite	0.82	2.17	1.75	15.2	1.28	0.12	<	0.18	1.31	0.16	<	<	0.1	76.8

sample	#	type	melt	vesicularity	v total	description	normalised oxides													
							Na_2O	MgO	Al_2O_3	SiO_2	P_2O_5	S	Cl	K_2O	CaO	TiO_2	V_2O_5	Cr_2O_3	MnO	FeO
				central 60%d, very little dispersed		dendrites in glass				6									0	4
PGI1	S26	SHS	p	dispersed coarse central porosity and dispersed fine marginal	25	40µm magnetite with crust and dendrites, then mixed dense dendrite and pseudo-dendrite wustite in minor glass	0.81	1.36	1.32	11.09	0.68	0.14	<	0.18	1.02	0.09	<	<	0.16	83.14
PGI1	S27	SHS	c	rounded central 65%d, minor dispersed	50	thin crust, then 60µm of probable magnetite dendrites in glass then very fine wustite dendrites in glass	1.45	2.50	2.62	17.25	1.02	0.29	<	0.38	1.96	0.20	<	<	0.37	71.96
PGI1	S28	SHS	c	round, locally m/c central 70%D, significant dispersed marginal	65	thin crust then magnetite dendrites in glass	1.27	1.58	2.44	16.80	0.31	0.16	<	0.52	2.19	0.14	<	<	0.07	74.52
PGI1	S29	SHS	c	moderate multicuspate 35%d and dispersed marginal	30	very thin crust with minor dendrites, but dominated by feathery olivine	1.65	4.85	2.93	24.91	1.19	0.13	0.05	1.21	2.69	0.33	<	<	0.25	59.81
PGI1	S30	SHS	p	abundant dispersed	30	thin crust followed by very variable dendrite and pseudo-dendrite in either glass or olivine	0.43	2.63	1.31	12.44	0.86	<	<	0.09	1.05	0.18	<	<	0.07	80.92
PGI1	S31	SHS	p	rounded central 80%d, slight m/c, v minor dispersed	65	thin magnetite crust then dense blebby pseudo-dendritic wustite	0.71	0.97	1.35	5.98	1.01	0.11	<	0.18	0.95	0.08	<	<	0.31	88.35
PGI1	S32	SHS	p	moderate dispersed	30	30µm magnetitised crust with inward facing terminals, then blebby-polygonal wustite	0.16	0.52	0.51	2.78	0.32	0.05	<	<	0.36	<	<	<	0.06	95.25

sample	#	type	melt	vesicularity	v total	description	normalised oxides													
							Na_2O	MgO	Al_2O_3	SiO_2	P_2O_5	S	Cl	K_2O	CaO	TiO_2	V_2O_5	Cr_2O_3	MnO	FeO
PGI1	S33	SHS	p	modest central rounded 40d minor dispersed	20	outer 25µm granular oxide in glass, then inwards blebby to polygonal	0.33	0.45	0.59	3.03	0.23	0.24	<	0.07	0.57	<	<	<	0.07	94.43
PGI1	S34	SHS	c	broken, rounded central 65%d, minor dispersed	50	no crust, large skeletal olivine in glass	0.90	1.63	2.72	26.55	0.90	0.09	<	0.47	2.01	0.29	<	<	0.08	64.36
PGI1	S35	SHS	p	offset rounded 30%d, very minor dispersed	12	wustite in minor glass, dendrites, pseudo-dendrites and brain all present	1.35	2.01	1.66	12.34	0.31	0.18	<	0.27	1.81	0.12	<	<	0.07	79.88
PGI1	S36	SHS	p	offset rounded 45%d, minor dispersed	25	dense wustite dendrite and pseudo-dendrite in glass	0.76	1.37	1.66	10.66	0.31	0.12	<	0.21	0.94	0.09	<	<	0.11	83.77

Table XII.2.8. Other investigated microresidue particles from Area K7 (80013). < = below detection.

sample	#	type	description	normalised oxides													
				Na_2O	MgO	Al_2O_3	SiO_2	P_2O_5	S	Cl	K_2O	CaO	TiO_2	V_2O_5	Cr_2O_3	MnO	FeO
PGI3	P1	ceramic	p1 ceramic; typical bloated partially-melted ceramic lump	0.25	0.51	1.20	95.67	0.12	<	<	0.07	0.17	0.05	<	<	0.06	1.90
PGI3	P1	ceramic	p1 ceramic; typical bloated partially-melted ceramic lump	3.46	1.64	9.57	72.22	0.97	<	0.03	2.12	0.33	0.96	<	<	0.10	8.59
PGI3	P1	ceramic	p1 intermediate glass	2.30	4.07	8.96	52.14	1.08	0.21	<	1.09	2.93	0.86	<	<	0.23	26.13
PGI3	P1	ceramic	p1 intermediate glass	1.64	4.31	8.07	49.97	0.89	0.24	<	0.86	2.01	0.89	<	<	0.19	30.94
PGI3	P1	ceramic	p1 outer slag, fayalitic slag (feathery olivine in glass) with thin (80micron) zone of delicate probably magnetite dendrites growing in from quenched surface	1.71	2.48	3.97	32.59	0.65	0.33	<	0.59	3.32	0.34	<	<	0.16	53.87
PGI4	T2	ceramic	bloated and partially-melted ceramic sheet, with iron slag on various margins (wustite-rich in various forms)	5.29	0.15	9.71	75.67	<	0.10	0.05	3.11	0.39	0.31	<	<	<	5.23
PGI4	T3	ceramic	siliceous slag sheet, with basal thin oxide crust, slag with wustite dendrite patches after scale inclusions and large extents of surviving scale, local zones of partially melted cermaic	6.07	1.88	11.86	68.26	0.20	0.09	0.04	4.57	1.93	0.50	<	<	0.09	4.51
PGI3	P2	slag droplet	vesicular fine slag droplet, bearing relicts of partially-melted ceramic. Slag has fine wustite dendrites growing from scale fragments, followed by fine skeletal olivine and glass	1.88	3.05	3.32	24.51	0.82	0.15	<	0.53	4.32	0.24	<	<	0.07	61.12
PGI3	P3	slag droplet	vesicular iron-rich slag droplet with partially melted ceramic (now mostly missing) in its core. Much of surface is coated in scale or a magnetitised scale-like crust	1.39	2.16	1.98	8.53	0.63	0.12	0.01	0.33	1.53	0.13	<	<	0.05	83.13
PGI3	P5	slag droplet	iron rich slag droplet with dense fine wustite dendrites followed by fayalite, with margin scale relicts	0.28	1.37	0.90	9.47	0.87	0.10	<	<	0.49	0.17	<	<	0.08	86.28
PGI3	P6	slag droplet	droplet formed from mixture of partially-melted ceramic and iron slag, formed of coarse olivine with very fine wustite(?) dendrites.	3.25	4.35	4.81	47.39	1.12	0.13	<	1.05	3.15	0.37	<	<	0.11	34.27
PGI3	P8	slag droplet	compound droplet of iron slag (flow slag-like), fine small wustite dendrites in glass, with thin wustite crust between lobes	1.31	1.85	2.40	15.11	0.65	0.21	0.03	0.55	1.42	0.16	<	<	0.07	76.24
PGI3	P9	slag droplet	SHS-like particle, with marginal vesicles, multiple marginal flake inclusions, fine wustite dendrites followed by olivine,	1.82	4.18	2.84	20.82	1.28	0.23	<	0.51	4.64	0.20	<	<	0.08	63.40

sample	#	type	description	normalised oxides													
				Na_2O	MgO	Al_2O_3	SiO_2	P_2O_5	S	Cl	K_2O	CaO	TiO_2	V_2O_5	Cr_2O_3	MnO	FeO
PGI3	P10	slag droplet	hammerscale-like particle with multiple marginal scale fragments, mostly dense dendrites of wustite followed by fayalite, locally pseudo-dendrites	0.27	1.61	0.98	8.81	0.84	0.10	0.03	0.04	0.81	0.11	<	<	0.09	86.30
PGI3	P7	pyroxene droplet	spheroid with rusted core, probably once iron, coated with pyroxene slag, locally with pyroxene in rosettes.	0.59	13.95	11.44	39.79	5.90	0.27	0.23	0.25	14.36	1.43	<	0.17	0.30	11.31
PGI3	P4	lining slag droplet	vesicular partially-melted ceramic, marginal iron-rich inclusions, thin crust with delicate magnetite dendrites; main coarse wustite dendrites, pseudo-dendrites and feathery olivine in glass	4.69	5.27	7.13	68.92	2.04	<	0.04	1.77	3.91	0.75	<	<	<	5.48
PGI4	T1	slag with iron contact	irregular crude sheet of slag with sparse, early wustite blebs, then skeletal olivine, then local fine wustite dendrites in glass, base of sheet is magnetite margined flake crust of 20µm	1.88	3.13	3.14	26.13	0.88	0.22	<	0.56	4.96	0.28	<	<	0.07	58.74

Table XII.2.9. Investigated FHS particles from Area E (31153). Melt types: u = unmelted, p = partial (p1>50% thickness unmelted, p2<50% thickness unmelted, p3 relict fragments dispersed in slag), c = complete, d = deformed, c= cataclasite. Elemental areal analyses by EDS presented as normalised results cast as oxides, except for S and Cl. < = below detection.

sample	#	type	melt	description	normalised oxides													
					Na_2O	MgO	Al_2O_3	SiO_2	P_2O_5	S	Cl	K_2O	CaO	TiO_2	V_2O_5	Cr_2O_3	MnO	FeO
PGI6	F1	FHS	p3	<600µm, front face of magnetitised material, backed by variably disrupted wustite zone mixed with slag with wustite dendrites followed by fayalite. Some large rear embayments	1.29	1.94	1.46	12.15	0.44	0.16	<	0.21	1.92	0.08	<	<	0.08	80.26
PGI6	F2	FHS	p1	<500µm, front face with outer part of original scale intact but with thick (up to 400µm) rear slag with w dendrites in glass and feathery f, locally possible I on rear face, locally external slagged layer with second magnetitised surface.	1.07	1.81	1.89	11.15	0.56	0.19	<	0.15	1.22	0.14	<	<	0.09	81.72
PGI6	F3	FHS	p1	<175µm, scale variably intact, but with some zones of melting	0.28	0.28	0.40	4.39	0.26	0.05	<	0.06	0.31	<	<	<	0.09	93.88
PGI6	F4	FHS	u	<400µm, scale largely intact, with thin rear slag zone to about 50µm with possible small-scale iscorite.	0.19	0.22	0.33	1.74	0.24	0.09	<	<	0.17	<	<	<	<	97.01
PGI6	F5	FHS	p2	<400µm, outer scale intact, except where cut by glass filled fractures, wustite shows increasing melting towards rear face, but low glass proportion except around small embayments, no generalised rear slag	0.36	0.65	0.47	2.80	1.21	0.10	<	0.04	0.56	<	<	<	<	93.81
PGI6	F6	FHS	p2	<500µm, front face has thin magnetitised layer with abrupt rear face into disrupted and locally melted wustite, has deep embayments on rear face	0.73	1.70	1.04	5.15	0.30	0.09	<	0.10	0.97	0.07	<	<	0.34	89.52
PGI6	F7	FHS	p3d	<1200µm, variable, large rear embayments, thin magnetitised front face, largely recrystallised texture of blebby and dendritic wustite in glass behind, locally with some somewhat intact wustite layer as floating fragments. Localised area rich in arsenide.	1.44	3.30	1.30	6.70	0.67	0.13	<	0.14	1.77	0.10	<	0.06	<	84.39
PGI6	F8	FHS	ud	<350µm, rear embayments, very variable, in places largely intact with slight rear slagging, others have thin magnetitised front, with largely recrystallised material	1.15	0.38	0.70	5.32	0.62	0.16	<	0.18	0.49	<	<	<	0.09	90.91

sample	#	type	melt	description	normalised oxides													
					Na_2O	MgO	Al_2O_3	SiO_2	P_2O_5	S	Cl	K_2O	CaO	TiO_2	V_2O_5	Cr_2O_3	MnO	FeO
				behind - these areas associated with localised 'faulting'.														
PGI6	F9	FHS	p3	<600µm, thin magnetitised front abruptly back by coarse w dendrites/pseudo-dendrites, various internal w layer relicts, then rear is irregular layer with wustite dendrites and fayalite	1.21	2.88	1.27	8.08	0.76	0.09	<	0.17	1.78	0.09	<	<	<	83.66
PGI8	T1	FHS	p3	<1000µm, marginal m layer, inside which mainly recrystallised wustite in glass, locally with olivine; relict surface-parallel laminae shows some survival of wustite, large rear embayments, some coinciding with bumps on surface, and with glass filled cracks to surface.	1.24	3.12	1.52	11.28	0.60	0.07	0.03	0.24	1.98	0.12	<	<	0.20	79.58
PGI8	T2	FHS	cat	<2400µm, scale shows four zones, rear fine grained variable thickness to 500µm, then coarse zone to 700µm, then finer again for 200µm, outer zone is coarser, wustite-rich and contains much brittle fracture and porosity	1.10	2.23	1.87	11.50	0.91	0.16	0.04	0.25	1.91	0.11	<	<	0.35	79.56
PGI8	T3	FHS	p3	<3200µm, shows vague outlines of scale remnants, particularly towards ends. Centrally dendritic wustite with some rounded porosity, 200µm of more slaggy material on inner margin, fine grained on outer	1.28	2.23	1.19	7.06	0.57	0.04	<	0.10	1.76	0.09	<	<	0.20	85.49

Table XII.2.10. Investigated SHS particles from Area E (31153). Melt types: p = partial, c = complete. Elemental areal analyses by EDS presented as normalised results cast as oxides, except for S and Cl. < = below detection.

sample	#	type	melt	vesicularity	v total	description	normalised oxides													
							Na_2O	MgO	Al_2O_3	SiO_2	P_2O_5	S	Cl	K_2O	CaO	TiO_2	V_2O_5	Cr_2O_3	MnO	FeO
PGI5	S1	SHS	p	almost none in main, some fine dispersed in coating	2	15µm magnetitised crust, then dense blebby to almost polygonal wustite with iron prills in very minor glass	0.18	0.42	0.59	2.96	0.53	0.12	<	<	0.48	0.07	<	<	0.21	94.45
PGI5	S2	SHS	p	some dispersed, mainly marginal	5	dense variable wustite dendrite, pseudo-dendrite and brain	0.47	1.01	0.68	4.41	0.50	0.16	0.03	0.09	0.94	0.07	<	<	0.07	91.58
PGI5	S3	SHS	p	dispersed, fine	25	dense variable wustite dendrite, pseudo-dendrite and brain	0.39	0.64	0.62	3.44	0.31	0.06	<	0.09	0.70	<	<	<	<	93.76
PGI5	S4	SHS	p	minor dispersed marginal	5	15µm magnetitised crust then blebby to pseudo-dendritic wustite, almost granular in outer part	0.44	1.36	0.88	5.31	0.58	0.12	<	0.05	1.01	0.10	<	<	0.16	90.00
PGI5	S5	SHS	p	some dispersed, mainly marginal	10	20µm magnetitised crust with dendrite bases, then polygonal to dendritic wustite	0.21	0.26	0.36	1.82	0.86	0.08	<	0.06	0.36	<	<	<	0.09	95.90
PGI5	S6	SHS	p	some dispersed, mainly marginal	10	15µm magnetitised crust then blebby to pseudo-dendritic wustite, almost granular in outer part	0.36	1.39	0.60	4.21	0.38	0.09	<	<	0.61	0.07	<	<	0.07	92.22
PGI5	S7	SHS	p	minor marginal, some shrinkage cracking	2	10µm crust, then fine wustite dendrites in glass growing off brain fragments	0.33	1.80	3.70	13.50	1.53	0.15	<	0.87	3.31	0.19	<	<	4.91	69.71
PGI5	S8	SHS	c	off-centre	15	thin crust then	0.30	1.82	6.80	18.31	2.77	0.17	<	1.61	4.69	0.34	<	<	6.34	56.84

sample	#	type	melt	vesicularity	v total	description	normalised oxides													
							Na_2O	MgO	Al_2O_3	SiO_2	P_2O_5	S	Cl	K_2O	CaO	TiO_2	V_2O_5	Cr_2O_3	MnO	FeO
				rounded void 35%d and rare marginal vesicles		60µm magnetite dendrites in glass, then very fine wustite dendrites in glass														
PGI5	S9	SHS	c	moderate dispersed	20	densely packed wustite dendrites in minor glass	1.21	2.57	1.50	12.57	0.42	0.15	<	0.21	2.33	0.13	<	<	0.08	78.84
PGI5	S10	SHS	p	moderate fine dispersed	15	densely packed wustite dendrites and pseudo-dendrites followed by olivine	0.14	0.89	0.53	6.37	0.65	0.04	<	<	0.40	0.08	<	<	0.24	90.66
PGI5	S11	SHS	p	large central multicuspate 87%d	80	dense pseudo-dendritic to polygonal wustite	0.36	0.44	0.45	2.30	0.24	0.05	<	<	0.40	<	<	<	<	95.76
PGI5	S12	SHS	p	rare moderate dispersed	6	10µm crust with inward-facing magnetite then dense wustite pseudo-dendrite in minor glass	0.68	1.53	0.98	6.97	1.01	0.24	<	0.08	1.77	<	<	<	0.08	86.66
PGI5	S13	SHS	p	moderate dispersed	15	11µm crust with inward-facing magnetite then dense wustite pseudo-dendrites and dendrites in moderate glass	1.30	2.20	1.80	15.63	1.23	0.18	<	0.22	1.98	0.13	<	<	0.58	74.76
PGI5	S14	SHS	p	moderate, mostly fine dispersed	20	dense pseudo-dendrites to polygonal wustite	0.47	0.83	0.48	3.20	0.30	0.07	0.04	<	0.63	0.05	<	<	<	93.94
PGI5	S15	SHS	p	mostly rounded central void 55%d, minor marginal	28	mixture of large magnetite dendrites, dendritic and pseudo-dendritic wustite, increasing inwards	0.34	0.84	0.75	4.61	0.58	0.07	<	0.05	0.74	<	<	<	0.12	91.90
PGI5	S17	SHS	p	dispersed mostly fine	15	tightly-packed wustite dendrites becoming coarser inwards	1.04	1.93	1.27	8.98	0.39	0.13	<	0.22	1.65	0.12	<	<	<	84.27
PGI5	S18	SHS	p	part round, part	65	30µm magnetised crust, then dense	0.55	1.24	0.69	5.12	0.21	0.07	<	0.05	0.85	<	<	<	<	91.21

sample	#	type	melt	vesicularity	v total	description	normalised oxides													
							Na_2O	MgO	Al_2O_3	SiO_2	P_2O_5	S	Cl	K_2O	CaO	TiO_2	V_2O_5	Cr_2O_3	MnO	FeO
				multicuspate central 80%d, plus minor marginal		blebby to pseudo-dendritic wustite														
PGI5	S19	SHS	p	central mostly rounded 40%d moderate dispersed	35	10µm crust, then 20-30µm magnetitised wustite, then granular wustite becoming pseudo-dendritic inwards, minor glass	0.63	1.27	0.60	3.64	0.59	0.11	<	<	0.88	0.05	<	<	0.13	92.10
PGI5	S20	SHS	p	central mostly rounded 83%d moderate fine dispersed	80	15µm crust, then 50µm magnetised wustite, then granular wustite becoming pseudo-dendritic inwards, minor glass	0.62	1.10	0.66	4.87	0.26	0.04	0.03	0.06	0.70	<	<	<	<	91.65
PGI5	S21	SHS	p	central mostly rounded 37%d moderate dispersed	25	15µm crust, then 40µm magnetised wustite, then granular wustite becoming pseudo-dendritic inwards, followed by olivine	0.14	0.88	0.50	4.64	0.57	0.10	<	<	0.45	<	<	<	0.09	92.61
PGI5	S22	SHS	p	irregular rounded centre 50%d, sparse dispersed	27	densely packed wustite pseudo-dendrites and dendrites in minor glass	0.89	1.67	1.45	8.28	0.98	0.15	<	0.25	1.45	0.10	<	<	1.03	83.74
PGI5	S23	SHS	p	irregular rounded central 37%d, moderate dispersed	35	15µm magnetite crust facing in, then 100-150µm porous granular wustite, then blebby to pseudo-dendritic even dendritic wustite in glass	0.92	2.56	1.06	7.65	0.69	0.13	0.03	0.12	2.04	0.09	<	<	0.08	84.64
PGI5	S24	SHS	c	sparse dispersed	3	dispersed dendrites in glass after very thin crust, probably	1.28	2.08	3.09	21.52	0.19	0.08	<	0.58	1.61	0.15	<	<	<	69.41

sample	#	type	melt	vesicularity	v total	description	normalised oxides													
							Na_2O	MgO	Al_2O_3	SiO_2	P_2O_5	S	Cl	K_2O	CaO	TiO_2	V_2O_5	Cr_2O_3	MnO	FeO
PGI7	P5	SHS	p	rounded central 40%d, abundant dispersed mostly fine	25	magnetite magnetitised margin, inward-facing subhedral skeletal magnetite of up to 20µm, 5-10µm magnetitisation of adjacent wustite; then mainly blebby to polygonal wustite in glass	0.68	1.62	0.81	7.03	0.58	0.17	<	0.08	1.54	0.07	<	<	0.09	87.33
PGI7	P6	SHS	p	several large rounded and other dispersed	50	15µm dendritic magnetite crust, fine inward-facing skeletal growths, locally magnetite dendrites for 20-30µm, then variable wustite (brain, dendrite, pseudo-dendrite) in glass	0.30	0.42	2.13	18.23	1.82	0.18	<	0.58	3.52	0.10	<	<	0.30	72.42

Table XII.2.11. Other investigated microresidue particles from Area E (31153). < = below detection.

sample	#	type	description	normalised oxides													
				Na_2O	MgO	Al_2O_3	SiO_2	P_2O_5	S	Cl	K_2O	CaO	TiO_2	V_2O_5	Cr_2O_3	MnO	FeO
PGI5	S16	clinker-like	clinker-like grain, solid glassy core, porous outer, rough iron-oxide coat. The glass bears skeletal magnesian olivine with very rare small diopside and prills of iron and iron sulphide. There is a possible weathered iron skin.	3.61	10.01	8.68	44.09	3.93	0.08	0.09	0.97	9.36	1.14	0.00	0.00	0.00	18.05
PGI7	P1	ceramic melt	rounded glassy particle with relict partially-melted quartz; glass has elongate (to 600µm) skeletal olivine, followed by dendritic (to 150µm) strongly zoned pyroxene	5.12	12.03	6.26	57.81	1.25	0.03	0.03	0.95	11.27	0.69	0.00	0.00	0.00	4.56
PGI7	P2	ceramic melt	similar to P1, but also has marginal iron oxide rich blebs (laminated) and much dispersed sub-spherical blebs of Fe-P eutectic in the glass	7.04	13.16	7.16	56.78	1.07	0.07	0.00	1.44	9.35	0.61	0.00	0.00	0.09	3.22
PGI7	P3	slag droplet	slag droplet with primary dendritic/pseudo-dendritic wustite followed by olivine; olivine interstices show abundant tiny voids (after weathered iron?) and some internal areas and all of margin shows complex convoluted Fe-oxide films, also after iron; contains a large fragment of	0.18	1.91	0.52	9.72	0.91	0.34	0.03	0.00	0.98	0.07	0.00	0.00	0.31	85.02

sample	#	type	description	normalised oxides													
				Na_2O	MgO	Al_2O_3	SiO_2	P_2O_5	S	Cl	K_2O	CaO	TiO_2	V_2O_5	Cr_2O_3	MnO	FeO
PGI7	P4	slag droplet	incompletely-reacted relict hammerscale wustite-rich droplet with some large pieces possibly relict after hammerscale; margin has 10µm magnetitised crust with inward-facing terminals in places, mostly various blebby/dendritic textures of wustite in glass	0.30	1.62	0.73	8.62	0.84	0.34	0.07	0.07	1.04	0.00	0.00	0.00	0.24	86.13

Table XII.2.12. EDS areal analyses of SHC PGI9 from Area E (31163). h = approximate height of centre of area above the base of the SHC. < = below detection.

Sample	Spectrum#	h (mm)	normalised oxides													Normalised oxides on iron free basis											
			Na_2O	MgO	Al_2O_3	SiO_2	P_2O_5	S	Cl	K_2O	CaO	TiO_2	V_2O_5	Cr_2O_3	MnO	FeO	Na_2O	MgO	Al_2O_3	SiO_2	P_2O_5	S	Cl	K_2O	CaO	TiO_2	V_2O_5	Cr_2O_3	MnO
PGI9a	761	29.50	3.36	7.08	3.97	31.05	0.94	0.32	0.04	0.52	6.42	0.27	<	<	0.14	45.89	6.21	13.09	7.34	57.38	1.73	0.59	0.07	0.95	11.87	0.49	<	<	0.26
PGI9a	762	28.46	0.37	6.23	3.22	21.81	1.90	0.38	0.05	0.06	3.74	0.40	<	<	0.19	61.65	0.97	16.24	8.41	56.87	4.95	1.00	0.13	0.15	9.76	1.04	<	<	0.48
PGI9a	785	24.38	2.65	8.73	3.16	29.96	0.76	0.25	<	0.45	5.06	0.21	<	<	0.21	48.55	5.15	16.96	6.15	58.24	1.47	0.49	<	0.87	9.84	0.41	<	<	0.42
PGI9a	793	24.00	4.00	4.77	4.62	28.53	1.13	0.34	<	0.57	6.76	0.34	<	0.06	0.14	48.74	7.79	9.31	9.01	55.66	2.21	0.66	<	1.12	13.19	0.66	<	0.11	0.27
PGI9a	821	16.88	3.11	4.64	3.66	23.90	0.88	0.24	<	0.41	5.05	0.19	<	0.06	0.15	57.71	7.35	10.97	8.65	56.52	2.09	0.57	<	0.96	11.94	0.46	<	0.13	0.35
PGI9a	7	13.90	2.86	5.54	3.29	26.35	0.88	0.23	<	0.42	4.78	0.16	<	0.06	0.18	55.25	6.38	12.38	7.35	58.89	1.97	0.51	<	0.93	10.69	0.37	<	0.13	0.40
PGI9a	822	13.74	2.84	4.60	3.21	20.11	0.73	0.25	0.06	0.30	4.25	0.21	<	<	0.17	63.27	7.74	12.52	8.75	54.74	1.97	0.68	0.16	0.82	11.58	0.57	<	<	0.47
PGI9b	55	8.80	2.24	5.34	2.63	20.54	0.63	0.18	<	0.28	3.68	0.15	<	<	0.22	64.12	6.25	14.87	7.33	57.25	1.76	0.49	<	0.79	10.24	0.41	<	<	0.60
PGI9b	57	6.72	2.72	4.39	3.06	19.45	0.72	0.22	<	0.33	4.02	0.20	<	<	0.20	64.70	7.69	12.45	8.67	55.10	2.03	0.61	<	0.93	11.39	0.55	<	<	0.57
PGI9b	113	2.56	2.46	3.90	2.88	15.83	0.63	0.17	<	0.28	3.24	0.21	<	<	0.19	70.21	8.25	13.11	9.66	53.12	2.12	0.56	<	0.96	10.87	0.72	<	<	0.64
PGI9b	183	0.50	1.71	6.22	2.31	19.00	0.55	0.15	<	0.22	2.98	0.18	<	<	0.24	66.45	5.09	18.52	6.88	56.62	1.63	0.45	<	0.64	8.89	0.55	<	<	0.73
PGI9b	184	0.30	0.65	5.21	6.02	24.42	1.56	0.52	0.05	0.13	3.73	0.21	<	<	0.22	57.26	1.53	12.18	14.09	57.15	3.66	1.22	0.12	0.31	8.74	0.48	<	<	0.52
PGI9b	185	0.10	<	0.24	0.86	1.75	0.21	0.20	0.05	<	0.31	<	<	<	0.10	96.28	<	6.38	23.15	47.16	5.61	5.25	1.40	<	8.32	<	<	<	2.71

Table XII.2.13. Investigated FHS particles from Area B2 (90036). Melt types: u = unmelted, p = partial (p1>50% thickness unmelted, p2<50% thickness unmelted, p3 relict fragments dispersed in slag), c = complete, d = deformed, c= cataclasite. Elemental areal analyses by EDS presented as normalised results cast as oxides, except for S and Cl. < = below detection. < = below detection.

sample	#	type	melt	description	normalised oxides													
					Na_2O	MgO	Al_2O_3	SiO_2	P_2O_5	S	Cl	K_2O	CaO	TiO_2	V_2O_5	Cr_2O_3	MnO	FeO
PGI12	f1	FHS	p3	relict floating on melted material rich in fayalite	<	0.26	1.54	7.84	0.28	0.26	0.04	0.05	0.27	0.09	<	<	<	89.36
PGI13	f1	FHS	cd	granular structure of rounded wustite - shock induced?	<	0.14	1.31	4.25	0.49	0.29	0.03	0.12	0.20	<	<	<	0.08	93.09
PGI13	f2	FHS	cat	magnetitised cataclasite	<	0.28	2.41	8.39	0.20	0.21	0.03	0.19	0.49	0.11	<	<	0.17	87.53
PGI13	f5	FHS	cat	cataclasite	<	0.14	1.31	3.64	0.29	0.42	<	<	0.31	0.07	<	<	<	93.82
PGI13	f6	FHS	c	all wustite melted, dry	<	0.09	1.65	3.51	0.24	0.77	<	0.09	0.38	<	<	<	0.12	93.15
PGI13	f7	FHS	p1	only basal wustite melted, remainder primary, strong iscorite development, external aluminous bleb	<	<	0.64	2.49	0.12	0.14	<	0.06	0.12	<	<	<	0.11	96.32
PGI13	f8	FHS	cat	magnetitised cataclasite	<	0.09	1.16	5.11	0.60	0.21	<	0.08	0.17	<	<	<	0.08	92.49
PGI13	f9	FHS	p1	only basal W melted, remainder primary, local melting towards front	0.14	0.10	0.88	3.68	0.33	0.26	<	0.10	0.50	0.07	<	<	<	93.94
PGI13	f10	FHS	c	dominantly magnetite in glass	0.38	0.40	3.33	14.21	0.31	0.70	0.04	0.50	1.40	0.18	<	<	0.08	78.47
PGI13	f11	FHS	n/a	unusual, cf. rust	0.17	<	0.30	0.58	0.16	0.10	0.06	0.04	0.09	<	<	<	<	98.51
PGI13	f12	FHS	c	wustite entirely melted, strong iscorite development	0.17	<	1.15	4.45	0.19	0.25	<	0.10	0.53	<	<	<	0.09	93.07
PGI13	f13	FHS	p2	wustite partly melted, strong iscorite development	0.11	0.12	0.59	1.91	1.27	0.70	<	0.05	0.21	<	<	<	0.07	94.97
PGI13	f14	FHS	p2	wustite partly melted, intergrowth on front	0.17	0.24	3.28	8.97	0.21	0.27	<	0.37	0.46	0.14	<	<	0.11	85.80
PGI13	f15	FHS	p2	wustite partly melted, intergrowth on front	0.19	0.17	1.62	4.83	0.26	0.61	<	0.20	0.13	0.05	<	<	<	91.94
PGI13	f16	FHS	c	wustite entirely melted, dendritic all through	<	0.21	0.92	2.70	0.22	0.17	0.03	0.04	0.28	0.05	<	<	0.14	95.25
PGI13	f17	FHS	c	scale largely magnetitised, wustite melted, strong iscorite development	<	<	0.49	2.57	0.12	0.25	<	0.04	0.21	<	<	<	<	96.32
PGI13	f18	FHS	cat	magnetitised cataclasite	<	0.14	1.23	3.68	0.30	0.46	<	0.05	0.39	0.07	<	<	0.08	93.60
PGI13	f19	FHS	cat	cataclasite with range of relict wustite structures from primary to dendrite	0.21	0.23	2.11	6.61	0.19	0.15	0.06	0.04	0.28	<	<	<	<	90.12
PGI13	f20	FHS	c	wustite completely melted and reacted with fuel?	0.12	0.13	2.22	7.79	0.28	0.63	0.07	0.22	0.31	0.19	<	<	0.10	87.95
PGI13	f21	FHS	p2	wustite melted to sharp front, with fine intergrowth texture, vesicles in slag behind	<	0.09	1.12	4.72	0.20	0.75	<	0.06	0.30	<	<	<	0.39	92.38
PGI13	f22	FHS	p3	wustite melted leaving irregular relicts, intergrowth present	0.35	0.12	0.55	2.12	1.57	0.48	0.03	0.10	0.16	<	<	<	<	94.51
PGI13	f23	FHS	cd	wustite all melted, strong iscorite development, some deformation	<	<	0.64	1.75	0.19	0.09	<	0.08	0.15	<	<	<	<	97.10
PGI13	f24	FHS	c	wustite all melted, strong iscorite development	<	0.09	1.04	4.74	0.26	0.38	0.04	0.10	0.31	<	<	<	<	93.05
PGI13	f25	FHS	c	wustite all melted, strong iscorite development	<	0.16	2.01	5.84	0.15	0.05	0.03	0.12	0.16	0.12	<	<	<	91.36
PGI13	f26	FHS	c	wustite all melted, strong iscorite development	<	0.10	1.11	2.96	0.12	0.57	<	0.09	0.27	0.05	<	<	<	94.74

Table XII.2.14. Investigated SHS particles from Area B2 (90036). Melt types: p = partial, c = complete. Elemental areal analyses by EDS presented as normalised results cast as oxides, except for S and Cl. < = below detection.

sample	#	type	melt	vesicularity	v total	description	normalised oxides													
							Na_2O	MgO	Al_2O_3	SiO_2	P_2O_5	S	Cl	K_2O	CaO	TiO_2	V_2O_5	Cr_2O_3	MnO	FeO
PGI12	s1	SHS	c	moderate, dispersed	25	pear shaped glassy particle, much relict scale externally, this and crust growing inward magnetite dendrites, fine wustite	0.44	0.54	7.61	24.23	0.26	0.31	<	1.36	1.16	0.27	0.09	<	0.13	63.59
PGI12	s2	SHS	c	large central rounded void and dispersed	80	dendrites internally dominantly magnetite dendrites in glass with localised wustite	0.26	0.39	4.06	11.24	0.56	1.20	<	0.31	1.03	0.20	<	<	0.11	80.64
PGI12	s3	SHS	c	dispersed	15	thin crust supporting coarse skeletal magnetite dendrites, internally fine wustite dendrites in glass	0.20	0.40	3.81	10.63	0.26	0.46	<	0.59	0.96	0.12	<	<	0.07	82.49
PGI12	s5	SHS	p	central, crudely m/c, dispersed marginal	40	finely pseudo- to fully dendritic wustite dominant, thin magnetitised zone at edge bears iscorite. No real crust	0.13	0.21	1.73	5.61	0.19	0.74	<	0.13	0.37	0.07	<	<	0.07	90.75
PGI12	s6	SHS	c	large eccentric void and dispersed others	50	glassy particle with thin magnetite crust and dispersed magnetite dendrites interspersed with rare fine wustite dendrites	0.29	0.39	3.74	16.30	0.41	0.96	<	0.36	0.58	0.21	<	<	0.12	76.64
PGI12	s7	SHS	c	dispersed (but particle incomplete)	30?	glassy particle, block magnetite on crust, dispersed skeletal magnetite internally supporting fine wustite dendrites	0.41	0.40	4.28	16.22	0.21	0.86	0.03	0.69	0.67	0.19	<	<	0.05	75.98
PGI12	s9	SHS	p	eccentric central, few other vesicles, shrinkage	10	extremely thin crust on glassy particle, body bears clots, brain, flake fragments forming roots for fine wustite dendrites	0.34	0.30	4.37	19.62	0.21	0.93	<	0.72	0.68	0.15	<	<	<	72.66
PGI12	s11	SHS	c	small central and dispersed	10	external flake, internally complex	0.15	0.16	1.59	5.74	0.33	0.11	0.00	0.07	0.52	0.13	0.00	0.00	0.11	91.09

sample	#	type	melt	vesicularity	v total	description	normalised oxides													
							Na_2O	MgO	Al_2O_3	SiO_2	P_2O_5	S	Cl	K_2O	CaO	TiO_2	V_2O_5	Cr_2O_3	MnO	FeO
PGI12	S13	SHS	p	dispersed	5	mixture of dendrites of wustite and magnetite magnetite crust with thick zone of coarse magnetite inside, internally mainly coarse pseudo-dendritic, locally finer dendritic wustite	0.18	0.20	1.90	5.81	0.43	0.74	0.05	0.11	0.31	0.11	0.00	0.00	0.11	90.06
PGI12	s15	SHS	c	mostly shrinkage	3	glassy particle with very fine dendrites of magnetite (mainly) and wustite (limited) with iscorite	0.44	0.48	6.43	21.56	0.26	1.36	<	1.24	0.79	0.27	<	<	<	67.16
PGI12	s16	SHS	c	eccentric large and minor dispersed	15	coarse magnetite marginally, passing into wustite pseudo-dendrite and dendrite with little glass	<	0.14	0.89	2.08	<	0.36	<	<	0.06	<	<	<	<	96.47

Table XII.2.15. Other investigated microresidue particles from Area B2 (90036). < = below detection.

sample	particle	type	description	normalised oxides													
				Na_2O	MgO	Al_2O_3	SiO_2	P_2O_5	S	Cl	K_2O	CaO	TiO_2	V_2O_5	Cr_2O_3	MnO	FeO
PGI12	s4	slag droplet	complex heterogeneous grain, mostly blebby wustite/glass, but locally skeletal fayalite patches and areas rich in iscorite; has coarse quartz grain and bleb of melted ceramic. External chilled zone	0.29	0.48	3.90	15.98	0.43	0.12	0.04	0.36	0.56	0.30	0.00	0.00	0.22	77.31
PGI12	s8	slag droplet	unusual large grain with very homogeneous texture of iron oxides, hercynite and iron sulphide; has plate-like crystals extending from margin	0.14	0.27	3.00	5.75	0.19	5.41	0.00	0.20	0.67	0.14	0.00	0.00	0.00	84.23
PGI12	s10	slag droplet	very thin magnetite crust, then zone with magnetite, iscorite and wustite, but very heterogeneous, with irregular wustite zones and swirls	0.15	0.47	3.85	16.42	0.65	0.71	0.03	0.12	0.77	0.19	<	<	0.07	76.57
PGI12	s12	slag droplet	Possible SHS grain, but irregular shape. Glass dominated. Little or no crust. Glass bears quartz grains and small magnetite dendrites.	0.57	0.39	18.72	38.95	<	<	0.03	0.86	1.74	0.20	0.14	<	<	36.67
PGI12	s14	lining slag droplet	Irregular droplet bearing partially melted quartz in a groundmass with plagioclase and probably pyroxene in glass. The particle is fringed by blebs of iron-oxide rich material of uncertain origin.	1.17	1.15	14.83	56.06	0.24	0.40	0.06	2.69	3.24	0.68	0.00	0.00	0.06	19.42
PGI13	f3	lining slag	Chip of glassy lining slag	0.56	1.06	16.06	51.17	0.22	0.15	0.00	3.72	2.01	0.94	0.00	0.00	0.11	23.99
PGI13	f4	lining slag	Chip of glassy lining slag	0.58	1.17	13.82	44.76	0.27	0.00	0.00	2.50	2.23	0.55	0.00	0.00	0.08	34.03

Table XII.2.16. EDS areal analyses of SHC PGI14 from Area B2 (90036). h = approximate height of centre of area above the base of the SHC. < = below detection.

sample	spectrum	notes	h (mm)	Normalised oxides														Normalised oxides on iron free basis											
				Na_2O	MgO	Al_2O_3	SiO_2	P_2O_5	S	Cl	K_2O	CaO	TiO_2	V_2O_5	Cr_2O_3	MnO	FeO	Na_2O	MgO	Al_2O_3	SiO_2	P_2O_5	S	Cl	K_2O	CaO	TiO_2	V_2O_5	Cr_2O_3	MnO
PGI14a	1069	typical bulk	29.7	0.76	0.51	10.08	31.38	0.17	0.82	0.00	1.81	1.21	0.43	0.00	0.00	0.00	52.83	1.62	1.09	21.37	66.52	0.35	1.74	0.00	3.84	2.56	0.91	0.00	0.00	0.00
PGI14a	1114	typical bulk	28.5	0.80	0.60	9.80	33.05	0.17	0.85	0.00	1.84	1.06	0.48	0.00	0.00	0.00	51.21	1.63	1.27	20.74	67.34	0.34	1.74	0.00	3.76	2.17	0.99	0.00	0.00	0.11
PGI14a	1116	oxide rich patch	28.3	0.00	0.00	0.94	9.600	0.01	5.01	0.00	0.99	0.20	12.00	0.00	0.00	0.00	83.14	0.00	0.00	5.66	56.96	0.00	29.69	0.00	5.89	1.16	0.69	0.00	0.00	0.00
PGI14a	1117	oxide rich patch	27.7	0.00	0.12	0.97	5.845	0.17	1.45	0.15	0.40	0.33	20.03	0.00	0.00	90.23	0.00	1.27	9.90	59.04	1.75	14.83	1.53	4.03	3.42	2.04	1.36	0.00	0.00
PGI14a	1115	oxide rich patch	27.5	0.17	0.19	0.69	6.718	0.18	1.09	0.43	0.15	0.43	08.00	0.00	0.00	89.80	1.69	1.82	6.71	66.80	1.56	10.69	4.21	1.54	4.18	0.00	0.00	0.00	0.00	0.00
PGI14a	1136	weathered oxide	26.4	0.00	0.00	0.56	2.707	0.00	2.36	0.08	1.03	0.25	00.00	0.00	0.00	92.94	0.00	0.00	7.99	39.26	0.00	33.42	1.16	14.66	3.51	0.00	0.00	0.00	0.00	0.00
PGI14a	1135	weathered typical bulk	26.3	0.60	0.56	9.18	33.37	0.17	0.87	0.00	1.64	0.95	39.00	0.00	0.00	0.00	52.26	1.28	1.19	19.69	69.91	0.36	1.83	0.00	3.41	1.99	0.82	0.00	0.00	0.00
PGI14a	1145	typical bulk	25.9	0.57	0.54	10.30	34.06	0.19	1.22	0.00	1.97	1.36	0.44	0.00	0.00	0.00	49.26	1.17	1.07	20.67	67.13	0.37	2.40	0.00	3.82	2.68	0.88	0.00	0.00	0.16
PGI14a	1146	heavily weathered zone	25.8	0.00	0.00	0.33	1.301	0.00	0.45	0.05	0.00	0.05	00.00	0.00	0.00	0.00	97.81	0.00	0.00	15.27	59.82	0.00	20.58	2.11	0.00	2.21	0.00	0.00	0.00	0.00
PGI14a	1158	typical glassy/microcrystalline	24.2	0.56	0.60	10.12	33.39	0.19	1.20	0.00	1.89	1.10	40.00	0.00	0.00	0.00	50.51	1.13	1.21	20.44	67.46	0.38	2.42	0.00	3.82	2.22	0.80	0.00	0.00	0.11
PGI14a	1159	typical glassy/microcrystalline	23.8	0.77	0.58	10.08	34.51	0.22	1.15	0.02	1.74	1.08	48.00	0.00	0.00	0.00	49.36	1.53	1.15	19.91	68.16	0.43	2.26	0.04	3.43	2.14	0.94	0.00	0.00	0.00
PGI14a	1161	highly weathered zone	23.7	0.00	0.13	0.81	3.041	0.12	0.79	0.01	0.05	0.32	16.00	0.00	0.00	0.00	94.46	0.00	2.41	14.70	54.96	2.22	14.30	1.94	0.88	5.76	2.83	0.00	0.00	0.00
PGI14a	1160	typical glassy/microcrystalline	22.9	0.87	0.65	11.03	36.05	0.20	1.14	0.02	2.01	1.27	50.00	0.00	0.05	0.07	46.14	1.62	1.21	20.48	66.95	0.36	2.11	0.04	3.74	2.35	0.92	0.00	0.09	0.13
PGI14a	1218	dark ?altered material adjacent ot 1217	22.1	0.00	0.00	0.98	4.906	0.16	0.97	0.08	0.05	0.10	00.00	0.00	0.00	0.00	92.72	0.00	0.00	13.41	68.05	2.14	13.29	1.12	0.68	1.31	0.00	0.00	0.00	0.00
PGI14a	1163	vesicualr glassy relict zone	22.0	1.31	0.83	13.57	46.39	0.16	0.52	0.06	3.19	1.17	53.00	0.00	0.00	0.00	32.28	1.94	1.22	20.04	68.50	0.23	0.77	0.08	4.71	1.73	0.78	0.00	0.00	0.00
PGI14a	1166	typical bulk	22.0	1.52	0.90	14.59	47.76	0.12	0.41	0.00	3.77	1.05	56.00	0.00	0.00	0.00	29.32	2.15	1.27	20.65	67.57	0.17	0.58	0.00	5.33	1.49	0.79	0.00	0.00	0.00

sample	spectrum	notes	h (mm)	Normalised oxides														Normalised oxides on iron free basis											
				Na_2O	MgO	Al_2O_3	SiO_2	P_2O_5	S	Cl	K_2O	CaO	TiO_2	V_2O_5	Cr_2O_3	MnO	FeO	Na_2O	MgO	Al_2O_3	SiO_2	P_2O_5	S	Cl	K_2O	CaO	TiO_2	V_2O_5	Cr_2O_3	MnO
PGI 14a	1216	dark vesicular clast - coke?	22.0	0.50	1.15	23.01	50.83	0.18	0.20	0.07	3.68	0.21	0.69	0.00	0.00	0.00	19.47	0.63	1.45	28.58	63.12	0.23	0.25	0.08	4.64	0.26	0.86	0.00	0.00	0.00
PGI 14a	1164	micrcrystalline slag	21.9	0.94	0.69	11.53	36.52	0.20	1.01	0.00	2.08	1.26	0.44	0.00	0.05	0.07	45.21	1.72	1.26	21.05	66.65	0.37	1.84	0.00	3.80	2.29	0.80	0.00	0.09	0.13
PGI 14a	1162	vesicualr glassy relict zone	21.9	1.37	0.81	13.90	46.85	0.08	0.55	0.08	3.17	1.12	0.54	0.00	0.00	0.00	31.52	2.00	1.18	20.30	68.42	0.12	0.80	0.12	4.63	1.78	0.00	0.00	0.00	0.00
PGI 14a	1165	bloated cermaic inclusion	21.9	0.59	0.68	10.53	29.04	0.27	0.82	0.09	1.63	0.82	0.34	0.00	0.00	0.00	54.97	1.32	1.52	23.39	64.50	0.60	1.83	0.63	3.52	1.76	0.00	0.00	0.00	0.00
PGI 14a	1217	bright rim on 1216	21.9	0.00	0.07	0.71	1.57	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.23	0.00	0.01	9.60	88.00	0.00	1.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PGI 14a	1208	very fine slag?	20.9	1.14	0.80	12.42	42.68	0.19	0.58	0.00	2.54	1.30	0.56	0.00	0.00	0.00	38.22	1.82	1.29	19.42	69.09	0.31	0.90	0.00	4.10	2.10	0.00	0.00	0.00	0.00
PGI 14a	1182	bloated ceramic?	20.8	0.71	0.61	9.51	26.51	0.30	1.18	0.02	1.64	0.96	0.31	0.00	0.00	0.00	57.89	1.68	1.45	22.77	62.94	0.71	2.80	0.05	3.90	2.73	0.00	0.00	0.00	0.00
PGI 14a	1206	core of laminated clast	20.8	0.32	0.90	24.33	58.15	0.00	0.33	0.05	3.25	0.41	0.53	0.00	0.00	0.00	11.73	0.36	1.02	27.56	65.87	0.00	0.38	0.06	3.68	0.46	0.60	0.00	0.00	0.00
PGI 14a	1207	large bright fine swirl	20.2	0.00	0.04	0.46	1.67	0.11	0.33	0.00	0.04	0.11	0.00	0.00	0.00	0.00	95.27	0.00	0.04	9.63	35.39	2.39	49.39	0.00	0.83	2.38	0.00	0.00	0.00	0.00
PGI 14a	1205	bulk partially melted laminated clast	20.1	0.42	0.65	18.79	40.79	0.09	0.50	0.07	2.14	0.37	0.50	0.00	0.00	0.00	36.29	0.66	1.02	28.55	64.02	0.14	0.78	0.10	3.36	0.57	0.79	0.00	0.00	0.00
PGI 14a	1211	detail as 1209	20.1	0.00	0.05	0.45	1.45	0.08	0.16	0.00	0.00	0.11	0.00	0.00	0.00	0.00	97.74	0.00	0.05	19.96	64.18	3.56	7.40	0.00	0.00	5.07	0.00	0.00	0.00	0.00
PGI 14a	1210	qtz-rich glass	20.1	1.10	0.24	4.76	82.27	0.10	0.09	0.03	2.57	0.56	0.33	0.00	0.00	0.00	7.95	1.20	0.26	5.17	89.37	0.10	0.13	0.03	2.79	0.61	0.36	0.00	0.00	0.00
PGI 14a	1209	bright cf laminated grain	19.9	0.00	0.10	0.40	1.46	0.00	0.19	0.04	0.00	0.08	0.00	0.00	0.00	0.00	97.74	0.00	4.37	17.87	64.35	0.00	8.30	1.50	0.00	3.63	0.00	0.00	0.00	0.00
PGI 14a	1203	very fine slag?	19.7	0.76	0.65	10.70	35.35	0.19	1.12	0.00	2.25	1.40	0.40	0.00	0.00	0.00	47.56	1.46	1.24	20.67	67.41	0.36	2.16	0.00	3.80	2.75	0.00	0.00	0.00	0.00
PGI 14a	1181	fine-grained slag	19.6	0.86	0.58	12.63	42.78	0.15	0.91	0.03	2.54	1.32	0.58	0.00	0.00	0.07	37.54	1.38	0.93	20.22	68.49	0.24	1.44	0.08	4.07	2.12	0.00	0.00	0.00	0.13
PGI 14a	1204	qtz snd-rich clast	19.4	0.50	0.54	8.42	54.76	0.00	0.79	0.02	2.03	1.02	0.32	0.00	0.00	0.00	31.52	0.73	0.79	12.32	79.96	0.00	1.15	0.03	2.96	1.49	0.00	0.00	0.00	0.00
PGI 14a	1202	typical bulk	18.8	0.50	0.62	9.50	32.77	0.14	0.77	0.00	1.74	1.03	0.43	0.00	0.00	0.00	52.68	1.00	1.30	20.07	68.87	0.30	1.64	0.00	3.68	2.17	0.00	0.00	0.00	0.00
PGI 14b	1338	hole/organic clast?	16.0	0.00	0.00	5.20	0.00	0.00	0.00	52.77	0.00	0.00	0.00	0.00	0.00	0.00	42.03	0.00	0.00	8.96	0.00	0.00	0.00	91.04	0.00	0.00	0.00	0.00	0.00	0.00
PGI 1337	1337	porous clast	15.0	0.80	0.00	1.05	5.12	0.00	2.03	0.50	0.00	0.00	0.00	0.00	0.00	0.00	88.49	7.50	0.00	9.86	46.21	2.00	21.04	4.90	0.70	8.00	0.00	0.00	0.00	0.00

sample	spectrum	notes	h (mm)	Normalised oxides														Normalised oxides on iron free basis											
				Na_2O	MgO	Al_2O_3	SiO_2	P_2O_5	S	Cl	K_2O	CaO	TiO_2	V_2O_5	Cr_2O_3	MnO	FeO	Na_2O	MgO	Al_2O_3	SiO_2	P_2O_5	S	Cl	K_2O	CaO	TiO_2	V_2O_5	Cr_2O_3	MnO
14b PGI 14b	1336	in breccia bulk fuel breccia	9 15.6	5 0.6	0 0.0	2 2.7	9 10.7	24 0.6	39 2.0	6 0.31	08 0.19	93 0.31	00 0.11	0 0.0	0 0.0	0 0.0	73 83.07	7 3.8	0 0.0	3 16.7	03 60.7	14 1.6	20 12.7	9 1.8	5 1.1	29 1.3	00 0.0	0 0.0	0 0.0	0 0.0
PGI 14b	1339	porous organic clast core	15.1	0.6 0	0.0 0	4.9 7	5.6 6	0.31	2.44	0.17	0.25	0.53	0.00	0.0 0	0.0 0	0.1 8	84.89	3.8 8	0.0 0	32.90	37.44	2.08	16.14	1.4	1.4	3.50	0.00	0.0 0	0.0 0	1.7
PGI 14b	1340	porous orgnaic claast inclduing impreg margin	15.1	0.5 5	0.0 0	4.7 5	6.0 3	0.43	2.19	0.5	0.19	0.44	0.00	0.0 0	0.0 0	0.0 0	85.16	3.7 0	0.0 0	32.02	40.67	2.90	14.79	1.6 9	1.2 7	2.96	0.00	0.0 0	0.0 0	0.0 0
PGI 14b	1311	fuel breccia	13.9	0.4 4	0.0 0	2.8 3	9.7 8	0.23	2.09	0.1 8	0.22	0.40	0.00	0.0 0	0.0 0	0.0 0	83.83	2.7 1	0.0 0	17.49	60.47	1.44	12.94	1.1 3	1.3 6	2.46	0.00	0.0 0	0.0 0	0.0 0
PGI 14b	1310	typical bulk	13.4	0.1 1	0.9 5	15.44	17.73	1.10	0.73	0.1 2	0.21	0.82	0.35	0.0 0	0.0 8	0.2 2	62.15	0.2 8	2.5 0	40.78	46.85	2.90	1.93	0.3 2	0.5 5	2.16	0.94	0.0 0	0.2 1	0.5 9
PGI 14b	1309	typical bulk	12.9	0.2 2	0.5 7	5.6 1	22.93	0.54	0.24	0.0 0	0.04	0.75	0.25	0.0 0	0.0 0	0.2 2	68.63	0.6 9	1.8 2	17.87	73.09	1.73	0.75	0.0 0	0.1 2	2.40	0.80	0.0 0	0.0 0	0.7 1
PGI 14b	1157	typical bulk	9.3	0.2 2	0.4 5	4.7 0	27.94	0.59	0.15	0.0 0	0.05	0.50	0.25	0.0 0	0.0 0	0.1 5	65.00	0.6 2	1.2 8	13.42	79.82	1.69	0.43	0.0 0	0.1 5	1.42	0.72	0.0 0	0.0 0	0.4 4
PGI 14b	1283	typical bulk	6.3	0.2 2	0.3 4	5.1 3	29.65	1.64	0.53	0.0 7	0.09	0.69	0.32	0.0 0	0.0 0	0.1 5	61.18	0.5 6	0.8 7	13.21	76.38	4.22	1.35	0.1 9	0.2 3	1.79	0.82	0.0 0	0.0 0	0.3 9
PGI 14b	1282	typical bulk	5.8	0.1 7	0.4 3	4.5 5	32.28	0.64	0.12	0.0 2	0.04	0.39	0.20	0.0 0	0.0 0	0.1 7	60.99	0.4 5	1.1 0	11.65	82.75	1.65	0.30	0.0 0	0.1 6	1.0 01	0.51	0.0 0	0.0 0	0.4 3
PGI 14b	1262	typical bulk	5.5	0.2 6	0.3 2	3.6 6	30.88	0.39	0.17	0.0 0	0.08	0.34	0.21	0.0 0	0.0 0	0.1 5	63.53	0.7 2	0.8 9	10.04	84.68	1.08	0.40	0.0 0	0.2 3	0.92	0.58	0.0 0	0.0 0	0.4 1
PGI 14b	1268	typical bulk	5.5	0.3 8	0.2 9	5.8 8	47.75	0.65	0.20	0.0 6	0.11	0.61	0.29	0.0 0	0.0 0	0.1 2	43.66	0.6 8	0.5 1	10.43	84.75	1.15	0.36	0.1 6	0.2 1	1.09	0.51	0.0 0	0.0 0	0.2 2
PGI 14b	1267	typical bulk	4.8	0.1 6	0.3 9	3.9 9	25.32	0.57	0.13	0.0 0	0.08	0.45	0.23	0.0 0	0.0 0	0.2 2	68.45	0.5 1	1.2 5	12.64	80.25	1.80	0.41	0.0 0	0.2 5	1.44	0.74	0.0 0	0.0 0	0.7 1
PGI 14b	1261	typical bulk	4.5	0.1 0	0.9 2	8.8 3	29.88	0.63	0.17	0.0 4	0.13	0.59	0.20	0.0 0	0.0 0	0.3 0	58.20	0.2 5	2.1 9	21.12	71.49	1.52	0.41	0.0 1	0.3 2	1.41	0.49	0.0 0	0.0 0	0.7 2
PGI 14b	1260	typical bulk	3.4	0.1 6	0.5 9	6.3 0	34.96	0.66	0.20	0.0 3	0.42	0.76	0.23	0.0 0	0.0 0	0.2 5	55.44	0.3 5	1.3 3	14.45	78.48	1.64	0.40	0.0 4	0.9 8	1.70	0.52	0.0 0	0.0 0	0.5 7
PGI 14b	1221	internal bright + spinel bleb	1.5	0.1 8	0.1 4	1.6 5	17.96	1.12	0.49	0.0 6	0.16	0.46	0.22	0.0 0	0.0 0	0.1 7	77.37	0.8 0	0.6 3	7.3 0	79.36	4.96	2.1 6	0.2 7	0.7 2	2.04	0.99	0.0 0	0.0 0	0.7 7
PGI 14b	1250	rimmed bleb	1.4	0.0 0	0.0 0	1.1 4	15.99	1.07	2.02	0.0 0	1.16	0.52	0.43	0.0 0	0.0 0	0.2 1	77.47	0.0 0	0.0 0	5.0 5	70.95	4.73	8.8 8	0.0 0	5.1 6	2.31	1.89	0.0 0	0.0 0	0.9 3
PGI 14b	1219	typical bulk	1.3	0.1 3	0.3 7	5.1 8	35.14	0.84	0.24	0.0 4	0.33	0.96	0.20	0.0 0	0.0 0	0.2 4	56.34	0.2 9	0.8 5	11.88	80.49	1.92	0.45	0.0 4	0.7 8	2.5 19	0.45	0.0 0	0.0 0	0.5 6
PGI 14b	1220	typical bulk	0.1	0.0 0	0.0 0	1.5 9	6.0 1	0.82	1.10	0.0 4	0.27	0.23	0.26	0.0 0	0.0 0	0.1 5	89.52	0.0 0	0.0 0	15.20	57.41	7.82	10.46	0.3 4	2.6 0	2.23	2.47	0.0 0	0.0 0	1.4 7

Table *XII.2*.17. EDS analyses of glassy slag PGI17 from H (2093), presented as normalised oxides with analytical total in wt%. < = below detection.

site	spectrum	notes	Normalised oxides															
			Na2O	MgO	Al2O3	SiO2	P2O5	S	Cl	K2O	CaO	TiO2	V2O5	MnO	FeO	NiO	CuO	ZnO	total
Areal analyses																			
2	#7	glass	0.37	4.94	13.31	56.28	0.39	0.16	<	1.70	15.03	0.57	<	0.27	6.97	<	<	<	99.85
2	#8	glass	0.33	3.85	11.74	59.43	0.42	0.14	<	1.67	12.50	0.52	<	0.25	9.16	<	<	<	99.25
5	#69	typical	0.23	5.24	21.28	49.06	0.30	0.23	0.03	1.92	17.59	0.65	<	0.15	3.30	<	<	<	99.87
6	#82	typical	0.38	4.56	12.73	57.25	0.35	0.22	<	1.71	14.45	0.54	<	0.28	7.54	<	<	<	98.26
6	#83	typical	0.38	4.57	12.45	57.36	0.39	0.25	0.04	1.66	14.01	0.59	<	0.26	8.03	<	<	<	98.63
7	#84	typical	0.35	3.90	12.15	58.71	0.39	0.14	<	1.78	12.73	0.57	<	0.25	9.03	<	<	<	99.49
9	#110	typical	0.33	5.22	13.69	55.58	0.33	0.23	<	1.66	15.63	0.55	<	0.25	6.53	<	<	<	97.83
11	#125	typical	0.35	4.43	12.40	56.79	0.37	0.49	<	1.64	13.70	0.59	<	0.28	8.87	0.11	<	<	98.6
16	#166	typical near weathered prill	0.30	3.88	11.83	59.55	0.41	0.14	<	1.69	12.45	0.57	0.10	0.30	8.78	<	<	<	99.49
13	#126	bulk prill	<	<	0.20	0.18	0.10	23.85	<	<	0.04	<	<	<	75.08	0.33	0.23	<	98.19
14	#139	bulk prill (weathered)	<	0.12	0.43	0.49	1.23	22.93	0.07	0.05	0.22	<	<	<	73.60	0.51	0.36	<	99.55
15	#150	dendrite core	<	<	0.46	0.18	2.45	0.05	<	<	0.03	<	<	<	96.32	0.41	0.09	<	100.04
2	#9	prill?	<	0.67	1.71	5.80	0.13	23.16	<	0.15	1.45	<	<	0.15	65.68	0.55	0.33	0.20	90.89
2	#10	silica-rich relict clast	0.25	0.78	3.54	87.42	0.09	<	<	1.37	3.05	0.36	<	0.05	3.08	<	<	<	99.86
6	#81	anorthite-rich relict clast	0.34	4.06	23.32	48.13	0.24	0.27	0.07	1.16	17.92	0.48	<	0.19	3.82	<	<	<	95.28
Point analyses across foliation																			99.52
7	#85		0.29	4.63	12.86	55.73	0.42	0.11	<	1.38	14.31	0.62	<	0.28	9.38	<	<	<	99.56
7	#86		0.36	3.79	10.98	60.10	0.41	0.27	<	2.03	12.10	0.48	<	0.27	9.21	<	<	<	99.63
7	#87		0.33	3.84	11.22	59.80	0.37	0.11	<	1.89	12.22	0.51	<	0.29	9.42	<	<	<	99.79
7	#88		0.33	4.09	11.70	57.62	0.37	0.10	<	1.59	13.02	0.55	0.11	0.30	10.21	<	<	<	99.29
7	#89		0.36	3.88	11.36	59.23	0.42	0.10	<	1.75	12.35	0.52	<	0.29	9.76	<	<	<	99.67
7	#90		0.37	3.79	10.73	60.05	0.44	0.07	<	1.75	12.10	0.51	<	0.29	9.88	<	<	<	99.42
7	#91		0.39	3.74	12.55	58.43	0.37	0.07	<	1.71	12.86	0.57	<	0.30	8.99	<	<	<	99.27
7	#92		0.32	4.35	13.35	55.42	0.44	0.12	<	1.32	14.05	0.55	<	0.30	9.77	<	<	<	99.45
7	#93		0.37	3.89	11.70	59.74	0.37	0.10	<	1.67	12.53	0.52	<	0.26	8.86	<	<	<	99.85

Table XII.2.18: concentration of selected oxides/elements and oxide ratios for the glass in isolated inclusions (i) and the heads of the connected glass-filled network (c) in examples of FHS showing minimal amounts of slag generation. All contributing analyses were normalised to exclude iron oxide. Comparative data from real analyses providing estimates of bulk particle composition are also provided. P ratio = $P_2O_5/(P_2O_5+FeO)$ (all wt%)

sample	scale	Na_2O		MgO		Al_2O_3		SiO_2		P_2O_5		S		K_2O		CaO		MnO		$SiO_2:Al_2O_3$		whole particle				
		i	c	i	c	i	c	i	c	i	c	i	c	i	c	i	c	i	c	i	c	$SiO_2:Al_2O_3$	CaO:MgO	Na_2O	P_2O_5	P ratio
PGI2	F5	14	8	0.4	0.3	2.3	2.2	46	61	14.5	1.8	0.12	0.5	1.5	1.8	21	18	0.45	0.5	20	15	5.8	0.7	5.0	2.2	0.48%
PGI2	F10	18	12	0.3	0.5	1.2	1.6	40	38	24	22	0.5	1.4	3.6	3.3	11	9	0.5	0.8	37	33	3.9	1.4	12.5	12.5	0.32%
PGI6	F2	9	7	8	6	11.5	10	55	55	2.7	2.5	0.5	0.4	1.1	1.3	15	18	0.25	0.15	5.5	5	8.3	1.0	5.9	3.1	0.67%
PGI6	F5	9	7	6	4.5	2.8	2.1	37	42	25	24	1	1.3	1.6	1.7	17	18	0.1	0.1	17	20	6.0	0.9	5.8	19.5	0.87%
PGI6	F6	10	8	5	4.5	7.5	6.5	55	57	3	2.7	0.8	0.6	1.4	1.5	18	18	0.9	0.8	7.5	9	6.9	0.6	12.7	2.9	0.57%
PGI13	F1		0.8		0.9		4.5		75		10		4		2.4		3		0.65		16	5.1	1.0	<	7.1	0.53%
PGI13	F9	4	4	0.5	0.3	13	10	55	50	4	4	0	0	3	2.5	23	30	0.1	0.1	5	6	4.2	4.9	2.3	5.5	0.35%
PGI13	F14	3	2.5	1	1	12	10	72	72	2	1	0.4	0.5	2.7	4.5	9	8	0.5	0.5	8	7	3.2	1.7	1.1	1.5	0.25%
PGI13	F15	3	5	0.7	0.6	17	17	67	65	2	4	1	5	5.5	5	3	4	0	0	3	4	3.0	0.8	2.4	3.2	0.26%
PGI13	F22	17	10	0.57	0.3	0.5	2.2	12	40	59	45	1	2	5	5	4	6	1	0.2	22	20	3.8	1.3	6.5	28.3	1.63%

Table XII.2.19: comparison of the populations of scale with ratio P_2O_5:(P_2O_5+FeO) (all as wt%) within stated ranges across the studied assemblages.

P ratio	Area K7		Area E		Area B2	
	SHS	FHS	SHS	FHS	SHS	FHS
mean	0.83%	1.02%	0.84%	0.68%	0.39%	0.37%
0 - 0.4%	6	3	6	3	7	21
0.4 - 0.8%	15	2	11	6	3	2
0.8 - 1.2%	7	2	4	2	1	0
1.2 - 1.6%	4	4	0	1	1	1
1.6 – 2.0%	3	1	1	0	0	1
2.0 - 2.4%	1	0	1	0	0	0
2.4 - 2.8%	0	1	1	0	0	0
total	36	12	23	12	12	25

Table XII.2.20: comparison of the populations of scale with ratio MnO:(MnO+FeO) (all as wt%) within stated ranges across the studied assemblages. < = Mn below detection. The mean for the Area E SHS is 0.018% if the two extremely high outliers (10.03% and 6.58%) are excluded.

P ratio	Area K7		Area E		Area B2	
	SHS	FHS	SHS	FHS	SHS	FHS
mean	0.14%	0.12%	0.83%	0.14%	0.09%	0.07%
<	10	5	7	4	4	12
0 - 0.1%	7	0	6	1	4	5
0.1 - 0.2%	12	4	5	3	2	7
0.2 - 0.3%	3	3	2	2	1	0
0.3 – 0.4%	1	1	0	1	1	0
0.4 – 0.5%	1	0	1	1	0	1
> 0.5%	2	0	4	0	0	0
total	36	12	23	12	12	25

Appendix XII.2: Summary Catalogue

Table A1: Summary catalogue by area and context (after Young & Kearns 2010, Table 1)

area	context	find	label	weight (g)	description
B1	1044	1475	cinder	9	fragments of coke – probably, but not certainly coal residue
B1	1044	5632	magnetic residue	12	stone and small indeterminate fragments of slag, at least one possible clinker
B1	4001	1474	cinder	0.4	coke
B1	4018	5549	slag	44	bag of small fragments of burnt organic material occasionally magnetic, probably coal residues
B1	4018	5761	metal working res	2.5	fragments of reduced- fired clay
B1	5029	1219	slag	0.5	coke
B1	5052	1531	Burnt clay	1	Oxidised fired clay
B1	5054	1327	slag? Clinker	0.3	coke
B1	5067	5550	hammerscale	0.3	1 droplet of glassy slag – very fresh
B1	5067	5595	magnetic residue and hammerscale sphere	2.5	one sphere of hammerscale and a slag bleb, but most is stone
B1	6033	5684	magnetic residue	5.5	stone with a few possible slag spheroids
B1	6115	1481	Burnt clay	18	8 pieces of fired clay, 3 natural stones
B1	6121	5634	magnetic residue	3.6	stone with a few slag fragments and one broken spheroid
B1	7054	1311	slag x 2	0.7	2 fragments of coke
B1	7056	5605	metal res hammerscale	0.3	one sphere of hammerscale or slag
B1	7065	5925	hammerscale	0.5	stone, coke or burnt bone and natural iron crust
B1	8046	6090	cinder	1	coke
B1	9031	5629	magnetic residue	2	stone
B1	10010	5939	metal working res	1.5	a few slag fragments and one droplet
B1	11018	5751	slag?	0.2	Vesicular slag – probably clinker
B1	11020 + 11021	1529	slag?	0.6	small fragment of fired clay or possibly natural concretion
B1	11021	5986	slag	64	dense slag with gravelly top and prilly base, probably from proximal part of an SHC
B1	13005	1498	slag? Iron	0.5	oxidised pyrite concretion - natural
B1	13008	5660	metallic residue	1.5	stone
B1	13008	5666	magnetic residue	4.5	stone

area	context	find	label	weight (g)	description
B1	13012	1333	slag	1	clinker
B1	13014	5630	magnetic residue	5	mainly stone, one clinker-like irregular slag bleb
B1	13016	1483	Burnt clay	35	Ashy concretions with charcoal sand and a little clay
B1	14028	1329	slag	0.3	fired clay
B1	14028	1473	slag/cinder	0.8	3 pieces of coke
B1	14038	1339	slag	13	3 small fragments of coke, one of clinker
B1	14038	2032	slag, some metal	5.7	Mainly small fragments of coal, some coke, 2 flakes of clinker
B1	14038	5622	magnetic residue	1.5	stone
B1	14050	4024	Burnt material	1	Possibly burnt fine gravel – 4 grains
B2	90002	2	slag	11.5	partly devitrified rounded and dimpled nub of dark green glass
B2	90002	10	Fired clay	50	Quarter round piece of vitrified clay in the form of a boss, rear face planar oxidised, front vitrified, 30mm thick, outline suggests 100mm diameter. Not a tuyere, but possibly a blowhole repair?
B2	90002	13	slag	1.6	very small fragment of slag, lobate maroon surface, probably clinker
B2	90002	74	Pot sherd	4	Scrap of fired clay with coarse rounded gravel temper
B2	90002	91	slag	36	concretion around corroded iron object , iron approx. 15x8x40mm, slightly curved
B2	90002	97	?furnace	3.9	Fragment of fired clay with one reduced-fired surface, remainder oxidised
B2	90002	169	iron slag	175	indeterminate slag with possible attached lining shale clasts and reddened upper smoothly lobate surface. Probably part or all of a deformed coal fuelled SHC.
B2	90002	170	iron slag	150	wall attachment area of small SHC, top smooth reddened, base strongly prilly with enclosed probable coal shale fragments
B2	90002	177	iron slag	111	indeterminate slag with attached lining, possible SHC fragment, contains charcoal
B2	90002	178	iron slag	300	probable fragment of SHC, dimpled/prilly texture enclosing fuel fragments (probably both charcoal and coal) on base, top rusty, iron rich, but obscured by accretion.
B2	90002	184	iron slag	600	1 plano convex SHC (12.5 x 8 x 4.5 cm), top smooth blown, haematised with slightly wrinkled surface, base mainly smoothish – probably in contact with hearth floor.
B2	90002	191	slag?	44	3 fragments of (a single?) gravelly concretion with outer dense iron oxide coat. Iron pan.
B2	90002	303	slag	5	fragment of low density slag

area	context	find	label	weight (g)	description
B2	90002	345	slag x 4	15	1 fragment of lobate dense clinkery slag and 1 piece of coke, broken into 3
B2	90036	600	slag and baked clay	1325	3 large fragments of SHC, 1 of which roughly sub-circular and plano convex in form, measuring 9x8x4cm (350g), the other two are similar in shape, the largest = 13x8x5 cm (650 g) has a gravelly base while the other measuring 12x6x3.5 cm (300g) has a dimpled base texture. There is also 1 small fragment of SHC.
B2	90036	5547	slag	50	C50 very small pieces including small fragments of slag, clinker, slightly slagged coal shale, concretions (1 large one cored on sheet iron with adhering charcoal dust-rich deposit.) and some fuel ash slags similar to material adhering to coal shale
B2	90036	5736	slag?	12	small fragments of fired clay: 6 small fuel ash slag bebs in ashy concretion, 1 sandy black glassy lining slag with charcoal inclusion
B2	90036	5907	hammerscale	5	small assemblage of flake hammerscale and blisters, with a little spheroidal hammerscale and amorphous particles
B2	90056	437	slag/cinder	2	coke
B2	90056	440	slag	2	small fragment of slag, black glassy surface, lining slag or more likely clinker
B2	90056	450	burnt clay	3	fired clay – pale, probably with organic temper
B2	90056	481	coal (anthracite)	5.3	coal
B2	90101	5750	spheroid metal	0.2	one hollow sphere of slag or clinker
B2	90121	111	burnt clay	26	fired clay (plus 26g natural stone)
B2	90128	6346	slag	15	c.25 small fragments of coke and fresh coal
B2	90145	6354	slag	19	vitrified stone, well glazed on one surface with black to maroon colour surface, possible clinker
B2	90213	435	slag x 3	3	3 fragments of coke
B2	90213	439	slag x 4	1	4 small fragments of coke
B2	90213	1761	porous material	0.2	2 pieces of coke
B2	90213	5608	magnetic residue	0.2	stone and possible fuel ash slag grains
B2	90248	606	pot?	3.7	fragments of fired clay
B2	90260	4281	slag	0.5	very small fragment of highly vesicular black fuel ash slag or coke
B2	90267	605	burnt clay	20	fired clay – 9 rounded lumps
B2	90288	145	burnt clay	0.4	fired clay
B2	90288	146	iron slag	15	fragment of clinkery, maroon-surfaced slag with fragments of probable coal residue
B2	90331	6192	slag x1	5	fragment of slag
B2	90339	166	iron slag	42	rounded slag nub with accreted sediment

area	context	find	label	weight (g)	description
B2	90429	5942	coal/coke fragments	4.3	5 small fragments of coke
B2	90479	231	furnace lining	39	partially vitrified lining, just showing margin of blowhole
B2	90479	241	?furnace	12	2 pieces of gravelly fired clay
B2	91344	6349	slag	32	6 fragments of iron pan on angular gravel
B2	91444	540	slag	80	Weathered arcuate lump of slag with dense lining burr attached
B2 E Area	91518	502	Burnt clay/pottery fragments	7	3 pieces of well tempered oxidised fired clay, 2 with concave surface
B2 E Area	91653	5578	Burnt clay	<1	Tiny scraps of oxidised fired clay
B2 E Area	91657	5619	magnetic residue	0.3	stone plus a couple of spheroidal hammerscale particles
B2 E Area	91691	1999	kiln lining	6.5	2 pieces of clinker
B2 E Area	91691	4192	slag	2	3 very small fragments of slag - occasionally magnetic, 2 pieces of coal, 1 charcoal fragment
B2 E Area	91691	4212	Pot fragments	1	3 pieces of mainly reduced fired clay, 2 probable concretions
B2 - LS	90299	451	Burnt clay	47	C35 scraps of fired clay with gravelly temper, some with planar surface
B2 - LS	90323	174	slag	92	small SHC fragment, with dense crust and upper maroon lobes
B2 - LS	90437	446	slag/kiln liner	300	17 fragments of slag, 1 piece of vitrified lining and one probable SHC fragment, plus bits and concreted gravel
B2 - LS	90501	221	slag and stone	75	5 very small fragments iron pan, 1 fragment of natural rock with thin layer of pan material at one end
B2 - LS	90501	230	slag	475	large fragment of dense well formed SHC, at least 80% present, flat top has impressed coal particles
B2 - LS	90629	5685	magnetic residue	0.3	stone, charcoal
B2 - LS	90708	456	Burnt clay	7	Gravelly fired clay
B2 - LS	90708	460	Pot crumbs?	8	6 scraps of fired clay
B2 - LS	91047	4395	Burnt clay	85	Gravel grade highly abraded fired clay debris
B2 - PW	90794	293	2 x pot sherds	9.4	2 fragments of oxidised fired clay, coarse inclusions of angular grit to 5mm, smooth faces, possibly daub
B2 - PW	91059	4025	burnt material	1	fragment of fired clay
B2 - PW	91233	6369	burnt clay	26	small fragment of oxidised fired clay
B2 - PW	91321	663	burnt clay/pot?	52	fragments of oxidised fired clay
B2 - PW	91331	5610	metallic residue	0.2	stone
B2 - PW	91333	5809	burnt clay	0.3	2 tiny fragments of oxidised fired clay

area	context	find	label	weight (g)	description
B2 - PW	91501	4007	burnt clay	2	1 small piece of oxidised fired clay
B2 - PW	91666	529	Daub	28	5 small fragments of oxidised lightly fired clay
B2 - PW	91666	1728	burnt clay	125	small fragments of oxidised lightly fired clay
B2 - PW	91666	4237	burnt clay	275	c30 fragments of oxidised lightly fired clay as above with occasional charcoal inclusions
B2 - PW	92047	593	coal	10	coal
B2 - PW	92073	1732	burnt clay	30	small fragments of oxidised lightly fired clay
B2 - PW	92073	1740	burnt clay/hearth	450	c50 fragments of oxidised lightly fired clay in small irregular lumps, larger pieces show smooth planar face
B2 – PW	92073	1741	burnt clay	1000	c100 fragments of worn oxidised lightly fired clay ranging in size and shape from irregular chunks to small pebbles. Pieces from here have few clasts and occasional planar surface.
B2 - PW	92073	1970	burnt/baked clay	6	5 small pieces of fired clay
B2 - PW	92073	2053	burnt clay	62	small worn fragments of oxidised fired clay
B2 - PW	92073	2076	burnt clay	475	c150 pebble shaped fragments of oxidised lightly fired clay
B2 - PW	92073	2077	burnt clay	400	c50 fragments of oxidised lightly fired clay in small random shaped lumps
B2 - PW	92073	2078	burnt clay	400	c17 fragments of oxidised lightly fired clay, some pieces with smooth planar surface. In general these pieces become more reduced away from the surface. Some show indication of possible fine organic temper, most sparsely gritted.
B2 - PW	92073	2079	burnt clay	250	15 fragments of oxidised lightly fired clay in the form of small random shaped lumps
B2 - PW	92073	2085	burnt clay/hearth	900	c150 fragments of oxidised lightly fired clay ranging in size and shape from irregular chunks to small pebbles
B2 - PW	92073	3046	burnt clay	25	small fragments of oxidised lightly fired clay
B2 - PW	92073	4051	burnt clay	30	small pebble like fragments of oxidised lightly fired clay
B2 - PW	92073	4198	baked clay/hearth?	23	5 small pieces of fired clay
B2 - PW	92073	4292	burnt clay	69	tiny fragments of oxidised fired clay
B2 - PW	92075	1746	pot?/burnt clay?	39	small fragments of oxidised lightly fired clay
B2 - PW	92094	1760	burnt clay	2.5	tiny quantity of burnt clay fragments
B2 - PW	92112	6371	baked clay	81	small fragments of oxidised lightly fired clay
B2 - PW	92190	1767	pot?/burnt clay?	6.5	4 small fragment of reduced fired clay, 1 contains quartz inclusions
B2 - PW	92211	5689	magnetic residue	0.3	stone
B2 - PW	92232	4228	burnt clay	16	small fragments of oxidised lightly fired clay
B2 - PW	92232	5864	burnt clay	7	tiny fragments of oxidised fired clay

area	context	find	label	weight (g)	description
B2-RHA	90474	197	Furnace / pot	17.5	4 pieces of apparently fired clay bound by secondary iron crust (iron pan)
B2-RHA	90474	607	Burnt clay	76	C40 pieces of very gravelly fired clay, several have planar surface
B2-RHA	90474	685	Burnt clay	19	C50 pieces of oxidised fired clay
B2 RHA	90479	445	slag	200	concretions with iron rich crust on gravel, iron panning
B2 RHA	90479	5678	magnetic residue	0.3	Stone plus a few grains of spheroidal hammerscale
B2 RHA	90514	444	metal residue	3	stone
B2-RHA	90577	611	Burnt clay	20	10 small sandy silt concretions
B2 RHA	90580	443	slag?	2	concretions with iron rich crust on gravel, iron panning
B2 RHA	90586	5664	magnetic residue	3.5	stone
B2 RHA	90596	5673	magnetic residue	2.5	stone
B2-RHA	90608	4299	Burnt clay	5	C50 tiny chips of fired clay
B2 RHA	90619	5679	magnetic residue	0.5	stone
B2-RHA	90632	667	Baked clay?	9	3 pieces of unfired micaceous kaolinite clay
B2 RHA	90632	5663	magnetic residue	2	stone plus a few pieces of reddened material that may be weathered slag
B2-RHA	90632	6372	Burnt clay	33	C25 fragment of oxidised fired clay, several pieces with smooth planar surface
B2-RHA	90632	6374	Burnt clay	6	11 scraps of mainly reduced crumbly fired clay, 2 pieces of charcoal-rich ash
B2 RHA	90638	438	slag	24	Mottled iron pan gravelly concretion
B2 RHA	90638	441	slag? Not magnetic	4	probable natural concretion in coarse sand
B2 RHA	90638	442	from residue, slag?	1	probable natural concretion in coarse sand
B2 RHA	90638	5698	magnetic res	2.5	mainly stone, some possible slag but it may just be panning
B2 RHA	90638	6347	slag	83	concretions with iron rich crust on gravel, iron panning (see 90002, 191)
B2 RHA	90639	5863	slag	2	broken iron concretion – not clear if panning or corroded metal
B2 RHA	90639	6348	iron slag	16	concretions with iron rich crust on gravel, iron panning
B2 RHA	90639	6358	iron slag	275	concretions with iron rich crust on gravel, iron panning
B2-RHA	90656	711	Burnt clay	2	Possible fired clay or concretion
B2 RHA	90658	5662	magnetic residue	2	iron oxide coated stone
B2 RHA	90833	5686	magnetic residue	1.5	stone and iron pan
B2 RHA	90863	5671	magnetic residue	7	mainly concreted clay
B2-RHA	90921	5835	Poss burnt clay/daub	7	C20 tiny pieces of oxidised fired clay
B2-RHA	91004	4406	Burnt clay	1	Scrap of probable fired clay
B2 RHA	91931	5642	magnetic residue	0.2	stone
B2 RHA	91936	5644	magnetic residue	0.1	stone
B2 RHA	92018	5626	magnetic residue	0.5	stone and possible fuel ash slag

area	context	find	label	weight (g)	description
B2-RHA/E	90949	610	Burnt clay	2	2 pieces of clay with possible organic temper probably from small rounded lump with pale outside ad dark grey reduced interior
B2 RHB	90883	3098	burnt clay/pot	25	small worn fragments of fired clay
B2 RHB	90922	401	prehistoric pot x 6	10	6 fragments of very worn fired clay, appears to contain dark inclusions – possibly manganese oxide growths?
B2 RHB	90922	5648	metallic residue	0.5	stone
B2 RHB	90956	724	slag	1	2 very small fragments of lining slag
B2 RHB	90956	5616	magnetic residue	2.5	stone
B2 RHB	90986	6359	deposit - slag, stone	550	4 stones, 6 fragments of gravelly concretions, concretions are calcareous, have charcoal fragments and fuel ash microspherules – so probably an ash.
B2 RHB	90990	416	pot? Furnace lining	24	fragments of fired clay artefact with coarse inclusions, curved like neck of jar, but very crude, oxidised fired with slight buff tint to interior
B2 RHB	90990	5627	magnetic residue	1	stone
B2 RHB	90991	4238	clay fragments	20	fragments of fired clay
B2 RHB	91015	1921	baked clay	39	fired clay - much darker in colour to the other examples
B2 RHB	91024	601	burnt clay	400	irregular fragments of oxidised fired coarse clay
B2 RHB	91024	3029	baked clay	125	pebble shaped fragments of oxidised clay
B2 RHB	91158	5670	magnetic residue	1.5	stone possible fired clay and concretions
B2 RHB	91240	4097	burnt clay	18	fired clay
B2 RHB	91239	5681	magnetic residue	0.1	stone
B2 RHB	91450	5614	magnetic residue	0.3	stone
B2 RHB	91620	4176	baked clay	16	fired clay (oxidised)
B2 RHB	91620	4369	burnt clay	4	fragments of fired clay
B2 RHB	91622 + 91623	710	burnt clay	100	fired clay (oxidised)
B2 RHB	91664	4215	burnt clay/brick?	1	fired clay
B2 RHB	91786	5625	magnetic residue	0.3	possible fired clay with stone
B2 RHB	92044	587	pot x 2	10	2 worn fragments of reduced- fired clay
B2 RHB	92069	5645	magnetic residue	0.1	Stone, possible piece of fuel ash slag
B2 RHB	92119	1730	burnt clay	6.4	small fragment of fired clay, one with charcoal inclusion
B2 RHB	92201	5697	magnetic residue	0.1	concretion or possible weathered slag bleb
B2 RHB	92320	1749	burnt clay/pot?	31	worn fragments of fired clay (oxidised)

area	context	find	label	weight (g)	description
B2 RHC	90849	5537	Burnt clay	145	C37 pieces of fired clay with gravel, one shows a planar surface
B2 RHC	90849	5538	Burnt clay	213	C100 small pieces of fired clay with gravelly temper
B2 RHC	91155	2095	iron panning x2	65	iron rich concretion developed on unknown core
B2 RHC	91161	5947	Baked clay	3	14 small fragments of oxidised fired clay
B2 RHC	91163	5624	magnetic residue	3.5	stone
B2 RHC	91434	4099	Clay/kiln lining	18	9 pieces of fired clay with grit. Not strongly altered, possibly concretions; 4 pieces of strongly altered clay with convoluted crust – hard to distinguish iron pan from heat alteration; 7 pieces of reduced fired clay with abundant charcoal – probably a hearth residue ; 1 natural stone fragment
B2 RHC	91516	1786	poss kiln lining	5	1 piece fired clay, 2 pieces of vitrified lining, 2 slag blebs
B2 RHC	91516	1788		32	lining, oxidised on one side, vitrified on the other
B2 RHC	91603	1744	slag	33	fragments of vesicular iron slag with occasional charcoal
B2 RHC	91603	6503	furnace liner	5	1 piece fired clay, 1 dense slag bleb, 2 pieces of fuel ash or lining slag
B2 RHC	91603	4341	slag	2.5	9 low density slag blebs or fragments thereof
B2 RHC	91648	542	slag x 4	10	weathered fuel ash slag
B2 RHC	91734	1774	Burnt clay	4	Reduced fired clay fragments
B2 RHC	91734	5641	magnetic residue	0.2	stone
B2 RHC	91738	2049	slag	1	1 slag bleb, 1 piece of fuel ash or lining slag
B2 RHC	91738	5621	magnetic residue	0.3	stone, possible slag fragment
B2 RHC	91745	5540	Burnt clay (3) magnetic (1)	2	4 tiny fragments of well-fired clay
B2 RHC	91748	5611	slag	0.3	tiny fragments of magnetic material, apparently slag blebs
B2 RHC	91887	5946	Burnt clay	8	c.30 tiny blebs of fired clay
B2 RHC	91926	741	slag	66	Deeply weathered grey vesicular slag, with thin lining slag layer on top, probably most of a small SHC
B2 RHC	92040	1745	Burnt clay/hearth	324	Fired clay with coarse grit/gravel temper, c100 pieces. Large pieces commonly show slightly reduced planar surface. 2 fragments appear to show two surfaces so may be pot c 9mm thick.
B2 RHC	92040	1905	Baked clay	26	2 pieces of hard fired clay, brown colour, gritted, slightly darker planar surface; 3 pieces similar, amorphous, greyer; 1 piece reduced fired internally, pale planar surface, gritted.
B2 RHC	92248	4028	burnt material/kiln liner	1.5	tiny iron-rich concretions, possibly fired clay
B2 RHC	92257	4218	Burnt clay	35	C21 pieces of oxidised fired gravelly clay; 1 piece naturally concreted gravel
B2 RHC	92257	4225	furnace lining	8	fragment of vitrified clay probably classifiable as a fuel ash slag
B2 RHC	92257	4252	clay	55	Natural concreted gravel

area	context	find	label	weight (g)	description
B2 RHC	92473	5623	magnetic residue	0.3	stone
B2 RHC	92514	1971	Burnt clay/hearth	186	Fired gravelly clay, largest piece has very smooth planar surface with reduction and probably adhering organic residue
B2 RHD	90465	453	Burnt clay and ceramic	107	6 fragments of very low fired, extremely gravelly clay, with rather varied degree of oxidation/reduction. One piece shows a reduced planar surface.
B2 RHD	90465	457	Burnt clay and ceramics	83	35 pieces of soft gritty/gravelly fired clay, variably oxidised/reduced with several pieces showing planar reduced surface
B2 RHD	90465	4245	Burnt clay	11	11 tiny fragments of fired clay
B2 RHD	90465	4273	Burnt clay	8	C25 small fragments of fired clay
B2 RHD	90465	4305	Burnt clay	16	C50 small fragments of fired clay
B2 RHD	90473	609	Burnt clay	2	Fired gravelly clay
B2 RHD	90621	5687	magnetic residue	0.2	mainly stone, but a few slag fragments and spheroids
B2 RHD	90719	5607	magnetic residue	0.2	stone, fired clay
B2 RHD	90747	612	Burt clay	27	5 pieces of gravelly fired clay, largest piece shows planar smooth surface
B2 RHD	90748	599	Heat degrading stone and burnt clay	292	Any pieces of rounded fired clay, some with planar surfaces. Marked lack of temper in most pieces. Some fine grained clays show some colour banding from streaking of original clay.
B2 RHD	90859	5636	magnetic residue	0.3	Stone, fired clay
B2 RHD	90953	5667	magnetic residue	0.4	3 possible small slag fragments
B2 RHD	91030	2097	furnace lining slag x 1	3	fragment of vitrified lining, possibly from blowhole margin
B2 RHD	91127	3032	Burnt clay	3	2 fragments of oxidised fired clay, one with one reduced surface
B2 RHE	91304	1780	slag?	4.5	small fragments of indeterminate low density slag
B2 RHE	91337	5659	metallic residue	0.3	stone, one possible flake hammerscale piece
B2 RHE	91403	598	burnt clay	1725	large and small fragments of fired clay - major parts form the equivalent of most of a rounded unequally-biconvex mass with a 200mm long axis, at least 120mm preserved perpendicularly (possibly originally 200mm in this axis too?, and the lump was 80mm thick. Object cut by vertical work burrows (or just possibly roots). Possibly large loom weight?
B2 RHE	91722	1734	burnt clay	22	fragments of fired clay
B2 RHE	91722	5606	hammerscale	0.3	stone, fired clay, burnt organic material and possible slag grains
B2 RHE	92085	664	burnt clay/pot?	22	fragments of fired clay
B2 RHE	92085	2071	burnt clay	2	small fragments of fired clay
B2 RHE	92145	2066	burnt clay	6	fragments of fired clay, including vitrified hearth lining

area	context	find	label	weight (g)	description
B2 RHE	92145	4087	furnace lining/slag	4	1 small fragment of fired clay, 7 pieces burnt organic material, 1 small fragment of charcoal
B2 RHE	92147	1784	burnt clay	15	fragments of fired clay (oxidised)
B3	3027	5617	Magn residue	2	Stone, 3 slag/clinker spheroids
B3	22156	5635	magnetic residue	4	stone, possible fuel ash spheroid
B3	22157	3001	Baked clay?	44	Clay with charcoal and sand – possibly ashy concretions
B3	22164	2096	Burnt clay	20	Gritty masses – probably natural concretions
D3	60100	4047	cinder	1	8 tiny fragments of coked organic material – probably coal residue
D3	60136	4242	furnace lining	11	natural quartz rich stone with iron veining
E	30083	5428	Burnt clay/kiln lining	61	1 large and 7 small fragments of fired clay from heath wall beside blowhole, has delicately vitrified face, with rapid thickening of slag layer towards likely blowhole position. Has oxidised fired clay behind vitrified face and this bears abundant ?straw tempering. Remainder is 20 small pieces of fire clay without vitrified face. 1 small isolated slag fragment and one probable tubular concretion. One of the fired clay fragments has a curved face rather similar to tuyère margin, but too small for proper identification.
E	30083	5546	kiln liner?	41	small fragments ashy/charcoal-rich concretion, some pieces with flake hammerscale, one piece of vitrified lining
E	31025	5968	cinder	0.6	coked organic material – probably coal residue
E	31040	6357	slag	0.5	fuel ash slag containing charcoal
E	31153	917	furnace lining	4.5	fired and vitrified clay with adhering residue of ash – including fuel ash microspherules
E	31153	917	Blast furnace - mainly iron ore	125	12 fragments of “smithing floor” with flake hammerscale inclusions, 2 fragments of vitrified lining
E	31153	5500	slag/heat fused material	217	122g 6 pieces of dense smithing slag, 82g 18 pieces of low density fuel ash/lining slag, 12g 8 pieces of smithing floor concretion plus 3 slag flats
E	31153	5511	heat affected metal + yellow substance	7	1 small piece of vitrified lining, 1 piece lining or fuel ash slag, 4 pieces of corrosion from iron? object
E	31153	5551	hammerscale	550	good assemblage of hammerscale, majority is in flake form, also small fragments of slag, lining and fuel ash slag spheroids, corroded iron fragments and smithing floor concretions
E	31153	5822	hammerscale	34	Hammerscale – good assemblage of flake and spheroidal hammerscale with slag flats

area	context	find	label	weight (g)	description
E	31153	5911	hammerscale	63	Hammerscale – good assemblage of flake and spheroidal hammerscale with slag flats
E	31163	918	vitrified 'furnace' lining	52	5 pieces of vitrified lining
E	31163	919	Burnt material	193	5 pieces of rather blebby/lobed hearth slag. One good fragment from margin of SHC
E	31163	922	iron ore, slag	750	2 halves of dense well formed plano-convex SHC (100x100x50mm) 90%? complete, charcoal inclusions
E	31163	922	iron ore, slag	350	proximal end of SHC with deep burr and slightly prilly base, probable charcoal inclusions
E	31172	920	furnace lining	200	fragment of furnace lining vitrified on one side
E	31172	921	furnace lining	12	fragment of lining (high fired on one side)
E	31384	4486	slag	134	2 lumps of slag, probable fragments of SHC
E	31510	5417	slag	0.5	natural rock grains
E	31596	5426	Burnt/baked clay	7	16 tiny scraps of fired clay
E	31632	5487	slag	1	2 pieces of burnt organic material – probably charcoal
F1 FE	92862	833	slag	11	indeterminate fragment of worn slag – probably basal crust from an SHC or flow
F1 FE	92948	5510	Baked caly	19	Stone attached to yellow sand by iron rich slaggy charcoal bearing concretion
F1 FE	93366	5675	Pottery/clay	81	5 pieces of oxidised fired clay with a slightly reduced surface, smooth, with very coarse gravel temper.
F1 FE	93524	5570	Burnt clay	436	Amorphous large lumps of fired gravelly clay, just two smaller ones show planar surface
F1 FE	93524	6338	Burnt clay	10	5 small pieces of variably fired clay with coarse temper
F1 FE	93554	5732	Burnt clay	46	21 scraps of mainly oxidised fired clay with gravel temper
F1-FW	92904	4239	Burnt clay	593	Large assemblage (c200 pieces?) of fired gravelly clay. C10 pieces show good evidence for a planar surface, in most cases with slight reduced firing. In one case at least an ashy charcoal rich (very fine – straw/twigs) residue rests on the surface. Also 1 tubular iron pan concretion.
F1 RHG	92612	788	slag	37	2 small indeterminate lumps of slag with incorporate lining slag
F1 RHG	92622	786	Slag	550	3 chunks of highly vesicular frothy pale grey to pale green fuel ash slag, largest block contains angular pieces of vitrified stone
F1 RHG	92624	787	slag	56	3 small chunks of vesicular fuel ash slag

area	context	find	label	weight (g)	description
F1 RHG	92633	797	Fe object?	20.5	highly weathered iron slag in sheet form – probably the lower crust of an SHC
F1 RHG	92687	796	Burnt clay	29	8 pieces of dense gritty fired clay
F1 RHG	92895	817	slag x 7	50	5 small chunks of fuel ash slag
F1-RHH	92829	4478	Burnt clay	3	2 pieces of natural stone/concretion
F1-RHH	92875	4319	Clay with holes	7	2 pieces of tubular iron pan concretion
H	02070	1008	vitrified material	47	black glassy material with occasional vesicles - resembles obsidian/pitchstone, but contains enclaves of coarse pale crystalline material and also dark foliated clasts which may be coal shale.
H	02093	1017	vitrified material	63	black glassy material, original surface with flowed structures on one side - resembles obsidian/pitchstone, but contains pale crystalline clots and also angular white clasts, probably of quartzite.
H	02102	1028	Burnt clay	2	Fine fired clay with organic temper
H	20048	1328	Burnt clay	1	Very well foliated fine oxidised fired clay with organic temper
H	50011, 50012	4304	slag, clinker	0.2	burnt organic matter – probably coal residue
H	02100, 50045	5647	magnetic residue	0.5	stone
H	50053, 50100	5646	magnetic residue	0.1	stone with one slag fragment
H	50055	5640	magnetic residue	0.4	stone
H	50064	1471	Burnt clay	2	Burnt clay or concretion?
H	50083	3045	slag/charcoal	0.6	small fragment of burnt material - possibly charcoal, but pore structure suggests burnt bone
H	50106	1605	Burnt clay	6	3 concretions, 1 possible fired soil
H	50110	1200	daub	17	Fired silty clay with coarse organic temper – possibly daub
H	50111	1439	daub	19.5	Natural stone
H	50115	1647	Burnt clay	29	Very fine fired clay lump
H	50117	1434	Burnt clay	22	Concretions?
H	50117	1609	Burnt clay and stone	9	Burnt soil?
H	50117	5682	magnetic residue	0.2	stone
H	50118	1610	Burnt clay	34	Concreted silt, probably not burnt
H	50118	1612	Clinker	0.3	Coke, fuel ash, stone
H	50118	2099	Burnt clay	27	Concreted silt, probably not burnt

area	context	find	label	weight (g)	description
H	50118	5637	magnetic residue	0.3	stone
H	50124	1384	clay	10	Coarse silty clay with charcoal fragments
H	50135	4477	Pot fragment (rim)	1	Reduced fired clay piece with ?organic temper
H	50150	5867	hammerscale	0.3	stone
H	50163	3037	Burnt clay?	7	3 concretions and 9 pieces of charcoal-rich burnt soil
H	50163	4055	Burnt clay	8	7 pieces of concretion (with charcoal fragments) and 3 pieces of charcoal
H	50163	5955	Baked clay	7	Probable concretions
H	50168	5539	magnetic residue	0.5	stone
H	50170	5620	magnetic residue	0.2	stone
H	50275	2094	Daub? Pot?	134	Fired clay tempered with abundant coarse grit/gravel and some possible organic temper. Many pieces show a flat surface, which is very well smooth and locally reduced fired (everything bar surface 2mmis oxidised fired)
H	50401	5756	metalwork residue	0.5	6 pieces of coal, 2 clinker droplets and 2 stones
I	18087	6373	Burnt clay	420	Fired clay with coarse gravelly temper, many pieces have planar surface, some moderately convex, with reduced fired surface
I	19066	5661	metallic residue	0.3	magnetic – probably burnt stone
I	22009	1040	daub	386	Fired clay fragments, many with a single planar to slightly convex surface with a slight reduced fired, or at least pale, surface. Clay is tempered with coarse rounded gravel.
I	22014	1221	Burnt clay	1	Oxidised fired clay with coarse temper
I	22014	1309	Burnt clay	20	Oxidised fired sandy clay with some possible organic (hair?) temper
I	22014	1319	slag	1.6	weathered natural concretion
I	22014	1468	Burnt clay	15	5 fragments of oxidised fired clay with coarse temper, and paler smooth planar surface
I	22014	1479	slag? Furnace lining?	2	3 fragments of natural mineral vein
I	22014	4243	Burnt clay	2	10 rounded fragments of oxidised fired clay
Ia	21209	1441	slag? clinker	3	stone
Ia	21209	5658	metallic residue	0.3	stone
Ia	21211	5618	magnetic residue	0.2	stone
Ia	21216	5668	magnetic residue	0.3	stone with one piece of flake hammerscale and one slag fragment
Ia	21220	1587	coal	0.3	7 tiny fragments of coal
Ia	21222	5692	magnetic residue	0.4	stone with possible slag fragment

area	context	find	label	weight (g)	description
Ia	21224	1589	clinker	0.5	burnt material
Ia	21224	5638	magnetic residue	0.2	stone
Ia	21224	5674	magnetic residue	0.2	mainly stone with two spheroids
J	70089	5799	Burnt clay	1	2 fragments of fired clay
J	70092	4074	Burnt clay	5	3 pieces of silty and sadny material, possibly very low fired
J	70125	5700	hammerscale	0.4	one fleck of possible hammerscale
J	70129	5798	hammerscale	0.2	stone
J	70172	5804	metalwork residue	0.2	stone, fired clay?
J	70182	3095	slag	3.5	11 small fragments/blebs of slag, 1 of coal
J	70227	1883	Baked clay	42	9 fragments of fired clay
J	70267	4468	slag	0.5	minute fragment of fuel ash slag, one of fired stone
J	70291	5690	magnetic residue	0.3	stone
J3	70536	6498	burnt clay	0.3	oxidised fired clay
J3	70530	6467	burnt clay	0.4	1 fragment of oxidised fired clay
J3	70537	6479	burnt clay	4	1 fragment of oxidised fired clay
J3	70437	6447	possible clinker	0.4	coke
K	80190	6375	clinker? Not bone	1	small fragment of fired clay/fuel ash slag
K1	18173	1340	slag	0.2	specks of black glassy material, possibly related to 6092
K1	19100	1496	Pottery fragments	4	Pottery sherds
K1	19108	5628	metallic residue	0.2	stone
K1	20153	1283	pos slag fragment	0.1	tiny bleb of sandy black glass
K1	21053	1304	Burnt clay?	1	Mainly fired caly fragments, 1 piece is natural
K1	21053	5633	magnetic residue	6.2	stone
K1	21053	6092	vitrified material	125	3 fragments of black glass bearing angular clasts of white rock. Related to the “obsidian-like” material seen elsewhere. Has dimpled, slightly flown surface with maroon tint.
K1	23016	1484	Burnt clay	7	Natural silty concretions
K7	80009	5695	magnetic residue	8.5	small amount of hammerscale with some natural stones
K7	80011	5760	metalworking fragments	6	One small fragments of iron rich slag , 2 spheroids, remainder stone

area	context	find	label	weight (g)	description
K7	80013	2041	slag	50	broken slag piece, coarsely crystalline interior around large voids, probably lower part of hearth slag or small SHC
K7	80013	4472	furnace lining?	475	c. 200 pieces of smithing floor concretion, includes 1 Cu-alloy piece (missing, mould only) 9x18, slightly curved, some slag blebs, 1 piece of fired slate(?)
K7	80013	4514	vitrified burnt material/slag	568	378g c120 pieces of smithing floor concretion with hammerscale and charcoal and one fragment of cu-alloy, 104g 7 pieces of dense slag, all in dimpled nubs – largest may have been squeezed by tongs. 86 g c35 pieces of low density, partly flowed blebs, ranging down to fuel ash slag
K7	80013	4516	metal	825	good assemblage of hammerscale, majority is in flake form
K7	80013	5548	slag	100	very small fragments of slag , mainly blebby materials ranging from fuel ash slag to dense varieties, also some coarse flake hammerscale, one tiny chip of oxidised fired lining, several small pieces of smithing floor concretion, including 3 pieces (probably from a single original) of folded thin Cu-alloy strip.
K7	80013	5596	hammerscale	15	hammerscale - majority spheroidal – but possibly mainly slag droplets than true hammerscale
K7	80013	5598	hammerscale	400	good assemblage of hammerscale, majority is in flake form
K7	80013	5599	hammerscale, metal residues and slag	450	good assemblage of hammerscale, majority is in flake form
K7	80013	5600	hammerscale	39	Spheroidal hammerscale, slag droplets, slag flats and small fragments of slag. Also possible bifurcate Cu-alloy rivet fragment
K7	80013	5787	metalworking debris	525	good assemblage of hammerscale, majority is in flake form
K7	80015	4470	slag? Furnace lining?	1	Natural iron ore concretion
K7	80016	5597	metallic residue	2.5	small fragments of slag, 1 sphere
K7	80018	808	Surface slag	17	4 pieces of dense slag – possibly fragments from an SHC?
K7	80018	809	kiln lining	41	lining, vitrified and well slagged
K7	80018	810	slag	125	8 small fragments of indeterminate dense slag, largest appears to be tool mark from base of small SHC
K7	80018	811	kiln lining	25	1 fragment of slagged lining, 1 concretion on iron
K7	80018	4353	metal working frags	5	large spheroids – many of lining slag
K7	80018	4358	slag?/nail heads	1	2 small spherical droplets of lining slag
K7	80018	5602	metal working residues and hammerscale	22	spheroids of slag and hammerscale
K7	80018	5603	hammerscale	7	stone, slag, flake and spheroidal hammerscale, 1 piece of coal
K7	80018	5910	hammerscale	3	slag droplets, slag fragments and ?coarse spheroidal hammerscale
K7	80018	5983	slag	50	6 small lumps of slag: 1 dense, dimpled, 2 complex gravelly lining slags, 3 droplets of lining slag

area	context	find	label	weight (g)	description
K7	80018	6350	slag, kiln lining, vitrified material, some metal	50	small fragments of blebby slag from dense to fuel ash slag and a few stone fragments
K7	80020	5824	metal frags/slag/spheroids/hammerscale	3.5	Mainly spheroidal hammerscale, 1 flake of slag, plus other more amorphous material
K7	80035	4544	vitrified kiln liner	0.5	maroon slaggy surface on white porcellaneous vitrified substrate, possibly clinker
K7	80054/80055	823	slag	26	Gravelly fuel ash slag in rounded, slightly lobate nub
K7	80054	4469	slag	5	small fragment of lobate and dimpled lining slag
K7	80054	4515	burnt vitrified material/slag	75	19 small pieces of gravelly fuel ash slag, 5 small fragments of burnt organic residue, 1 corroded iron piece, possibly nail point
K7	80054	5418	slag and hammerscale	30	small fragments of mainly fuel ash slag and coarse hammerscale (spherical and flake), also a small amount of burnt fuel residue resembling, but not conclusively, coal residue in very tiny pieces
K7	80054	5956	metal working debris	50	small broken fragments of slag, flake and spheroidal hammerscale, occasional small pebbles
K7	80058	5860	metal working residue	2.8	stone and slag spheroids
K7	80065	4434	vitrified kiln lining/waste slag	50	broken blebby slag, mainly vitrified and slagged stones, giving a clinkery, maroon coloured material – but some is clearly a granite precursor, others sandstone. Slag is mainly a black glass.
K7	80065	4473	slag/manganese	50	18 pieces of concreted hearth floor deposits with charcoal dust and fuel as spheroids, 6 pieces of fuel ash slag of variable density
K7	80065	5593	hammerscale and metallic residue	57	small fragments of slag, flake and spheroidal hammerscale, dominated by slag fats, blisters and large spheroids
K7	80065	5957	metalworking debris	175	Coarse hammerscale containing good proportion of large spheres along with flake, slag flats and fuel as droplets
K7	80077	4523	kiln liner?	21	iron pan - gravelly concretion
K7	80077	5825	metal frags/slag/spherhoids/hammerscale	2	spheroidal hammerscale or clinker droplets, slag fragments stone
K7	80096	5826	hammerscale/spheroids	1.5	spheroidal and flake hammerscale, slag stone
K7	80103	4517	burnt/coalesced material/furnace lining/slag	187	12g 1 piece glassy black lining slag, 82g 30 pieces of concretion around iron, with charcoal and hammerscale, 4g 2 stones, 42g 29 pieces of low density fuel ash slag, 47g 20 pieces of dense slags in blebs and fragments
K7	80103	4550	slag	100	Mainly broken prills and blebs of slag. Some corroded iron, some coarse flake hammerscale, some slag flats, one slag sheet with re-entrant right angle, probably from tool
K7	80103	5928	hammerscale	250	Coarse flake hammerscale, slag flats and small fragments of slag, together

area	context	find	label	weight (g)	description
					with a very high proportion of spheroidal hammerscale
K7	80115	5944	metalworking residue	2	2 fragments of slag , 2 of coal and 2 of coke
K7	80126	5856	Burnt clay	1	6 tiny blebs of fired clay
K7	80126	5876	hammerscale	2.5	stone
K7	80127	4443	Burnt clay	2	stone
K7	80201	5936	metalworking residue	3	thin slag and corroding iron fragment, small piece of smithing floor concretion, other concretions
K7	80266	4494	possible ore x1	77	very dense, but highly weathered slag, slightly vesicular, probably piece from centre of an SHC
K7	80268	5943	metalworking debris	0.1	tiny magnetic specks of ?concretion – not hammerscale
K7	80326	4424	Burnt clay	66	Fine grained fired clay. 1 piece shows curved surface – withy or hole margin?
K7	80334	4459	Burnt clay	5	4 pieces soft fine fired clay
K7	80334	4552	slag	1.7	small fragment variegated black/red glass resting on sandy interface – possibly a Cu-alloy slag
K7	80388	5540	Burnt clay/kiln liner?	63	Low density friable material, grey in fracture, but orange –coated. Possible ochre precipitate in drain. Not necessarily anything to do with burning!
K7	80406	5498	kiln liner/degraded stone	9	Siliceous residue from decalcified limestone
K9	80553	6313	clinker	0.5	coke
K9	80601	5976	furnace lining?	2	fired clay, possibly fragment of lining
K9B	80831	6013	daub	5	oxidised fired clay
K9B	80831	6014	daub	5	oxidised fired clay
K9B	80837	6361	burnt clay	1	2 fragments of fired clay
K9B	80840	6042	burnt clay	33	small fragments of oxidised fired clay
K9B	80840	6228	burnt clay	39	small fragments of oxidised fired clay
K9B	80840	6448	burnt clay	6	tiny fragments of oxidised fired clay
K9B	80843	6038	burnt clay	5	fragments of oxidised fired clay
K9B	80843	6048	slag x 3	19	3 small fragments of black glassy slag with white inclusions and slightly purple surface
K9B	80844	6031	burnt clay	120	fragments of oxidised fired clay
K9B	80845	6017	burnt clay/furnace lining	20	oxidised fired clay
K9B	80845	6018	burnt clay	21	1 fragment of fired clay, partially oxidised, 1 small quartz inclusion
K9B	80848	6027	daub	2	oxidised fired clay

area	context	find	label	weight (g)	description
K9B	80848	6028	daub	4	oxidised fired clay
K9B	80848	6029	burnt clay	7	small fragments of oxidised fired clay
K9B	80848	6032	burnt clay	5	2 small fragments of oxidised fired clay
K9B	80849	6153	burnt clay	11	oxidised fired clay
K9B	80850	6033	burnt clay	10	1 fragment of fired clay
K9B	80866	6229	Burnt clay	241	Oxidised fired gritty clay. Larger pieces show flat to slightly concave surface with a browner colour than the red body
K9B	80866	6230	burnt clay	205	fragments of oxidised fired clay
K9B	80866	6364	burnt clay	10	small fragments of fired clay
K9B	80866	6366	burnt clay	10	small fragments of oxidised fired clay
K9B	80866	6438	burnt clay	17	small rounded fragments of oxidised fired clay
K9B	80866	6473	burnt clay	19	small rounded fragment of oxidised fired clay
K9B	80869	6237	burnt clay	360	fragments of oxidised fired clay, some organic temper, but not abundant compared to grit.
K9B	80869	6443	burnt clay	125	fragments of oxidised fired clay. Larger pieces show brown surface. Lots of small cavities indicative of organic temper
K9B	80869	6455	burnt clay	42	small fragment of oxidised fired clay
K9B	80869	6458	burnt clay	22	small fragment of oxidised fired clay
K9B	80869	6460	burnt clay	998	c70 fragments of oxidised fired clay. Variable in detail. Some larger bits of included organics, but mostly just coarse sand temper
K9B	80869	6474	burnt clay	15.5	4 small fragments of reduced fired clay
K9B	80869	6487	burnt clay	50	small rounded lump of oxidised fired clay
K9B	80874	6049	burnt clay	200	c20 small fragments of oxidised fired clay
K9B	80893	6060	daub	1	oxidised fired clay
K9B	80893	6293	slag	1	small fragments of iron rich material (magnetic)
K9B	80900	6058	burnt daub	10	attachment of handle onto pot
K9B	80900	6468	burnt clay	<1	tiny fragment of oxidised fired clay
K9B	80901	6062	burnt clay	2	oxidised fired clay
K9B	80910	6136	burnt clay	4	oxidised fired clay
K9B	80921	6135	coke	1	coke
K9B	80939	6410	burnt clay	1	fired clay
K9B	80939	6431	burnt clay	2	fragment of oxidised fired clay
K9B	80943	6234	burnt clay	9	3 fragments of oxidised fired clay
K9B	80949	6360	burnt clay	2	1 fragment of fired clay

area	context	find	label	weight (g)	description
K9B	80963	6142	burnt clay	22	partially oxidised fired clay
K9B	80978	6232	burnt clay	20	fired clay
K9B	80978	6363	burnt clay	2	5 small fragments of oxidised fired clay, 1 piece slightly blackened
K9B	80978	6365	burnt clay	7	oxidised fired clay
K9B	81006	6236	burnt clay	3	1 fragment of oxidised fired clay
K9B	81029	6150	slag and burnt clay	105	3 fragments of oxidised fired clay - inner surfaces more highly fired (approaching vitrification)
K9B	81034	6239	burnt clay	5	2 small fragments of oxidised fired clay, 1 has small stone inclusion
K9B	81042	6158	burnt clay	7	1 fragment of fired clay
K9B	81042	6167	burnt clay	54	4 fragments of fired clay
K9B	81042	6454	burnt clay	1	fired clay
K9B	81043	6437	burnt clay	2	6 tiny fragments of oxidised fired clay
K9B	81048	6160	burnt clay	12	1 fragment of fired clay
K9B	81053	6439	clinker	1.5	coke
K9B	81073	6472	burnt clay	5	fired clay
K9B	81079	6312	clinker	1	coke
K9B	81144	6470	burnt clay	1	2 tiny fragments of oxidised fired clay
K9B	81166	6428	burnt clay/possible lining	710	c100 fragment of oxidised fired clay. Rather variable clay, sometimes with pebbles. Has good smooth, slightly brown surface.
K9B	81166	6428	burnt clay/possible lining	800	c200 small worn fragments of oxidised fired clay
K9B	81166	6428	burnt clay	225	small rounded fragments of oxidised fired clay
K9B	81166	6461	burnt clay	47	bag of small rounded lumps of oxidised fired clay
K9B	81171	6179	burnt clay	10	small fragment of oxidised fired clay
K9B	81171	6478	burnt clay	60	small fragments of fired clay partially oxidised and reduced
K9B	81172	6311	slag	11	2 fragments of ferruginous concretion, 1 small quartz rich stone; all natural
K9B	81172	6450	slag	1	tiny fragment of clinker, with shale and maroon surface
K9B	81205	6476	burnt clay	10	oxidised fired clay
K9B	81206	6475	burnt clay	10	1 fragment of oxidised fired clay
K9B	81264	6469	burnt clay	2	fired clay
K9B	81287	6471	burnt clay	5	1 fragment of oxidised fired clay
K9B	81287	6477	burnt clay	4	fired clay
L3	21191	5615	magnetic residue	3.5	stone
L3	21193	1289	Burnt clay? Daub?	53	4 pieces of very hard fired clay with angular gravel, varies from orange to dark

area	context	find	label	weight (g)	description
					brown
L3	21193	1297	Pot? Burnt clay	45	Probable fired clay fragments, harder than most of the material, bears large grit and small voids
L3	21197	4241	Burnt clay	12	C50 tiny fragments of fired clay
L3	21205	1321	Burnt clay?	30	Fired clay fragments
L3	22139	1251	Burnt clay	3	7 tiny fragments of fired clay with coarse temper
L3	22172	1365	slag	16	Gravelly lining slag with lining attached
L3	22181	2057	coal?	0.5	coal
L3	22181	2058	Slag?	1	Natural chert
L3	22181	5613	hammerscale	0.2	one large sphere of hammerscale
M3	19123	4032	poss furnace lining or slag, some metal	20	gravel and iron pan
M4	22058	1303	burnt clay	0.4	burnt clay
M4	22073	1301	slag?	2	coke
M4	22073	1355	residue - slag	2.7	4 fragments of coke/coal
M4	22092	5669	magnetic residue	0.2	stone
M4	22117	1318	slag?	1.5	8 natural grains
M4	22117	5665	magnetic residue	3.5	stone
M4	40001	5683	magnetic material	0.2	stone, coke, probable slag and spheroid
M4	40019	5890	hammerscale	0.3	Stone and slag or rust crusts
M4	40022	5847	hammerscale	0.3	Stone, slag fragment and a single spheroid of hammerscale
M4	40026	4366	cinder	2	4 pieces of coke
M4	40037	5846	clinker	0.4	5 pieces of coke
M4	40075	5882	metalwork residue	0.4	stone
M4	40077	5837	hammerscale	0.2	iron-rich crusts - but probably not hammerscale
M4	40080	5888	metalworking reside	0.3	stone
M4	40112	5878	metal work residue	2.5	coke
M4	40118	5594	ferro mag	5	mainly stone, 2 fuel ash spheroids, 2 possible slag fragment
M4	40120	5688	magnetic residue	0.3	stone
M4	40136	3075	furnace lining x1	1.8	Natural rock concretion
M4	40167	5884	Burnt clay	1	1 piece natural concretion, 2 pieces of stone
M4	40181	6368	vitrified kiln lining/slag	4	natural haematite-bearing chert

area	context	find	label	weight (g)	description
M4	40198, 40199, 40200	5694	magnetic residue	4.5	stone
M4	40200	5849	metal residue	0.4	fragment of coke

Part XIII: burnt stone

Dr R. Alan Williams

Sixty six samples of burnt stone were collected as having potential to provide information on the use of hot stones in a variety of activities. These were collected by hand and as coarse residues from the wet sieving. Of these some were small numbers of incidentally burnt stones or were residual in a late context or otherwise of little significance. Samples of low significance were discarded.

The samples retained related to mainly prehistoric activity from the burnt mounds and from activity related to the Iron Age roundhouses. The purpose of this collection was to determine whether there was any evidence of rock type selection for the use of heating water. Jenkins (2008) noted "a slight preference for doleritic/mafic rock types" in burnt mounds at Parc Bryn Cegin and stated that similar observations had been made at other sites.

The very large number of pieces of rock in each of the numerous sample bags meant a sensible sampling strategy was required to make an evaluation of the rock types a more manageable task. If an initial evaluation suggested significant selection was taking place, then a more detailed study could be undertaken.

A random selection of burnt stone was taken from sample bags from two burnt mound features and from around the hearth in Roundhouse I and sorted into broad rock types (see Fig XIII.1). Rocks with a significant iron content showed reddening, a common feature of burnt rock as iron in the ferrous form oxidises into the reddy-brown ferric form. A reference set of stones had been taken from boulder clay (glacial till) at Parc Cybi.

The results of this snapshot examination of the various samples described is shown in Table 1. This shows the number of pieces of each rock type. However, this not an ideal parameter as it takes no account of the size of the rock samples and indeed the quartz is noticeably smaller than the other rock types and so can over represent the amount of quartz used. This may reflect the well-known tendency of quartz to crack when heated due the inversion at 573 ^{o}C when the crystal structure changes from the alpha to beta form.

While there is variation between the burnt stone samples, the local schist is a major component in all them. The averages of rock types in all the burnt stone samples have been plotted against the reference samples of boulder clay rocks and natural rock in Fig XIII.2. These results are consistent with the burnt stone assemblage being a mixture of local stone and boulder clay derived stone. While the local schist was a major component it could be argued that there was a preference to avoid using only local schist although this could merely reflect the availability of the right size and shape preferred for water heating. Based on this limited data there is no obvious evidence of preferential selection of dolerite rock as reported by Jenkins (2008) at Parc Bryn Cegin.

Conclusions

A small-scale sampling scheme examined the rock types present in various burnt stone contexts in comparison to those in the natural stone of the area and those present in glacial till. This did not show any selective use of dolerite that was seen at Parc Bryn Cegin. Overall the limited assemblages examined is consistent with the use of a mixture of local schist with glacial till stone without any strong preference for one rock type.

Having examined samples from features most likely to have exhibited selection of rock types and found little evidence of this further study was considered unlikely to produce significant results. Many of the samples were very small and unlikely to be more than incidental in their contexts.

Bibliography

Jenkins, D., 2008. 'Appendix XI: Petrology of Clasts Recovered from Parc Bryn Cegin', in Kenney, J, Recent excavations at Parc Bryn Cegin Llandygai near Bangor, North Wales, Unpublished Gwynedd Archaeological Trust Report 764

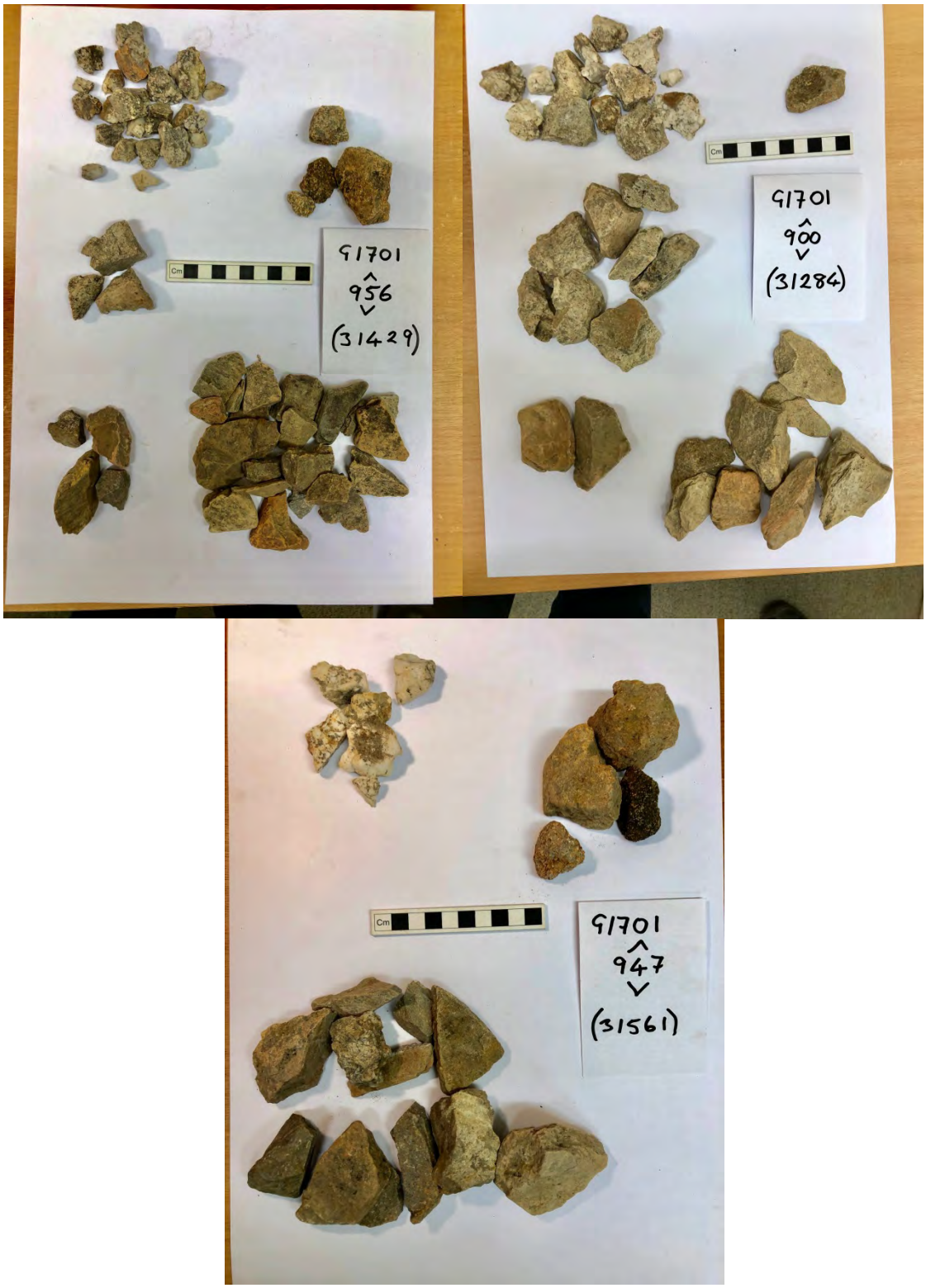

Fig XIII.1. *Burnt Stone: Typical breakdown of rock types in bags reference <956>, <900> and <947>. In each photo vein quartz (top left) and quartzite (centre left); dolerite and other basic intrusive rocks (top right); schist, some with quartz veinlets (bottom right) and sandstones (bottom left in 900 and 945).*

	<Sample bag>		Schist	Quartz	Quartzite	Sandstone	Dolerite/basic	Black chert	Total
Main burnt mound	900	no.	8	14	8	2	1		33
		%	24.2	42.4	24.2	6.1	3.0	0	
"	947	no.	11	6	0	0	4		21
		%	52.4	28.6	0.0	0.0	19.0	0	
"	956	no.	20	21	3	4	4		52
		%	38.5	40.4	5.8	7.7	7.7	0	
Roundhouse I hearth area	5015	no.	15	5	2	14	2		38
		%	39.5	13.2	5.3	36.8	5.3	0	
Other burnt stone	5085	no.	6	6	4	5	1		22
		%	27.3	27.3	18.2	22.7	4.5	0	
Average for burnt stone samples		%	**36**	**30**	**11**	**15**	**8**	**0**	**166**
"Natural stone from Parc Cybi"	None	no.	31	2	3	2	1	0	39
(small bag)		%	79.5	5.1	7.7	5.1	2.6	0	
Natural stone reference	818	no.	3	6	3	8	2	2	24
"stones from boulder clay"		%	12.5	25.0	12.5	33.3	8.3	8.3	
(large blue bag - large stones)									

Table XIII.1. *Identification of the rock types present in partial sampling of bags of stone taken from three burnt stone archaeological contexts and two natural contexts.*

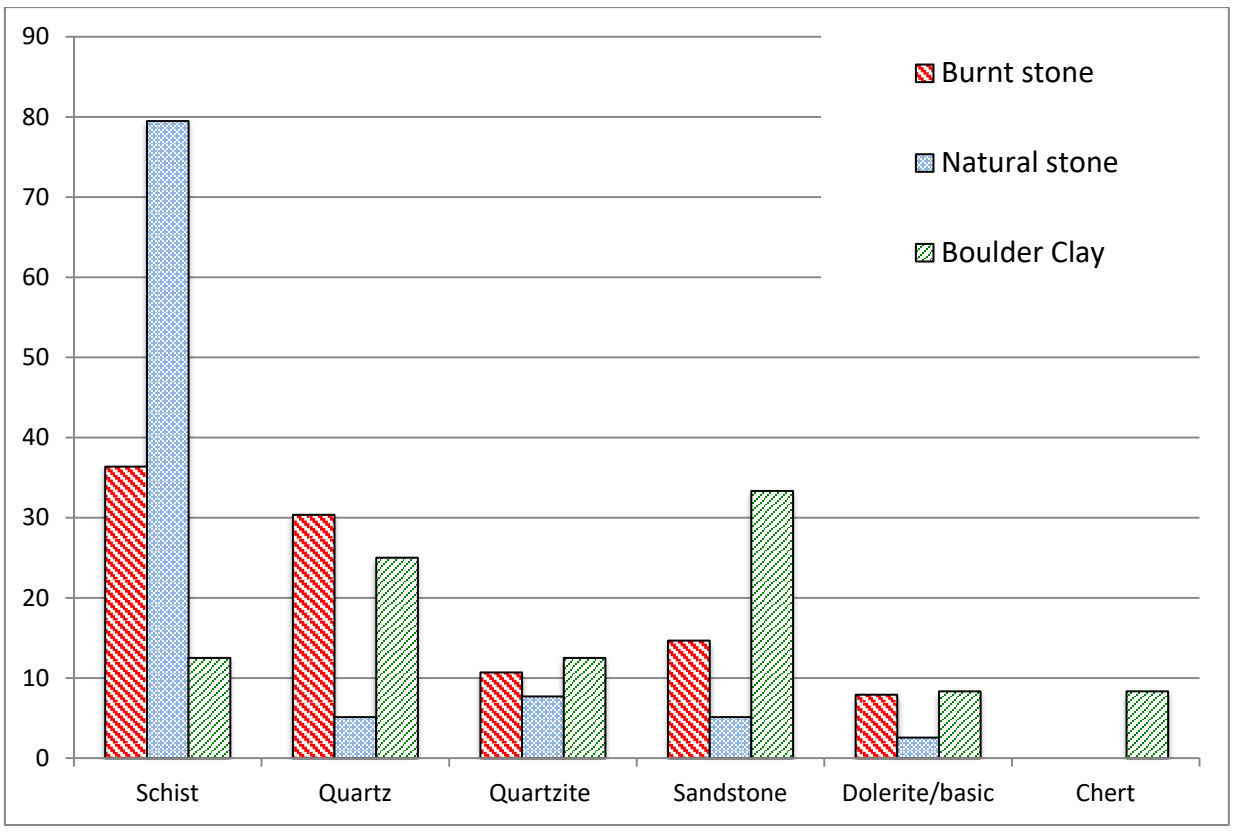

Fig XIII.2. *Histogram of the data in Table XIII.1. The average burnt stone data suggests a mixture of local stone and boulder clay stone without any clear rock type selection.*

Catalogue of burnt stone

Sixty six samples of burnt stone were collected from the coarse residues produced during wet sieving and occasional hand collected examples.

Area	Context No	Context type	Feature type	Period	Fill of cut	Find/ Sample No	Weight (kg)
A							
	7022	Fill	pit	Prehistoric?	7023	sample 100	0.26
B1							
	1044	Fill	pit	Prehistoric?	4011	sample 25	2.14
	11020	Fill	posthole	Prehistoric?	11019	SF1343	0.42
B2 structure F							
	90501	Layer		Roman?		SF2244	0.5
B2 roundhouse A							
	90638	Fill	hearth?	Iron Age	90509	SF495	0.31
						SF494	0.55
	90692	Fill	posthole	Iron Age	90693	SF496	0.2
	90722	Fill	pit	Iron Age	90723	sample 190	2.82
B2 roundhouse B							
	90806	layer		Iron Age		sample 407	
	92110	Fill	posthole	Iron Age	92109	SF591	0.44
D3							
	60100	Fill	pit	Late Neolithic	60093	sample 1181	3.92
E (Burnt mounds)							
	31284	Fill	burnt mound pit	Beaker period	31283	sample 900	6.95
	31288	Fill	pit	Beaker period	31289	sample 922	4.3
	31367	Fill	pit	Beaker period	31415	sample 915	3.97
	31429	Layer	burnt mound	Beaker period		sample 956	2.77
	31435	Fill	pit	Beaker period	31436	sample 923	1.28
	31561	Fill	pit	Beaker period	31415	sample 947	3.66
	31594	Fill	well/trough	Beaker period	31593	sample 960	3.86
E (hollow)							
	31002	Layer	burnt mound	Late Neolithic		sample 1450	11.54
F1 eastern part							
	93466	Layer	OGS	Bronze Age		sample 5070	6.34
						sample 5085	7.42
F1 roundhouse I							
	92916	Layer		Iron Age		sample 801	1.45
	92945	layer		Iron Age		sample 5087	2.31
	92948	Fill	posthole	Iron Age	93080	sample 810	5.34
	92961	layer		Iron Age		sample 803	1.75
	93109	Fill	posthole	Iron Age	93023	sample 794	6.18
	93193	Fill	pit	Iron Age	93192	sample 975	
	93365	Fill	posthole	Iron Age	93367	sample 5015	4.8

Area	Context No	Context type	Feature type	Period	Fill of cut	Find/ Sample No	Weight (kg)
	93544	Fill	pit	Iron Age	93543	sample 5079	0.99
F1b							
	93620	Layer		Bronze Age		SF6491	0.09
I							
	18060	Fill	pit	Prehistoric?	18059	SF1354	1.59
						SF1352	0.58
						SF1350	0.38
	19066	Fill	posthole	Prehistoric	19065	SF1349	0.19
	21043	Fill	pit	Prehistoric?	21042	sample 1012	5.78
Ia							
	18064	Fill	pit	Mid Neolithic	18063	sample 88	3.61
J3							
	70520	Layer	surface	Romano-British?		SF6494	0.11
K1							
	18125	Fill	fire pit?	Bronze Age	18124	SF1344	2.94
	18167	Fill	pit	Bronze Age?	18166	sample 1042	
K7							
	80126	Fill	corn drier	Early medieval	80056	sample 788	2.94
	80199	Fill	pit	Iron Age	80198	sample 1421	
	80332	Layer	wall	Iron Age		sample 1476	
	80345	Layer	deposit	Iron Age		sample 1467	3.86
	80366	Fill	drain	Iron Age	80288	sample 1472	
	80369	Fill	drain	Iron Age	80359	sample 1521	2.8
K9a							
	80566	Fill	hollow	Romano-British?	80567	SF5705	1.3
	80605	Fill	pit	Prehistoric?	80606	sample 5148	1.11
	80638	Fill	pit	Mid Neolithic	80594	sample 5146	0.36
	80684	Fill	pit	Mid Neolithic	80686	sample 5159	0.25
K9b							
	80806	Layer		Romano-British?		sample 5617	0.51
	80807	Layer		Romano-British?		SF6212	1.22
						SF6489	0.61
	80840	Layer		Roman?		SF6216	0.57
	80869	Fill	Furnace?	Romano-British		SF6490	0.06
	80879	Fill	drain	Romano-British	80862	SF6219	0.34
	80882	Fill	corn dryer	Romano-British	80835	SF6492	0.09
	80912	Layer		Romano-British		SF6218	0.13
	80921	group		Romano-British		SF6221	0.07
	80978	Fill	pit	Romano-British	80946	SF6493	0.26
	81073	Layer	corn dryer?	Romano-British		SF6225	0.05
	81094	Layer		Romano-British		SF6210	0.09
	81108	Cut	posthole	Romano-British		SF6220	0.14
	81172	Fill	pit	Romano-British	81185	SF6213	0.1
L3							
	22143	layer	hearth	Prehistoric?	22170	sample 1131	

Area	Context No	Context type	Feature type	Period	Fill of cut	Find/ Sample No	Weight (kg)
L5							
	3080	Fill	burnt mound trough?	Prehistoric?	3078	sample 5138	0.49
M4							
	40072	Fill	pit	Bronze Age	40071	sample 1336	0.67

Part XIV: human remains

Parc Cybi Human Remains
Michael Wysocki

Summary
Very fragmented, degraded and friable human bone from 5 grave contexts was studied. Surviving fragments are predominantly from the denser skeletal elements as bone density is a key factor in maintaining preservation in hostile environments. Much of the material was too fragmentary to contained significant information but the best preserved skeleton (from grave 80036) could be identified as probably a male between 16.5 to 19.5 years old at death with enamel hypoplasia indicating three episodes of physiological stress, caused by illness or nutritional deprivation, during late infancy (c. 18 – 30 months), at around 6 – 8 years and again around 11 – 13 years. Another individual, from grave 80040, was possibly a female over 30 years in age. A tooth from grave 80043 indicates an individual with a possible age range at death of 16 – 24 years, and the body in grave 80052 is of an adult, or near adult, possibly male.

Methods
Very fragmented, degraded and friable human bone from 5 grave contexts (80012, 8036, 80040, 80043, and 80052) was available for analysis. Each grave assemblage was presented in one or more containers marked variously *left leg*, *left arm*, *backbone*, *right hip* and so forth. In some cases the human material was so fragmented as to be unidentifiable without this contextual *in situ* information. Most of the fragments were prone to further fragmentation at the slightest touch and had to be handled very carefully. The material was examined macroscopically and under hand lens. Summary results are presented in table 1.

Results
Context 80005, Grave A, cut 80036
Some 119 g. of bone was available for analysis (sf2036). Dentition was not weighed, nor was the mandible (Fig XIV.1), which was held together within a mass of soil matrix. Any attempt to remove this soil would result in the specimen falling to pieces.

Bone from skull. The material consists of a fragment of left basilar occipital bone with occipital condoyle, a fragment of right occipital condyle, a fragment each of the left petrous temporal and an unsided mastoid process and c. 60 tiny fragments and bone crumb. Also present were a fragment of the left lamina and superior articular facet of the 1st cervical vertebra, an anterior body fragment from the 2nd cervical vertebra and three small cervical body fragments. Total weight of fragments: 25.13 g.

Teeth. Loose teeth consist of more or less intact crowns with partially preserved roots as well as about two dozen fragments and slivers of enamel crown. It was possible to identify left maxillary 1st, 2nd and 3rd molars; left and right mandibular 3rd molars; left maxillary 2nd premolar and crown enamel fragments of 1st and 2nd maxillary incisors.

Mandible. As noted above, the mandible is extremely friable and largely held together by its soil matrix. The right distal maxillary dentition is also preserved and consolidated in the soil matrix (1st, 2nd and 3rd molars in very fragmentary condition – see Fig XIV.1). The mandibular dentition is complete with the exception of the left and right 3rd molars. Left and right mandibular rami are missing, however the mesial wall of the left 3rd molar socket is partially preserved. Specimen not weighed

Backbone. A small portion of lumbar vertebral body and two vertebral body fragments are all that can be identified. Total weight: 5.5 g.

Left arm. A fragment of the left scapular spine. Weight: 2.2 g.

Left hip. A portion of the left acetabulum and ischium and a fragment of unfused femoral head (proximal epiphysis) are identifiable among a few dozen smaller bone fragments. Total weight 24.1 g.

Right hip. Several tiny fragments of bone are accompanied by a small fragment of unfused femoral head with fovea (Fig XIV.2) and a small fragment of acetabulum. Total weight: 6.0 g.

Left leg. A portion of unfused distal femur (part of the patellar surface and intercondylar fossa of the epiphysis articulates with a segment of diaphysis), and a fragment of proximal diaphysis of the fibula are identifiable amongst a number of smaller fragments and bone crumb. Total weight 33.3 g.

Right leg. A portion of tibial shaft and two metaphyseal fragments are accompanied by a quantity of tiny fragments. Total weight: 22.8 g.

There were also tiny fragments recovered from wet sieving, too small to add to the information given above (sf5912, 5916, 5917, 5919, 5920, 5921, 5931, 5932).

Age estimate. The dentition provides reliable estimators of age. There is no evidence of occlusal wear on the mandibular 3rd molar crowns, but there are slight mesial contact facets, indicating that these teeth had recently at least partially, if not fully, erupted. The extant roots of the 3rd molars are broken off at approximately mid-length, so it is uncertain whether the roots were fully formed with apical closure (the maxillary 3rd molar root is likewise uninformative), however it is clear that the roots were at least very nearly complete. On this basis the probable dental age is between 16.5 to 19.5 years (Smith 1991).

Sex assessment. Fusion of the femoral head occurs between 12 - 16 years in females and 14 – 19 years in males; fusion times in the distal femur and proximal fibula are 14 – 18 years in females, 16 – 20 years in males and 12 – 17 years in females, 15 – 20 years in males respectively (Scheuer and Black 2000, 390-392; 422-424). Given the likely dental age and the lack of any fusion in these elements, the sex of the individual is very probably male.

Other observations. Enamel hypoplasia was evident in the molar teeth. Left M^1 displayed a hypoplastic band at the crown mid-length point, left M^2 a band just above the cervix (Fig XIV.3) while both left M^3 and right M_3 displayed a strong band at the crown mid-length point.

Hypoplasias result from episodes of physiological stress, most often initiated by illness or nutritional deprivation, during the periods of crown formation (Mays 1995, Larsen 1997, 45). The locations of hypoplastic defects in this individual indicate that he experienced at least three such episodes, during late infancy (c. 18 – 30 months), at around 6 – 8 years and again around 11 – 13 years.

Context 80007, Grave D, cut 80040
Some 69 g. of human bone was recovered (sf2037).
Right pelvis (boxes 1 & 2). A portion of the fused head and neck of the right femur, three fragments of femoral shaft and two fragments from the acetabulum are identifiable. Two small nuggets of trabecular bone, a flake of cortical bone, probably from the ilium and around three dozen tiny fragments of unidentifiable bone are also present. Total weight: 25.9 g.

Left leg. A relatively substantial portion of the proximal tibia shaft, with nutrient foramen (171 mm in length, two fragments conjoin) is accompanied by a small fragment of fibula shaft and a dozen or so smaller fragments of bone. Total weight: 39.2 g.

Fragments of bone. A fragment of tibia shaft and c. 30 tiny fragments of bone. Total weight 4.21 g.

There were also tiny fragments recovered from wet sieving, too small to add to the information given above (sf5913, 5914, 5918, 5933).

Age and sex. The fused femoral head and neck indicate a skeletally mature individual. Lipping around the foveal margin suggests an older rather than younger adult, possibly over 30 years (Fig XIV.4). A significant proportion of the femoral head circumference is preserved and the maximum measurable vertical diameter is 41.7 mm. It is highly unlikely that the maximum intact vertical diameter would significantly exceed this measurement, which falls well within the female range (Steele and Bramblett 1988).

Context 80009, Grave B, cut 80043
This individual is represented by only c. 12 g. of skeletal material (sf818). A box *labelled left leg (femur)* contains c. 40 tiny fragments of unidentifiable bone weighing just under 5 g, while a second box labelled *left leg (tibia)* contains a small segment of the anterior border of a tibia shaft and a number of unidentifiable fragments and slivers of bone, weighing in total 3 g.

Skull fragments and teeth. Among the two dozen or so tiny fragments are a small portion of petrous temporal bone and the right incus bone from the inner ear. A mandibular permanent left 2nd molar crown (root destroyed) has also been preserved (Fig XIV.5).

There were also tiny fragments recovered from wet sieving, too small to add to the information given above (sf5922, 5930).

Age and sex The crown exhibits a mesial interproximal wear facet, but no distal facet, indicating that the third molar has not yet erupted. Taking this at face value, together with the degree of occlusal attrition (substantial wear facets, no observable dentine) would indicate an age range of 16 – 20 years. Third molars fail to erupt in some individuals either as a result of congenital absence or impaction. Therefore the possible age range should be extended to 16 – 24 years (Miles 1962, Lovejoy 1985). Sex cannot be determined.

Context 80011, Grave J, cut 80050
A single human tooth was recovered from this context (sf4431). This was an immature crown with dentine and initial root formation from a lower 1st molar. It is from an immature individual with an estimated age c. 5 – 7 years.

Context 80012, Grave F, cut 80048
This context yielded 1.57 g. of tiny bone crumbs, bone dust and traces of soil (sf2043). Nothing can be added to the accompanying contextual information "*very fragmented part of right leg*", and it is impossible to say whether this material is of human or animal origin or, indeed, from what anatomical region it derives.

There were also human teeth; three immature crowns and one immature crown fragment with some dentine formation (sf4437). These were partially formed upper and lower 2nd molar crowns with initial dentine formation from an immature individual with an estimated age c. 5 - 7 years.

Context 80016, Grave G, cut 80052
This individual is represented by some 24 g of cranial fragments only (sf822). One box contains a relatively substantial portion of the right posterior parietal, displaying a segment of lambdoid suture. The fragment is robust with a maximum cranial thickness of 9.85 mm indicating an adult, or near adult, possibly male. A portion of the right petrous temporal with inner auditory meatus is similarly of adult size. Three enamel crown fragments exhibit occlusal and interproximal faceting but are too insubstantial to enable individual tooth identification (possibly from molars or premolars – not incisors/canines). One strong hypoplastic band is evident, but it is not possible to reliably estimate its location.

Taphonomic notes
All the material is very degraded, friable and fragile under handling. Larger bone fragments are proportionally light in weight. Bone density is a key factor in maintaining preservation in hostile environments (Galloway *et al.* 1997) and surviving fragments are predominantly from the denser skeletal elements: femur, tibia and thicker portions of skull, such as the petrous temporal. The acetabulum and femoral head (the 'socket and ball' of the hip joint) are also relatively well preserved. This joint generally stays in articulation the longest and the juxtaposition of articulating surfaces is likely to have afforded a level of protection from the otherwise acid environment.

Proposals for further work involving destructive sampling.
The assessment of this material proposed that further biomolecular analysis (stable isotopes, trace elements, C14) from crown dentine may be possible in the well-preserved teeth (e.g. 8003), where the enamel crown and portions of root are intact. It seems likely that the bone fragments, with the *possible* exception of the large skull fragment from grave 80052, will be too degraded to yield C14 or other isotopic data.

Archaeologically and socio-culturally, ancient human skeletal remains from this region are extremely rare, but, accordingly, so is the opportunity to gain related data from destructive sampling. There is nothing *osteologically* notable about the surviving fragments that might otherwise argue against destructive sampling of potentially viable specimens. It would seem reasonable to attempt isotopic/radiocarbon analysis from one or two of the best preserved, non-diagnostic, teeth. However, the possibility remains that no useful data may be obtained.

Teeth from grave F (sf4437) and from grave J (sf4431) were submitted to SUERC for radiocarbon dating and oxygen isotope analysis but they contained insufficient collagen for dating.

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Table 1. Parc Cybi human bone: summary results

Grave No.	Bone Weight (g)	Age (years)	Sex	Comments
80012	1.6 g.	N/A	N/A	tiny unidentifiable bone fragments
80036	119 g.	c. 16.5 - 19.5	Male	enamel hypoplasia
80040	69 g.	Adult	Female	
80043	12 g.	16 - 24	N/A	
80052	24 g.	Adult (?)	Male (?)	enamel hypoplasia

(?) = probable

Fig XIV.1. Grave 80036 Mandible; maxillary dentition (right M^2) arrowed.

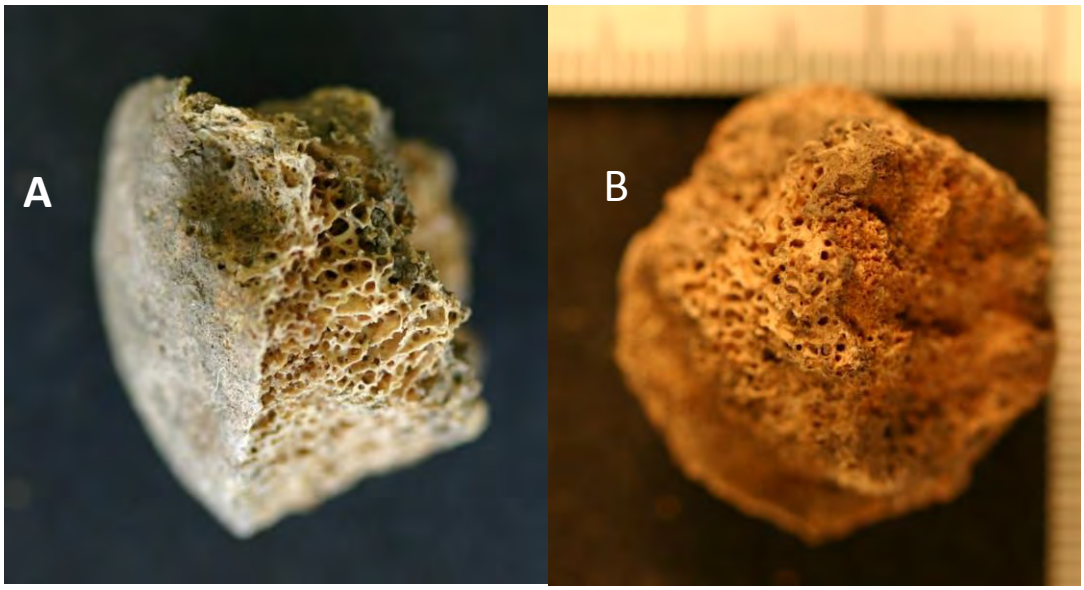

Fig XIV.2. Grave 80036: Fragment of unfused femoral head, (A)articular surface; (B) metaphyseal surface

Fig XIV.1. Grave 80036: Left M^2. Hypoplastic defect evident below dashed line. Note minimal occlusal faceting

Fig XIV.4. Grave 80040: fused femoral head and neck; note lipping at foveal margin(arrowed)

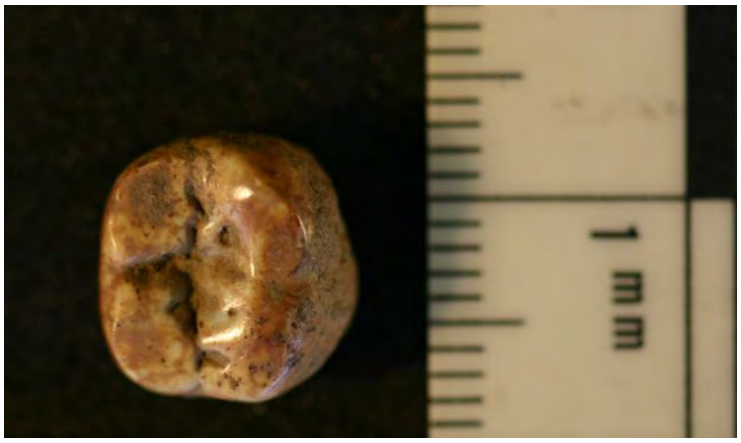

Fig XIV.5. Grave 80043: left M_2, note occlusal faceting

Part XV: animal bone

Part XV.1. Assessment of animal bones

Dr N. Bermingham

Summary

This report presents an assessment of the animal bone recovered from the excavations at Parc Cybi. The bone was mostly very fragmentary and poorly preserved. The assemblage mainly consists of teeth and tooth fragments. The assessment has separated identifiable and unidentifiable bone and makes recommendations for the analysis of the identifiable remains.

Introduction

This report was initially submitted as two separate reports on bone from the first and second parts of the excavations at Parc Cybi and these two reports have been amalgamated. Animal bones recovered from 215 contexts (=325 individual finds) from the excavations of an archaeological site at Parc Cybi, Anglesey, were submitted for initial assessment. This consisted of separating identifiable and unidentifiable remains. Consequently, the assemblage has not been quantified by fragment count or weight. Recommendations for further work are made. A single post-medieval context 70594 was recorded in more detail, so that no further work is required on this.

Methods

Preservation

Preservation of the material is extremely poor with high fragmentation; no intact bones or teeth occur with only a small number of semi-intact ends or teeth present. Much of the material has been burnt and the majority of identifiable material comprises tooth fragments. Fragments from context 81106 display unusual cracking on the surface and these should be examined by a human osteologist to determine if human.

Identification

Table XV.1 lists the contexts in which identifiable elements occur. This amounts to 42 contexts or 73 individual finds. Identifiable material was found in 5 mid Neolithic, 2 possible Bronze Age, 28 Iron Age, 22 Roman period, 2 possible medieval and 8 post-medieval contexts. The majority of identifiable material thus derives from Iron Age contexts and mainly comprises tooth fragments with cattle, horse, sheep/goat and pig occurring. A number of horn cores may derive from goat. A fragment of a single bird bone is also recorded (Find 561, Context 90990). Two Roman contexts include identifiable fragments: a single piece of a cattle tooth 80553 and a single humerus shaft of sheep/goat 80807.

Unidentifiable material derives from 175 contexts equating to 254 individual finds (see Table XV2.1 for full list of finds). Prehistoric, Neolithic, early Neolithic, Bronze Age, late Iron Age, post-medieval and undated contexts have produced unidentifiable material which comprises bone and teeth fragments, mainly from medium to large sized mammals, such as sheep/goat and cattle.

A single post-medieval context 70594 produced a significant quantity of bone and this has been recorded in more detail. As it is late post medieval in date it is not recommended for further work so the opportunity was taken to record it adequately at this stage. The sample comprises 41 fragments with a total weight of 1.25kg. There was no evidence for burning. Most derive from cattle (37) with four fragments of pig represented. Pig is represented by four skull and maxilla fragments with some teeth in place.

In cattle, cranial and post-cranial material is represented with some teeth in place within a broken mandible (cattle). Identifiable elements include fragments of scapula (x1), tibia (x1), humerus (x3), femur (x1) and astragalus (x1). There were no intact bones or ends suitable for measurement but all appear to be derived from relatively large individuals.

Five fragments of cattle bone display evidence for sawing. The proximal articulation of the scapula had been sawn through as was the proximal end of the femur. Saw marks occurred mid-shaft and on the distal end of one humerus fragment. The proximal end of another humerus had also been sawn. The use of the saw in butchery would suggest a modern, rather than post-medieval, origin for this material.

Proposals for further work

Further analyses are recommended in the form of:

- Quantification of both identifiable & unidentifiable material by simple fragment count and weight
- Species/element analysis of identifiable material from all contexts other than modern. A list of which contexts can be associated or merged for the purposes of analysis should be provided by the client
- Given poor preservation and the level of fragmentation, obtaining reliable ageing or sexing information is unlikely though where such information is preserved it will be recorded
- Where reliable dating evidence is available, each dated assemblage can be considered in relation to contemporary farming, economic and dietary preferences.
- Bone fragments from context 81106 should be examined by a human osteologist to determine if these fragments represent human bone.

Table XV.1.1: Identifiable animal bone remains from Parc Cybi G1701

Context	Sample	Find	Identifiable	Burnt	Notes	Period
8086	\	52	Y	N	tooth - cattle m1/m2	Post Medieval
14016	\	6100	Y	N	Cattle mandible, metapodial, post-cranial & cranial frags	Post-medieval
18118	\	6119	Y	N	med mammal - humerus - sh/gt or pig	Post Medieval
21231	1123	1426	Y	Y	One tiny frag. Small mammal	Medieval?
40153	1374	5465	Y	N	horn cores x 5 - goat?	Post-medieval
40153	1374	5474	Y	N	horn core x 7 goat + horn	Post-medieval
40153	1374	4017	Y	N	horn cores - goat?	Post-medieval
80139	1403	4430	Y	Y	some frags poss id.	Medieval?
80139	1403	4463	Y	Y	poss. Med. Mammal (sh/gt?) bone & horn	Medieval?
90002	\	77	Y	Y?	lge mammal tooth frags - prob horse	Post-medieval?
90002	\	304	Y	N	lge mammal tooth frag - poss. Cattle	Post-medieval?
90305	\	149	Y	N	horse teeth - max & mand	Post-medieval
90305	\	150	Y	N	horse teeth - max & mand	Post-medieval
90305	\	129	Y	N	horse teeth - max & frag of skull	Post-medieval
90632	178	464	Y	N	sh/gt m1/m2	Iron Age
90818	\	300	Y	N	sh/gt tooth frags	Iron Age
90818	\	299	Y	N	cattle tooth frags	Iron Age
90860	\	557	Y	N	lge mammal tooth - prob cattle	Iron Age
90949	257	602	Y	N	tooth - cattle	Iron Age
90977	238	694	Y	N	sh/gt max & mand teeth & bone frags	Iron Age
90990	\	561	Y	N	bird?	Iron Age
91000	253	6367	Y	N	sh/gt tooth frags	Iron Age
91054	\	350	Y	Y	Poss ID - post cranial lge mammal	Iron Age
91114	270	5774	Y	Y	tooth frag - med-lge mammal	Iron Age
91213	\	372	Y	N	lag mammal post-cranial, prob cattle	Iron Age
91233	\	394	Y	N	lge mammal tooth frags - prob. Cattle	Iron Age
91240	\	378	Y	N	Identifiable frags present - mud encrusted	Iron Age
91240	522	6118	Y	N	Poss. some identifiable material, mud encrusted.	Iron Age
91240	522	3099	Y	N	Some identifiable material (inc. sh/gt mand), mud encrusted.	Iron Age

Context	Sample	Find	Identifiable	Burnt	Notes	Period
91240	\	594	Y	N	Some identifiable material (inc. sh/gt mand teeth), mud encrusted.	Iron Age
91330	\	418	Y	N	cranial & tooth - prob. Sh/gt	Iron Age
91331	311	692	Y	N	lge mammal tooth frags - prob. Cattle	Iron Age
91446	\	424	Y	N	pig tooth - m3 deciduous	Iron Age
91446	\	756	Y	N	teeth frags inc. pig deciduous	Iron Age
91500	365	4177	Y	N	tooth & bone frags. Tooth - pig - deciduous m3 & m1/m2	Iron Age
91501	364	4006	Y	N	horse tooth frags	Iron Age
91502	\	503	Y	N	lge mammal tooth frags - prob. Cattle	Iron Age
91518	\	499	Y	N	pig tooth frag - deciduous	Iron Age
91589	\	592	Y	N	cattle teeth max & mand.	Bronze Age?
91701	\	830	Y	N	cattle tooth frags	Post Medieval
91710	\	556	Y	N	tooth frags - pig canine male	Iron Age
91748	439	1751	Y	N	lge mammal post-cranial	Iron Age
91792	\	555	Y	N	lge mammal tooth frags - prob. Cattle	Iron Age
92018	493	1956	Y	N	2 pig tooth frags (deciduous) & 1 sh/gt tooth frag	Iron Age
92018	493	2051	Y	N	Pig tooth frags - deciduous	Iron Age
92018	\	584	Y	N	sh/gt & pig (deciduous) tooth frags	Iron Age
92018	493	1731	Y	N	sh/gt tooth frags	Iron Age
92129	\	638	Y	N	cattle tooth frags	Bronze Age?
92231	\	657	Y	N	lge mammal tooth frags - prob. Cattle	Iron Age
92288	\	737	Y	N	lge mammal tooth frags - prob. Cattle	Iron Age
92290	\	719	Y	N	lge mammal tooth frags - prob. Cattle	Iron Age
92293	\	722	Y	N	Cattle tooth frags - max.	Post medieval
93010	\	5676	Y	N	horse teeth frags	Iron Age
80553	\	6488	Y	N	Tooth fragment, cattle m1/m2	Roman period
80807	\	6005	Y	N	post cranial, sh/gt humerus, shaft	Roman period
81106	\	5670	Y?	Y	Bone fragments display unusual cracking on surface due to burning. Human bone?	Roman period

Part XV.2. Study of identifiable animal bones

Alan Pipe, Museum of London Archaeology

Introduction and methodology

This report quantifies, identifies and interprets the identifiable hand-collected and wet-sieved animal bones recovered from prehistoric, Neolithic, Bronze Age, Iron Age, medieval and post-medieval contexts at G1701 together with those from contexts not definitely assigned to a specific period, area or land use at time of writing. Labelling on each context and sample was bag was copied onto the Excel tables so that data lines in the tables may have been duplicated where there is ambiguity in terms of period, area or feature.

For the complete assemblage, animal bones from each context and sample group were described and recorded directly onto an Excel spreadsheet, each fragment being recorded in terms of species, skeletal element, body side, age, epiphyseal fusion, dental eruption and wear, sex, fragmentation, and modification as required. Identifications of species and skeletal element referred to the MOLA reference collections; with Schmid 1972. Evidence for age at death was derived from surface texture, epiphyseal fusion and dental eruption and wear stages as appropriate. Interpretations of age at death were made following Amorosi 1989; Goody 1976; and Schmid 1972. Modifications such as burning were described using MOLA Osteology codes and conventions. In general, each bone fragment was recorded as an individual Excel table entry unless this was impracticable due to extreme fragmentation and/or poor preservation, in which case fragments were recorded as unidentifiable fragments of unidentifiable mammal bone. Less fragmented and damaged fragments, particularly of tooth enamel, rib and long-bone mid-shaft, were recorded either as single or multiple records, at an approximate level of identification, particularly 'cattle-sized mammal' and 'sheep-sized mammal', based on size and wall thickness as appropriate. Fragments assigned to the 'cattle-sized' mammal category could be from cattle, horse or red deer; those assigned to the 'sheep-sized' mammal category are likely to derive from sheep, goat, pig or dog. Whenever identifiable to species and skeletal element, fragments were recorded as individual records as described above.

The chronological narrative gives a detailed record for each period of all fragments identifiable to at least the approximate categories 'cattle-sized' and 'sheep-sized' and/or to skeletal element, as well as fragments more fully identifiable in terms of species-composition, skeletal element, body side, fusion, age and modification.

Preservation, quantification and modification

Bone preservation was generally very poor, with the majority of context and sample groups producing only friable fragments of unidentifiable mammal bone unidentifiable to skeletal element, species, genus, family or approximate group such as sheep/goat or even 'cattle-sized' or ''sheep-sized' mammal. Surface damage was usually sufficient to obscure all fine detail, particularly tool marks and other modification such as gnawing and pathological change; and to prevent definite identification of skeletal element and species. Any fine, shallow tool marks, for example knife-cuts associated with skinning and butchery, are likely to have been abraded away. There was no clear tool mark evidence of butchery or working of horn, bone or any other industrial activity; and no definite evidence for canine or rodent gnawing, pathological change or any other modification, with the exception of burning. Table XV.2.2 gives a summary of the evidence for burning, with the majority of burnt fragments calcined white, indicating a high combustion temperature of at least 700 degrees Celsius, equivalent to a cremation pyre or a well-oxygenated hardwood fire (Lyman 1994, 386). Only one or two fragments had been charred black, indicating a much lower combustion temperature of 400-600 degrees Celsius, perhaps equivalent to a campfire or bonfire (Lyman 1994, 386). In general, the burnt fragments were extremely small, suggesting that their location within the site stratigraphy may have been, at least partially, due to bioturbation.

Chronological narrative

Neolithic
Area I
Fill [19076] of pit [19075] produced two fragments of 'sheep-sized' long bone mid-shaft.
Fill [21222] of pit [21221] produced two fragments of 'sheep-sized' long bone mid-shaft.

Bronze Age or possibly Bronze Age
Area I
Fill [18060] of pit [18059] produced 63 unidentifiable fragments of unidentifiable, mainly 'sheep-sized', mammal bone including three fragments of long-bone mid-shaft.

Area M4

Fill [40019] of recut in ring ditch [40018] produced two fragments of 'cattle-sized' long bone mid-shaft.

Fill [40035] of recut [40033] of ring ditch [40030] produced three fragments of 'cattle-sized' long bone mid-shaft.

Area B2: Pre-roundhouse settlement

Stone layer [90818] produced six fragments of 'cattle-sized' tooth enamel with ten fragments of sheep/goat *Ovis aries/Capra hircus* maxillary (upper jaw) tooth. Wear on the sheep/goat tooth fragments probably indicates adult animals.

Fill [91446] of ditch [91445] produced a large group, roughly 75 fragments, of unidentifiable mammal tooth with single fragments of pig *Sus scrofa* juvenile and sub-adult tooth.

Stone layer [91589] produced fragments of cattle *Bos taurus* tooth; one maxillary (upper jaw) and two mandibular (lower jaw).

Fill [91792] of ditch [91783] produced 30 fragments of 'cattle-sized' tooth.

The old ground surface [92129] produced six fragments of 'cattle-sized' maxillary (upper jaw) tooth.

Stony layer [92192] included a fragment of 'sheep-sized' long-bone mid-shaft.

Fill [92412] of ditch [91445] produced 15 fragments of unidentifiable mammal tooth with eight fragments of 'cattle-sized' tooth and a fragment of adult sheep/goat *Ovis aries/Capra hircus* maxillary (upper jaw) tooth.

Fill [92517] of ditch [92516] produced ten fragments of unidentifiable mammal tooth with two fragments of pig *Sus scrofa* tooth, including one probably from a juvenile.

Fill [92518] of ditch [92516] included 45 unidentifiable fragments of mammal tooth.

Silt layer [92539] produced more than 200 fragments of horse *Equus caballus* tooth, with ten fragments of mandibular (lower jaw) tooth; preservation was generally poor.

Silt layer [92542] produced single fragments of cattle *Bos taurus* skull, humerus (upper fore-leg) and radius (lower fore-leg).

The old ground surface [92578] produced six fragments of horse *Equus caballus* tooth.

Iron Age

Area B2/F1

Platform beneath roundhouses

Layer [91000] included six fragments of unidentifiable and 'sheep-sized' tooth.

Platform layer? [91213] included 25 fragments of unidentifiable mammal long bone mid-shaft.

Platform deposit [91906] included a fragment of unidentifiable mammal tooth.

Roundhouse A

RHA.1

Fill [90668] of posthole [90647] included a fragment of unidentifiable mammal tooth.

Fill [90831] of fire pit [90817] included six fragments of 'sheep-sized' tooth.

Lens [90977] produced 20 fragments of 'cattle-sized' tooth enamel; and four fragments of sheep/goat *Ovis aries/Capra hircus* maxillary (upper jaw) tooth including two worn examples probably from adult animals.

Layer [91114] included a fragment of mammal tooth.

Midden deposit [91333] produced 12 fragments of 'sheep-sized' long bone mid-shaft.

Fill [92018] of stakehole [92017] included a mandible of juvenile pig *Sus scrofa* with 17 fragments of pig tooth including three of mandibular (lower jaw) tooth. In addition, the group included 60 fragments of 'sheep-sized' and sheep/goat tooth *Ovis aries/Capra hircus* including 25 of mandibular (lower jaw) tooth.

RHA.2

Hearth deposit [90632] included a fragment of adult sheep/goat *Ovis aries/Capra hircus* mandibular (lower jaw) tooth.

Burnt layer [90949] produced approximately 80 fragments of predominantly 'sheep-sized', unidentified mammal tooth.

Passageway to RHA

Phase II

Fills [91233] and [91234] of pit [91206] included approximately 90 fragments of cattle *Bos taurus* and 'cattle-sized' tooth.

Levelling layer [91321] included two fragments of unidentifiable mammal tooth.

Fill [91500] of pit [91498] included two fragments of sub-adult pig *Sus scrofa* tooth.
Fill [91501] of pit [91498] included 25 fragments of 'cattle-sized' tooth.
Fill [91502] of pit [91498] included 15 fragments of cattle *Bos taurus* tooth.
Fill [92190] of ditch [92189] included 50 fragments of 'cattle-sized' tooth.
Fill [92290] of ditch [92288] included approximately 45 fragments of unidentifiable mammal and 'cattle-sized' fragments.
Occupation layer [92231] included approximately 50 fragments of 'cattle-sized' tooth.
Fill [92423] of post-hole [92431] included two fragments of unidentifiable mammal tooth.

Phase III
Layer [91059] included a fragment of cattle-sized tooth.
Fill [91330] in pit [91329] included two fragments of cattle-sized tooth.
Fill [91331] in pit [91329] included fragments of unidentifiable mammal tooth with fragments of 'cattle-sized' tooth and long bone mid-shaft.
Fill [91332] in pit [91301] included fragments of 'cattle-sized' tooth.

Phase IV
Layer [90482] included four fragments of 'sheep-sized' tooth.
Cobbles [92058] included 30 fragments of 'cattle-sized' tooth.

Roundhouse B
RHB.1
Floor deposit [90990] included an unidentifiable fragment of unidentified bird ulna (lower wing) mid-shaft.
Fill [91240] of pit [91252] included a fragment of cattle *Bos taurus* first phalange (basal toe joint); with a small group of adult sheep/goat *Ovis aries/Capra hircus*. Fusion of the distal (lower) articulation (joint surface) of the cattle phalange indicates an adult animal in at least the third year. Sheep/goat produced single or occasional fragments of adult maxillary (upper jaw) and mandibular (lower jaw) teeth, adult mandible (lower jaw); metacarpal (fore-foot); femur, tibia and astragalus (upper and lower hind-leg).

RHB.2
Tumble [92116] included 50 fragments of unidentifiable mammal tooth.

Roundhouse C
Pre-RHC
Cobbled surface [91648] included five fragments of unidentifiable mammal tooth.
Cobbled surface [91710] included a substantial group of 145 tooth enamel fragments derived from horse *Equus caballus* and 'sheep-sized' mammal.
Layer [92042] included ten fragments of unidentifiable mammal tooth.
Demolition layer [92063] included approximately 75 fragments of unidentifiable mammal tooth.
Fill [92338] of pit [92337] included 50 fragments of unidentifiable mammal tooth with single fragments of 'sheep-sized' tooth and adult sheep/goat *Ovis aries/Capra hircus* mandibular (lower jaw) tooth.
Silting deposit [92520] included a fragment of juvenile pig *Sus scrofa* tooth.

RHC.1
Floor layer [91924] included ten fragments of unidentifiable mammal tooth.

Structure D
Layer [90461] included ten fragments of 'sheep-sized' long-bone mid-shaft.
Levelling layer? [90473] included four fragments of adult cattle *Bos taurus* tooth.
Occupation layer [90581] produced five fragments of horse *Equus caballus* tooth.
Fill [90695] of post-hole [90694] included a fragment of 'sheep-sized' rib.
Layer [90860] included ten fragments of horse *Equus caballus* tooth.

Roundhouse E
RHE.2
Fill [91312] of stakehole [91311] included a fragment of unidentifiable mammal tooth.

Structure G (structures 93004 and 94019)
Stone deposit [92634] produced two fragments of horse *Equus caballus* tooth.
Floor? deposit [92685] included three fragments of 'sheep-sized' long bone mid-shaft.

Fill [92687] of foundation slot [92731] included approximately 294 fragments of horse *Equus caballus* maxillary (upper jaw) and mandibular (lower jaw) tooth enamel.
Fill [92687] of foundation slot [92731] five fragments of sheep/goat *Ovis aries/Capra hircus* mandibular (lower jaw) tooth enamel.

Structure H
A general layer [92923] in structure H produced six fragments of 'cattle-sized' rib.

Roundhouse I
RHI.1
Floor deposit [92946] included 50 fragments of unidentifiable mammal and 'cattle-sized' tooth.
Gravel dump [93008] included 15 fragments of horse *Equus caballus* maxillary (upper tooth) enamel.
Patch [93065] included 20 fragments of 'cattle-sized' tooth.
Fill [93088] of post-hole [93079] included ten fragments of 'cattle-sized' tooth.
Fill [93503] of gully [93504] included ten fragments of 'cattle-sized' tooth.
Tumble [93507] included five fragments of horse *Equus caballus* tooth.

RHI.2
Stone spread [92862] includes approximately 110 fragments of horse *Equus caballus* teeth, including 40 fragments of maxillary (upper jaw) tooth.

Area east of roundhouse settlement
Layer [91518] included a fragment of sub-adult pig *Sus scrofa* tooth.

Area K7
Layer 80268 {1456} included a fragment of 'sheep-sized' tooth.
Demolition deposit [80326] {1468} included a fragment of 'sheep-sized' long bone mid-shaft fragment.
Roof collapse? [80334] included ten fragments of 'cattle-sized' mammal tooth.
Drain fill [80390] {1510} of cut [80259] included three fragments of 'sheep-sized' tooth.

Early Medieval
Area K7
Corn drier deposit [80127] {787} included 30 fragments of 'sheep-sized' tooth.
Corn drier deposit [80139] {1403} included single fragments of pig *Sus scrofa* skull and mandible (lower jaw).

Post-medieval
Area B1
Ditch fill [8086] included six fragments of cattle *Bos taurus* tooth.
Pit fill [14016] of cut [14015] included a small group of cattle *Bos taurus* bones, mainly of infant calf. These comprised tooth fragments including deciduous (temporary) maxillary (upper jaw) teeth, with two fragments of mandible (lower jaw), two cervical (neck) vertebrae and single fragments of skull, humerus (upper fore-leg) and metacarpal (fore-foot).

Area B2
Plough soil [90002] included approximately 65 fragments of 'cattle-sized' and horse *Equus caballus* tooth enamel.
Pit fill [90305] of cut [90304] included a fragment of horse *Equus caballus* skull and 14 adult horse teeth seven maxillary (upper jaw) and seven mandibular (lower jaw).
Plough soil? [92293] included two fragments of cattle *Bos taurus* tooth.
Pit fill [92315] {617} include a fragment of cattle *Bos taurus* tooth.

Area I
Gully fill [18118] of cut [18117] and {6119} included two fragments of distal (elbow) articulation of sheep/goat *Ovis aries/Capra hircus* humerus (upper fore-leg).

Area M4
Post-hole fill [40153] {40152} included 20 fragments of cattle *Bos taurus* horn core.

Unknown Date
Area K3
Wall? deposit [22050] produced approximately 50 fragments of 'sheep-sized' tooth enamel.

Species-composition and skeletal representation

Table XV.2.1 clearly shows that, of the 5264 fragments initially recorded in this small and very poorly-preserved assemblage, virtually all context and sample groups derived mainly from unidentifiable fragments of unidentifiable mammal bone with 2989 fragments assigned as unidentifiable fragments of unidentifiable mammal bone, and a smaller fraction, 2275 fragments, assigned to approximate categories, 'cattle-sized' and sheep-sized' mammal bone, or more accurate identification up to species-level (Table XV.2.3), with comparatively small fragment counts of cattle *Bos taurus*, sheep/goat *Ovis aries/Capra hircus*, pig *Sus scrofa* and horse *Equus caballus*. There was no definite identification of either sheep or goat. Only a single fragment of unidentifiable bird long bone mid-shaft was recovered from Iron Age floor deposit [90990]. In general, the very poor preservation state and extreme fragmentation of the bone, together with the complete dominance of highly-robust and resistant skeletal elements such as tooth enamel, teeth and mandible, that, for the prehistoric deposits at least, interpretation of the recovery of species, carcase-part, age and modification is virtually impossible beyond a basic establishment of the presence of cattle, horse, sheep/goat and pig. The predominance of adult animals is also likely to reflect obviously very aggressive local soil chemistry in which preservation of comparatively delicate juvenile and younger skeletal elements was much sparser.

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Tables

Table XV.2.1: G1701 hand-collected and wet-sieved animal bone/catalogue

Period	Area	Feature	Cut No	Find No	Context	Sample	Identification	Bone	Age	Fusion/ Distal	Modification	Nos
pre-Neolithic	H	OGS		1532	2093	1098	Mammal, unidentifiable	Unidentifiable				1
pre-Neolithic	H	OGS		1532	2093	1098	Mammal, unidentifiable	Unidentifiable				1
early Neolithic	H	hearth	50044	1613	2100	1105	Mammal, unidentifiable	Unidentifiable				1
unknown/post-med?	B1	pit	5053	1214	5054	54	Sheep-sized	Long bone			charred, black	1
Iron Age?	B1	ditch	6120	1495	6121	72	Mammal, unidentifiable	Unidentifiable			calcined, white	1
post-medieval	B1	furrow	7055	1254	7054	20	Mammal, unidentifiable	Unidentifiable			calcined, grey	2
prehistoric	B1	pit?	7057	1227	7056	22	Mammal, unidentifiable	Unidentifiable			calcined, white	1
prehistoric	B1	pit?	7057	1257	7056	227	Mammal, unidentifiable	Unidentifiable			calcined, white	1
prehistoric	B1	pit?	7057	4356	7056	22	Mammal, unidentifiable	Unidentifiable			calcined, white	1
unknown	B1	pit	8081	5854	8080	56	Mammal, unidentifiable	Unidentifiable			calcined, white	3
post-medieval	B1	ditch	8087	52	8086	0	Cattle	Tooth				6
prehistoric	B1	pit	10012	4394	10013	30	Mammal, unidentifiable	Unidentifiable			calcined, white	1
prehistoric	B1	pit	11017	1240	11018	62	Mammal, unidentifiable	Unidentifiable			charred, black	1
post-medieval	B1	pit	14015	6100	14016	0	Cattle	Vertebra, cervical	infant			2
post-medieval	B1	pit	14015	6100	14016	0	Cattle	Humerus	infant	unfused		1
post-medieval	B1	pit	14015	6100	14016	0	Cattle	Mandible	infant			2
post-medieval	B1	pit	14015	6100	14016	0	Cattle	Tooth, maxillary deciduous	infant			2
post-medieval	B1	pit	14015	6100	14016	0	Cattle	Metacarpal				1
post-medieval	B1	pit	14015	6100	14016	0	Cattle	Skull	infant			1
Iron Age?	B1	ditch	14037	2034	14038	76	Mammal, unidentifiable	Unidentifiable			calcined, white	1
Iron Age?	B1	ditch	14037	4310	14038	76	Mammal, unidentifiable	Unidentifiable			calcined, white	1
Bronze Age ?	I	pit	18059	1238	18060	86	Mammal, unidentifiable	Unidentifiable				3
Bronze Age ?	I	pit	18059	1238	18060	86	Sheep-sized	Long bone fragment				3
Bronze Age ?	I	pit	18059	1238	18060	86	Sheep-sized	Unidentifiable				57

Period	Area	Feature	Cut No	Find No	Context	Sample	Identification	Bone	Age	Fusion/ Distal	Modification	Nos
Bronze Age ?	I	pit	18102	1320	18103	1019	Mammal, unidentifiable	Unidentifiable				2
post-medieval	I	gully	18117	6119	18118	0	Sheep/goat	Humerus		fused		1
post-medieval		gully	18117	6119	18118	0	Sheep/goat	Humerus		fused		1
Bronze Age	K1	fire pit?	18124	4289	18125	1020	Mammal, unidentifiable	Unidentifiable				60
Natural	I	probably natural silt		1560	19066	1007	Mammal, unidentifiable	Unidentifiable				1
Natural	I	probably natural silt		1560	19066	1007	Sheep-sized	Unidentifiable				1
mid-Neolithic	I	pit	19075	1334	19076	1011	Sheep-sized	Long bone fragment				2
mid-Neolithic	I	pit	19075	1334	19076	1011	Sheep-sized	Unidentifiable				2
unknown	M3	pit ?	19136	1596	19137	1121	Mammal, unidentifiable	Unidentifiable				1
? medieval	K1	corn drier	21051	2070	21052	0	Mammal, unidentifiable	Unidentifiable				20
? medieval	K1	corn drier	21051	2070	21052	1026	Mammal, unidentifiable	Unidentifiable				15
? medieval	K1	corn drier	21051	2070	21052	1026	Mammal, unidentifiable	Unidentifiable				30
mid-neolithic	Ia	pit	21210	1322	21211	1102	Mammal, unidentifiable	Unidentifiable				1
mid-neolithic	Ia	pit	21217	1374	21218	1108	Mammal, unidentifiable	Unidentifiable				10
mid-Neolithic	Ia	pit	21221	1638	21222	1115	Sheep-sized	Long bone fragment				2
medieval ?	Ia	corn drier	21229	1597	21231	1123	Mammal, unidentifiable	Unidentifiable				56
medieval ?	Ia	corn drier	21229	1597	21231	1123	Sheep-sized	Unidentifiable				50
unknown	K3	wall ?	35001	1624	22050	0	Sheep-sized	Tooth				50
Romano-British	K3	buried soil		3050	22054	0	Cattle-sized	Unidentifiable				2
Bronze Age	M2	pit	22076	5880	22077	1061	Mammal, unidentifiable	Unidentifiable				2
Bronze Age ?	M2	ditch	22066	4278	22116	1073	Mammal, unidentifiable	Unidentifiable				2
early Bronze Age?	M2	posthole	22118	4254	22117	1084	Mammal, unidentifiable	Unidentifiable				16
prehistoric ?	L3	pit	22171	4041	22145	1137	Mammal, unidentifiable	Unidentifiable				10
prehistoric ?	B3	pit	22158	4165	22156	1116	Mammal, unidentifiable	Unidentifiable				20
post-medieval ?	B3	pit	22163	1310	22161	1118	Mammal, unidentifiable	Unidentifiable				1
prehistoric ?	L3	posthole	22180	4388	22179	1139	Mammal,	Unidentifiable				5

Period	Area	Feature	Cut No	Find No	Context	Sample	Identification	Bone	Age	Fusion/ Distal	Modification	Nos
							unidentifiable					
prehistoric ?	L3	posthole	22180	4388	22179	1139	Mammal, unidentifiable	Unidentifiable				15
post-medieval ?	E (PM)	ditch	31164	915	31170	0	Mammal, unidentifiable	Unidentifiable				2
Bronze Age/post-med?	M4	ditch	40018	4343	40019	0	Cattle-sized	Long bone fragment				1
Bronze Age/post-med?	M4	ditch	40018	4343	40019	0	Cattle-sized	Long bone fragment				1
post-medieval ?	M4	ditch	40025	5892	40026	1315	Mammal, unidentifiable	Unidentifiable				2
post-medieval ?	M4	ditch	40030	5881	40032	1318	Mammal, unidentifiable	Unidentifiable				1
Bronze Age/post-med?	M4	ditch	40033	5573	40035	1319	Cattle-sized	Long bone fragment				3
Bronze Age	M4	ring ditch	40017	4298	40091	1346	Mammal, unidentifiable	Unidentifiable				4
prehistoric ?	M4	posthole	40094	5840	40096	1351	Mammal, unidentifiable	Unidentifiable				5
post-medieval	M4	posthole	40152	5763	40153	1374	Mammal, unidentifiable	Unidentifiable				358
post-medieval	M4	posthole	40152	5763	40153	1374	Mammal, unidentifiable	Unidentifiable				10
post-medieval	M4	posthole	40152	5763	40153	1374	Cattle	Horn core				14
post-medieval	M4	posthole	40152	5763	40153	1374	Cattle	Horn core				6
early Bronze Age	M4	short cist	40166	4274	40158	1378	Mammal, unidentifiable	Unidentifiable				2
early Bronze Age	M4	short cist	40169	5844	40177	1387	Mammal, unidentifiable	Unidentifiable				1
early Bronze Age	M4	cist grave	40182	5561	40185	1392	Mammal, unidentifiable	Unidentifiable				5
early Bronze Age	M4	short cist	40180	4419	40196	1400	Mammal, unidentifiable	Unidentifiable				1
natural	H	hollow	50005	1270	50006	1055	Mammal, unidentifiable	Unidentifiable				1
early Neolithic	H	pit	50080	3056	50081	1099	Mammal, unidentifiable	Unidentifiable				1
early Neolithic	H	pit	50075	4056	50082	1104	Mammal, unidentifiable	Unidentifiable				3
early Neolithic	H	posthole	50164	1187	50102	1165	Mammal, unidentifiable	Unidentifiable				10
early Neolithic	H	posthole	50139	5813	50105	1150	Mammal, unidentifiable	Unidentifiable				2
early Neolithic	H	hearth	50116	1502	50110	1126	Mammal,	Unidentifiable				7

Period	Area	Feature	Cut No	Find No	Context	Sample	Identification	Bone	Age	Fusion/ Distal	Modification	Nos
							unidentifiable					
early Neolithic	H	hearth	50116	1640	50115	1128	Mammal, unidentifiable	Unidentifiable				2
early Neolithic	H	hearth	50116	4065	50122	1141	Mammal, unidentifiable	Unidentifiable				6
early Neolithic	H	hearth	50116	4065	50122	1141	Mammal, unidentifiable	Unidentifiable				10
early Neolithic	H	hearth	50116	4065	50122	1141	Mammal, unidentifiable	Unidentifiable				11
early Neolithic	H	hearth	50133	4062	50124	1143	Mammal, unidentifiable	Unidentifiable				2
early Neolithic	H	hearth	50133	4062	50124	1381	Mammal, unidentifiable	Unidentifiable				2
early Neolithic	H	slot	50136	5565	50135	1236	Mammal, unidentifiable	Unidentifiable				5
early Neolithic	H	hearth	50145	1459	50147	1164	Mammal, unidentifiable	Unidentifiable				4
early Neolithic	H	gully	50176	4448	50148	1193	Mammal, unidentifiable	Unidentifiable				1
early Neolithic	H	non-feature	50151	4522	50152	1162	Mammal, unidentifiable	Unidentifiable				2
early Neolithic	H	hearth	50145	1516	50153	1169	Mammal, unidentifiable	Unidentifiable				6
early Neolithic	H	hearth	50145	1959	50161	1171	Mammal, unidentifiable	Unidentifiable				10
early Neolithic	H	hearth	50145	1959	50161	1171	Mammal, unidentifiable	Unidentifiable				8
early Neolithic	H	hearth	50145	1959	50161	1171	Mammal, unidentifiable	Unidentifiable				10
early Neolithic	H	hearth	50145	1929	50163	1172	Mammal, unidentifiable	Unidentifiable				4
early Neolithic	H	hearth	50145	1929	50163	1172	Mammal, unidentifiable	Unidentifiable				3
early Neolithic	H	hearth	50145	1929	50163	1172	Mammal, unidentifiable	Unidentifiable				2
early Neolithic	H	posthole	50167	1859	50167	1269	Mammal, unidentifiable	Unidentifiable				1
early Neolithic	H	hearth	50173	2014	50171	1175	Mammal, unidentifiable	Unidentifiable				10
early Neolithic	H	posthole	50178	1986	50177	1178	Mammal, unidentifiable	Unidentifiable				1
early Neolithic	H	posthole	50179	4362	50190	1191	Mammal, unidentifiable	Unidentifiable				2
early Neolithic	H	posthole	50210	4330	50211	1221	Mammal, unidentifiable	Unidentifiable				1

Period	Area	Feature	Cut No	Find No	Context	Sample	Identification	Bone	Age	Fusion/ Distal	Modification	Nos
early Neolithic	H	beam slot	50166	1948	50213	1263	Mammal, unidentifiable	Unidentifiable				2
natural	H	animal burrow?	50264	4160	50264	1272	Mammal, unidentifiable	Unidentifiable				1
early Neolithic	H	beam slot	50101	4255	50277	1356	Mammal, unidentifiable	Unidentifiable				1
unknown	H	pit	50397	5445	50396	1555	Mammal, unidentifiable	Unidentifiable				1
mid-Neolithic	D3	pit	60093	1943	60092	1180	Mammal, unidentifiable	Unidentifiable				1
mid-Neolithic	J1/J2	pit	70173	1868	70171	1250	Mammal, unidentifiable	Unidentifiable				1
prehistoric ?	J1/J2	animal burrow ?	70268	4465	70267	1291	Mammal, unidentifiable	Unidentifiable				15
prehistoric	J1/J2	posthole ?	70297	2011	70298	1300	Mammal, unidentifiable	Unidentifiable				10
early medieval	K7	grave	80048	4438	80012	738	Mammal, unidentifiable	Unidentifiable				1
early medieval	K7	grave	80078	5559	80018	723	Mammal, unidentifiable	Unidentifiable				5
early medieval	K7	grave	80078	5559	80018	723	Sheep-sized	Long bone fragment				1
early medieval	K7	grave	80081	4545	80019	1379	Mammal, unidentifiable	Unidentifiable				1
medieval ?	K7	corn drier	80056	5861	80058	742	Mammal, unidentifiable	Unidentifiable				11
unknown	K7	posthole	80114	4506	80113	781	Mammal, unidentifiable	Unidentifiable				1
medieval ?	K7	corn drier	80056	5857	80126	788	Mammal, unidentifiable	Unidentifiable				20
medieval ?	K7	corn drier	80056	5857	80126	788	Sheep-sized	Long bone fragment				8
medieval ?	K7	corn drier	80056	4436	80127	787	Sheep-sized	Tooth				30
medieval ?	K7	corn drier	80137	4463	80139	1403	Mammal, unidentifiable	Unidentifiable				25
medieval ?	K7	corn drier	80137	4463	80139	1403	Mammal, unidentifiable	Unidentifiable				397
medieval ?	K7	corn drier	80137	4463	80139	1403	Mammal, unidentifiable	Unidentifiable				40
medieval ?	K7	corn drier	80137	4463	80139	1403	Pig	Mandible				1
medieval ?	K7	corn drier	80137	4463	80139	1403	Pig	Skull				1
medieval ?	K7	corn drier	80137	4463	80139	1403	Sheep-sized	Unidentifiable				100
medieval ?	K7	corn drier	80137	5572	80142	1404	Mammal, unidentifiable	Unidentifiable				7
Iron Age ?	K7	layer		5558	80268	1456	Mammal, unidentifiable	Unidentifiable				3

Period	Area	Feature	Cut No	Find No	Context	Sample	Identification	Bone	Age	Fusion/ Distal	Modification	Nos
Iron Age ?	K7	layer		5558	80268	1456	Sheep-sized	Tooth				1
Iron Age ?	K7	demolition deposit		5431	80326	1468	Sheep-sized	Long bone fragment				1
Iron Age ?	K7	roof collapse ?		4456	80334	0	Cattle-sized	Tooth				10
Iron Age	K7	abandonment collapse		5766	80340	1465	Mammal, unidentifiable	Unidentifiable				1
Iron Age	K7	abandonment collapse		5766	80340	1465	Mammal, unidentifiable	Unidentifiable				5
Iron Age ?	K7	drain	80259	5785	80390	1510	Sheep-sized	Tooth				3
post-medieval	B2	ploughsoil		304	90002	0	Cattle-sized	Tooth				15
post-medieval	B2	ploughsoil		304	90002	0	Horse	Tooth				50
post-medieval	B2 Pen y Lon	pit	90304	150	90305	0	Horse	Tooth, mandibular	adult			1
post-medieval	B2 Pen y Lon	pit	90304	150	90305	0	Horse	Tooth, mandibular	adult			6
post-medieval	B2 Pen y Lon	pit	90304	150	90305	0	Horse	Tooth, maxillary	adult			3
post-medieval	B2 Pen y Lon	pit	90304	150	90305	0	Horse	Tooth, maxillary				4
post-medieval	B2 Pen y Lon	pit	90304	150	90305	0	Horse	Skull				1
post-medieval	B2 Pen y Lon	pit	90423	162	90422	0	Cattle-sized	Unidentifiable				80
Iron Age	B2 RHD	layer		202	90461	0	Sheep-sized	Long bone fragment				10
Iron Age	B2 RHD	levelling layer ?		232	90473	0	Mammal, unidentifiable	Unidentifiable				10
Iron Age	B2 RHD	levelling layer ?		232	90473	0	Cattle	Tooth	adult			4
Iron Age	B2 RHD	levelling layer?		232	90473	142	Mammal, unidentifiable	Unidentifiable				15
Iron Age	B2 RHA	demolition debris ?		1206	90479	132	Mammal, unidentifiable	Unidentifiable			calcined, white	100
Iron Age	B2 RHA	layer		1206	90482	0	Sheep-sized	Tooth				4
Iron Age	B2 RHD	occupation layer		462	90581	0	Horse	Tooth				5
Iron Age	B2 RHD	occupation layer		462	90581	171	Mammal, unidentifiable	Unidentifiable				6
Iron Age	B2 RHA	hearth		471	90632	178	Mammal, unidentifiable	Unidentifiable				1
Iron Age	B2 RHA	hearth		471	90632	178	Sheep/goat	Tooth, mandibular	adult			1
Iron Age	B2 RHA	posthole	90647	4262	90668	185	Mammal, unidentifiable	Tooth				1
Iron Age	B2 RHA	posthole	90647	4262	90668	185	Mammal, unidentifiable	Unidentifiable				11
Iron Age	B2 RHD	posthole	90694	4206	90695	179	Mammal,	Unidentifiable				1

Period	Area	Feature	Cut No	Find No	Context	Sample	Identification	Bone	Age	Fusion/ Distal	Modification	Nos
							unidentifiable					
Iron Age	B2 RHD	posthole	90694	4206	90695	179	Sheep-sized	Rib				1
Bronze Age ?	B2 RHA	stone layer		299	90818	0	Cattle-sized	Tooth				6
Bronze Age ?	B2 RHA	stone layer		299	90818	0	Sheep/goat	Tooth, maxillary	adult			10
Iron Age	B2RHA	fire pit	90817	319	90831	0	Sheep-sized	Tooth				6
Iron Age	B2 RHA	posthole	90839	301	90840	0	Mammal, unidentifiable	Unidentifiable			calcined, white	3
Iron Age	B2 RHD	layer		557	90860	0	Horse	Tooth				10
Iron Age	B2 RHB	pit	91252	6118	91240	522	Mammal, unidentifiable	Unidentifiable				10
Iron Age	B2 RHA/RHE	burnt layer		602	90949	0	Mammal, unidentifiable	Unidentifiable				15
Iron Age	B2 RHA/RHE	burnt layer		602	90949	257	Mammal, unidentifiable	Tooth				10
Iron Age	B2 RHA/RHE	burnt layer		602	90949	257	Mammal, unidentifiable	Tooth				40
Iron Age	B2 RHA/RHE	burnt layer		602	90949	257	Mammal, unidentifiable	Unidentifiable				3
Iron Age	B2 RHA/RHE	burnt layer		602	90949	257	Mammal, unidentifiable	Unidentifiable				410
Iron Age	B2 RHA/RHE	burnt layer		602	90949	257	Mammal, unidentifiable	Unidentifiable				30
Iron Age	B2 RHA/RHE	burnt layer		602	90949	257	Cattle-sized	Tooth				1
Iron Age	B2 RHA/RHE	burnt layer		602	90949	257	Sheep-sized	Tooth				25
Iron Age	B2 RHA/RHE	burnt layer		602	90949	257	Mammal, unidentifiable	Tooth				15
Iron Age	B2 RHA/RHE	lens		694	90977	238	Mammal, unidentifiable	Unidentifiable				50
Iron Age	B2 RHA/RHE	lens		694	90977	238	Cattle-sized	Tooth				20
Iron Age	B2 RHA/RHE	lens		694	90977	238	Sheep/goat	Tooth, maxillary				2
Iron Age	B2 RHA/RHE	lens		694	90977	238	Sheep/goat	Tooth, maxillary	adult			2
Iron Age	B2 RHB	floor		516	90990	0	Mammal, unidentifiable	Unidentifiable				5
Iron Age	B2 RHB	floor		516	90990	0	Bird, unidentifiable	Ulna				1
Iron Age	B2 RHA	layer		6367	91000	253	Sheep-sized	Tooth				5
Iron Age	B2 RHA	layer		4279	91011	346	Mammal, unidentifiable	Unidentifiable				4
Iron Age	B2 RHA	layer		4279	91011	503	Mammal,	Tooth				1

Period	Area	Feature	Cut No	Find No	Context	Sample	Identification	Bone	Age	Fusion/ Distal	Modification	Nos
							unidentifiable					
Iron Age	B2 RHB	burnt patch	91014	4023	91015	286	Mammal, unidentifiable	Unidentifiable				10
Iron Age	B2 RHD	platform layer		350	91054	0	Mammal, unidentifiable	Unidentifiable				1
Iron Age	B2 passage-way	layer		348	91059	305	Cattle-sized	Tooth				1
Iron Age	B2 RHA/RHE	layer		5774	91114	270	Mammal, unidentifiable	Tooth				1
Iron Age	B2 RHA/RHE	layer		5774	91114	270	Mammal, unidentifiable	Unidentifiable				8
Iron Age	B2 RHD	pit	91762	4037	91205	287	Mammal, unidentifiable	Unidentifiable				2
Iron Age	B2 RHE	platform layer ?		372	91213	0	Mammal, unidentifiable	Long bone fragment				25
Iron Age	B2 passage-way	pit	91206	394	91233	0	Cattle	Tooth				50
Iron Age	B2 passage-way	pit	91206	394	91233	0	Cattle-sized	Tooth				15
Iron Age	B2 passage-way	pit	91206	397	91234	0	Cattle-sized	Tooth				25
Iron Age	B2 RHB	pit	91252	594	91240	0	Cattle	1st phalanx	adult	fused		1
Iron Age	B2 RHB	pit	91252	594	91240	0	Sheep/goat	Astragalus				1
Iron Age	B2 RHB	pit	91252	594	91240	0	Sheep/goat	Femur	adult	fused		1
Iron Age	B2 RHB	pit	91252	594	91240	0	Sheep/goat	Femur	sub-adult	unfused		1
Iron Age	B2 RHB	pit	91252	594	91240	0	Sheep/goat	Femur	sub-adult	unfused		1
Iron Age	B2 RHB	pit	91252	594	91240	0	Sheep/goat	Mandible	adult			1
Iron Age	B2 RHB	pit	91252	594	91240	0	Sheep/goat	Tooth, mandibular	adult			2
Iron Age	B2 RHB	pit	91252	594	91240	0	Sheep/goat	Tooth, maxillary	adult			2
Iron Age	B2 RHB	pit	91252	594	91240	0	Sheep/goat	Metacarpal				1
Iron Age	B2 RHB	pit	91252	594	91240	0	Sheep/goat	Premaxilla				1
Iron Age	B2 RHB	pit	91252	594	91240	0	Sheep/goat	Tibia				1
Iron Age	B2 RHB	pit	91252	594	91240	0	Sheep/goat	Tibia				1
Iron Age	B2 RHB	pit	91252	594	91240	522	Mammal, unidentifiable	Unidentifiable				105
Iron Age	B2 RHB	pit	91252	594	91240	522	Sheep-sized	Tooth				5
Iron Age	B2 RHB	pit	91252	594	91240	522	Sheep/goat	Mandible	adult			1
Iron Age	B2 RHE	deposit		388	91253	0	Mammal, unidentifiable	Unidentifiable				1
Iron Age	B2 RHA	posthole	91263	5469	91264	299	Mammal, unidentifiable	Unidentifiable				1

Period	Area	Feature	Cut No	Find No	Context	Sample	Identification	Bone	Age	Fusion/ Distal	Modification	Nos
medieval ?	B2 RHE	pit	91298	690	91297	306	Mammal, unidentifiable	Unidentifiable				1
Iron Age	B2 RHE	stakehole	91311	5490	91312	308	Mammal, unidentifiable	Tooth				1
Iron Age	B2 passage-way	levelling layer		2059	91321	539	Mammal, unidentifiable	Tooth				2
Iron Age	B2 passage-way	levelling layer		2059	91321	539	Mammal, unidentifiable	Unidentifiable				30
Iron Age	B2 passage-way	pit	91329	418	91330	0	Mammal, unidentifiable	Unidentifiable				5
Iron Age	B2 passage-way	pit	91329	418	91330	0	Cattle-sized	Tooth				2
Iron Age	B2 passage-way	pit	91329	692	91331	0	Mammal, unidentifiable	Tooth				50
Iron Age	B2 passage-way	pit	91329	692	91331	0	Cattle-sized	Long bone fragment				2
Iron Age	B2 passage-way	pit	91329	692	91331	0	Cattle-sized	Tooth				10
Iron Age	B2 passage-way	pit	91301	4027	91332	311	Cattle-sized	Tooth				25
Iron Age	B2 RHA	midden deposit		5509	91333	386	Sheep-sized	Long bone fragment				12
Bronze Age ?	B2 passage-way	ditch	91445	756	91446	0	Mammal, unidentifiable	Tooth				75
Bronze Age ?	B2 passage-way	ditch	91445	756	91446	0	Pig	Tooth	juvenile			1
Bronze Age ?	B2 passage-way	ditch	91445	756	91446	0	Pig	Tooth	sub-adult			1
Iron Age	B2 RHE	kerb		5560	91467	343	Mammal, unidentifiable	Unidentifiable				7
Iron Age	B2 passage-way	pit	91498	511	91499	0	Mammal, unidentifiable	Unidentifiable				15
Iron Age	B2 passage-way	pit	91498	4177	91500	0	Mammal, unidentifiable	Unidentifiable				15
Iron Age	B2 passage-way	pit	91498	4177	91500	365	Mammal, unidentifiable	Unidentifiable				50
Iron Age	B2 passage-way	pit	91498	4177	91500	365	Pig	Tooth	sub-adult			1
Iron Age	B2 passage-way	pit	91498	4177	91500	365	Pig	Tooth	sub-adult			1
Iron Age	B2 passage-way	pit	91498	5486	91501	364	Cattle-sized	Tooth				25
Iron Age	B2 passage-way	pit	91498	503	91502	0	Cattle	Tooth				15
Iron Age ?	B2 E area	layer		513	91518	0	Mammal, unidentifiable	Unidentifiable				2

Period	Area	Feature	Cut No	Find No	Context	Sample	Identification	Bone	Age	Fusion/ Distal	Modification	Nos
Iron Age ?	B2 E area	layer		513	91518	0	Pig	Tooth	sub-adult			1
Bronze Age ?	B2 E area	stone layer		5992	91589	0	Cattle	Tooth, mandibular	young adult			2
Bronze Age ?	B2 E area	stone layer		5992	91589	0	Cattle	Tooth, maxillary	young adult			1
Iron Age	B2 RHC	cobbled surface		4186	91648	427	Mammal, unidentifiable	Tooth				5
post medieval	B2 Pen y Lon	pit	91690	4195	91691	458	Mammal, unidentifiable	Unidentifiable				2
Iron Age	B2 RHC	cobbled surface		4363	91710	0	Horse	Tooth				30
Iron Age	B2 RHC	cobbled surface		4363	91710	462	Mammal, unidentifiable	Tooth				40
Iron Age	B2 RHC	cobbled surface		4363	91710	462	Mammal, unidentifiable	Unidentifiable				20
Iron Age	B2 RHC	cobbled surface		4363	91710	462	Sheep-sized	Tooth				75
Iron Age	B2 RHC	posthole	91724	1792	91734	585	Mammal, unidentifiable	Unidentifiable				5
Iron Age	B2 RHC	posthole	91724	1792	91734	585	Mammal, unidentifiable	Unidentifiable				7
Iron Age	B2 RHC	layer		4204	91746	437	Mammal, unidentifiable	Unidentifiable				1
Iron Age	B2 RHC	layer		4204	91746	437	Sheep-sized	Unidentifiable				1
Iron Age	B2 RHC	layer		1751	91748	439	Mammal, unidentifiable	Unidentifiable				40
Bronze Age ?	B2 passage-way	ditch	91783	555	91792	0	Cattle-sized	Tooth				30
Iron Age	B2 RHC	layer		1809	91848	547	Mammal, unidentifiable	Unidentifiable				7
Iron Age	B2 RHC	wall?	91805	1726	91857	464	Mammal, unidentifiable	Unidentifiable				3
Iron Age	B2 RHE	platform deposit		4371	91906	495	Mammal, unidentifiable	Tooth				1
Iron Age	B2 RHC	floor		735	91922	0	Mammal, unidentifiable	Unidentifiable				40
Iron Age	B2 RHC	floor		2061	91924	490	Mammal, unidentifiable	Tooth				10
Iron Age ?	B2 RHA	stakehole	92017	2051	92018	0	Pig	Tooth, mandibular	juvenile			2
Iron Age ?	B2 RHA	stakehole	92017	2051	92018	0	Pig	Tooth				1
Iron Age ?	B2 RHA	stakehole	92017	2051	92018	0	Pig	Tooth	juvenile			7
Iron Age ?	B2 RHA	stakehole	92017	2051	92018	0	Sheep/goat	Tooth, mandibular				20
Iron Age ?	B2 RHA	stakehole	92017	2051	92018	0	Sheep/goat	Tooth				10
Iron Age ?	B2 RHA	stakehole	92017	2051	92018	493	Mammal, unidentifiable	Tooth				25

Period	Area	Feature	Cut No	Find No	Context	Sample	Identification	Bone	Age	Fusion/ Distal	Modification	Nos
Iron Age ?	B2 RHA	stakehole	92017	2051	92018	493	Mammal, unidentifiable	Unidentifiable				3
Iron Age ?	B2 RHA	stakehole	92017	2051	92018	493	Pig	Tooth, mandibular	juvenile			1
Iron Age ?	B2 RHA	stakehole	92017	2051	92018	493	Pig	Tooth	juvenile			1
Iron Age ?	B2 RHA	stakehole	92017	2051	92018	493	Pig	Tooth	juvenile			5
Iron Age ?	B2 RHA	stakehole	92017	2051	92018	493	Sheep/goat	Tooth, mandibular				5
Iron Age	B2 RHC	layer		1766	92042	512	Mammal, unidentifiable	Tooth				10
Iron Age	B2 passage-way	cobbles		646	92058	0	Cattle-sized	Tooth				30
Iron Age	B2 RHC	demolition layer		589	92063	0	Mammal, unidentifiable	Tooth				75
Iron Age	B2 RHC	tumble		633	92116	0	Mammal, unidentifiable	Tooth				50
Iron Age	B2 RHC	surface		4159	92120	527	Mammal, unidentifiable	Unidentifiable				1
Iron Age	B2 RHC	surface		755	92123	0	Mammal, unidentifiable	Unidentifiable				1
Bronze Age ?	B2 E area	old ground surface		638	92129	0	Cattle-sized	Tooth, maxillary				6
Iron Age	B2 passage-way	ditch	92189	720	92190	0	Cattle-sized	Tooth				50
Bronze Age ?	B2 RHC	stony layer		637	92192	0	Sheep-sized	Long bone fragment				1
Iron Age	B2 passage-way	occupation layer		657	92231	0	Cattle-sized	Tooth				50
Iron Age	B2 passage-way	ditch	92288	719	92290	0	Cattle-sized	Tooth				30
Iron Age	B2 passage-way	ditch	92288	743	92290	0	Mammal, unidentifiable	Tooth				15
Iron Age	B2 passage-way	ditch	92288	743	92290	0	Cattle-sized	Tooth				30
post-medieval ?	B2 E area	ploughsoil ?		722	92293	0	Cattle	Tooth				2
post-medieval ?	B2 E area	pit	92344	1736	92315	617	Cattle-sized	Tooth				1
Iron Age	B2 RHC	pit	92337	4311	92338	598	Mammal, unidentifiable	Tooth				50
Iron Age	B2 RHC	pit	92337	4311	92338	598	Mammal, unidentifiable	Unidentifiable				1
Iron Age	B2 RHC	pit	92337	4311	92338	598	Sheep-sized	Tooth				1
Iron Age	B2 RHC	pit	92337	4311	92338	598	Sheep/goat	Tooth, mandibular	adult			1
Bronze Age ?	B2 passage-way	ditch	91445	742	92412	0	Mammal, unidentifiable	Tooth				15
Bronze Age ?	B2 passage-way	ditch	91445	742	92412	0	Cattle-sized	Tooth				8

Period	Area	Feature	Cut No	Find No	Context	Sample	Identification	Bone	Age	Fusion/ Distal	Modification	Nos
Bronze Age ?	B2 passage-way	ditch	91445	742	92412	0	Sheep/goat	Tooth, maxillary	adult			1
Iron Age	B2 passage-way	posthole	92431	2089	92423	634	Mammal, unidentifiable	Tooth				2
Bronze Age ?	B2 RHC	ditch	92516	5767	92517	648	Mammal, unidentifiable	Tooth				10
Bronze Age ?	B2 RHC	ditch	92516	5767	92517	648	Pig	Tooth				1
Bronze Age ?	B2 RHC	ditch	92516	5767	92517	648	Pig	Tooth	juvenile			1
Bronze Age ?	B2 RHC	ditch	92516	758	92518	0	Mammal, unidentifiable	Tooth				40
Bronze Age ?	B2 RHC	ditch	92516	758	92518	0	Mammal, unidentifiable	Unidentifiable				6
Bronze Age ?	B2 RHC	ditch	92516	758	92518	649	Mammal, unidentifiable	Tooth				5
Iron Age	B2 RHC	silting deposit		3078	92520	654	Pig	Tooth	juvenile			1
Bronze Age ?	B2 RHB	silt layer		1768	92539	0	Horse	Tooth				200
Bronze Age ?	B2 RHB	silt layer		1768	92539	0	Horse	Tooth				1
Bronze Age ?	B2 RHB	silt layer		1768	92539	660	Horse	Tooth, mandibular				10
Bronze Age ?	B2 E area	silt layer		4399	92542	0	Cattle	Humerus				1
Bronze Age ?	B2 E area	silt layer		4399	92542	0	Cattle	Radius				1
Bronze Age ?	B2 E area	silt layer		4399	92542	0	Cattle	Skull				1
Bronze Age ?	B2 E area	silt layer		4399	92542	661	Mammal, unidentifiable	Unidentifiable				20
Bronze Age ?	B2 RHC	deposit		773	92578	0	Mammal, unidentifiable	Unidentifiable				5
Bronze Age ?	B2 RHC	deposit		773	92578	688	Horse	Tooth				6
Iron Age	F1 RHG	stone		803	92634	0	Horse	Tooth				2
Iron Age	F1 RHG	floor ?		1983	92685	706	Sheep-sized	Long bone fragment				3
Iron Age	F1 RHG	foundation slot	92731	792	92687	0	Mammal, unidentifiable	Unidentifiable				50
Iron Age	F1 RHG	foundation slot	92731	794	92687	0	Horse	Tooth, mandibular				50
Iron Age	F1 RHG	foundation slot	92731	795	92687	0	Horse	Tooth, mandibular	adult			1
Iron Age	F1 RHG	foundation slot	92731	795	92687	0	Horse	Tooth, mandibular				50
Iron Age	F1 RHG	foundation slot	92731	795	92687	0	Horse	Tooth, maxillary	adult			2
Iron Age	F1 RHG	foundation slot	92731	795	92687	0	Horse	Tooth, maxillary				50
Iron Age	F1 RHG	foundation slot	92731	795	92687	0	Horse	Tooth	adult			90
Iron Age	F1 RHG	foundation slot	92731	795	92687	0	Mammal, unidentifiable	Unidentifiable				50
Iron Age	F1 RHG	foundation slot	92731	4322	92687	712	Horse	Tooth, maxillary	young adult			1
Iron Age	F1 RHG	foundation slot	92731	4466	92687	709	Mammal,	Unidentifiable				50

Period	Area	Feature	Cut No	Find No	Context	Sample	Identification	Bone	Age	Fusion/ Distal	Modification	Nos
							unidentifiable					
Iron Age	F1 RHG	foundation slot	92731	4466	92687	709	Sheep/goat	Tooth, mandibular				5
Iron Age	F1 RHG	charcoal rich deposit		4320	92691	713	Mammal, unidentifiable	Unidentifiable				5
Iron Age	F1 FE	stone spread		832	92862	0	Horse	Tooth, maxillary				40
Iron Age	F1 FE	stone spread		832	92862	0	Horse	Tooth				70
Iron Age	F1 RHH	general layer		6502	92923	0	Cattle-sized	Rib				6
Iron Age	F1 RHG	beam slot	92936	824	92938	776	Mammal, unidentifiable	Unidentifiable				50
Iron Age	F1 RHG	beam slot	92936	824	92938	776	Mammal, unidentifiable	Unidentifiable				80
Iron Age	F1 RHI	floor		5745	92946	0	Cattle-sized	Tooth				15
Iron Age	F1 RHI	floor		5745	92946	5029	Mammal, unidentifiable	Tooth				30
Iron Age	F1 RHI	floor		5745	92946	5029	Mammal, unidentifiable	Unidentifiable				5
Iron Age	F1 RHI	floor		5745	92946	5029	Cattle-sized	Tooth				5
Iron Age	F1 RHI	gravel dump		5676	93008	0	Horse	Tooth, maxillary				15
Iron Age	F1 RHI	patch		836	93065	0	Cattle-sized	Tooth				20
Iron Age	F1 FW	posthole	93079	5433	93088	814	Cattle-sized	Tooth				10
Bronze Age	F1 FW	OGS		5555	93326	5009	Mammal, unidentifiable	Unidentifiable				5
Iron Age	F1 RHI	gully	93504	5553	93503	5060	Cattle-sized	Tooth				10
Iron Age	F1 RHI	tumble		5462	93507	0	Horse	Tooth				5
TOTAL												**5264**

Table XV.2.2: G1701 hand-collected and wet-sieved animal bone/burning

Context	Sample	Identification	Fragments	Bone	Modification
2093	1098	Mammal, unidentifiable	1	unidentifiable	calcined white
2093	1098	Mammal, unidentifiable	1	unidentifiable	calcined white
2100	1105	Mammal, unidentifiable	1	unidentifiable	calcined white
18060	86	Mammal, unidentifiable	3	unidentifiable	calcined white
18060	86	Sheep-sized	1	long bone	calcined white
18060	86	Sheep-sized	2	long bone	calcined white
18060	86	Sheep-sized	7	unidentifiable	calcined white/charred black
18060	86	Sheep-sized	50	unidentifiable	calcined white
18103	1019	Mammal, unidentifiable	2	unidentifiable	calcined white
18125	1020	Mammal, unidentifiable	15	unidentifiable	calcined white
18125	1020	Mammal, unidentifiable	20	unidentifiable	calcined white
18125	1020	Mammal, unidentifiable	25	unidentifiable	calcined white
19066	1007	Mammal, unidentifiable	1	unidentifiable	calcined white
19066	1007	Sheep-sized	1	unidentifiable	calcined white
19076	1011	Sheep-sized	2	long bone	calcined white
19076	1011	Sheep-sized	2	unidentifiable	calcined white
19137	1121	Mammal, unidentifiable	1	unidentifiable	calcined white
21052	0	Mammal, unidentifiable	20	unidentifiable	calcined white
21052	1026	Mammal, unidentifiable	15	unidentifiable	calcined white
21052	1026	Mammal, unidentifiable	10	unidentifiable	calcined white
21052	1026	Mammal, unidentifiable	20	unidentifiable	calcined white
21211	1102	Mammal, unidentifiable	1	unidentifiable	calcined white
21218	1108	Mammal, unidentifiable	10	unidentifiable	calcined white
21231	1123	Mammal, unidentifiable	1	unidentifiable	calcined white
21231	1123	Mammal, unidentifiable	10	unidentifiable	calcined white
21231	1123	Mammal, unidentifiable	20	unidentifiable	calcined white
21231	1123	Mammal, unidentifiable	25	unidentifiable	calcined white
21231	1123	Sheep-sized	50	unidentifiable	calcined white
22077	1061	Mammal, unidentifiable	1	unidentifiable	calcined white
22116	1073	Mammal, unidentifiable	2	unidentifiable	calcined white
22156	1116	Mammal, unidentifiable	10	unidentifiable	calcined white
22161	1118	Mammal, unidentifiable	1	unidentifiable	calcined white
22179	1139	Mammal, unidentifiable	5	unidentifiable	calcined white
22179	1139	Mammal, unidentifiable	15	unidentifiable	calcined white
31170	0	Mammal, unidentifiable	2	unidentifiable	calcined white

Context	Sample	Identification	Fragments	Bone	Modification
40026	1315	Mammal, unidentifiable	2	unidentifiable	calcined white
40035	1319	Cattle-sized	3	long bone	calcined white
40032	1318	Mammal, unidentifiable	1	unidentifiable	calcined white
40091	1346	Mammal, unidentifiable	1	unidentifiable	calcined white
40091	1346	Mammal, unidentifiable	3	unidentifiable	calcined white
40158	1378	Mammal, unidentifiable	2	unidentifiable	calcined white
40177	1387	Mammal, unidentifiable	1	unidentifiable	calcined white
40185	1392	Mammal, unidentifiable	5	unidentifiable	calcined white
91333	386	Sheep-sized	2	long bone	calcined grey
91333	386	Sheep-sized	10	long bone	calcined white
50006	1055	Mammal, unidentifiable	1	unidentifiable	calcined white
50081	1099	Mammal, unidentifiable	1	unidentifiable	calcined white
50082	1104	Mammal, unidentifiable	3	unidentifiable	calcined white
50102	1165	Mammal, unidentifiable	10	unidentifiable	calcined white
50105	1150	Mammal, unidentifiable	2	unidentifiable	charred black
50110	1126	Mammal, unidentifiable	1	unidentifiable	calcined white
50110	1126	Mammal, unidentifiable	6	unidentifiable	calcined white
50115	1128	Mammal, unidentifiable	2	unidentifiable	calcined white
50122	0	Mammal, unidentifiable	6	unidentifiable	calcined white
50122	1141	Mammal, unidentifiable	1	unidentifiable	calcined white
50122	1141	Mammal, unidentifiable	10	unidentifiable	calcined white
50124	1143	Mammal, unidentifiable	2	unidentifiable	calcined white
50124	1381	Mammal, unidentifiable	2	unidentifiable	calcined white
50135	1236	Mammal, unidentifiable	5	unidentifiable	calcined white
50147	1164	Mammal, unidentifiable	4	unidentifiable	calcined white
50148	1193	Mammal, unidentifiable	1	unidentifiable	calcined white
50152	1162	Mammal, unidentifiable	2	unidentifiable	calcined white
50153	1169	Mammal, unidentifiable	6	unidentifiable	calcined white
50161	0	Mammal, unidentifiable	10	unidentifiable	calcined white
50161	1170	Mammal, unidentifiable	1	unidentifiable	calcined white
50161	1170	Mammal, unidentifiable	3	unidentifiable	calcined white
50161	1170	Mammal, unidentifiable	4	unidentifiable	calcined white
50161	1171	Mammal, unidentifiable	10	unidentifiable	calcined white
50163	1172	Mammal, unidentifiable	4	unidentifiable	calcined white
50163	1172	Mammal, unidentifiable	1	unidentifiable	calcined white
50163	1172	Mammal, unidentifiable	2	unidentifiable	calcined white

Context	Sample	Identification	Fragments	Bone	Modification
50167	1269	Mammal, unidentifiable	1	unidentifiable	calcined white
50171	1175	Mammal, unidentifiable	10	unidentifiable	calcined white
50177	1178	Mammal, unidentifiable	1	unidentifiable	calcined white
50190	1191	Mammal, unidentifiable	2	unidentifiable	calcined white
50211	1221	Mammal, unidentifiable	1	unidentifiable	calcined white
50213	1263	Mammal, unidentifiable	2	unidentifiable	calcined white
50264	1272	Mammal, unidentifiable	1	unidentifiable	calcined white
50277	1356	Mammal, unidentifiable	1	unidentifiable	calcined white
50396	1555	Mammal, unidentifiable	1	unidentifiable	calcined white
60092	1180	Mammal, unidentifiable	1	unidentifiable	calcined white
70171	1250	Mammal, unidentifiable	1	unidentifiable	calcined white
70267	1291	Mammal, unidentifiable	15	unidentifiable	calcined white
70298	1300	Mammal, unidentifiable	10	unidentifiable	calcined white
80012	738	Mammal, unidentifiable	1	unidentifiable	calcined white
80019	1379	Mammal, unidentifiable	1	unidentifiable	calcined white
80058	742	Mammal, unidentifiable	11	unidentifiable	calcined white
80113	781	Mammal, unidentifiable	1	unidentifiable	calcined white
80126	788	Mammal, unidentifiable	20	unidentifiable	calcined white
80126	788	Sheep-sized	3	long bone	calcined white
80126	788	Sheep-sized	5	long bone	calcined white
80127	787	Sheep-sized	30	tooth	calcined white
80139	1403	Mammal, unidentifiable	25	unidentifiable	calcined white
80139	1403	Mammal, unidentifiable	2	unidentifiable	calcined grey
80139	1403	Mammal, unidentifiable	25	unidentifiable	calcined white
80139	1403	Mammal, unidentifiable	40	unidentifiable	calcined white
80139	1403	Mammal, unidentifiable	80	unidentifiable	calcined white
80139	1403	Mammal, unidentifiable	100	unidentifiable	calcined white
80139	1403	Mammal, unidentifiable	150	unidentifiable	calcined white
80139	1403	Pig	1	mandible	calcined white
80139	1403	Pig	1	skull	calcined white
80139	1403	Sheep-sized	100	unidentifiable	calcined white
80142	1404	Mammal, unidentifiable	1	unidentifiable	calcined white
80142	1404	Mammal, unidentifiable	5	unidentifiable	calcined white
80268	1456	Mammal, unidentifiable	3	unidentifiable	calcined white
80326	1468	Sheep-sized	1	long bone	calcined white
80340	1465	Mammal, unidentifiable	1	unidentifiable	calcined white

Context	Sample	Identification	Fragments	Bone	Modification
80340	1465	Mammal, unidentifiable	5	unidentifiable	calcined white
90461	0	Sheep-sized	10	long bone	calcined white
90473	0	Mammal, unidentifiable	10	unidentifiable	calcined white
90581	171	Mammal, unidentifiable	1	unidentifiable	charred black
90581	171	Mammal, unidentifiable	1	unidentifiable	calcined white
90581	171	Mammal, unidentifiable	4	unidentifiable	calcined white
90668	185	Mammal, unidentifiable	1	unidentifiable	calcined white
90695	179	Mammal, unidentifiable	1	unidentifiable	calcined white
90695	179	Sheep-sized	1	rib	calcined white
90949	0	Mammal, unidentifiable	15	unidentifiable	calcined white
90949	257	Mammal, unidentifiable	15	unidentifiable	calcined white
90949	257	Mammal, unidentifiable	35	unidentifiable	calcined white
90949	257	Mammal, unidentifiable	75	unidentifiable	calcined white
90949	257	Mammal, unidentifiable	300	unidentifiable	calcined white
91114	270	Mammal, unidentifiable	8	unidentifiable	calcined white
91264	299	Mammal, unidentifiable	1	unidentifiable	charred black
91297	306	Mammal, unidentifiable	1	unidentifiable	calcined white
91331	0	Cattle-sized	2	long bone	calcined white
91467	343	Mammal, unidentifiable	7	unidentifiable	calcined white
91518	0	Mammal, unidentifiable	2	unidentifiable	calcined white
91691	458	Mammal, unidentifiable	2	unidentifiable	calcined white
91746	437	Mammal, unidentifiable	1	unidentifiable	charred black
91746	437	Sheep-sized	1	unidentifiable	calcined white
91857	464	Mammal, unidentifiable	3	unidentifiable	calcined grey
92018	493	Mammal, unidentifiable	1	unidentifiable	calcined white
92120	527	Mammal, unidentifiable	1	unidentifiable	calcined white
92192	0	Sheep-sized	1	long bone	calcined white
92685	706	Sheep-sized	3	long bone	calcined white
92691	713	Mammal, unidentifiable	5	unidentifiable	calcined white
93326	5009	Mammal, unidentifiable	5	unidentifiable	calcined white
TOTAL			**1655**		

Table XV.2.3: G1701 identifiable hand-collected and wet-sieved animal bone/catalogue

Period	Area	Feature	Cut No	Find No	Context	Sample	Identification	Bone	Age	Fusion/ Distal	Modification	Nos
post-medieval	B1	ditch	8087	52	8086	0	Cattle	Tooth				6
post-medieval	B2 Pen y Lon	pit	90304	150	90305	0	Horse	Tooth, mandibular	adult			1
post-medieval	B2 Pen y Lon	pit	90304	150	90305	0	Horse	Tooth, mandibular	adult			6
post-medieval	B2 Pen y Lon	pit	90304	150	90305	0	Horse	Tooth, maxillary	adult			3
post-medieval	B2 Pen y Lon	pit	90304	150	90305	0	Horse	Tooth, maxillary				4
post-medieval	B2 Pen y Lon	pit	90304	150	90305	0	Horse	Skull				1
Iron Age	B2 RHD	layer		202	90461	0	Sheep-sized	Long bone fragment				10
Iron Age	B2 RHD	levelling layer ?		232	90473	0	Cattle	Tooth	adult			4
Bronze Age ?	B2 RHA	stone layer		299	90818	0	Cattle-sized	Tooth				6
Bronze Age ?	B2 RHA	stone layer		299	90818	0	Sheep/goat	Tooth, maxillary	adult			10
post-medieval	B2	ploughsoil		304	90002	0	Cattle-sized	Tooth				15
post-medieval	B2	ploughsoil		304	90002	0	Horse	Tooth				50
Iron Age	B2RHA	fire pit	90817	319	90831	0	Sheep-sized	Tooth				6
Iron Age	B2 passage-way	layer		348	91059	305	Cattle-sized	Tooth				1
Iron Age	B2 RHE	platform layer ?		372	91213	0	Mammal, unidentifiable	Long bone fragment				25
Iron Age	B2 passage-way	pit	91206	394	91233	0	Cattle	Tooth				50
Iron Age	B2 passage-way	pit	91206	394	91233	0	Cattle-sized	Tooth				15
Iron Age	B2 passage-way	pit	91206	397	91234	0	Cattle-sized	Tooth				25
Iron Age	B2 passage-way	pit	91329	418	91330	0	Cattle-sized	Tooth				2
Iron Age	B2 RHD	occupation layer		462	90581	0	Horse	Tooth				5
Iron Age	B2 RHA	hearth		471	90632	178	Sheep/goat	Tooth, mandibular	adult			1
Iron Age	B2 passage-way	pit	91498	503	91502	0	Cattle	Tooth				15
Iron Age ?	B2 E area	layer		513	91518	0	Pig	Tooth	sub-adult			1
Iron Age	B2 RHB	floor		516	90990	0	Bird, unidentifiable	Ulna				1
Bronze Age ?	B2 passage-way	ditch	91783	555	91792	0	Cattle-sized	Tooth				30

Period	Area	Feature	Cut No	Find No	Context	Sample	Identification	Bone	Age	Fusion/ Distal	Modification	Nos
Iron Age	B2 RHD	layer		557	90860	0	Horse	Tooth				10
Iron Age	B2 RHC	demolition layer		589	92063	0	Mammal, unidentifiable	Tooth				75
Iron Age	B2 RHB	pit	91252	594	91240	0	Cattle	1st phalanx	adult	fused		1
Iron Age	B2 RHB	pit	91252	594	91240	0	Sheep/goat	Astragalus				1
Iron Age	B2 RHB	pit	91252	594	91240	0	Sheep/goat	Femur	adult	fused		1
Iron Age	B2 RHB	pit	91252	594	91240	0	Sheep/goat	Femur	sub-adult	unfused		1
Iron Age	B2 RHB	pit	91252	594	91240	0	Sheep/goat	Femur	sub-adult	unfused		1
Iron Age	B2 RHB	pit	91252	594	91240	0	Sheep/goat	Mandible	adult			1
Iron Age	B2 RHB	pit	91252	594	91240	0	Sheep/goat	Tooth, mandibular	adult			2
Iron Age	B2 RHB	pit	91252	594	91240	0	Sheep/goat	Tooth, maxillary	adult			2
Iron Age	B2 RHB	pit	91252	594	91240	0	Sheep/goat	Metacarpal				1
Iron Age	B2 RHB	pit	91252	594	91240	0	Sheep/goat	Premaxilla				1
Iron Age	B2 RHB	pit	91252	594	91240	0	Sheep/goat	Tibia				1
Iron Age	B2 RHB	pit	91252	594	91240	0	Sheep/goat	Tibia				1
Iron Age	B2 RHB	pit	91252	594	91240	522	Sheep-sized	Tooth				5
Iron Age	B2 RHB	pit	91252	594	91240	522	Sheep/goat	Mandible	adult			1
Iron Age	B2 RHA/RHE	burnt layer		602	90949	257	Mammal, unidentifiable	Tooth				10
Iron Age	B2 RHA/RHE	burnt layer		602	90949	257	Mammal, unidentifiable	Tooth				40
Iron Age	B2 RHA/RHE	burnt layer		602	90949	257	Cattle-sized	Tooth				1
Iron Age	B2 RHA/RHE	burnt layer		602	90949	257	Sheep-sized	Tooth				25
Iron Age	B2 RHA/RHE	burnt layer		602	90949	257	Mammal, unidentifiable	Tooth				15
Iron Age	B2 RHC	tumble		633	92116	0	Mammal, unidentifiable	Tooth				50
Bronze Age ?	B2 RHC	stony layer		637	92192	0	Sheep-sized	Long bone fragment				1
Bronze Age ?	B2 E area	old ground surface		638	92129	0	Cattle-sized	Tooth, maxillary				6
Iron Age	B2 passage-way	cobbles		646	92058	0	Cattle-sized	Tooth				30
Iron Age	B2 passage-way	occupation layer		657	92231	0	Cattle-sized	Tooth				50
Iron Age	B2 passage-way	pit	91329	692	91331	0	Mammal, unidentifiable	Tooth				50

Period	Area	Feature	Cut No	Find No	Context	Sample	Identification	Bone	Age	Fusion/ Distal	Modification	Nos
Iron Age	B2 passage-way	pit	91329	692	91331	0	Cattle-sized	Long bone fragment				2
Iron Age	B2 passage-way	pit	91329	692	91331	0	Cattle-sized	Tooth				10
Iron Age	B2 RHA/RHE	lens		694	90977	238	Cattle-sized	Tooth				20
Iron Age	B2 RHA/RHE	lens		694	90977	238	Sheep/goat	Tooth, maxillary				2
Iron Age	B2 RHA/RHE	lens		694	90977	238	Sheep/goat	Tooth, maxillary	adult			2
Iron Age	B2 passage-way	ditch	92288	719	92290	0	Cattle-sized	Tooth				30
Iron Age	B2 passage-way	ditch	92189	720	92190	0	Cattle-sized	Tooth				50
post-medieval ?	B2 E area	ploughsoil ?		722	92293	0	Cattle	Tooth				2
Bronze Age ?	B2 passage-way	ditch	91445	742	92412	0	Mammal, unidentifiable	Tooth				15
Bronze Age ?	B2 passage-way	ditch	91445	742	92412	0	Cattle-sized	Tooth				8
Bronze Age ?	B2 passage-way	ditch	91445	742	92412	0	Sheep/goat	Tooth, maxillary	adult			1
Iron Age	B2 passage-way	ditch	92288	743	92290	0	Mammal, unidentifiable	Tooth				15
Iron Age	B2 passage-way	ditch	92288	743	92290	0	Cattle-sized	Tooth				30
Bronze Age ?	B2 passage-way	ditch	91445	756	91446	0	Mammal, unidentifiable	Tooth				75
Bronze Age ?	B2 passage-way	ditch	91445	756	91446	0	Pig	Tooth	juvenile			1
Bronze Age ?	B2 passage-way	ditch	91445	756	91446	0	Pig	Tooth	sub-adult			1
Bronze Age ?	B2 RHC	ditch	92516	758	92518	0	Mammal, unidentifiable	Tooth				40
Bronze Age ?	B2 RHC	ditch	92516	758	92518	649	Mammal, unidentifiable	Tooth				5
Bronze Age ?	B2 RHC	deposit		773	92578	598	Horse	Tooth				6
Iron Age	F1 RHG	foundation slot	92731	792	92687	0	Mammal, unidentifiable	Unidentifiable				50
Iron Age	F1 RHG	foundation slot	92731	794	92687	0	Horse	Tooth, mandibular				50
Iron Age	F1 RHG	foundation slot	92731	795	92687	0	Horse	Tooth, mandibular	adult			1
Iron Age	F1 RHG	foundation slot	92731	795	92687	0	Horse	Tooth, mandibular				50
Iron Age	F1 RHG	foundation slot	92731	795	92687	0	Horse	Tooth, maxillary	adult			2

Period	Area	Feature	Cut No	Find No	Context	Sample	Identification	Bone	Age	Fusion/ Distal	Modification	Nos
Iron Age	F1 RHG	foundation slot	92731	795	92687	0	Horse	Tooth, maxillary				50
Iron Age	F1 RHG	foundation slot	92731	795	92687	0	Horse	Tooth	adult			90
Iron Age	F1 RHG	stone		803	92634	0	Horse	Tooth				2
Iron Age	F1 FE	stone spread		832	92862	0	Horse	Tooth, maxillary				40
Iron Age	F1 FE	stone spread		832	92862	0	Horse	Tooth				70
Iron Age	F1 RHI	patch		836	93065	0	Cattle-sized	Tooth				20
Iron Age	B2 RHA	layer		1206	90482	0	Sheep-sized	Tooth				4
unknown/post-medieval?	B1	pit	5053	1214	5054	54	Sheep-sized	Long bone			charred, black	1
Bronze Age ?	I	pit	18059	1238	18060	86	Sheep-sized	Long bone fragment				3
mid-Neolithic	I	pit	19075	1334	19076	1011	Sheep-sized	Long bone fragment				2
unknown	K3	wall ?	35001	1624	22050	0	Sheep-sized	Tooth				50
mid-Neolithic	Ia	pit	21221	1638	21222	1115	Sheep-sized	Long bone fragment				2
post-medieval ?	B2 E area	pit	92344	1736	92315	617	Cattle-sized	Tooth				1
Iron Age	B2 RHC	layer		1766	92042	512	Mammal, unidentifiable	Tooth				10
Bronze Age ?	B2 RHB	silt layer		1768	92539	0	Horse	Tooth				200
Bronze Age ?	B2 RHB	silt layer		1768	92539	0	Horse	Tooth				1
Bronze Age ?	B2 RHB	silt layer		1768	92539	660	Horse	Tooth, mandibular				10
Iron Age	F1 RHG	floor ?		1983	92685	706	Sheep-sized	Long bone fragment				3
Iron Age ?	B2 RHA	stakehole	92017	2051	92018	0	Pig	Tooth, mandibular	juvenile			2
Iron Age ?	B2 RHA	stakehole	92017	2051	92018	0	Pig	Tooth				1
Iron Age ?	B2 RHA	stakehole	92017	2051	92018	0	Pig	Tooth	juvenile			7
Iron Age ?	B2 RHA	stakehole	92017	2051	92018	0	Sheep/goat	Tooth, mandibular				20
Iron Age ?	B2 RHA	stakehole	92017	2051	92018	0	Sheep/goat	Tooth				10
Iron Age ?	B2 RHA	stakehole	92017	2051	92018	493	Mammal, unidentifiable	Tooth				25
Iron Age ?	B2 RHA	stakehole	92017	2051	92018	493	Pig	Tooth, mandibular	juvenile			1
Iron Age ?	B2 RHA	stakehole	92017	2051	92018	493	Pig	Tooth	juvenile			1
Iron Age ?	B2 RHA	stakehole	92017	2051	92018	493	Pig	Tooth	juvenile			5
Iron Age ?	B2 RHA	stakehole	92017	2051	92018	493	Sheep/goat	Tooth, mandibular				5
Iron Age	B2 passage-way	levelling layer		2059	91321	539	Mammal, unidentifiable	Tooth				2
Iron Age	B2 RHC	floor		2061	91924	490	Mammal, unidentifiable	Tooth				10
Iron Age	B2 passage-way	posthole	92431	2089	92423	634	Mammal, unidentifiable	Tooth				2

Period	Area	Feature	Cut No	Find No	Context	Sample	Identification	Bone	Age	Fusion/ Distal	Modification	Nos
Iron Age	B2 RHC	silting deposit		3078	92520	654	Pig	Tooth	juvenile			1
Iron Age	B2 passage-way	pit	91301	4027	91332	311	Cattle-sized	Tooth				25
Iron Age	B2 passage-way	pit	91498	4177	91500	365	Pig	Tooth	sub-adult			1
Iron Age	B2 passage-way	pit	91498	4177	91500	365	Pig	Tooth	sub-adult			1
Iron Age	B2 RHC	cobbled surface		4186	91648	427	Mammal, unidentifiable	Tooth				5
Iron Age	B2 RHD	posthole	90694	4206	90695	179	Sheep-sized	Rib				1
Iron Age	B2 RHA	posthole	90647	4262	90668	185	Mammal, unidentifiable	Tooth				1
Iron Age	B2 RHA	layer		4279	91011	503	Mammal, unidentifiable	Tooth				1
Iron Age	B2 RHC	pit	92337	4311	92338	598	Mammal, unidentifiable	Tooth				50
Iron Age	B2 RHC	pit	92337	4311	92338	598	Sheep-sized	Tooth				1
Iron Age	B2 RHC	pit	92337	4311	92338	598	Sheep/goat	Tooth, mandibular	adult			1
Iron Age	F1 RHG	foundation slot	92731	4322	92687	712	Horse	Tooth, maxillary	young adult			1
Bronze Age/post-med?	M4	ditch	40018	4343	40019	0	Cattle-sized	Long bone fragment				1
Bronze Age/post-med?	M4	ditch	40018	4343	40019	0	Cattle-sized	Long bone fragment				1
Iron Age	B2 RHC	cobbled surface		4363	91710	0	Horse	Tooth				30
Iron Age	B2 RHC	cobbled surface		4363	91710	462	Mammal, unidentifiable	Tooth				40
Iron Age	B2 RHC	cobbled surface		4363	91710	462	Sheep-sized	Tooth				75
Iron Age	B2 RHE	platform deposit		4371	91906	495	Mammal, unidentifiable	Tooth				1
Bronze Age ?	B2 E area	silt layer		4399	92542	0	Cattle	Humerus				1
Bronze Age ?	B2 E area	silt layer		4399	92542	0	Cattle	Radius				1
Bronze Age ?	B2 E area	silt layer		4399	92542	0	Cattle	Skull				1
medieval ?	K7	corn drier	80056	4436	80127	787	Sheep-sized	Tooth				30
Iron Age ?	K7	roof collapse ?		4456	80334	0	Cattle-sized	Tooth				10
medieval ?	K7	corn drier	80137	4463	80139	1403	Pig	Mandible				1
medieval ?	K7	corn drier	80137	4463	80139	1403	Pig	Skull				1

Period	Area	Feature	Cut No	Find No	Context	Sample	Identification	Bone	Age	Fusion/ Distal	Modification	Nos
Iron Age	F1 RHG	foundation slot	92731	4466	92687	709	Sheep/goat	Tooth, mandibular				5
Iron Age ?	K7	demolition deposit		5431	80326	1468	Sheep-sized	Long bone fragment				1
Iron Age	F1 FW	posthole	93079	5433	93088	814	Cattle-sized	Tooth				10
Iron Age	F1 RHI	tumble		5462	93507	0	Horse	Tooth				5
Iron Age	B2 passage-way	pit	91498	5486	91501	364	Cattle-sized	Tooth				25
Iron Age	B2 RHE	stakehole	91311	5490	91312	308	Mammal, unidentifiable	Tooth				1
Iron Age	B2 RHA	midden deposit		5509	91333	386	Sheep-sized	Long bone fragment				12
Iron Age	F1 RHI	gully	93504	5553	93503	5060	Cattle-sized	Tooth				10
Iron Age ?	K7	layer		5558	80268	1456	Sheep-sized	Tooth				1
Bronze Age/post-med?	M4	ditch	40033	5573	40035	1319	Cattle-sized	Long bone fragment				3
Iron Age	F1 RHI	gravel dump		5676	93008	0	Horse	Tooth, maxillary				15
Iron Age	F1 RHI	floor		5745	92946	0	Cattle-sized	Tooth				15
Iron Age	F1 RHI	floor		5745	92946	5029	Mammal, unidentifiable	Tooth				30
Iron Age	F1 RHI	floor		5745	92946	5029	Cattle-sized	Tooth				5
post-medieval ?	M4	posthole	40152	5763	40153	1374	Cattle	Horn core				14
post-medieval ?	M4	posthole	40152	5763	40153	1374	Cattle	Horn core				6
Bronze Age ?	B2 RHC	ditch	92516	5767	92517	648	Mammal, unidentifiable	Tooth				10
Bronze Age ?	B2 RHC	ditch	92516	5767	92517	648	Pig	Tooth				1
Bronze Age ?	B2 RHC	ditch	92516	5767	92517	648	Pig	Tooth	juvenile			1
Iron Age	B2 RHA/RHE	layer		5774	91114	270	Mammal, unidentifiable	Tooth				1
Iron Age ?	K7	drain	80259	5785	80390	1510	Sheep-sized	Tooth				3
Bronze Age ?	B2 E area	stone layer		5992	91589	0	Cattle	Tooth, mandibular	young adult			2
Bronze Age ?	B2 E area	stone layer		5992	91589	0	Cattle	Tooth, maxillary	young adult			1
post-medieval	B1	pit	14015	6100	14016	0	Cattle	Vertebra, cervical	infant			2
post-medieval	B1	pit	14015	6100	14016	0	Cattle	Humerus	infant	unfused		1
post-medieval	B1	pit	14015	6100	14016	0	Cattle	Mandible	infant			2
post-medieval	B1	pit	14015	6100	14016	0	Cattle	Tooth, maxillary deciduous	infant			2
post-medieval	B1	pit	14015	6100	14016	0	Cattle	Metacarpal				1

Period	Area	Feature	Cut No	Find No	Context	Sample	Identification	Bone	Age	Fusion/ Distal	Modification	Nos
post-medieval	B1	pit	14015	6100	14016	0	Cattle	Skull	infant			1
post-medieval	I	gully	18117	6119	18118	0	Sheep/goat	Humerus		fused		1
post-medieval		gully	18117	6119	18118	6119	Sheep/goat	Humerus		fused		1
Iron Age	B2 RHA	layer		6367	91000	253	Sheep-sized	Tooth				5
Iron Age	F1 RHH	general layer		6502	92923	0	Cattle-sized	Rib				6
TOTAL												**2275**

Part XVI: Beetle and Plant Macrofossils from the marsh in area K

Beetle and Plant Macrofossil Assessment from Parc Cybi (Area K)
E. Kitchen and Dr B. R. Gearey MIfA

Summary
This report describes the assessment of seven bulk samples for plant macrofossil and coleopteran (beetle) remains. The preservation of plant macrofossils was good and the range of species recorded demonstrate a transition from an acidic mire with areas of open water to a damp sedge and grass dominated fen. The preservation of beetles was poor and the range of taxa recorded does not provide significant information regarding past environmental change. No further work on these samples is recommended.

Introduction
Birmingham Archaeo-Environmental was subcontracted by Gwynedd Archaeological Trust to carry out a plant macrofossil and beetle assessment of sediment samples from the archaeological site of Parc Cybi, Anglesey. Seven bulk samples were collected from an area of wetland (Area K) previously identified as of palaeoenvironmental potential (Gearey *et al*. 2008). The samples were taken from three contexts (80294, 80295 and 80296) which spanned a 1 metre peat sequence. The basal context (80296) was a dense moss peat and the two upper contexts were a dark, brown peat with visible remains of monocotyledonous plants (e.g. grasses, sedges).

Methods
The material was processed using standard flotation methods described by Kenward *et al* (1980). The flot (the sum of the material from each sample that floats) was examined under a low-power binocular microscope at magnifications between x12 and x40. A four point semi-quantative scale was used to assess the abundance of plant material and other components, ranging from `1`- one or a few specimens (less than an estimated six per kg of raw sediment) to`4`- abundant remains (many species per kg, or a major component of the matrix). One Petri dish of each sample was assessed and where possible plant material and insects identified to species level. Plant macrofossil identification was assisted by the keys in Chinery (1987) and Fitter and Fitter (1984).

Results
Plant Macrofossil Assessment
All six samples produced a large amount of waterlogged plant material and unidentifiable herbaceous detritus (see Table XVI.1). The preservation of the identifiable Beetle and Plant Macrofossil Assessment from Parc Cybi (Area K) remains was recorded as good for all samples, with quantities of identifiable seeds produced from samples 5515, 5517, 5518 and 5525 (see Table XVI.2). The two basal samples (5518 and 5517) contained *Menyanthes trifoliata* (bog bean) and *Potamogeton polygonifolius* (bog weed) seeds. These species are both typical of shallow, acidic and peaty water bodies. There is a transition in both the stratigraphy and the plant macrofossil assemblage in sample 5516, with *Carex* spp. (sedge family) and *Ranunculus* spp. (Buttercup family) appearing at the point the sediment trends into dark brown monocot rich peat. Samples 5515, 5514, and 5513 also produced *Ranunculus* spp. and *Carex* spp., with *Rumex* spp. recorded in 5515. The sample from the top of the sequence (5525) contained *Carex* spp., *Cyperus* sp. (Galingale sedge), *Scleranthus annuus* (knot grass), *Festuca* spp. (fescue grass) and *Dipsacus pilosus* (small teasel) seeds. These species are indicative of damp, marshy grassland. This sequence reflects a hydroseral transition from an open mire with areas of standing water (5518 and 5517) to a sedge dominated semi-terrestrial mire (5513, 5514 and 5516) with a range of plants typical of open, damp wetland environments. There are no plant remains recorded which clearly derive from the dryland areas around the wetland or that are indicative of human activity.

Beetle Assessment
All seven samples contained insect sclerites including elytra, pronota and head capsules. The numbers of individuals were generally low, reflecting only a few specimens per kg of raw sediment (see Table XVI.3). Abundances were slightly greater in samples 5515 and 5517. Overall, the majority of the insect sclerites were reasonably well preserved, although some elytra appeared `washed out` and flimsy which can be indicative of high levels of decay. In addition, there is some suggestion of the presence of re-worked material, with Samples 5514 and 5517 producing a mix of both well preserved and degraded individuals. *Bembidion* and *Stenus* were identified but cannot be readily identified to species level. *Bembidion* species are always found in close proximity to water, whilst *Stenus* species occupy a wide range of habitats.

Evaluation of potential

Whilst the plant macrofossils were well preserved and abundant, the range of taxa recorded is associated with a natural sequence of wetland development from an environment with shallow, open water to a sedge fen. The interpretative value of the plant macrofossil record is compromised by the poor preservation of microfossils. The low diversity and concentration of beetle remains in all seven samples prohibit detailed comment regarding the palaeoenvironment, with those species which are recorded found in a wide range of open habitats.

These largely negative results support those from palynological assessment of a monolith sequence from this area. Pollen concentrations were also generally low and preservation poor to medium for the majority of samples (Gearey and Hopla, 2010), but an early Holocene timeframe was inferred due to the lack of tree and shrub pollen. The poor preservation of insects and pollen may thus be a reflection of conditions inimical to the preservation of microfossils, such as relatively dry conditions during sediment accumulation. Alternatively, the low concentrations of these remains might be a result of generally low biomass during the earlier Holocene. No further analysis is recommended on the beetle samples. Further analyses of the plant macrofossil samples are unlikely to provide significant information regarding the wider environment and hence no further work is recommended.

Archive

All bulk samples and subsequent flots are currently fully processed and are stored at Birmingham Archaeo-Environmental, University of Birmingham, B15 2TT.

References

Chinery, M. 1987. Field guide to the plant life of Britain and Europe. London.

Fitter, R., Fitter, A. 1984.Collins guide to the grasses, sedges, rushes and ferns of Britain and Northern Europe. Glasgow.

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Kenward, H.K., Hall, A.R. and Jones, A.K.G. (1980) A tested set of techniques for the extraction of plant and animal macrofossils from waterlogged archaeological deposits Science and Archaeology 22 Websites. http://seeds.eldoc.ub.rug.nl/. 2006 GIA: Het GIA (Groningen Instituut voor Archeologie) heeft de rechten van alle afbeeldingen in de Digitale Zadenatlas van Nederland. Alle rechten voorbehouden. Accessed 30/11/2009.

Table XVI.1. Plant macrofossil results of the analysis with a semi-quantitative score of the components of the samples (based on four point scale).components of the samples (based on four point scale).

Sample No	Volume (litres)	Bud Scales	Catkins	Ceramic Building Material (CBM) fgts.	Charcoal fgts.	Fish scale	Herbaceous detritus	Insect fgts.	Leaf fgts.	Moss fgts.	Plant macros (w/l)	Sand	Shell fgts.	Snails	Stones	Twig Fgts.	Undisaggregated	Wood fgts.
5513	10l	/	/	/	/	/	4	1	/	/	2	/	/	/	/	1	/	/
5514	10l	/	/	/	/	/	4	1	/	1	2	/	/	/	/	/	/	/
5515	10l	/	/	/	/	/	4	2	1	1	4	/	/	/	/	1	/	/
5516	10l	/	/	/	/	/	4	1	3	4	4	/	/	/	/	2	/	/
5517	10l	/	/	/	/	/	4	2	3	4	4	/	/	/	/	1	/	/
5518	6l	/	/	/	/	/	4	1	/	4	4	/	/	/	/	/	/	/
5525	10l	/	/	/	/	/	4	1	/	1	4	/	/	/	/	/	/	/

Table XVI.2. Plant macrofossils recorded in the assessment of samples from Parc Cybi

Sample number	Species Recorded
5525	*Carex* spp., *Cyperus* sp., *Sclerathus annus* sp., *Festuca* spp., *Dipsacus pilosus*
5513	*Ranuculus* sp., *Carex* spp.
5514	*Ranunculus* sp *and Carex* spp.
5515	*Carex* spp., *Ranunculus* sp, *Rumex* spp.
5516	*Menyanthes trifoliata, Carex* spp, *Ranunculus* spp.
5517	*Menyanthes trifoliata*
5518	*Menyanthes trifoliata, Potamogeton polygonifolius*

Table XVI.3. Insect preservation and abundance (abundance based on four point scale)

Sample no.	Preservation	Abundance
5525	good	1
5513	average	1
5514	good	2
5515	good	1
5516	good	2
5517	poor	1
5518	poor	1

Part XVII: Molluscs

Molluscs from Parc Cybi: a basic assessment
Andrew Moss

Summary
Twelve context from across the site produced marine mollusc shells. These were inspected and identified by Andrew Moss.

Methodology
Mollusc shells were hand collected from various context across the site. These were rapidly inspected to identify species. The results are given in the following table.

Area	Context number	Find number	Description and notes
B1	05050	1313	2 *Patella* and 1 fragment of ? *Littorina*
B1	05052	1256	*Patella vulgata* 1
B1	05054	5870	Numerous tiny fragments of *Patella*
B1	05054	1287	Numerous tiny fragments of *Patella*
B1	05054	1228	64 *Patella vulgate*; 10 *Littorina littorea*
E	31181	4427	56 apexes of *Patella vulgata* (Common Limpet) plus 1 whole *Littorina littorea* (Edible Winkle)
F1	92923	827	Shell fragmented on lifting but appeared to be mussel shell when seen in ground. When inspected remains consists of tiny mineral grains showing striations, ranging from purple to grey-white. Some is distinctly fibrous material?
I	18011	6091	*Ostrea edulis* (edible Oyster) 1 valve (left lower) plus fragment
K9B	80858	6129	Tiny fragments of *Patella*. 8 apexes counted
K9B	80858	6130	Tiny fragments of *Patella*.
L3	21194	1268	*Patella vulgata* 13 apexes plus fragments
L3	21194	4306	Fragments of *Patella*

Evaluation of potential
Taken together this looks like a food assemblage with no normal beach types. Oddly there are no whelks or cockles, both of which have fairly thick shells and should have been preserved if there. Mussels tend to be a bit fragile but usually even fragments have a purplish tinge to them. The only mussels were so fragmentary as to be unidentifiable without site notes.

Part XVIII: Wood

Parc Cybi wood
Kristina Krawiec

Summary
A total of 14 wood samples were examined for indications of woodworking and woodland management.

Methodology
The items were scored using the condition scale developed by the Humber Wetlands Project (Van De Noort, *et al.*, 1995; Table 15.1). All pieces scored a 2 being well preserved but with little indication of being worked. The species of some of the items was identifiable by the naked eye. A catalogue of the wood is provided in Table XVIII.1.

Proposals for further work
Only 2 items are thought to be woodworking debris, all other samples were either natural roundwood debris or woody peat samples. As an assemblage it is of little interpretable value as only a small percentage is possibly worked. No further analysis on this material is recommended, with the exception of samples 5037, 5038 and 5050 from the edge of the marsh in area F, which should be identified to species.

Table XVIII.1: wood catalogue
Key
Rw = roundwood
Phrag = *Phragmites*
BSH = Bark Sapwood Heartwood
RAD = radial

Sample no	Context no	Description	Species	Cond	B/S/H	Dimensions
18	3722	Degraded debris, fibrous	*Quercus*	2	H	190mm leng 50x20mm dia
5037	93358	Bark/plant matter in peat matrix	*Betula* (Birch), identified from two very compressed twigs			
5038	93479	Compressed rw twigs	Too small to identifiy	2	BSH	150mm leng 30x20mm dia
5048	93394	Rw gnarly branch, pronounced curve, root damage	Oak	2	SH	1200mm leng 2x20mm dia
5050	93493	Mixed rw natural debris	Salix (Willow) in very poor condition microscopically	BSH	2	Too many and too small to measure
5052	93493	Gnarly wood, possible scar	?	2	BSH	
5062	03043	Natural rw twig	Fraxinus?	SH	2	450mm leng 150m dia
5063	03043	Natural rw debris, many pieces	?	BSH	2	Too many and too small to measure
5508	31562	Dried sediment, rooty silt clay				
5510	80295	Quartered RAD split chip, very soft, machine and reed damage, no toolmarks, worked?	?	2	SH	280mm leng 240x150mm dia
5511	80295	Rw natural debris, phrag. damage	?	2	SH	650mm leng 160mmdia
5526	80295 1of 5	RAD split chip, surface degraded	?	2	SH	200m leng 100mm dia
5526	80295 2of 5	Rw twig	?	2	SH	150mm leng 240x180mm dia
5526	80295	Rw twig. Natural debris	?	2	SH	

Sample no	Context no	Description	Species	Cond	B/S/H	Dimensions
	3of 5					
5526	80295	Natural rw twig	?	BSH	2	300mm leng
	4of 5					150mm dia
5526	80295	Rw nat debris, radial drying	?	2	SH	790mm leng
	5 of 5	cracks, phrag damage				160-100mm dia

Part XIX: Charred plant macrofossils and charcoal

Part XIX.1: Evaluation of plant macrofossils

Dr. Pam Grinter

Summary

This report describes the plant macrofossil assessment of sub-samples from the archaeological site of Parc Cybi. A total of 1979 samples were examined and 292 samples contained plant macrofossil remains worthy of further analyses. This would contribute to the understanding of human activity on the site as well as the regional picture of human activity within the prehistoric period as very little charred material from Anglesey has been analysed to date.

Introduction

A programme of soil sampling was carried out which included the collection and floatation of standard 20 litre soil samples (where possible) from sealed contexts. A total of 1979 of these samples were submitted for an evaluation of their plant macrofossil content. A full list of these samples is provided in Appendices 1 and 2 with their context details, feature numbers and contents. The aims of the assessment were:

To assess the form of preservation (i.e. charred, waterlogged) of any macrofossils;
To assess the potential of any such macrofossils to provide information regarding site environment and economy;
To make recommendations regarding further analyses of the samples.

Methods

Following description and selection samples of raw sediment were processed by staff from Gwynedd Archaeological Trust using standard water flotation methods for the extraction of environmental remains. The flot (the sum of the material from each sample that floats) was sieved to 0.3mm and air dried. The heavy residue (the material which does not float) was not examined by the author, and therefore the results presented here are based entirely on the material from the flot.

The flots were examined under a low-power binocular microscope at magnifications between x12 and x40. A four point semi quantitative scale was used, from + less than 10 items to +++ >30 items (many specimens per kg or a major component of the matrix). For charcoal present a five point scale used, '+' less than 10ml to '!!' for more than 300 ml. Nomenclature follows Stace (1997) for indigenous taxa and Zohary and Hopf (2000) for 'economic' plants.

Results

Appendices XIX.1.1 and 2 presents the results of the assessment. The results are provided for each of the areas excavated and are listed in sample number order.

The organic fraction of the samples consists for the most part of material preserved by charring. 292 samples from significant contexts contained enough identifiable charcoal to justify further analysis. An additional 326 samples contain charcoal which may be identifiable for radiocarbon dating if required. Other identifiable charred plant remains were present in 40 samples (Tables XIX.1.1 and 2). Although the preservation of this material is generally good, the range of taxa preserved is restricted, although barley (*Hordeum vulgare* L.) and fragments of hazelnut shell (*Corylus avellana* L.) were recorded. Of the samples with cereal grain 3 were prehistoric, 15 Roman period and 5 medieval, with no grain recognised from the early Neolithic samples. The hazelnut shells came from 4 early Neolithic samples, 8 later Neolithic, 3 Bronze Age and 2 generally prehistoric.

One sample (1374) contained fragments of what appear to be animal bone and another sample also contained burnt clay (403). These may require integration with the finds archive.

The table in Appendix XIX.1.2 lists samples suitable for radiocarbon dating. This is based on the presence of suitably sized fragments of wood charcoal which would require species identification prior to submission for dating. Samples which contain significant amounts of identifiable charcoal and other plant remains (listed in Table 1) would also be suitable for radiocarbon dating.

The general lack of identifiable plant macrofossils other than charcoal at Parc Cybi suggests that soil conditions at the site were generally inimical to the preservation of plant macrofossils. It is also possible that the absence of identifiable material reflects an actual low density of deposition in the past.

Conclusions

There would appear to have been little archaeo-botanical work carried out on Anglesey. The English Heritage Environmental Archaeology Bibliography database (http://ads.ahds.ac.uk/catalogue/specColl/eab_eh_2004 last modified October 2009) lists only three sites on Anglesey which have produced plant remains (Hillman, 1981, Williams 1999, and Caseldine, 1997). A further report by Caseldine from Castellior, Anglesey (Caseldine, 2004), would appear to be the sum of the published work. The samples from Parc Cybi that contain identifiable plant remains will provide valuable information regarding the site and will also add to this regional picture.

Recommendations for further analysis

It is recommended that full analyses of the 292 samples listed in Appendix XIX.1.1 are carried out. No further interpretable proxy evidence such as waterlogged plant remains, molluscs or insects were recovered from the remaining samples, hence further analysis of these samples is not recommended. Taphonomic processes at the site clearly preclude the preservation of abundant identifiable or interpretable, site-specific non-charcoal plant macrofossil evidence, limiting the information that might be obtained. The absence of early Neolithic grain is particularly disappointing. However, the charcoal should give an indication of tree species present, possible changes in fuel wood selection over time and may answer specific questions, such as whether the burnt deposits in the roundhouse in area K7 represents the destruction of a thatched roof. There is also the opportunity to use some of the charred material to provide chronological control for the site based on radiocarbon dates as described in the appropriate section below.

Archive

The archive and all paper records pertaining to it are currently held at Birmingham Archaeo-Environmental.

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Table XIX.1.1: Samples with charred grain

Period	Sample	Context	Area	Grain	Comments on Flot
medieval?	1026	21052	K	++	Barley
medieval?	788	80126	K7	+++	Barley
medieval?	789	80127	K7	+++	Barley
medieval?	1123	21231	Ia	+++	
medieval?	1403	80139	K7	+++	Barley
Prehistoric?	1116	22156	B3	+++	Barley
Prehistoric?	1117	22157	B3	+++	Barley
Prehistoric?	1015	19085	I	+	
Romano-British	5600	80830	K9B	+++	barley
Romano-British	5601	80837	K9B	++	barley

Period	Sample	Context	Area	Grain	Comments on Flot
Romano-British	5602	80837	K9B	+++	barley
Romano-British	5609	80885	K9B	+++	barley
Romano-British	5610	80882	K9B	++	barley
Romano-British	5611	80887	K9B	++	barley
Romano-British	5613	80811	K9B	+	barley
Romano-British	5619	80899	K9B	+	barley
Romano-British	5670	81006	K9B	++	barley
Romano-British	5671	80921	K9B	++	barley
Romano-British	5681	81027	K9B	+++	Barley/wheat
Romano-British	5682	81034	K9B	+++	Barley
Romano-British	5685	81072	K9B	+++	Barley
Romano-British	5693	81073	K9B	+++	Barley
Romano-British	5712	81144	K9B	+	Cereal

Table XIX.1.2: samples with charred hazelnut shells

Period	Sample	Context	Area	Hazelnuts
Bronze Age	1011	19076	I	++
Bronze Age	1190	60163	D3	+++
Bronze Age	1011	19076	I	+
Early Neolithic	1141	50122	H	++
Early Neolithic	1176	50172	H	+
Early Neolithic	1284	50159	H	+++
Early Neolithic	965	31606	E	+
Late Neolithic	1184	60124	D3	+++
Late Neolithic	1103	21216	Ia	+
Mid Neolithic	1101	21213	Ia	+
Mid Neolithic	1102	21211	Ia	+
Mid Neolithic	1108	21218	Ia	+
Mid Neolithic	1112	21220	Ia	+
Mid Neolithic	1113	21224	Ia	+
Mid Neolithic	5150	80609	K9	++
Prehistoric	1256	70182	J	++
Prehistoric	5822	70536	J3	+

Appendix XIX.1.1: Table of flots proposed for further analysis

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
7	B1	7051	pit	Prehistoric?	80	-	-	!!	-		-	-	-	-	Y	Y	
9	B1	8048	pit	Prehistoric?	39	-	-	++	-	-	-	-	-	-	Y	Y	
15	B1	10002	pit	Bronze Age?	30	-	-	+++	-	-	-	-	-	-	Y	Y	Cinder/slag
17	B1	10002	pit	Bronze Age?	32	-	-	+++	-	-	-	-	-	-	Y	Y	
18	B1	10003	pit	Bronze Age?	38	-	-	+++	-	-	-	-	-	-	Y	Y	
22	B1	7056	pit?	Prehistoric	90	-	-	!!	-	-	-	-	-	-	Y	Y	
27	B1	10010	pit	Prehistoric	63	-	-	!!	-	-	-	-	-	-	Y	Y	
28	B1	10011	pit	Prehistoric	37	-	-	+++	-	-	-	-	-	-	Y	Y	
29	B1	10010	pit	Prehistoric	74	-	-	!!	-	-	-	-	-	-	Y	Y	
30	B1	10013	pit	Prehistoric	262	-	-	!!	-	-	-	-	-	-	Y	Y	
32	B3	11013	pit?	Unknown	57	-	-	!!	-	-	-	-	-	-	Y	Y	
46	B1	10017	pit	Unknown	119	-	-	!!	-	-	-	-	-	-	Y	Y	
50	B1	13009	gully	Unknown	88	-	-	++	-	-	-	-	-	-	Y	Y	
51	B1	13010	gully	Unknown	51	-	-	++	-	-	-	-	-	-	Y	Y	
53	B1	13012	pit	Unknown	63	-	-	!!	-	-	-	-	-	-	Y	Y	
57	B1	10018	pit	Prehistoric	211	-	-	!!	-	-	-	-	-	-	Y	Y	
59	B1	13016	pit	Prehistoric?	18	-	-	+++	-	-	-	-	-	-	Y	Y	
62	B1	11018	pit	Prehistoric	198	-	-	!!	-	-	-	-	-	-	Y	N	
63	B1	11020	pit	Prehistoric?	156	-	-	!!	-	-	-	-	-	-	Y	Y	
65	B1	11020	pit	Prehistoric?	75	-	-	!!	-	-	-	-	-	-	Y	Y	
66	B1	11021	pit	Prehistoric?	131	-	-	!!	-	-	-	-	-	-	Y	Y	
86	I	18060	pit	Prehistoric?	243	-	-	ü	-	-	-	-	-	-	Y	Y	
88	Ia	18064	pit	Bronze Age/Mid Neolithic	109	-	-	+++	-	-	-	-	-	-	Y	Y	
92	H	20048	posthole	Early Neolithic	25	-	-	++	-	-	-	-	-	-	Y	Y	
100	A	7022	pit	Prehistoric?	245	-	-	!!	-	-	-	-	-	-	Y	Y	
145	B2 RHA	90571	drain	Iron Age	48	-	-	++	-	-	-	-	-	-	Y	Y	
163	B2 RHA	90638	hearth?	Iron Age	83	-	-	+++	-	-	-	-	-	-	Y	Y	
164	B2 RHA	90638	hearth?	Iron Age	221	-	-	++	-	-	-	-	-	-	Y	Y	
165	B2 RHA	90638	hearth?	Iron Age	111	-	-	++	-	-	-	-	-	-	Y	Y	
166	B2 RHA	90638	hearth?	Iron Age	252	-	-	++	-	-	-	-	-	-	Y	Y	
207	B2 RHA	90833	rubble	Iron Age	118	-	-	++	-	-	-	-	-	-	Y	Y	
211	B2 RHA	90861	stakehole	Iron Age	39	-	-	++	-	-	-	-	-	-	Y	Y	
222	B2 RHB	90899	floor	Iron Age	46	-	-	-	-	-	-	-	-	-	Y	Y	
226	B2 RHB	90916	stakehole	Iron Age	10	-	-	++	-	-	-	-	-	-	Y	Y	
227	B2 RHB	90925	floor	Iron Age	47	-	-	++	-	-	-	-	-	-	Y	Y	
237	B2 RHB	90875		Iron Age	54	-	-	++	-	-	-	-	-	-	Y	Y	
240	B2 RHB	90986	posthole	Iron Age	37	-	-	++	-	-	-	-	-	-	Y	Y	
241	B2 passage-	90794	layer	Iron Age	43	-	-	ü	-	-	-	-	-	-	Y	Y	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
	way																
242	B2 RHB	90988	pit	Iron Age	30	-	-	++	-	-	-	-	-	-	Y	Y	
246	B2 RHA	90960		Iron Age	50	-	-	++	-	-	-	-	-	-	Y	Y	
249	B2 RHD	90999	pit	Iron Age	44	-	-	+++	-	-	-	-	-	-	Y	Y	
260	B2 RHC	91712		Iron Age	33	-	-	+++	-	-	-	-	-	-	Y	Y	
267	B2 RHA	90970		Iron Age	56	-	-	ü	-	-	-	-	-	-	Y	Y	
267	B2 RHA	90970		Iron Age	23	-	-	++	-	-	-	-	-	-	Y	Y	
268	B2 Laneside	91102		Romano-British?	24	-	-	-	-	-	-	-	-	-	Y	Y	
277	B2 RHA	91148	pit? Posthole?	Iron Age	9	-	-	++	-	-	-	-	-	-	Y	Y	
340	B2 RHA	90596	post slot	Iron Age	65	-	-	++	-	-	-	-	-	-	Y	N	
346	B2 RHA	91011		Iron Age	52	-	-	+++	-	-	-	-	-	-	Y	N	
350	B2 RHB	91158		Iron Age	61	-	-	+++	-	-	-	-	-	-	Y	Y	
364	B2 passage-way	91501	pit	Iron Age	97	-	-	ü	-	-	-	-	-	-	Y	Y	
367	B2 RHA	91520	pit	Iron Age	20	-	-	-	-	-	-	-	-	-	Y	Y	
369	B2 RHC	91544	burnt patch	Iron Age	122	-	-	!!	-	-	-	-	-	-	Y	N	
372	B2 RHC	91434	stone slab	Iron Age	107	-	-	!!	-	-	-	-	-	-	Y	Y	
386	B2 passage-way	91333	midden deposit	Iron Age	194	-	-	!!	-	-	-	-	-	-	Y	Y	
392	B2 RHB	90882		Iron Age	28	-	-	++	-	-	-	-	-	-	Y	Y	
393	B2 RHB	91620	hearth	Iron Age	81	-	-	+++	-	-	-	-	-	-	Y	Y	
398	B2 RHB	91664	floor	Iron Age	114	-	-	!!	-	-	-	-	-	-	Y	Y	
409	B2 RHC	91681	hearth	Iron Age	174	-	-	!!	-	-	-	-	-	-	Y	Y	
430	B2 RHC	91738	pit	Iron Age	56	-	-	++	-	-	-	-	-	-	Y	Y	
444	B2 RHB	91777	pit	Iron Age	56	-	-	++	-	-	-	-	-	-	Y	Y	
448	B2 RHA	90924		Iron Age	57	-	-	+++	-	-	-	-	-	-	Y	N	
449	B2 RHB	91786	pit	Iron Age	62	-	-	+++	-	-	-	-	-	-	Y	Y	
466	B2 RHC	91882	wall	Iron Age	24	-	-	++	-	-	-	-	-	-	Y	N	
470	B2 RHB	91786	pit	Iron Age	66	-	-	++	-	-	-	-	-	-	Y	Y	
473	B2 RHB	91915	posthole	Iron Age	40	-	-	++	-	-	-	-	-	-	Y	Y	
476	B2 RHA	91011		Iron Age	64	-	-	+++	-	-	-	-	-	-	Y	Y	
479	B2 RHB	91060	slot	Iron Age	81	-	-	!!	-	-	-	-	-	-	Y	Y	
485	B2 RHB	90990	floor	Iron Age	15	-	-	ü	-	-	-	-	-	-	Y	Y	
495	B2 RHE	91906	make up layer	Iron Age	126	-	-	!!	-	-	-	-	-	-	Y	Y	
501	B2 passage-way	92059	charcoal deposit layer	Iron Age	112	-	-	+++	-	-	-	-	-	-	Y	Y	
555	B2	91607	layer	Iron Age	50	-	-	+++	-	-	-	-	-	-	Y	N	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
	passage-way																
606	B2 RHE	92327	pit	Iron Age	38	-	-	++	-	-	-	-	-	-	Y	N	
632	B2 passage-way	92408	pit	Iron Age	269	-	-	!!	-	-	-	-	-	-	Y	Y	
682	B2 RHE	92141	hearth	Iron Age	39	-	-	++	-	-	-	-	-	-	Y	Y	
683	B2 RHE	92147	floor?	Iron Age	5	-	-	+++	-	-	-	-	-	-	Y	Y	
684	B2 RHE	92148	floor	Iron Age	85	-	-	++	-	-	-	-	-	-	Y	Y	
685	B2 RHE	92145	hearth?	Iron Age	158	-	-	!!	-	-	-	-	-	-	Y	Y	
710	F1 RHG	92633	stone	Iron Age	16	-	-	++	-	-	-	-	-	-	Y	Y	
713	F1 RHG	92691		Iron Age	101	-	-	++	-	-	-	-	-	-	Y	Y	
716	F1 FW	92768	posthole	Iron Age	19	-	-	++	-	-	-	-	-	-	Y	N	
733	K7	80013	pit	early medieval	238	-	-	!!	-	-	-	-	-	-	Y	Y	
741	K7	80057	corn drier	Med?	188	-	-	!!	-	-	-	-	-	-	Y	Y	
742	K7	80058	corn drier	Med?	254	-	-	!!	-	-	-	-	-	-	Y	Y	
787	K7	80125	corn drier	Med?	112	-	-	!!	-	-	-	-	-	-	Y	N	
788	K7	80126	corn drier	Med?	116	-	-	!!	-	-	+++	-	-	-	Y	Y	Barley
789	K7	80127	corn drier	Med?	62	-	-	ü	-	-	+++	-	-	-	Y	Y	Barley
810	F1 RHI	92948	posthole	Iron Age	209	-	-	!!	-	-	-	-	-	-	Y	N	
821	E (hollow)	31004	posthole	Neolithic	50	-	-	ü	-	-	-	-	-	-	Y	N	
850	E (hollow)	31022	pit	Neolithic	37	-	-	++	-	-	-	-	-	-	Y	Y	
860	E (hollow)	31024	hollow	Neolithic	115	-	-	++	-	-	-	-	-	-	Y	Y	
870	E (hollow)	31148	pit	Neolithic	20	-	-	++	-	-	-	-	-	-	Y	Y	
871	E (hollow)	31149	pit	Neolithic	69	-	-	!!	-	-	-	-	-	-	Y	N	
874	E (hollow)	31139	pit	Neolithic	96	-	-	!!	-	-	-	-	-	-	Y	Y	
875	E (hollow)	31140	pit	Neolithic	8	-	-	++	-	-	-	-	-	-	Y	Y	
891	E (hollow)	31208	pit	Neolithic	131	-	-	!!	-	-	-	-	-	-	Y	Y	
892	E (hollow)	31209	Layer	Neolithic	10	-	-	++	-	-	-	-	-	-	Y	N	
894	E (hollow)	31207	burnt patch	Neolithic	69	-	-	!!	-	-	-	-	-	-	Y	Y	
900	E (BM)	31284	burnt mound pit	Prehistoric	14	-	-	++	-	-	-	-	-	-	Y	Y	
908	E (BM)	31304	pit	Prehistoric	13	-	-	++	-	-	-	-	-	-	Y	Y	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
917	E (BM)	31370	pit	Prehistoric	13	-	-	++	-	-	-	-	-	-	Y	Y	
922	E (BM)	31288	pit	Prehistoric	39	-	-	++	-	-	-	-	-	-	Y	Y	
923	E (BM)	31435	pit	Prehistoric	1195	-	-	!!	-	-	-	-	-	-	Y	Y	
924	E (hollow)	31510	pit	Neolithic	24	-	-	++	-	-	-	-	-	-	Y	Y	
925	E (hollow)	31512	pit	Early Bronze Age?	25	-	-	++	-	-	-	-	-	-	Y	Y	
947	E (BM)	31561	pit	Prehistoric	23	-	-	++	-	-	-	-	-	-	Y	Y	
952	E (BM)	31559	pit	Prehistoric	22	-	-	++	-	-	-	-	-	-	Y	Y	
955	E (BM)	31422	burnt mound	Prehistoric	48	-	-	!!	-	-	-	-	-	-	Y	Y	
956	E (BM)	31429	burnt mound	Prehistoric	82	-	-	!!	-	-	-	-	-	-	Y	Y	
960	E (BM)	31594	well/trough	Prehistoric	51	-	-	!!	-	-	-	-	-	-	Y	Y	
961	E (hollow)	31596	pit	Neolithic	224	-	-	!!	-	-	-	-	-	-	Y	Y	
962	E (BM)	31597	burnt mound	Prehistoric	30	-	-	++	-	-	-	-	-	-	Y	N	
965	E (hollow)	31606	pit	Neolithic	2	-	-	+	-	-	-	+	-	-	Y	Y	
967	E (hollow)	31602	pit	Neolithic	22	-	-	+++	-	-	-	-	-	-	Y	Y	
969	E (hollow)	31611	posthole	Neolithic	24	-	-	ü	-	-	-	-	-	-	Y	N	
972	F1 FE	93171	OGS	Bronze Age	71	-	-	!!	-	-	-	-	-	-	Y	Y	
996	F1 FW	93255	trough	Romano-British?	30	-	-	++	-	-	-	-	-	-	Y	Y	
1003	K2	20078	pit?	Prehistoric?	23	-	-	++	-	-	-	-	-	-	Y	N	
1004	K1	19110	fire pit	Bronze Age	110	-	-	!!	-	-	-	-	-	-	Y	Y	
1008	I	18079	pit	Prehistoric	40	-	-	++	-	-	-	-	-	-	Y	Y	
1010	I	21041	pit	Prehistoric?	592	-	-	!!	-	-	-	-	-	-	Y	Y	
1011	I	19076	pit	Bronze Age	1	-	-	-	-	-	-	++	-	-	Y	Y	
1011	I	19076	pit	Bronze Age	37	-	-	+	-	-	-	+	-	-	Y	Y	
1012	I	21043	pit	Prehistoric?	1042	-	-	!!	-	-	-	-	-	-	Y	Y	
1012	I	21043	pit	Prehistoric?	1274	-	-	!!	-	-	-	-	-	-	Y	Y	
1015	I	19085	postpipe?	Prehistoric?	22	-	-	+	-	-	+	-	-	-	Y	Y	
1020	K1	18125	fire pit?	Bronze Age	283	-	-	!!	-	-	-	-	-	-	Y	Y	
1026	K1	21052	corn drier	Med?	811	-	-	!!	-	-	++	-	-	-	Y	Y	Barley
1027	K1	21053	corn drier	Med?	201	-	-	!!	-	-	-	-	-	-	Y	Y	
1038	K1	18157	pit	Bronze Age?	106	-	-	!!	-	-	-	-	-	-	Y	Y	
1040	K1	21025	hollow	Prehistoric?	11	-	-	++	-	-		-	-	-	Y	Y	
1045	K1	18171	posthole	Prehistoric?	195	-	-	!!	-	-	-	-	-	-	Y	Y	
1047	K1	19114	pit	Prehist?	87	-	-	!!	-	-	-	-	-	-	Y	Y	
1048	K1	21087	pit	Prehistoric?	48	-	-	!!	-	-	-	-	-	-	Y	Y	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
1050	K1	21088	pit	Bronze Age?	112	-	-	!!	-	-	-	-	-	-	Y	Y	
1051	K1	18170	posthole	Prehistoric?	67	-	-	!!	-	-	-	-	-	-	Y	Y	
1052	K1	19118	pit	Prehist?	27	-	-	ü	-	-	-	-	-	-	Y	Y	
1053	K1	18173	posthole	Prehistoric	105	-	-	!!	-	-	-	-	-	-	Y	Y	
1056	M2	22058	pit	Prehistoric?	90	-	-	!!	-	-	-	-	-	-	Y	Y	
1061	M2	22077	pit	Bronze Age	180	-	-	!!	-	-	-	-	-	-	Y	Y	
1064	H	2100	hearth	Neolithic	651	-	-	!!	-	-	-	-	-	-	Y	Y	
1065	H	50045	pit	Early Neolithic	97	-	-	++	-	-	-	-	-		Y	Y	
1066	M2	22083	ditch	Bronze Age	112	-	-	!!	-	-	-	-	-	-	Y	Y	
1067	M2	22084	ditch	Bronze Age	80	-	-	ü	-	-	-	-	-	-	Y	Y	
1068	M2	22085	ditch	Bronze Age??	64	-	-	ü	-	-	-	-	-	-	Y	Y	
1073	M2	22116	ditch	Bronze Age?	36	-	-	++	-	-	-	-	-	-	Y	Y	
1078	L3	21193	pit	Prehistoric?	245	-	-	!!	-	-	-	-	-	-	Y	Y	
1082	L3	21201	posthole	Prehistoric?	29	-	-	++	-	-	-	-	-	-	Y	Y	
1088	H	50060	pit	Early Neolithic	51	-	-	ü	-	-	-	-	-	-	Y	Y	
1101	Ia	21213	pit	Mid Neolithic	11	-	-	+	-	-	-	+	-	-	Y	Y	
1102	Ia	21211	pit	Mid Neolithic	16	-	-	+	-	-	-	+	-	-	Y	Y	
1103	Ia	21216	pit	Late Neolithic	10	-	-	+	-	-	-	+	-	-	Y	Y	
1105	H	2100	hearth	Neolithic	1495	-	-	!!	-	-	-	-	-	-	Y	Y	
1106	H	2100	hearth	Neolithic	132	-	-	!!	-	-	-	-	-	-	Y	Y	
1108	Ia	21218	pit	Mid Neolithic	10	-	-	+	-	-	-	+	-	-	Y	Y	
1112	Ia	21220	pit	Mid Neolithic	15	-	-	+	-	-	-	+	-	-	Y	Y	
1113	Ia	21224	pit	Mid Neolithic	26	-	-	+	-	-	-	+	-	-	Y	Y	
1115	Ia	21222	pit	Mid Neolithic	180	-	-	+++	-	-	-	-	-	-	Y	Y	
1116	B3	22156	pit	Prehistoric?	288	-	-	++	-	-	+++	-	-	-	Y	Y	Barley
1117	B3	22157	pit	Prehistoric?	24	-	-	-	-	-	+++	-	-	-	Y	Y	Barley
1123	Ia	21231	corn drier	medieval?	147	-	-	!!	-	-	+++	-	-	-	Y	Y	
1124	H	50108	hearth	Early Neolithic	64	-	-	+++	-	-	-	-	-	-	Y	Y	
1125	I	50111	pit	Prehistoric?	86	-	-	+++	-	-	-	-	-	-	Y	Y	
1126	H	50110	hearth	Early Neolithic	254	-	-	!!	-	-	-	-	-	-	Y	Y	
1127	H	50106	pit	Early Neolithic	116	-	-	ü	-	-	-	-	-	-	Y	Y	
1128	H	50100	House	Early Neolithic	204	-	-	!!	-	-	-	-	-	-	Y	Y	
1128	H	50115	hearth	Early Neolithic	281	-	-	!!	-	-	-	-	-	-	Y	Y	
1130	H	50117	pit	Early Neolithic	201	-	-	!!	-	-	-	-	-	-	Y	Y	
1136	L3	22144		Prehistoric?	28	-	-	++	-	-	-	-	-	-	Y	Y	
1141	H	50122	hearth	Early Neolithic	311	-	-	+++	-	-	-	++	-	-	Y	Y	
1143	H	50124	hearth	Early Neolithic	994	-	-	!!	-	-	-	-	-	-	Y	Y	
1144	H	50125	pit	Early Neolithic	124	-	-	!!	-	-	-	-	-	-	Y	Y	
1155	H	50132	hearth	Early Neolithic	530	-	-	!!	-	-	-	-	-	-	Y	Y	
1164	H	50147	hearth	Early Neolithic	150	-	-	!!	-	-	-	-	-	-	Y	Y	
1167	H	50154	hearth	Early Neolithic	38	-	-	+++	-	-	-	-	-	-	Y	Y	
1168	H	50159	posthole	Early Neolithic	50	-	-	+++	-	-	-	-	-	-	Y	Y	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
1169	H	50153	hearth	Early Neolithic	105	-	-	!!	-	-	-	-	-	-	Y	Y	
1170	H	50161	hearth	Early Neolithic	295	-	-	!!	-		-	-	-	-	Y	Y	
1171	H	50161	hearth	Early Neolithic	154	-	-	!!	-	-	-	-	-	-	Y	Y	
1172	H	50163	hearth	Early Neolithic	327	-	-	!!	-	-	-	-	-	-	Y	Y	
1173	H	50170	hearth	Early Neolithic	115	-	-	!!	-	-	-	-	-	-	Y	Y	
1174	H	50165	beam slot	Early Neolithic	69	-	-	ü	-	-	-	-	-	-	Y	Y	
1175	H	50171	posthole	Early Neolithic	147	-	-	!!	-	-	-	-	-	-	Y	Y	
1176	H	50172	posthole	Early Neolithic	27	-	-	!!	-	-	-	+	-	-	Y	Y	
1178	H	50177	pit	Early Neolithic	128	-	-	ü	-	-	-	-	-	-	Y	Y	
1180	D3	60092	pit	Beaker/Neolithic?	46	-	-	++	-	-	-	-	-	-	Y	Y	
1181	D3	60100	pit	Beaker/Neolithic?	72	-	-	++	-	-	-	-	-	-	Y	Y	
1184	D3	60124	gully	Beaker/Neolithic?	12	-	-	++	-	-	-	+++	-	-	Y	Y	
1185	D3	60136	pit	Prehistoric?	28	-	-	++	-	-	-	-	-	-	Y	Y	
1186	H	50183	posthole	Early Neolithic	88	-	-	!!	-	-	-	-	-	-	Y	Y	
1188	H	50189	pit	Early Neolithic	70	-	-	ü	-	-	-	-	-	-	Y	Y	
1190	D3	60163	pit	Bronze Age	140	-	-	!!	-	-	-	+++	-	-	Y	Y	
1191	H	50190	pit	Early Neolithic	65	-	-	ü	-	-	-	-	-	-	Y	Y	
1192	H	50191	pit	Early Neolithic	30	-	-	+++	-	-	-	-	-	-	Y	Y	
1193	H	50148	gully	Early Neolithic	442	-	-	!!	-	-	-	-	-	-	Y	Y	
1205	J1/J2	70038	stakehole	Prehistoric	50	-	-	++	-	-	-	-	-	-	Y	Y	
1210	J1/J2	70055	pit	Bronze Age	16	-	-	++	-	-	-	-	-	-	Y	Y	
1214	J1/J2	70061	posthole	Prehistoric	11	-	-	++	-	-	-	-	-	-	Y	N	
1220	H	50206	pit	Early Neolithic	41	-	-	++	-	-	-	-	-	-	Y	Y	
1236	H	50135	posthole	Early Neolithic	96	-	-	+++	-	-	-	-	-	-	Y	Y	
1241	H	50233	Beam slot	Early Neolithic	59	-	-	++	-	-	-	-	-	-	Y	Y	
1245	H	50235	beam slot	Early Neolithic	106	-	-	+++	-	-	-	-	-	-	Y	Y	
1247	H	50229	posthole	Early Neolithic	30	-	-	+++	-	-	-	-	-	-	Y	Y	
1250	J1/J2	70171	pit	Mid Neolithic	100	-	-	!!	-	-	-	-	-	-	Y	N	
1251	J1/J2	70172	pit	Mid Neolithic	168	-	-	!!	-	-	-	-	-	-	Y	N	
1256	J1/J2	70182	pit	Prehistoric	75	-	-	!!	-	-	-	++	-	-	Y	Y	
1263	H	50213	beam slot	Early Neolithic	26	-	-	++	-	-	-	-	-	-	Y	Y	
1266	H	50247	pit	Early Neolithic	90	-	-	ü	-	-	-	-	-	-	Y	Y	
1267	H	50213	beam slot	Early Neolithic	49	-	-	ü	-	-	-	-	-	-	Y	Y	
1269	H	50168	posthole	Early Neolithic	107	-	-	ü	-	-	-	-	-	-	Y	Y	
1283	H	50102	posthole	Early Neolithic	5	-	-	ü	-	-	-	-	-	-	Y	Y	
1284	H	50159	posthole	Early Neolithic	27	-	-	+++	-	-	-	+++	-	-	Y	Y	
1287	H	50265	posthole	Neolithic?	21	-	-	++	-	-	-	-	-	-	Y	Y	
1288	H	50267	pit	Neolithic?	59	-	-	ü	-	-	-	-	-	-	Y	Y	
1291	J1/J2	70267	pit	Prehistoric?	80	-	-	!!	-	-	-	-	-	-	Y	Y	
1314	J1/J2	70325	posthole	Prehistoric	20	-	-	++	-	-	-	-	-	-	Y	N	
1336	M4	40072	pit	Bronze Age?	49	-	-	++	-	-	-	-	-	-	Y	N	
1343	M4	40086	pit	Prehistoric?	66	-	-	++	-	-	-	-	-	-	Y	Y	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
1353	M4	40104	pit	Prehistoric?	64	-	-	++	-	-	-	-	-	-	Y	Y	
1361	M4	40118	pit	Prehistoric?	36	-	-	++	-	-	-	-	-	-	Y	Y	
1368	M4	40138	pit	Prehistoric	140	-	-	!!	-	-	-	-	-	-	Y	Y	
1398	M4	40198	deposit	Bronze Age??	126	-	-	!!	-	-	-	-	-	-	Y	Y	
1402	M4	40199	deposit	Prehistoric?	36	-	-	++	-	-	-	-	-	-	Y	Y	
1403	K7	80139	corn drier	Medieval?	266	-	-	!!	-	-	+++	-	-	-	Y	Y	Barley
1450	E (hollow)	31002	burnt mound	Late Neo?	55	-	-	!!	-	-	-	-	-	-	Y	Y	
1452	E (hollow)	31017	trough	Late Neo?	49	-	-	!!	-	-	-	-	-	-	Y	Y	
1453	E (hollow)	31018	Trough	Late Neo?	31	-	-	+++	-	-	-	-	-	-	Y	Y	
1456	K7	80268	layer	Iron Age?	54	-	-	++	-	-	-	-	-	-	Y	N	
1478	K7	80334	roof collapse?	Iron Age?	46	-	-	+++	-	-	-	-	-	-	Y	Y	
1485	K7	80358	roof collapse?	Iron Age?	42	-	-	+++	-	-	-	-	-	-	Y	Y	
1535	K7	80334	roof collapse?	Iron Age?	31	-	-	+++	-	-	-	-	-	-	Y	Y	
1549	H	50399	posthole	Prehistoric?	55	-	-	!!	-	-	-	-	-	-	Y	Y	
1559	E (hollow)	31632	posthole	Neolithic	11	-	-	++	-	-	-	-	-	-	Y	Y	
1565	E (hollow)	31641	posthole	Neolithic	7	-	-	++	-	-	-	-	-	-	Y	Y	
5009	F1 FW	93326	OGS	Bronze Age	194	-	-	!!	-	-	-	-	-	-	Y	Y	
5085	F1 FE	93466	OGS	Bronze Age	77	-	-	+++	-	-	-	-	-	-	Y	Y	
5098	F1 RHI	93598	burnt stone layer	Iron Age	42	-	-	++	-	-	-	-	-	-	Y	Y	
5125	K9a	80524	pit	Romano-British?	628	-	-	!!	-	-	-	-	-	-	Y	Y	
5128	K9a	80541	pit	Romano-British?	55	-	-	ü	-	-	-	-	-	-	Y	Y	
5132	K9a	80555	pit	Romano-British?	40	-	-	++	-	-	-	-	-	-	Y	Y	
5133	K9a	80559	pit	Romano-British?	50	-	-	++	-	-	-	-	-	-	Y	Y	
5134	K9a	80561	pit	Romano-British?	20	-	-	+++	-	-	-	-	-	-	Y	Y	
5135	K9a	80566	hollow	Romano-British?	50	-	-	+++	-	-	-	-	-	-	Y	Y	
5138	L5	3080	burnt mound trough?	Prehistoric?	72	-	-	ü	-	-	-	-	-	-	Y	Y	
5139	L5	3083	burnt mound trough	Prehistoric?	35	-	-	+++	-	-	-	-	-	-	Y	Y	
5141	K9a	80652	pit	Prehistoric	77	-	-	!!	-	-	-	-	-	-	Y	Y	
5145	K9a	80593	pit	Mid Neolithic	35	-	-	++	-	-	-	-	-	-	Y	Y	
5146	K9a	80638	pit	Mid Neolithic	84	-	-	!!	-	-	-	-	-	-	Y	Y	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
5147	K9a	80601	pit	Prehistoric	74	-	-	!!	-	-	-	-	-	-	Y	Y	
5148	K9a	80605	pit	Prehistoric?	43	-	-	++	-	-	-	-	-	-	Y	N	
5150	K9a	80609	pit	Mid Neolithic	52	-	-	++	-	-	-	++	-	-	Y	Y	
5159	K9a	80684	pit	Mid Neolithic	80	-	-	!!	-	-	-	-	-	-	Y	Y	
5160	K9a	80685	pit	Mid Neolithic	10	-	-	++	-	-	-	-	-		Y	Y	
5162	K9a	80730	pit	Romano-British?	18	-	-	++	-	-	-	-	-	-	Y	N	
5512	H	50162	hearth	Early Neolithic	70	-	-	+++	-	-	-	-	-	-	Y	Y	Large charcoal pieces
5600	K9b	80830	pit	Romano-British	29	-	-	ü		-	+++	-	-	-	Y	Y	barley
5601	K9b	80837	corn dryer	Romano-British	9	-	-	++		-	++	-	-	-	Y	Y	barley
5602	K9b	80837	corn dryer	Romano-British	50	-	-	ü		-	+++	-	-	-	Y	Y	barley
5603	K9b	80840		Roman?	37	-	-	ü		-	-	-			Y	Y	
5604	K9b	80866	Furnace?	Romano-British	51	-	-	++		-	-	-			Y	Y	
5607	K9b	80846		Romano-British	54	-	-	ü		-	-	-			Y	Y	
5609	K9b	80885	corn dryer	Romano-British	16	-	-	++		-	+++	-			Y	Y	barley
5610	K9b	80882	corn dryer	Romano-British	9	-	-	+		-	++	-			Y	Y	barley
5611	K9b	80887	corn dryer	Romano-British	12	-	-	++		-	++	-			Y	Y	barley
5612	K9b	80893		Romano-British	27	-	-	++		-	-	-			Y	Y	
5613	K9b	80811	floor?	Romano-British	20	-	-	++		-	+	-			Y	Y	barley
5616	K9b	80807		Romano-British?	23	-	-	++		-	-	-			Y	Y	
5619	K9b	80899		Romano-British	19	-	-	+		-	+	-			Y	Y	barley
5621	K9b	80908	pit	Romano-British	25	-	-	++		-	-	-			Y	Y	
5622	K9b	80884		Romano-British	70	-	-	ü		-	-	-			Y	Y	
5637	K9b	80904		Romano-British	10	-	-	++		-	-	-			Y	Y	
5638	K9b	80904		Romano-British	7	-	-	++		-	-	-			Y	Y	
5652	K9b	80939	furnace	Romano-British	14	-	-	++		-	-	-			Y	Y	
5653	K9b	80847		Romano-British	13	-	-	++		-	-	-			Y	Y	
5670	K9b	81006	corn dryer?	Romano-British	79	-	-	++	-	-	++				Y	Y	barley
5671	K9b	80921		Romano-British	5	-	-	-			++				Y	Y	barley
5677	K9b	80847		Romano-British	38	-	-	++		-	-	-			Y	Y	
5681	K9b	81027	corn dryer?	Romano-British	29	-	-	+		-	+++	-			Y	Y	Barley/wheat
5682	K9b	81034	corn dryer?	Romano-British	51	-	-	+		-	+++	-			Y	Y	Barley
5685	K9b	81072	corn dryer?	Romano-British	32	-	-	+		-	+++	-			Y	Y	Barley
5693	K9b	81073	corn dryer?	Romano-British	56	-	-	+++		-	+++	-			Y	Y	Barley
5712	K9b	81144	pit	Romano-British	21	-	-	+		-	+	-			Y	Y	Cereal
5804	J3	70479	posthole	Prehistoric?	34	-	-	++		-	-	-			Y	Y	
5807	J3	70451	posthole	Prehistoric?	31	-	-	++		-	-	-			Y	Y	
5809	J3	70502	posthole	Prehistoric	17	-	-	++		-	-	-			Y	Y	
5815	J3	70528	pit	Prehistoric?	5	-	-	++		-	-	-			Y	Y	
5822	J3	70536	pit	Prehistoric	17	-	-	+		-	-	+			Y	Y	
5861	J3	70693	posthole	Romano-British	69	-	-	ü		-	-	-			Y	Y	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
5865	J3	70693	posthole	Romano-British	64	-	-	ü		-	-	-			Y	Y	
5866	J3	70694	posthole	Romano-British	276	-	-	!!							Y	Y	
5867	J3	70696	posthole	Romano-British	463	-	-	!!							Y	Y	
10537	B2 passage-way	92223	pit	Iron Age	260	-	-	!!	-	-	-	-	-	-	Y	Y	

Appendix XIX.1.2: Table of flots not proposed for further analysis but some of which might be used for radiocarbon dating

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
1	B1	6034	pit	Prehistoric	230	-	-	-	-	-	-	-	-	-	N	N	Cinder/slag
2	B1	6033	pit	Prehistoric	36	-	-	-	-	-	-	-	-	-	N	N	Cinder/slag
3	B1	4001	pit	Unknown	9	-	-	-	-	-	-	-	-	-	N	N	
4	B3	3017	pit	Romano-British?	5	-	-	-	-	-	-	-	-	-	N	N	
5	B1	8023	pit	Prehistoric?	24	-	-	-	-	-	-	-	-	-	N	N	Cinder/slag
6	B1	6088	pit?	Unknown	51	-	-	-	-	-	-	-	-	-	N	N	Cinder/slag
10	B1	4018	pit	Prehistoric	142	-	-	+	-	-	-	-	-	-	N	N	Cinder/slag.
11	B1	7052	pit	Prehistoric	10	-	-	-	-		-	-	-	-	N	N	Cinder/slag
12	B1	8046	pit	Prehistoric?	10	-	-	-	-	-	-	-	-	-	N	N	
13	B1	8048	pit	Prehistoric?	187	-	-	-	-	-	-	-	-	-	N	N	
14	B1	6090	pit	Prehistoric?	88	-		-	-	-	-	-	-	-	N	N	Cinder/slag
16	B1	7053	pit	Prehistoric?	10	-	-	-	-	-	-	-	-	-	N	N	
19	B1	5029	gully	Post medieval	10	-	-	-	-	-	-	-	-	-	N	N	
20	B1	7054	furrow	Post medieval	62	-	-	-	-	-	-	-	-	-	N	N	
21	B1	10005	tree hollow-unburnt	Non-feature	10	-	-	+	-	-	-	-	-	-	N	Y	
23	B1	4025	pit	Unknown	10	-	-	-	-	-	-	-	-	-	N	N	
24	B1	6110	pit?	Prehistoric?	14	-	-	-	-	-	-	-	-	-	N	N	
25	B1	5039	pit	Prehistoric?	50	-	-	-	-	-	-	-	-	-	N	N	
26	B1	1044	pit	Prehistoric?	47	-	-	-	-	-	-	-	-	-	N	N	
31	B1	6115	hollow	Unknown	259	-	-	-	-	-	-	-	-	-	N	N	
33	B3	3027	pit	Romano-British?	2	-	-	-	-	-	-	-	-	-	N	N	
34	B3	3027	pit	Romano-British?	10	-	-	-	-	-	-	-	-	-	N	N	
35	B1	14005	hollow	Unknown	10	-	-	+	-	-	-	-	-	-	N	Y	
36	B1	13008	pit	Unknown	415	-	-	-	-	-	-	-	-	-	N	N	Cinder/slag
37	B3	9024	pit	Unknown	3	-	-	-	-	-	-	-	-	-	N	N	
38	B1	10014	pit	Prehistoric	88	-	-	-	-	-	-	-	-	-	N	N	Cinder/slag
39	B1	3009	pit/tree hollow?	Unknown/Natural ?	36	-	-	++	-	-	-	-	-	-	N	Y	
40	B1	10015	pit	Prehistoric?	32	-	-	++	-	-	-	-	-	-	N	Y	
41	B1	6116	hollow	Natural	10	-	-	-	-	-	-	-	-	-	N	N	
42	B3	12004	pit	Romano-British?	161	-	-	-	-	-	-	-	-	-	N	N	Sand and clay
43	B3	9025	pit	Unknown	43	-	-	-	-	-	-	-	-	-	N	N	
44	B3	9026	pit	Unknown	9	-	-	-	-	-	-	-	-	-	N	N	
45	B1	10016	pit	Unknown	80	-	-	+	-	-	-	-	-	-	N	Y	
47	B1	5052	pit	post med?	10	-	-	-	-	-	-	-	-	-	N	N	
48	B1	3013	stonehole	Natural	10	-	-	-	-	-	-	-	-	-	N	N	
49	B1	13005	pit	Post medieval?	49	-	-	-	-	-	-	-	-	-	N	N	
52	B1	13009	gully	Unknown	52	-	-	-	-	-	-	-	-	-	N	N	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
54	B1	5054	pit	Unknown/post med?	10	-	-	-	-	-	-	-	-	-	N	N	
55	B1	5055	pit	Unknown/post med?	8	-	-	-	-	-	-	-	-	-	N	N	
56	B1	8080	pit	Unknown	77	-	-	-	-	-	-	-	-	-	N	N	
58	B1	13014	pit	Prehistoric?	15	-	-	-	-	-	-	-	-	-	N	N	
60	B1	5057	pit	Prehistoric?	10	-	-	-	-	-	-	-	-	-	N	N	
61	B1	10020	root hole?	Natural	45	-	-	++	-	-	-	-	-	-	N	Y	
64	B1	8082	pit	Unknown	20	-	-	+	-	-	-	-	-	-	N	Y	
67	B1	9031	ditch	Post medieval	10	-	-	-	-	-	-	-	-	-	N	N	
68	B1	9033	ditch	Post medieval	10	-	-	-	-	-	-	-	-	-	N	N	
69	B1	9035	ditch	Post medieval	108	-	-	-	-	-	-	-	-	-	N	N	
70	B1	9039	ditch	Post medieval	0	-	-	-	-	-	-	-	-	-	N	N	
71	B1	10022	ditch	Unknown	8	-	-	-	-	-	-	-	-	-	N	N	
72	B1	6121	ditch	Iron Age?	8	-	-	-	-	-	-	-	-	-	N	N	
73	B1	14028	ditch	Iron Age?	20	-	-	-	-	-	-	-	-	-	N	N	
74	B1	14036	ditch	Iron Age?	8	-	-	-	-	-	-	-	-	-	N	N	
75	B1	14026	ditch	Iron Age?	20	-	-	-	-	-	-	-	-	-	N	N	
76	B1	14038	ditch	Iron Age?	29	-	-	-	-	-	-	-	-	-	N	N	
77	B1	14046	gully	Iron Age?	111	-	-	-	-	-	-	-	-	-	N	N	
78	B1	14050	ditch	Iron Age?	10	-	-	-	-	-	-	-	-	-	N	N	
79	B1	13020	pit	Post medieval?	15	-	-	+	-	-	-	-	-	-	N	N	
80	B3	1078	ditch	Unknown	10	-	-	-	-	-	-	-	-	-	N	N	
81	B3	11016	ditch	Unknown	8	-	-	-	-	-	-	-	-	-	N	N	
82	B3	16010	pit	Unknown	30	-	-	-	-	-	-	-	-	-	N	N	
83	B3	12020	ditch	Unknown	10	-	-	-	-	-	-	-	-	-	N	N	
83	H	50055	pit	Early Neolithic	17	-	-	+	-	-	-	-	-	-	N	Y	
84	B2	90036	ditch	Post Medieval	10	-	-	-	-	-	-	-	-	-	N	N	
85	B2	90101	pit	Post Medieval	20	-	-	-	-	-	-	-	-	-	N	N	
87	B2	90128	pit	Post Medieval	256	-	-	++	-	-	-	-	-	-	N	Y	
89	B2	90145	posthole?	Iron Age?	12	-	-	-	-	-	-	-	-	-	N	N	
90	B2	90108	posthole	Post Medieval	12	-	-	-	-	-	-	-	-	-	N	N	
91	B2	90182	posthole	Post Medieval	10	-	-	-	-	-	-	-	-	-	N	N	
93	B2	90227	posthole	Post Medieval	12	-	-	-	-	-	-	-	-	-	N	N	
94	B2	90245	gully	early post medieval?	12	-	-	-	-	-	-	-	-	-	N	N	
95	B2	90258	pit?	Post Medieval	15	-	-	-	-	-	-	-	-	-	N	N	
97	B2	90260	pit	Post Medieval	10	-	-	-	-	-	-	-	-	-	N	N	
98	B2 RHD	90460	pit	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
101	B1	7064	pit	Post medieval?	10	-	-	+	-	-	-	-	-	-	N	N	
102	B1	7065	pit	Post medieval?	10	-	-	-	-	-	-	-	-	-	N	N	
103	B3	8070	tree hollow-	Natural	68	-	-	ü	-	-	-	-	-	-	N	Y	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
			burnt														
111	B2	90196	hearth?	Iron Age?	10	-	-	+	-	-	-	-	-	-	N	Y	
112	B2	90056	pit	Post Medieval	67	-	-	-	-	-	-	-	-	-	N	N	
113	B2	90263	stakehole	Post Medieval	94	-	-	-	-	-	-	-	-	-	N	N	
114	B2	90255	ditch	Post Medieval	0	-	-	+	-	-	-	-	-	-	N	N	
115	B2	90267	Layer	Post Medieval	10	-	-	-	-	-	-	-	-	-	N	N	
117	B2	90326	ditch	Post Medieval	10	-	-	-	-	-	-	-	-	-	N	N	
118	B2	90331	pit	Post Medieval	51	-	-	-	-	-	-	-	-	-	N	N	
119	B2	90337	posthole	Post Medieval	10	-	-	-	-	-	-	-	-	-	N	N	
120	B2 RHD	90309	stone spread	Post Medieval	65	-	-	-	-	-	-	-	-	-	N	N	
121	B2	90036	ditch	Post Medieval	10	-	-	-	-	-	-	-	-	-	N	N	
122	B2	90418	tree hollow-unburnt	Post Medieval	121	-	-	+	-	-	-	-	-	-	N	N	
122	B2	90418	tree hollow-unburnt	Post Medieval	31	-	-	-	-	-	-	-	-	-	N	N	
123	B2	90036	ditch	Post Medieval	18	-	-	-	-	-	-	-	-	-	N	N	
124	B2	90248	pit	Post Medieval	28	-	-	-	-	-	-	-	-	-	N	N	
125	B2 Laneside	90323	pit	Post Medieval	10	-	-	-	-	-	-	-	-	-	N	N	
126	B2 Laneside	90408	pit	Post Medieval	10	-	-	-	-	-	-	-	-	-	N	N	
127	B2	90429	pit	Post Medieval	74	-	-	-	-	-	-	-	-	-	N	N	
128	B2 Laneside	90437	smithing hearth	Romano-British?	10	-	-	-	-	-	-	-	-	-	N	N	
129	B2 RHD	90461	Layer	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
130	B2 Laneside	90299	Layer	Post Medieval	15	-	-	-	-	-	-	-	-	-	N	N	
131	B2 Laneside	90501		Post Medieval	15	-	-	-	-	-	-	-	-	-	N	N	
131	B2 Laneside	90501		Post Medieval	14	-	-	-	-	-	-	-	-	-	N	N	
132	B2 RHA	90479		Iron Age	26	-	-	-	-	-	-	-	-	-	N	N	
133	B2 RHD	90465	floor	Iron Age	18	-	-	-	-	-	-	-	-	-	N	N	
134	B2 RHD	90465	floor	Iron Age	20	-	-	-	-	-	-	-	-	-	N	N	
135	B2 RHA	90506	posthole	Iron Age	20	-	-	-	-	-	-	-	-	-	N	N	
141	B2 RHA	90514	posthole	Iron Age	28	-	-	-	-	-	-	-	-	-	N	N	
142	B2 RHD	90473		Iron Age	28	-	-	-	-	-	-	-	-	-	N	N	
143	B2 RHA	90569	posthole	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
144	B2 RHA	90547	posthole	Iron Age	3	-	-	+	-	-	-	-	-	-	N	N	
144	B2 RHA	90547	posthole	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
146	B2 RHA	90580	wall	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
147	B2 RHA	90580	wall	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
148	B2	90629		Romano-British?	10	-	-	-	-	-	-	-	-	-	N	N	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
	Laneside																
150	B2 RHA	90577	floor	Iron Age	18	-	-	-	-	-	-	-	-	-	N	N	
151	B2 RHD	90621		Iron Age	18	-	-	-	-	-	-	-	-	-	N	N	
152	B2 RHA	90590	posthole	Iron Age	20	-	-	-	-	-	-	-	-	-	N	N	
153	B2 RHA	90619	posthole	Iron Age	10	-	-	+	-	-	-	-	-	-	N	N	
154	B2 RHA	90619	posthole	Iron Age	15	-	-	-	-	-	-	-	-	-	N	N	
155	B2 RHA	90619	posthole	Iron Age	15	-	-	+	-	-	-	-	-	-	N	N	
156	B2 RHA	90619	posthole	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
157	B2 RHD	90634	posthole	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
158	B2 Laneside	90560	pit	Romano-British?	10	-	-	-	-	-	-	-	-	-	N	N	
159	B2 Laneside	90548		Romano-British?	15	-	-	-	-	-	-	-	-	-	N	N	
160	B2 RHA	90619	posthole	Iron Age	10	-	-	+	-	-	-	-	-	-	N	N	
161	B2 RHA	90638	hearth?	Iron Age	79	-	-	-	-	-	-	-	-	-	N	N	
162	B2 RHA	90638	hearth?	Iron Age	235	-	-	-	-	-	-	-	-	-	N	N	
162	B2 RHA	90638	hearth?	Iron Age	34	-	-	+	-	-	-	-	-	-	N	Y	"Clay lumps
167	B2 RHD	90648	posthole	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
168	B2 RHA	90021	Tumble	Iron Age	33	-	-	+		-	-	-	-	-	N	Y	
169	B2 RHA	90480	posthole	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
170	B2 RHD	90664	posthole	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
171	B2 RHD	90581		Iron Age	39	-	-	+	-	-	-	-	-	-	N	Y	
172	B2 RHA	90646	posthole	Iron Age	20	-	-	+	-	-	-	-	-	-	N	Y	
173	B2 RHA	90668	posthole	Iron Age	36	-	-	+	-	-	-	-	-	-	N	Y	
174	B2 Laneside	90548		Romano-British?	5	-	-	-	-	-	-	-	-	-	N	N	
175	B2 Laneside	90734	posthole?	Romano-British?	5	-	-	-	-	-	-	-	-	-	N	N	
177	B2 RHA	90692	posthole	Iron Age	27	-	-	+	-	-	-	-	-	-	N	Y	
178	B2 RHA	90632	hearth	Iron Age	20	-	-	+	-	-	-	-	-	-	N	Y	
179	B2 RHD	90695	posthole	Iron Age	17	-	-	+	-	-	-	-	-	-	N	Y	
180	B2 RHA	90703		Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
181	B2 RHA	90639	posthole	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
182	B2 Laneside	90711	posthole	Romano-British?	5	-	-	-	-	-	-	-	-	-	N	N	
183	B2 Laneside	90707	pit	Romano-British?	0	-	-	-	-	-	-	-	-	-	N	N	
184	B2 Laneside	90708	posthole	Romano-British?	12	-	-	-	-	-	-	-	-	-	N	N	
185	B2 RHA	90668	posthole	Iron Age	34	-	-	+	-	-	-	-	-	-	N	N	
186	B2 RHD	90718		Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
187	B2 RHD	90714	posthole	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
189	B2 Laneside	90721	posthole	Romano-British?	10	-	-	-	-	-	-	-	-	-	N	N	
190	B2 RHA	90722	pit	Iron Age	37	-	-	+	-	-	-	-	-	-	N	Y	
191	B2 RHA	90722	pit	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
192	B2 RHD	90719		Iron Age	19	-	-	-	-	-	-	-	-	-	N	N	
193	B2 RHA	90716	posthole	Iron Age	8	-	-	+	-	-	-	-	-	-	N	Y	
194	B2 RHD	90743	burnt patch	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
195	B2 RHD	90747		Iron Age	27	-	-	+	-	-	-	-	-	-	N	Y	
196	B2 RHD	90667	Layer	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
197	B2 RHD	90759	stakehole	Iron Age	3	-	-	-	-	-	-	-	-	-	N	N	
198	B2 Laneside	90757	posthole	Romano-British?	18	-	-	-	-	-	-	-	-	-	N	N	
199	B2 RHA	90685	posthole	Iron Age	27	-	-	-	-	-	-	-	-	-	N	N	
200	B2 Laneside	90711	posthole	Romano-British?	28	-	-	+	-	-	-	-	-	-	N	Y	
201	B2 Laneside	90672	pit	Romano-British?	13	-	-	+	-	-	-	-	-	-	N	Y	
202	B2 RHA	90778	wall	Iron Age	39	-	-	-	-	-	-	-	-	-	N	N	
203	B2 RHD	90125	ditch	Bronze Age??	10	-	-	-	-	-	-	-	-	-	N	N	
204	B2 RHA	90832	occupation deposit?	Iron Age	5	-	-	+	-	-	-	-	-	-	N	Y	
204	B2 RHA	90832	occupation deposit?	Iron Age	50	-	-	+	-	-	-	-	-	-	N	Y	
205	B2 RHA	90824		Iron Age	15	-	-	-	-	-	-	-	-	-	N	N	
206	B2 RHA	90834		Iron Age	80	-	-	+	-	-	-	-	-	-	N	Y	
206	B2 RHA	90021	Tumble	Iron Age	10	-	-	+	-	-	-	-	-	-	N	N	
207	B2 RHA	90833	rubble	Iron Age	26	-	-	+	-	-	-	-	-	-	N	Y	
209	B2 RHD	90859		Iron Age	12	-	-	+	-	-	-	-	-	-	N	Y	
210	B2 RHD	90860		Iron Age	15	-	-	-	-	-	-	-	-	-	N	N	
212	B2 RHA	90863	stakehole	Iron Age	6	-	-	+	-	-	-	-	-	-	N	Y	
213	B2 RHA	90865	stakehole	Iron Age	20	-	-	-	-	-	-	-	-	-	N	N	
214	B2 RHA	90867	stakehole	Iron Age	0	-	-	-	-	-	-	-	-	-	N	N	
215	B2 RHA	90869	posthole	Iron Age	44	-	-	+	-	-	-	-	-	-	N	Y	
216	B2 RHD	90886		Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
217	B2 RHA	90885		Bronze Age?	10	-	-	-	-	-	-	-	-	-	N	N	
218	B2 RHA	90594	drain?	Iron Age	15	-	-	-	-	-	-	-	-	-	N	N	
219	B2 RHA	90596	post slot	Iron Age	6	-	-	+	-	-	-	-	-	-	N	Y	
219	B2 RHA	90596	post slot	Iron Age	15	-	-	-	-	-	-	-	-	-	N	N	
220	B2 passage-way	90984	drain/pathway	Iron Age	19	-	-	-	-	-	-	-	-	-	N	N	
220	B2 RHD	90893	pit	Iron Age	121	-	-	-	-	-	-	-	-	-	N	N	Cinder/slag
221	B2 RHB	90898	burnt patch	Iron Age	5	-	-	+	-	-	-	-	-	-	N	Y	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
221	B2 RHB	90898	burnt patch	Iron Age	18	-	-	+	-	-	-	-	-	-	N	Y	
223	B2 RHA	90907	posthole	Bronze Age?	6	-	-	-	-	-	-	-	-	-	N	N	
223	B2 RHA	90907	posthole	Bronze Age?	12	-	-	+	-	-	-	-	-	-	N	N	
224	B2 RHA	90903	natural hollow?	Bronze Age?	10	-	-	-	-	-	-	-	-	-	N	N	
226	B2 RHB	90916	stakehole	Iron Age	5	-	-	+	-	-	-	-	-	-	N	N	
228	B2 RHB	90927	burnt patch	Iron Age	31	-	-	+	-	-	-	-	-	-	N	Y	
228	B2 passage-way	91059	layer	Iron Age	36	-	-	+	-	-	-	-	-	-	N	Y	
229	B2 RHA	90921	hearth	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
230	B2 RHA	90919	hearth	Iron Age	25	-	-	-	-	-	-	-	-	-	N	N	
231	B2 RHA	90895	pit	Iron Age	0	-	-	-	-	-	-	-	-	-	N	N	
232	B2 RHA	90932	posthole	Bronze Age?	23	-	-	-	-	-	-	-	-	-	N	N	
233	B2 RHD	90953	burnt patch	Unknown	38	-	-	-	-	-	-	-	-	-	N	N	Cinder/slag
234	B2 RHB	90939		Iron Age	6	-	-	+	-	-	-	-	-	-	N	Y	
235	B2 RHA	90946		Iron Age	15	-	-	-	-	-	-	-	-	-	N	N	
236	B2 RHA	90576	occupation deposit	Iron Age	24	-	-	+	-	-	-	-	-	-	N	Y	
238	B2 RHA	90977		Iron Age	17	-	-	+	-	-	-	-	-	-	N	Y	
239	B2 RHA	90979	lens	Iron Age	0	-	-	-	-		-	-	-	-	N	N	
243	B2 RHB	90993	burnt patch	Iron Age	22	-	-	+	-	-	-	-	-	-	N	Y	
244	B2 RHB	91018	animal burrow	Iron Age	20	-	-	+	-	-	-	-	-	-	N	Y	
245	B2 RHD	90748	burnt patch	Unknown	6	-	-	-	-	-	-	-	-	-	N	N	
247	B2 RHA	90961		Bronze Age?	8	-	-	-	-	-	-	-	-	-	N	N	
248	B2 RHD	90997	posthole	Iron Age	20	-	-	-	-	-	-	-	-	-	N	N	
250	B2 RHA	90959		Iron Age	28	-	-	+	-	-	-	-	-	-	N	Y	
251	B2 passage-way	90984	drain/pathway	Iron Age	20	-	-	-	-	-	-	-	-	-	N	N	
252	B2 passage-way	90984	drain/pathway	Iron Age	0	-	-	+	-	-	-	-	-	-	N	Y	
254	B2 RHB	90883		Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
256	B2 RHB	91024	stakehole	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
257	B2 RHA/RHE	90949		Iron Age	42	-	-	-	-	-	-	-	-	-	N	N	
257	B2 RHA/RHE	90949		Iron Age	40	-	-	-	-	-	-	-	-	-	N	N	
258	B2 RHA	90712	occupation deposit	Iron Age	0	-	-	-	-	-	-	-	-	-	N	N	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
259	B2 Laneside	90713		Romano-British?	5	-	-	-	-	-	-	-	-	-	N	N	
261	B2 RHD	91035		Iron Age	38	-	-	+	-	-	-	-	-	-	N	Y	
262	B2 Laneside	91047		Romano-British?	20	-	-	-	-	-	-	-	-	-	N	N	
263	B2 RHD	90851	posthole	Iron Age	0	-	-	-	-	-	-	-	-	-	N	N	
264	B2 RHD	91031	posthole	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
265	B2 RHD	91030	stakehole	Iron Age	0	-	-	-	-	-	-	-	-	-	N	N	
266	B2	91084	band of alluvium	Bronze Age?	20	-	-	-	-	-	-	-	-	-	N	N	
269	B2 RHA/RHE	91016	pit	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
270	B2 RHA/RHE	91114		Iron Age	55	-	-	-	-	-	-	-	-	-	N	N	
271	B2 RHA	91133	pit	Iron Age	0	-	-	-	-	-	-	-	-	-	N	N	
272	B2 RHD	91039		Bronze Age?	35	-	-	-	-	-	-	-	-	-	N	N	Cinder/slag
273	B2 RHE	90474		Iron Age	3	-	-	-	-	-	-	-	-	-	N	N	
274	B2 RHD	91120		Bronze Age?	10	-	-	-	-	-	-	-	-	-	N	N	
275	B2 RHE	91153	pit	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
276	B2 RHA	91146	pit	Iron Age	20	-	-	-	-	-	-	-	-	-	N	N	
277	B2 RHA	91148	pit? Posthole?	Iron Age	24	-	-	-	-	-	-	-	-	-	N	N	
278	B2 RHB	91158		Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
279	B2 RHB	91159		Iron Age	30	-	-	-	-	-	-	-	-	-	N	N	
280	B2 RHC	91161		Iron Age	6	-	-	-	-	-	-	-	-	-	N	N	
281	B2 RHC	91155		Iron Age	16	-	-	-	-	-	-	-	-	-	N	N	
282	B2 RHC	90012	wall	Iron Age	20	-	-	-	-	-	-	-	-	-	N	N	
283	B2 RHB	91167	posthole?	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
284	B2 RHB	91166		Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
285	B2 RHE	91171	pit/posthole	Iron Age	10	-	-	+	-	-	-	-	-	-	N	N	
286	B2 RHB	91015	burnt patch	Iron Age	9	-	-	+	-	-	-	-	-	-	N	Y	
287	B2 RHD	91205	pit	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
288	B2 passage-way	91206	pit	Iron Age	26	-	-	-	-	-	-	-	-	-	N	N	
289	B2 RHE	91209	posthole	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
290	B2 RHE	91209	posthole	Iron Age	10	-	-	+	-	-	-	-	-	-	N	N	
291	B2 RHE	91224	posthole	Iron Age	30	-	-	-	-	-	-	-	-	-	N	N	
291	B2 RHE	91224	posthole	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
292	B2 RHB	91239	posthole	Iron Age	2	-	-	-	-	-	-	-	-	-	N	N	
293	B2 RHB	91240	pit	Iron Age	75	-	-	+	-	-	-	-	-	-	N	Y	
294	B2 RHE	91247	stakehole	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
295	B2 RHB	91248	pit	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
296	B2 RHB	91257	burnt patch	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
297	B2 RHB	91258	burnt patch	Iron Age	14	-	-	+	-	-	-	-	-	-	N	Y	
298	B2 RHE	91259	posthole	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	"Rootlets, gravel"
299	B2 RHA	91264	posthole	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
300	B2 RHD	91187	burnt patch	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
301	B2 passage-way	91234	pit	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
302	B2 RHA	91278	pit	Iron Age	10	-	-	+	-	-	-	-	-	-	N	N	
303	B2 passage-way	91233	pit	Iron Age	8	-	-	+	-	-	-	-	-	-	N	Y	
305	B2 passage-way	91059	layer	Iron Age	8	-	-	-	-	-	-	-	-	-	N	N	
305	B2 passage-way	91059	layer	Iron Age	24	-	-	+	-	-	-	-	-	-	N	Y	
306	B2 RHE	91297	pit	Iron Age	39	-	-	-	-	-	-	-	-	-	N	N	
307	B2 RHE	91299	pit	medieval?	25	-	-	-	-	-	-	-	-	-	N	N	
308	B2 RHE	91312	stakehole	Iron Age	10	-	-	+	-	-	-	-	-	-	N	N	
310	B2 RHC	91290		unknown	43	-	-	-	-	-	-	-	-	-	N	N	
311	B2 passage-way	91332	pit	Iron Age	314	-	-	-	-	-	-	-	-	-	N	N	
311	B2 passage-way	91332	pit	Iron Age	4	-	-	-	-	-	-	-	-	-	N	N	
312	B2 passage-way	91331	pit	Iron Age	0	-	-	-	-	-	-	-	-	-	N	N	
314	B2 RHE	91337	ditch	medieval?	5	-	-	-	-	-	-	-	-	-	N	N	
315	B2 RHC	91328		Iron Age	20	-	-	-	-	-	-	-	-	-	N	N	
316	B2	91344	posthole	Post Medieval	20	-	-	-	-	-	-	-	-	-	N	N	
317	B2 RHE	91340	pit	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
318	B2 RHE	91350	lens	void	10	-	-	-	-	-	-	-	-	-	N	N	
319	B2 RHE	91351	lens	Iron Age	10	-	-	+	-	-	-	-	-	-	N	Y	
321	B2 RHE	91359	pit	Iron Age	10	-	-	+	-	-	-	-	-	-	N	N	
322	B2 RHE	91334	pit	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
323	B2 RHB	91382	burnt patch	Iron Age	15	-	-	+	-	-	-	-	-	-	N	N	
324	B2 RHE	91403	hollow	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
325	B2 RHB	90875		Iron Age	16	-	-	+	-	-	-	-	-	-	N	Y	
326	B2 RHE	91367	Curvilinear	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
326	B2 RHE	91367	Curvilinear	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
327	B2 RHE	91407		Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
328	B2 RHC	91409	wall	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
329	B2 RHC	91411	pit	Iron Age	20	-	-	-	-	-	-	-	-	-	N	N	
330	B2 RHC	91399		Iron Age	24	-	-	-	-	-	-	-	-	-	N	N	
331	B2 passage-way	91393	posthole	Iron Age	22	-	-	-	-	-	-	-	-	-	N	N	
331	B2 passage-way	91393	posthole	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
332	B2 RHB	91416	burnt patch	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
333	B2 RHB	90990	floor	Iron Age	15	-	-	-	-	-	-	-	-	-	N	N	
334	B2 RHC	91155		Iron Age	24	-	-	-	-	-	-	-	-	-	N	N	
335	B2	91275	pit	Iron Age	22	-	-	-	-	-	-	-	-	-	N	N	
336	B2 passage-way	91319	pit	Iron Age	15	-	-	-	-	-	-	-	-	-	N	N	
337	B2 RHC	91289	floor surface	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
339	B2 passage-way	91446	ditch	Iron Age	0	-	-	-	-	-	-	-	-	-	N	N	
341	B2 RHC	91163	wall	unknown	1	-	-	-	-	-	-	-	-	-	N	N	
342	B2 RHB	91465	drain	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
343	B2 RHE	91367	Curvilinear	Iron Age	14	-	-	-	-	-	-	-	-	-	N	N	
344	B2 RHE	91439	pit	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
344	B2 RHE	91439	pit	Iron Age	10	-	-	+	-	-	-	-	-	-	N	Y	
345	B2 RHC	91401	stakehole	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
347	B2 RHB	91476	burnt patch	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
348	B2 passage-way	91395	posthole	Iron Age	16	-	-	+	-	-	-	-	-	-	N	Y	
349	B2 RHB	90990	floor	Iron Age	15	-	-	-	-	-	-	-	-	-	N	N	
351	B2 RHC	91428	0	0	22	-	-	-	-	-	-	-	-	-	N	N	
352	B2 RHC	91427	0	0	10	-	-	-	-	-	-	-	-	-	N	N	
353	B2 RHC	91495	posthole	unknown	20	-	-	-	-	-	-	-	-	-	N	N	
354	B2 RHA	90021	Tumble	Iron Age	33	-	-	+	-	-	-	-	-	-	N	Y	
355	B2 RHA	91497	drain?	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
356	B2 passage-way	91318	pit	Iron Age	33	-	-	-	-	-	-	-	-	-	N	N	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
357	B2 RHB	90922		Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
358	B2 passage-way	91503	pit	Iron Age	10	-	-	+	-	-	-	-	-	-	N	Y	
360	B2 RHB	91450	pit	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
361	B2 RHB	91510		Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
362	B2 RHA	91389	drain?	Iron Age	23	-	-	-	-	-	-	-	-	-	N	N	
363	B2 passage-way	91502	pit	Iron Age	6	-	-	+	-	-	-	-	-	-	N	Y	
365	B2 passage-way	91500	pit	Iron Age	15	-	-	-	-	-	-	-	-	-	N	N	Slag
366	B2 RHC	90849		unknown	10	-	-	-	-	-	-	-	-	-	N	N	
368	B2 RHE	91543	posthole	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
370	B2 passage-way	91499	pit	Iron Age	3	-	-	-	-	-	-	-	-	-	N	N	
371	B2 RHC	91435	pit	Iron Age	34	-	-	+	-	-	-	-	-	-	N	Y	
373	B2 RHC	91436	pit	Iron Age	20	-	-	-	-	-	-	-	-	-	N	N	
374	B2 RHA	91545		Iron Age	20	-	-	-	-	-	-	-	-	-	N	N	
375	B2 RHA	91556		Iron Age	20	-	-	-	-	-	-	-	-	-	N	N	
376	B2 RHA	91557		Iron Age	20	-	-	-	-	-	-	-	-	-	N	N	
377	B2 RHC	91432	pit	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
378	B2 RHE	91560	0	0	10	-	-	-	-	-	-	-	-	-	N	N	
379	B2 RHC	91534	stakehole	Iron Age	20	-	-	-	-	-	-	-	-	-	N	N	
380	B2 RHC	91572	wall foundation	unknown	15	-	-	-	-	-	-	-	-	-	N	N	
381	B2 RHE	91563	deposit	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
382	B2 RHE	91564	0	0	10	-	-	-	-	-	-	-	-	-	N	N	
383	B2 E area	91640	pit	Post Medieval	60	-	-	-	-	-	-	-	-	-	N	N	
384	B2 passage-way	91526	pit	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
385	B2 passage-way	91546	pit	Iron Age	6	-	-	-	-	-	-	-	-	-	N	N	
387	B2 RHC	91536	posthole	Iron Age	12	-	-	-	-	-	-	-	-	-	N	N	
388	B2 RHC	91601		unknown	40	-	-	-	-	-	-	-	-	-	N	N	
389	B2 passage-way	91602	deposit	Iron Age	46	-	-	-	-	-	-	-	-	-	N	N	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
390	B2 RHC	91603	posthole	Iron Age	8	-	-	+	-	-	-	-	-	-	N	Y	
391	B2 RHC	91530	post tube	Iron Age	8	-	-	-	-	-	-	-	-	-	N	N	
394	B2 RHB	91622	hearth	Iron Age	10	-	-	+	-	-	-	-	-	-	N	N	
395	B2 passage-way	91607	layer	Iron Age	3	-	-	+	-	-	-	-	-	-	N	N	
396	B2 RHE	91649	deposit	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
397	B2 RHB	91450	pit	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
399	B2 RHA	90609		Post Medieval	14	-	-	-	-	-	-	-	-	-	N	N	
400	B2 RHC	91628	pit	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
401	B2 RHC	91532	posthole	Iron Age	15	-	-	+	-	-	-	-	-	-	N	N	
402	B2 RHC	91644		unknown	10	-	-	-	-	-	-	-	-	-	N	N	
403	B2 passage-way	91666	burnt patch	Iron Age	28	-	-	-	-	-	-	-	-	-	N	N	Burnt clay
403	B2 passage-way	91666	burnt patch	Iron Age	20	-	-	-	-	-	-	-	-	-	N	N	
404	B2 RHC	91647	occupational deposit	unknown	10	-	-	-	-	-	-	-	-	-	N	N	
405	B2 RHA	91669	Linear	Iron Age	33	-	-	-	-	-	-	-	-	-	N	N	
406	B2 RHB	91671	burnt patch	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
407	B2 RHB	90806		Iron Age	15	-	-	-	-	-	-	-	-	-	N	N	
410	B2 RHE	91561	deposit	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
411	B2 RHB	91683	posthole	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
421	B2 RHC	91667		Iron Age	20	-	-	-	-	-	-	-	-	-	N	N	
422	B2 RHC	91711		unknown	20	-	-	-	-	-	-	-	-	-	N	N	
423	B2 RHC	91679	gravel	Iron Age	90	-	-	-	-	-	-	-	-	-	N	N	
424	B2 RHE	91569	ditch?	medieval?	20	-	-	+	-	-	-	-	-	-	N	N	
425	B2 RHE	91637	pit	Iron Age	15	-	-	-	-	-	-	-	-	-	N	N	
427	B2 RHC	91648	wall	Iron Age	15	-	-	-	-	-	-	-	-	-	N	N	
428	B2 RHC	91624	hearth	Iron Age	19	-	-	+	-	-	-	-	-	-	N	Y	
429	B2 RHC	91471	Occupational layer	Iron Age	15	-	-	-	-	-	-	-	-	-	N	N	
431	B2 RHC	91740	stakehole	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
432	B2 RHE	91735	floor	Iron Age	6	-	-	-	-	-	-	-	-	-	N	N	
433	B2 RHE	91735	floor	Iron Age	2	-	-	-	-	-	-	-	-	-	N	N	
434	B2 RHE	91735	floor	Iron Age	2	-	-	-	-	-	-	-	-	-	N	N	
435	B2 RHE	91692	deposit	Iron Age	18	-	-	+	-	-	-	-	-	-	N	Y	
436	B2 RHC	91745	stakehole	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
437	B2 RHC	91746		Iron Age	8	-	-	+	-	-	-	-	-	-	N	Y	
437	B2 RHC	91746		Iron Age	10	-	-	-	-	-	-	-	-		N	N	
438	B2 RHC	91747	wall infill	Iron Age	6	-	-	+	-	-	-	-	-	-	N	N	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
439	B2 RHC	91748		Iron Age	34	-	-	+	-	-	-	-	-	-	N	Y	
440	B2 RHE	91722		Iron Age	34	-	-	+	-	-	-	-	-	-	N	Y	
441	B2 RHC	91750		Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
442	B2 RHC	91769	pit	Iron Age	9	-	-	-	-	-	-	-	-	-	N	N	
443	B2 RHC	91766	wall	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
445	B2 RHC	91734	posthole	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
446	B2 RHB	90956		Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
447	B2 RHA	90969		Iron Age	20	-	-	-	-	-	-	-	-	-	N	N	
450	B2 E area	91727	pit	Post Medieval	10	-	-	-	-	-	-	-	-	-	N	N	
451	B2 E area	91726	pit	Post Medieval	0	-	-	+	-	-	-	-	-	-	N	N	
451	B2 E area	91726	pit	Post Medieval	5	-	-	-	-	-	-	-	-		N	N	
452	B2 E area	91725	pit	Post Medieval	20	-	-	-	-	-	-	-	-	-	N	N	
453	B2 E area	91656	pit	Post Medieval	20	-	-	-	-	-	-	-	-	-	N	N	
454	B2 E area	91657	pit	Post Medieval	15	-	-	-	-	-	-	-	-	-	N	N	
455	B2 E area	91659	linear pit	Post Medieval	15	-	-	-	-	-	-	-	-	-	N	N	
456	B2 E area	91654	linear pit	Post Medieval	30	-	-	-	-	-	-	-	-	-	N	N	
457	B2 E area	91653	hollow	Post Medieval	50	-	-	-	-	-	-	-	-	-	N	N	
458	B2 E area	91691	pit	Post Medieval	5	-	-	+	-	-	-	-	-	-	N	Y	
458	B2 E area	91691	pit	Post Medieval	50	-	-	-	-	-	-	-	-	-	N	N	
459	B2 passage-way	91808	burnt patch	Iron Age	3	-	-	-	-	-	-	-	-	-	N	N	
460	B2 E area	91643	pit	Post Medieval	10	-	-	-	-	-	-	-	-	-	N	N	
461	B2 passage-way	91792	ditch	Bronze Age?	3	-	-	-	-	-	-	-	-	-	N	N	
462	B2 RHC	91710		Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
463	B2 RHE	91778	threshold deposit	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
463	B2 RHE	91778	threshold deposit	Iron Age	0	-	-	+	-	-	-	-	-	-	N	N	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
465	B2 RHC	91860	burnt patch	Bronze Age?	10	-	-	-	-	-	-	-	-	-	N	N	
467	B2 RHC	91883	occupation	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
469	B2 RHC	91858		Iron Age	10		-	+	-	-	-	-	-	-	N	Y	
471	B2 RHE	91909	deposit	Iron Age	10	-	-	+	-	-	-	-	-	-	N	N	
472	B2 RHC	91711		unknown	10	-	-	-	-	-	-	-	-	-	N	N	
474	B2 RHB	91930		Iron Age	15	-	-	-	-	-	-	-	-	-	N	N	
475	B2 passage-way	91956		Iron Age	25	-	-	-	-	-	-	-	-	-	N	N	
477	B2 RHA	90924		Iron Age	25	-	-	+	-	-	-	-	-	-	N	N	
478	B2 RHC	91961	hole	Iron Age	0	-	-	-	-	-	-	-	-	-	N	N	
479	B2 RHB	91060	slot	Iron Age	5	-	-	+	-	-	-	-	-	-	N	Y	
480	B2 RHA	90608	metalling	Iron Age	33	-	-	-	-	-	-	-	-	-	N	N	
481	B2 RHA	91939		Iron Age	35	-	-	-	-	-	-	-	-	-	N	N	
482	B2 RHA	91938		Iron Age	20	-	-	-	-	-	-	-	-	-	N	N	
483	B2 RHA	91931		Iron Age	20	-	-	-	-	-	-	-	-	-	N	N	
484	B2 RHA	91936		Iron Age	0	-	-	-	-	-	-	-	-	-	N	N	
485	B2 RHB	90990	floor	Iron Age	3	-	-	-	-	-	-	-	-	-	N	N	
486	B2 RHC	91996	depositional layer	Iron Age	23	-	-	-	-	-	-	-	-	-	N	N	
487	B2 RHC	92001	0	Iron Age	6	-	-	-	-	-	-	-	-	-	N	N	
488	B2 RHC	91923		Iron Age	4	-	-	-	-	-	-	-	-	-	N	N	
489	B2 RHC	91922	Floor	Iron Age	3	-	-	-	-	-	-	-	-	-	N	N	
490	B2 RHC	91924	depositional layer	Iron Age	16	-	-	-	-	-	-	-	-	-	N	N	
491	B2 RHC	91925	charcoal patch	Iron Age	40	-	-	-	-	-	-	-	-	-	N	N	
492	B2 RHC	92040	burnt patch	Iron Age	15	-	-	-	-	-	-	-	-	-	N	N	
493	B2 RHA	92018	stakehole	Bronze Age?	5	-	-	+	-	-	-	-	-	-	N	Y	
494	B2	90003		natural	314	-	-	-	-	-	-	-	-	++	N	N	wood
494	B2 E area	91837	natural	Post Medieval	10	-	-	-	-	-	-	-	-	-	N	N	
497	B2 RHC	92041	depositional layer	Iron Age	25	-	-	-	-	-	-	-	-	-	N	N	
498	B2 RHC	91926	depositional layer	Iron Age	10	-	-	+	-	-	-	-	-	-	N	Y	
499	B2 RHC	92041	depositional layer	Iron Age	16	-	-	-	-	-	-	-	-	-	N	N	
500	B2 passage-way	91666	burnt patch	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
502	B2 E area	91970		Bronze Age?	67	-	-	-	-	-	-	-	-	-	N	N	
503	B2 RHA	91011		Iron Age	65	-	-	+	-	-	-	-	-	-	N	Y	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
504	B2 RHA	92024	pit	Bronze Age?	18	-	-	+	-	-	-	-	-	-	N	N	
505	B2 passage-way	92073	hearth	Iron Age	3	-	-	+	-	-	-	-	-	-	N	N	
505	B2 passage-way	92073	hearth	Iron Age	35	-	-	+	-	-	-	-	-	-	N	N	
506	B2 RHC	92079		Iron Age	20	-	-	-	-	-	-	-	-	-	N	N	
507	B2 RHB	92119	0	0	10	-	-	-	-	-	-	-	-	-	N	N	
508	B2 RHB	90991		Iron Age	15	-	-	-	-	-	-	-	-	-	N	N	
509	B2 RHB	92069		Iron Age	10	-	-	+	-	-	-	-	-	-	N	N	
510	B2 passage-way	92094	burnt patch	Iron Age	6	-	-	-	-	-	-	-	-	-	N	N	
511	B2 passage-way	92095	burnt patch	Iron Age	3	-	-	-	-	-	-	-	-	-	N	N	
512	B2 RHC	92042		Iron Age	29	-	-	+	-	-	-	-	-	-	N	N	
514	B2 RHA	91005		Iron Age	22	-	-	-	-	-	-	-	-	-	N	N	
515	B2 RHA	91004		Iron Age	40	-	-	-	-	-	-	-	-	-	N	N	
516	B2 RHA	91003		Iron Age	40	-	-	-	-	-	-	-	-	-	N	N	
517	B2 RHA	91002		Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
518	B2 RHA	91001		Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
519	B2 RHA	92105		Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
520	B2 RHA	91389	drain?	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
521	B2 RHE	92098		Iron Age	38	-	-	-	-	-	-	-	-	-	N	N	
522	B2 RHB	91240	pit	Iron Age	15	-	-	+	-	-	-	-	-	-	N	N	
523	B2 RHC	92120		Bronze Age?	10	-	-	-	-	-	-	-	-	-	N	N	
524	B2 RHA	91661	pit	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
525	B2 RHA	92163	pit	Bronze Age?	0	-	-	-	-	-	-	-	-	-	N	N	
526	B2 RHA	92169	pit	Iron Age	15	-	-	+	-	-	-	-	-	-	N	Y	
527	B2 RHC	92120		Bronze Age?	10	-	-	-	-	-	-	-	-	-	N	N	
528	B2 RHA	92011	drain	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
529	B2 RHA	92012	drain	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
530	B2 RHA	91934	pit	Iron Age	29	-	-	-	-	-	-	-	-	-	N	N	
531	B2 RHA	91933		Iron Age	30	-	-	-	-	-	-	-	-	-	N	N	
532	B2 RHA	91937		Iron Age	27	-	-	-	-	-	-	-	-	-	N	N	
533	B2 RHE	91304	deposit	Iron Age	0	-	-	-	-	-	-	-	-	-	N	N	
534	B2 RHC	92192		Bronze Age?	20	-	-	+	-	-	-	-	-	-	N	N	
535	B2 RHC	92202	redeposited natural	Bronze Age?	18	-	-	-	-	-	-	-	-	-	N	N	
536	B2 RHB	92201	pit	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
537	B2 RHE	92203	posthole	Iron Age	0	-	-	+	-	-	-	-	-	-	N	Y	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
538	B2 passage-way	92118	deposit	Iron Age	144	-	-	-	-	-	-	-	-	-	N	N	
539	B2 passage-way	91321	levelling layer	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
540	B2 RHC	92174	pit	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
541	B2 RHC	92213	posthole	Iron Age	27	-	-	-	-	-	-	-	-	-	N	N	
543	B2 RHB	90990	floor	Iron Age	34	-	-	-	-	-	-	-	-	-	N	N	
543	B2 RHB	90990	floor	Iron Age	10	-	-	+	-	-	-	-	-		N	N	
544	B2 RHB	90956		Iron Age	6	-	-	-	-	-	-	-	-	-	N	N	
545	B2 RHB	92069		Iron Age	6	-	-	-	-	-	-	-	-	-	N	N	
546	B2 RHC	91847	infill	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
547	B2 RHC	91848		Iron Age	10	-	-	+	-	-	-	-	-	-	N	N	
548	B2 RHC	91849		Iron Age	10	-	-	+	-	-	-	-	-	-	N	N	
549	B2 RHC	91851	deposit	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
550	B2 RHC	92114		Bronze Age?	10	-	-	-	-	-	-	-	-	-	N	N	
551	B2 RHC	92115		Bronze Age?	10	-	-	+	-	-	-	-	-	-	N	YN	
552	B2 RHC	92116		Iron Age	6	-	-	-	-	-	-	-	-	-	N	N	
553	B2 RHB	92545	burnt layer	Iron Age	10	-	-	+	-	-	-	-	-	-	N	Y	
554	B2 RHC	92226		Bronze Age?	10	-	-	-	-	-	-	-	-	-	N	N	
556	B2 passage-way	92231		Iron Age	13	-	-	-	-	-	-	-	-	-	N	N	
557	B2 RHC	92227		Bronze Age?	6	-	-	+	-	-	-	-	-	-	N	Y	
558	B2 RHC	92237	0	0	113	-	-	+	-	-	-	-	-	-	N	N	
559	B2 RHC	92248	posthole	Iron Age	25	-	-	+	-	-	-	-	-	-	N	N	
560	B2 RHC	91289	floor surface	Iron Age	15	-	-	-	-	-	-	-	-	-	N	N	
560	B2 RHC	91289	floor surface	Iron Age	137	-	-	-	-	-	-	-	-	-	N	N	
561	B2 RHA	91663		Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
562	B2 passage-way	92195	pit	Iron Age	9	-	-	+	-	-	-	-	-	-	N	N	
563	B2 RHC	91267	wall	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
564	B2 RHC	91516	occupational level	Iron Age	59	-	-	-	-	-	-	-	-	-	N	N	
565	B2 passage-way	92196	posthole	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
566	B2 passage-way	92229	wall	Iron Age	42	-	-	-	-	-	-	-	-	-	N	N	
567	B2 RHC	92257		unknown	6	-	-	-	-	-	-	-	-	-	N	N	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
568	B2 passage-way	92232		Iron Age	12	-	-	-	-	-	-	-	-	-	N	N	
569	B2 RHB	90956		Iron Age	51	-	-	-	-	-	-	-	-	-	N	N	
570	B2 passage-way	92211	ditch	Iron Age	79	-	-	+	-	-	-	-	-	-	N	Y	
571	B2 RHE	91304	deposit	Iron Age	31	-	-	+	-	-	-	-	-	-	N	Y	
572	B2 RHE	92249		Iron Age	15	-	-	-	-	-	-	-	-	-	N	N	
573	B2 RHA	92276	depression	Bronze Age?	10	-	-	-	-	-	-	-	-	-	N	N	
574	B2 passage-way	91812	occupation layer	Iron Age	18	-	-	-	-	-	-	-	-	-	N	N	
576	B2 passage-way	92283	stakehole	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
577	B2 passage-way	92287	pit	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
578	B2 passage-way	92285	posthole	Bronze Age?	3	-	-	-	-	-	-	-	-	-	N	N	
580	B2 RHE	92186	posthole	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
581	B2 RHB	91770		Iron Age	10	-	-	+	-	-	-	-	-	-	N	Y	
582	B2 passage-way	92047	pit	Iron Age	28	-	-	-	-	-	-	-	-	-	N	N	
583	B2 RHC	91470	floor	Iron Age	25	-	-	-	-	-	-	-	-	-	N	N	
584	B2 RHE	92085	stone hole	Iron Age	3	-	-	-	-	-	-	-	-	-	N	N	
585	B2 RHC	91734	posthole	Iron Age	15	-	-	-	-	-	-	-	-	-	N	N	
586	B2 RHA	92262	pit	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
587	B2 RHA	92282	post trench	Iron Age	18	-	-	-	-	-	-	-	-	-	N	N	
588	B2 RHA	92321		Iron Age	15	-	-	-	-	-	-	-	-	-	N	N	
589	B2 RHC	92324	0	0	15	-	-	-	-	-	-	-	-	-	N	N	
590	B2 RHC	91679	gravel	Iron Age	20	-	-	-	-	-	-	-	-	-	N	N	
591	B2 RHC	92257		unknown	10	-	-	-	-	-	-	-	-	-	N	N	
592	F1 RHH	92820		Iron Age	56	-	-	+	-	-	-	-	-	-	N	Y	
593	B2 E area	92353	posthole	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
594	B2 E area	92351	posthole	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
595	B2 E area	92349	pit	Iron Age	50	-	-	-	-	-	-	-	-	-	N	N	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
596	B2 RHA	92340	post trench	Iron Age	57	-	-	-	-	-	-	-	-	-	N	N	
597	B2 RHC	92334	pit	Iron Age	4	-	-	+	-	-	-	-	-	-	N	Y	
597	B2 RHC	92334	pit	Iron Age	15	-	-	-	-	-	-	-	-	-	N	N	
598	B2 RHC	92338	pit	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
599	B2 RHE	92236		Iron Age	10	-	-	+	-	-	-	-	-	-	N	Y	
600	B2 RHA	92362	deposit	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
602	B2 RHA	90947	layer	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
602	B2 RHA	91008		Iron Age	15	-	-	-	-	-	-	-	-	-	N	N	
603	B2 E area	92364	pit/posthole?	Post Medieval	15	-	-	-	-	-	-	-	-	-	N	N	
604	B2 RHB	92361	posthole	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
605	B2 RHE	92326	pit	Iron Age	8	-	-	+	-	-	-	-	-	-	N	N	
607	B2 E area	92363	pit/posthole?	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
608	B2 RHC	92323	pit	Iron Age	15	-	-	-	-	-	-	-	-	-	N	N	
609	B2 RHC	92176	pit	Iron Age	3	-	-	-	-	-	-	-	-	-	N	N	
610	B2 RHC	92175	pit	Iron Age	3	-	-	-	-	-	-	-	-	-	N	N	
611	B2 E area	92306	ditch	Bronze Age?	5	-	-	-	-	-	-	-	-	-	N	N	
612	B2 E area	92305	posthole	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
613	B2 E area	92307	ditch	Bronze Age?	0	-	-	-	-	-	-	-	-	-	N	N	
614	B2 E area	92308	ditch	Bronze Age?	10	-	-	-	-	-	-	-	-	-	N	N	
615	B2 E area	92309	ditch	Bronze Age?	0	-	-	-	-	-	-	-	-	-	N	N	
616	B2 E area	92345	pit	Post Medieval	27	-	-	-	-	-	-	-	-	-	N	N	
617	B2 E area	92315	pit	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
618	B2 passage-way	92370	drain	Iron Age	3	-	-	-	-	-	-	-	-	-	N	N	
619	F1 RHH	92874	posthole	Iron Age	10	-	-	+	-	-	-	-	-	-	N	N	
620	B2 RHE	92378	dump	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
620	B2 RHE	92378	dump	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
621	B2 RHC	91708	hearth	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
622	B2 RHC	91709	hearth	Iron Age	10	-	-	-	-	-	-	-	-	-	N	Y	
623	B2 E area	92381	pit	Post Medieval	85	-	-	-	-	-	-	-	-	-	N	N	
624	B2 passage-	92112	pit	Iron Age	8	-	-	-	-	-	-	-	-	-	N	N	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
	way																
625	B2 passage-way	92190	fill of linear feature	Iron Age	8	-	-	-	-	-	-	-	-	-	N	N	
626	B2 RHC	92355		Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
627	B2 RHE	92401	pit	Iron Age	9	-	-	+	-	-	-	-	-	-	N	Y	
628	B2 RHC	92400		Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
629	B2 passage-way	92411	pit	Iron Age	6	-	-	-	-	-	-	-	-	-	N	N	
630	B2 passage-way	92412	ditch	Iron Age	30	-	-	-	-	-	-	-	-	-	N	N	
631	B2 NWA	92388	posthole?	Post Medieval?	3	-	-	-	-	-	-	-	-	-	N	N	
633	B2 passage-way	92290	ditch	Iron Age	12	-	-	-	-	-	-	-	-	-	N	N	
634	B2 passage-way	92423	posthole	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
635	B2 RHA	91011		Iron Age	27	-	-	+	-	-	-	-	-	-	N	Y	
636	B2 passage-way	92390	dark layer	Bronze Age?	2	-	-	-	-	-	-	-	-	-	N	N	
636	B2 passage-way	92390	dark layer	Bronze Age?	10	-	-	-	-	-	-	-	-	-	N	N	
637	B2 NWA	92434	posthole	Post Medieval	5	-	-	-	-	-	-	-	-	-	N	N	
638	B2 NWA	92436	posthole	Post Medieval	13	-	-	-	-	-	-	-	-	-	N	N	
639	B2 NWA	92438	posthole	Post Medieval	5	-	-	-	-	-	-	-	-	-	N	N	
640	B2 NWA	92447	pit	Post Medieval	15	-	-	-	-	-	-	-	-	-	N	N	
641	B2 NWA	92448	pit	Post Medieval	15	-	-	-	-	-	-	-	-	-	N	N	
642	B2 RHB	92458	posthole?	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
643	B2 RHA	92456	posthole	Iron Age	20	-	-	-	-	-	-	-	-	-	N	N	
644	B2 RHC	92473	0	0	10	-	-	-	-	-	-	-	-	-	N	N	
645	B2 passage-way	92493	posthole	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
646	B2 passage-way	92494	slot	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
647	B2 RHA	92322	post trench	Iron Age	34	-	-	+	-	-	-	-	-	-	N	Y	
648	B2 RHC	92517	ditch	Iron Age	15	-	-	+	-	-	-	-	-	-	N	Y	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
649	B2 RHC	92518	ditch	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
650	B2 RHC	91595	depositional layer	Iron Age	18	-	-	+	-	-	-	-	-	-	N	Y	
650	B2 RHC	91595	depositional layer	Iron Age	2	-	-	+	-	-	-	-	-	-	N	Y	
651	B2 RHC	91160		Iron Age	3	-	-	+	-	-	-	-	-	-	N	N	
651	B2 RHC	91160		Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
652	B2 RHC	92514	depositional layer	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
653	B2 RHC	91766	wall	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
654	B2 RHC	92520	silting deposit	Iron Age	0	-	-	-	-	-	-	-	-	-	N	N	
658	B2 RHB	92534	pit	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
659	B2 RHE	92536	posthole	Bronze Age?	6	-	-	-	-	-	-	-	-	-	N	N	
660	B2 E area	92539	0	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
661	B2 E area	92542	0	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
662	B2 E area	92538	0	Bronze Age?	10	-	-	-	-	-	-	-	-	-	N	N	
662	B2 E area	92538	0	Bronze Age?	10	-	-	-	-	-	-	-	-	-	N	N	
663	B2 RHE	92537	wall	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
664	B2 RHB	92545	burnt layer	Iron Age	6	-	-	-	-	-	-	-	-	-	N	N	
665	B2 RHC	92529	depositional layer	Iron Age	6	-	-	-	-	-	-	-	-	-	N	N	
666	B2 RHC	92519	rubble	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
667	B2 RHC/RHE	92540	depositional layer	Bronze Age?	3	-	-	-	-	-	-	-	-	-	N	N	
668	B2 RHC/E	92541	rubble	Iron Age	44	-	-	-	-	-	-	-	-	-	N	N	
669	B2 RHC	92550	depositional layer	Iron Age	137	-	-	+	-	-	-	-	-	-	N	Y	
670	B2 RHC	92543	cobbles	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
671	B2 RHC	92544		Iron Age	0	-	-	-	-	-	-	-	-	-	N	N	
672	B2 RHC	90012	wall	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
673	B2 RHC	91269	laid surface	Iron Age	0	-	-	-	-	-	-	-	-	-	N	N	
674	B2 RHC	92165	depositional layer	Bronze Age?	6	-	-	-	-	-	-	-	-	-	N	N	
676	B2 RHE	92563	posthole	Bronze Age?	9	-	-	-	-	-	-	-	-	-	N	N	
677	B2 RHE	92564	posthole	Bronze Age?	5	-	-	+	-	-	-	-	-	-	N	N	
678	B2 RHC	92569	deposit	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
679	B2	92502	soil and sand	Bronze Age?	4	-	-	-	-	-	-	-	-	-	N	N	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
	passage-way																
680	B2 RHC	92165	depositional layer	Bronze Age?	10	-	-	-	-	-	-	-	-	-	N	N	
682	B2 RHE	92141	hearth	Iron Age	12	-	-	-	-	-	-	-	-	-	N	N	
684	B2 RHE	92148	floor	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
686	B2 RHE	92146	hearth?	Iron Age	10	-	-	+	-	-	-	-	-	-	N	Y	
687	B2 RHC	92577		Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
688	B2 RHC	92578	deposit	Bronze Age?	10	-	-	-	-	-	-	-	-	-	N	N	
689	B2 RHC	91626	gravel	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
690	B2 RHC	91625	hearth	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
691	B2 RHC	93612	robber's cut	unknown	10	-	-	-	-	-	-	-	-	-	N	N	
692	B2 RHE	92590	hearth	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
693	B2 RHC	92591	pit	unknown	741	-	-	-	-	-	-	-	-	-	N	N	Cinder/slag
694	B2 RHA	92594	pit	Bronze Age?	8	-	-	+	-	-	-	-	-	-	N	Y	
695	B2 E Area	91874	linear	Bronze Age?	10	-	-	-	-	-	-	-	-	-	N	N	
696	F1 RHG	92612		Iron Age	15	-		-	-	-	-	-	-	-	N	N	
697	F1 RHG	92613		Iron Age	8	-	-	-	-	-	-	-	-	-	N	N	
698	F1 FW	92616	ditch	Bronze Age	33	-	-	-	-	-	-	-	-	-	N	N	
698	F1 FW	92616	ditch	Bronze Age	36	-	-	-	-	-	-	-	-	-	N	N	
699	F1 RHG	92682	posthole	Iron Age	23	-	-	-	-	-	-	-	-	-	N	N	
705	F1 RHG	92638	pit	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
706	F1 RHG	92685		Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
707	B2 RHE	92216	hearth	Iron Age	2	-	-	+	-	-	-	-	-	-	N	N	
707	B2 RHE	92216	hearth	Iron Age	20	-	-	+	-	-	-	-	-	-	N	Y	
708	F1 RHG	92702	posthole	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
709	F1 RHG	92687	ditch	Iron Age	8	-	-	+	-	-	-	-	-	-	N	N	
711	F1 RHG	92730	posthole	Iron Age	7	-	--	+	-	-	-	-	-	-	N	N	
712	F1 RHG	92687	ditch	Iron Age	7	-	-	+	-	-	-	-	-	-	N	Y	
712	F1 RHG	92687	ditch	Iron Age	33	-	-	+	-	-	-	-	-	-	N	N	
714	F1 RHG	92779	posthole	Iron Age	3	-	-	-	-	-	-	-	-	-	N	N	
715	F1 FW	92678	posthole	Bronze Age??	9	-	-	-	-	-	-	-	-	-	N	N	
717	F1 FW	92675	tree throw?	Bronze Age	5	-	-	-	-	-	-	-	-	-	N	N	
718	F1 FW	92664	0	void	29	-	-	-	-	-	-	-	-	-	N	N	
719	F1 RHG	92794	0	void	15	-	-	-	-	-	-	-	-	-	N	N	
720	F1 RHG	92804	posthole	Iron Age	9	-	-	-	-	-	-	-	-	-	N	N	
721	F1 RHG	92812	posthole	Iron Age	9	-	-	-	-	-	-	-	-	-	N	N	
722	F1 RHG	92802	posthole	Iron Age	9	-	-	-	-	-	-	-	-	-	N	N	
723	K7	80018	grave	early medieval	185	-	-	-	-	-	-	-	-	-	N	N	
724	F1 RHG	92648	posthole	Bronze Age	14	-	-	-	-	-	-	-	-	-	N	N	
725	F1 RHH	92830		Iron Age	10	-	-	+	-	-	-	-	-	-	N	N	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
726	F1 RHG	92786		Iron Age	6	-	-	-	-	-	-	-	-	-	N	N	
727	F1 RHH	92822	occupation layer	Iron Age	34	-	-	+	-	-	-	-	-	-	N	YN	
727	F1 RHH	92822	occupation layer	Iron Age	128	-	-	+	-	-	-	-	-	-	N	Y	
728	F1 RHG	92775	pit	Iron Age	3	-	-	-	-	-	-	-	-	-	N	N	
729	F1 RHG	92867	posthole	Iron Age	8	-	-	-	-	-	-	-	-	-	N	N	
730	F1 RHG	92869	posthole	Iron Age	3	-	-	-	-	-	-	-	-	-	N	N	
731	F1 RHH	92874	posthole	Iron Age	21	-	-	-	-	-	-	-	-	-	N	N	
732	K7	80007	grave	early medieval	55	-	-	-	-	-	-	-	-	-	N	N	
733	K7	80013	pit	early medieval	2	-	-	+	-	-	-	-	-	-	N	N	
734	K7	80008	grave	early medieval	70	-	-	-	-	-	-	-	-	-	N	N	
735	K7	80005	grave	early medieval	42	-	-	+	-	-	-	-	-	-	N	Y	
736	K7	80005	grave	early medieval	30	-	-	+	-	-	-	-	-	-	N	Y	
738	K7	80012	grave	early medieval	60	-	-	+	-	-	-	-	-	-	N	N	
739	K7	80009	grave	early medieval	0	-	-	-	-	-	-	-	-	-	N	N	
739	K7	80009	grave	early medieval	91	-	-	+	-	-	-	-	-	-	N	Y	
740	K7	80011	grave	early medieval	102	-	-	+	-	-	-	-	-	-	N	Y	
743	K7	80065	pit	early medieval	61	-	-	+	-	-	-	-	-	-	N	N	
744	K7	80010	grave	early medieval	17	-	-	+	-	-	-	-	-	-	N	Y	
745	K7	80054	pit	Early medieval?	39	-	-	-	-	-	-	-	-	-	N	N	
747	K7	80015	grave	early medieval	124	-	-	+	-	-	-	-	-	-	N	Y	
748	F1 RHG	92888	posthole	Iron Age	4	-	-	-	-	-	-	-	-	-	N	N	
749	F1 RHG	92624	posthole	Iron Age	4	-	-	-	-	-	-	-	-	-	N	N	
750	F1 RHG	92898	posthole	Bronze Age	4	-	-	-	-	-	-	-	-	-	N	N	
751	F1 RHH	92825	posthole	Iron Age	32	-	-	-	-	-	-	-	-	-	N	N	
752	F1 RHH	92885	hollow	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
753	F1 RHH	92823	hollow	Iron Age	24	-	-	-	-	-	-	-	-	-	N	N	
754	F1 RHH	92900	posthole	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
755	F1 FW	92848	pit	Post Medieval	21	-	-	-	-	-	-	-	-	-	N	N	
756	F1 FW	92854	posthole	Post Medieval	64	-	-	-	-	-	-	-	-	-	N	N	
757	F1 FW	92914	posthole	Post Medieval	10	-	-	-	-	-	-	-	-	-	N	N	
758	F1 FW	92886	posthole	Post Medieval	10	-	-	-	-	-	-	-	-	-	N	N	
759	F1 FW	92781	pit	Post Medieval	30	-		-	-	-	-	-	-	-	N	N	
760	F1 FW	92913	posthole	Post Medieval	10	-	-	-	-	-	-	-	-	-	N	N	
761	F1 FW	92904	hearth	Iron Age	39	-	-	+	-	-		-	-	-	N	N	
762	K7	80017	grave	early medieval	212	-	-	++	-	-	-	-	-	-	N	Y	
763	K7	80079	grave	Early medieval	31	-	-	+	-	-	-	-	-	-	N	Y	
764	K7	80016	grave	early medieval	83	-	-	+	-	-	-	-	-	-	N	Y	
765	K7	80076	grave	early medieval	96	-	-	++	-	-	-	-	-	-	N	Y	
766	K7	80035	grave	early medieval	76	-	-	++	-	-	-	-	-	-	N	Y	
767	K7	80077	grave	early medieval	85	-	-	+	-	-	-	-	-	-	N	Y	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
768	K7	80096	Grave	early medieval	69	-	-	++	-	-	-	-	-	-	N	Y	
769	K7	80099	grave	early medieval	74	-	-	++	-	-	-	-	-	-	N	Y	
770	K7	80014	grave	early medieval	131	-	-	++	-	-	-	-	-	-	N	Y	
771	K7	80102	grave	early medieval	75	-	-	-	-	-	-	-	-	-	N	N	
771	K7	80102	grave	early medieval	27	-	-	+	-	-	-	-	-	-	N	Y	
772	K7	80103	pit	unknown	81	-	-	-	-	-	-	-	-	-	N	N	Coke
773	F1 RHG	92935	posthole	Iron Age	6	-	-	-	-	-	-	-	-	-	N	N	
774	F1 RHG	92941	posthole	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
775	F1 FE	92953	patch	Iron Age	26	-	-	-	-	-	-	-	-	-	N	N	
776	F1 RHG	92938	beam slot	Iron Age	6	-	-	-	-	-	-	-	-	-	N	N	
777	F1 RHI	92957	posthole	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
778	F1 RHI	92959	posthole	Iron Age	9	-	-	-	-	-	-	-	-	-	N	N	
779	K7	80021	grave	early medieval	47	-	-	+	-	-	-	-	-	-	N	Y	
780	K7	80111	posthole	Post medieval?	17	-	-	-	-	-	-	-	-	-	N	N	
781	K7	80113	posthole	Unknown	14	-	-	-	-	-	-	-	-	-	N	N	
782	K7	80115	posthole	Prehistoric?	15	-	-	-	-	-	-	-	-	-	N	N	
783	K7	80124	grave	early medieval	15	-	-	-	-	-	-	-	-	-	N	N	
784	F1 RHI	92829	burnt patch	Iron Age	118	-	-	+	-	-	-	-	-	-	N	Y	
785	F1 RHI	92963	posthole	Iron Age	22	-	-	-	-	-	-	-	-	-	N	N	
786	F1 RHH	92875	floor	Iron Age	35	-	-	-	-	-	-	-	-	-	N	N	
790	F1 RHI	92945		Iron Age	52	-	-	-	-	-	-	-	-	-	N	N	
791	F1 FE	92999		Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
792	F1 FE	93010		Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
793	F1 FW	93022	gully	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
794	F1 RHI	93109	posthole	Iron Age	19	-	-	+	-	-	-	-	-	-	N	Y	
795	F1 RHI	93011	0	Iron Age	10	-	-	+	-	-	-	-	-	-	N	N	
796	F1 RHI	93065	patch	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
797	F1 RHI	92819		Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
798	F1 RHI	92819		Iron Age	18	-	-	-	-	-	-	-	-	-	N	N	
799	F1 RHI	92819		Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
800	F1 RHI	92819		Iron Age	18	-	-	-	-	-	-	-	-	-	N	N	
801	F1 RHI	92916		Iron Age	18	-	-	+	-	-	-	-	-	-	N	N	
802	F1 RHI	92961		Iron Age	7	-	-	+	-	-	-	-	-	-	N	N	
803	F1 RHI	92961		Iron Age	3	-	-	-	-	-	-	-	-	-	N	N	
804	F1 RHI	92961		Iron Age	19	-	-	+	-	-	-	-	-	-	N	N	
805	F1 RHI	92961		Iron Age	14	-	-	+	-	-	-	-	-	-	N	N	
806	F1 RHI	92961		Iron Age	21	-	-	+	-	-	-	-	-	-	N	Y	
807	F1 FE	93067	posthole	Iron Age	6	-	-	+	-	-	-	-	-	-	N	N	
808	F1 FW+FE	93082	posthole	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
809	F1 FW+FE	93083	posthole	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
811	F1 RHI	93085	posthole	Iron Age	7	-	-	-	-	-	-	-	-	-	N	N	
812	F3	25012	ditch	Unknown	34	-	-	-	-	-	-	-	-	-	N	N	
813	F1 FW+FE	93090	posthole	Iron Age	0	-	-	-	-	-	-	-	-	-	N	N	
814	F1 FW	93088	posthole	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
815	F1 RHI	93093	posthole	Iron Age	6	-	-	-	-	-	-	-	-	-	N	N	
819	E (hollow)	31006	burnt patch	Neolithic	5	-	-	-	-	-	-	-	-	-	N	N	
820	E (hollow)	31005	burnt patch	Neolithic	5	-	-	-	-	-	-	-	-	-	N	N	
822	E (hollow)	31014	pit	Neolithic	3	-	-	-	-	-	-	-	-	-	N	N	
823	E (hollow)	31007	burnt patch	Neolithic	3	-	-	-	-	-	-	-	-	-	N	N	
824	E (hollow)	31019	posthole	Neolithic	3	-	-	-	-	-	-	-	-	-	N	N	
825	E (hollow)	31032	stakehole	Neolithic	3	-	-	-	-	-	-	-	-	-	N	N	
826	E (hollow)	31034	pit	Neolithic	3	-	-	-	-	-	-	-	-	-	N	N	
827	E (hollow)	31036	posthole	Neolithic	3	-	-	-	-	-	-	-	-	-	N	N	
828	E (hollow)	31038	stakehole	Neolithic	5	-	-	-	-	-	-	-	-	-	N	N	
829	E (hollow)	31040	stakehole	Neolithic	3	-	-	-	-	-	-	-	-	-	N	N	
830	E (hollow)	31027	pit	Neolithic	2	-	-	-	-	-	-	-	-	-	N	N	
831	E (hollow)	31029	pit	Neolithic	2	-	-	-	-	-	-	-	-	-	N	N	
832	E (hollow)	31042	stakehole	Neolithic	2	-	-	-	-	-	-	-	-	-	N	N	
833	E (hollow)	31044	stakehole	Neolithic	3	-	-	-	-	-	-	-	-	-	N	N	
834	E (hollow)	31074	stakehole	Neolithic	3	-	-	-	-	-	-	-	-	-	N	N	
835	E (hollow)	31072	stakehole	Neolithic	3	-	-	-	-	-	-	-	-	-	N	N	
836	E (hollow)	31070	stakehole	Neolithic	3	-	-	-	-	-	-	-	-	-	N	N	
838	E (hollow)	31050	stakehole	Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
839	E	31052	stakehole	Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
	(hollow)																
840	E (hollow)	31062	stakehole	Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
841	E (hollow)	31048	stakehole	Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
842	E (hollow)	31060	stakehole	Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
843	E (hollow)	31068	stakehole	Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
844	E (hollow)	31064	stakehole	Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
845	E (hollow)	31066	stakehole	Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
846	E (hollow)	31054	stakehole	Neolithic	2	-	-	+	-	-	-	-	-	-	N	Y	
847	E (hollow)	31056	stakehole	Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
848	E (hollow)	31058	stakehole	Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
849	E (hollow)	31081	stakehole	Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
851	E (hollow)	31084	stakehole	Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
852	E (hollow)	31086	stakehole	Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
854	E (hollow)	31087	stakehole	Neolithic	10	-	-	+	-	-	-	-	-	-	N	Y	
855	E (hollow)	31092	stakehole	Neolithic	5	-	-	-	-	-	-	-	-	-	N	N	
856	E (hollow)	31095	stakehole	Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
857	E (hollow)	31097	stakehole	Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
858	E (hollow)	31100	pit	Neolithic	7	-	-	+	-	-	-	-	-	-	N	N	
859	E (hollow)	31102	pit	Neolithic	5	-	-	-	-	-	-	-	-	-	N	N	
861	E (hollow)	31118	stakehole	Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
862	E (hollow)	31125	pit	Late Neo?	2	-	-	-	-	-	-	-	-	-	N	N	
863	E (hollow)	31121	posthole	Neolithic	3	-	-	+	-	-	-	-	-	-	N	N	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
864	E (hollow)	31143	posthole	Neolithic	5	-	-	-	-	-	-	-	-	-	N	N	
864	E (hollow)	31143	posthole	Neolithic	5	-	-	-	-	-	-	-	-	-	N	N	
865	E (hollow)	31141	stakehole	Neolithic	3	-	-	+	-	-	-	-	-	-	N	N	
866	E (hollow)	31146	stakehole	Late Neo?	0	-	-	-	-	-	-	-	-	-	N	N	
868	E (hollow)	31106	stakehole	Neolithic	3	-	-	+	-	-	-	-	-	-	N	Y	
869	E (hollow)	31137	pit	Neolithic	3	-	-	+	-	-	-	-	-	-	N	N	
872	E (hollow)	31131	stakehole	Neolithic	3	-	-	-	-	-	-	-	-	-	N	N	
873	E (hollow)	31133	stakehole	Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
876	E (hollow)	31135	pit	Neolithic	3	-	-	-	-	-	-	-	-	-	N	N	
877	E (hollow)	31132	stakehole	Neolithic	2	-	-	-	-	-	-	-	-	-	N	N	
878	E (PM)	31153	smithing hearth	Post medieval	61	-	-	-	-	-	-	-	-	-	N	N	Cinder/slag
878	E (PM)	31153	smithing hearth	Post medieval	30	-	-	-	-	-	-	-	-	-	N	N	
881	E (hollow)	31089	posthole	Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
882	E (hollow)	31192	pit	Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
883	E (hollow)	31198	posthole	Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
884	E (hollow)	31194	posthole	Neolithic	3	-	-	+	-	-	-	-	-	-	N	N	
885	E (hollow)	31126	stakehole	Neolithic	3	-	-	-	-	-	-	-	-	-	N	N	
886	E (hollow)	31200	stakehole	Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
887	E (hollow)	31098	scoop	Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
888	E (hollow)	31108	stakehole	Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
889	E (hollow)	31111	stakehole	Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
890	E	31201	Occupation?	Neolithic	3	-	-	+	-	-	-	-	-	-	N	N	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
	(hollow)																
893	E (hollow)	31215	natural	Natural	22	-	-	+	-	-	-	-	-	-	N	Y	
895	E (hollow)	31202	stakehole	Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
896	E (hollow)	31216	Layer	Neolithic	10	-	-	+	-	-	-	-	-	-	N	N	
897	E (hollow)	31274	stakehole	Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
899	E (hollow)	31272	stakehole	Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
900	E (BM)	31284	burnt mound pit	Prehistoric	14	-	-	+	-	-	-	-	-	-	N	Y	
901	E (hollow)	31278	natural	Neolithic	3	-	-	+	-	-	-	-	-	-	N	N	
902	E (hollow)	31287	stakehole	Neolithic	3	-	-	+	-	-	-	-	-	-	N	N	
903	E (hollow)	31281	stakehole	Neolithic	2	-	-	-	-	-	-	-	-	-	N	N	
904	E (hollow)	31276	stakehole	Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
905	E (hollow)	31300	stakehole	Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
906	E (hollow)	31302	stakehole	Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
907	E (hollow)	31279	slot	Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
909	E (BM)	31305	pit	Prehistoric	4	-	-	+	-	-	-	-	-	-	N	Y	
910	E (hollow)	31297	stakehole	Neolithic	2	-	-	-	-	-	-	-	-	-	N	N	
911	E (BM)	31307	pit	Prehistoric	16	-	-	+	-	-	-	-	-	-	N	N	
912	E (hollow)	31309	stakehole	Neolithic	5	-	-	-	-	-	-	-	-	-	N	N	
913	E (hollow)	31357	stakehole	Neolithic	3	-	-	-	-	-	-	-	-	-	N	N	
914	E (BM)	31366	pit	Prehistoric	9	-	-	+	-	-	-	-	-	-	N	Y	
915	E (BM)	31367	pit	Prehistoric	10	-	-	+	-	-	-	-	-	-	N	N	
916	E (BM)	31368	pit	Prehistoric	10	-	-	+	-	-	-	-	-	-	N	N	
918	E (hollow)	31401	pit or posthole?	Neolithic	10	-	-	+	-	-	-	-	-	-	N	Y	
919	E (hollow)	31403	Layer	Neolithic	8	-	-	-	-	-	-	-	-	-	N	N	
920	E	31406	pit	Neolithic	5	-	-	-	-	-	-	-	-	-	N	N	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
	(hollow)																
921	E (hollow)	31405	stakehole	Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
926	E	31025	relict soil	Pre-Neolithic	6	-		+	-	-	-	-	-	-	N	Y	
927	E (hollow)	31530	pit	Neolithic	5	-	-	-	-	-	-	-	-	-	N	N	
928	E (hollow)	31532	natural	Neolithic	5	-	-	+	-	-	-	-	-	-	N	N	
930	E (hollow)	31536	slot	Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
932	E (hollow)	31540	stakehole	Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
933	E (hollow)	31542	stakehole	Neolithic	3	-	-	-	-	-	-	-	-	-	N	N	
934	E (hollow)	31544	stakehole	Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
935	E (hollow)	31546	pit	Neolithic	19	-	-	+	-	-	-	-	-	-	N	Y	
936	E (hollow)	31549	slot	Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
937	E (hollow)	31551	natural	Neolithic	3	-	-	+	-	-	-	-	-	-	N	Y	
939	E	31557	stakehole?	Neo?	15	-	-	+	-	-	-	-	-	-	N	Y	
940	E (BM)	31372	pit	Prehistoric	7	-	-	+	-	-	-	-	-	-	N	Y	
941	E (BM)	31522	posthole	Prehistoric	10	-	-	+	-	-	-	-	-	-	N	Y	
942	E (hollow)	31552	slot	Neolithic	3	-	-	-	-	-	-	-	-	-	N	N	
943	E (hollow)	31547	pit	Neolithic	3	-	-	-	-	-	-	-	-	-	N	N	
944	E (BM)	31369	pit	Prehistoric	5	-	-	+	-	-	-	-	-	-	N	N	
945	E (BM)	31373	pit	Prehistoric	7	-	-	+	-	-	-	-	-	-	N	N	
946	E (BM)	31560	pit	Prehistoric	2	-	-	-	-	-	-	-	-	-	N	N	
948	E (BM)	31562	burnt mound	Prehistoric	6	-	-	-	-	-	-	-	-	-	N	N	
949	E (BM)	31565	pit	Prehistoric	13	-	-	+	-	-	-	-	-	-	N	Y	
950	E (BM)	31524	pit	Prehistoric	10	-	-	+	-	-	-	-	-	-	N	N	
951	E (BM)	31558	pit	Prehistoric	10	-	-	+	-	-	-	-	-	-	N	N	
953	E (hollow)	31570	pit	Neolithic	10	-	-	-	-	-	-	-	-	-	N	N	
954	E (hollow)	31572	stakehole	Neolithic	3	-	-	-	-	-	-	-	-	-	N	N	
959	E (hollow)	31123	lens	Neolithic?	15	-	-	+	-	-	-	-	-	-	N	Y	
963	E	31601	stakehole	Neolithic	5	-	-	+	-	-	-	-	-	-	N	N	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
	(hollow)																
966	E (hollow)	31609	pit	Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
968	E (hollow)	31609	pit	Neolithic	8	-	-	+	-	-	-	-		-	N	Y	
970	F1 RHI	93091	hearth?	Iron Age	3	-	-	-	-	-	-	-	-	-	N	N	
971	F1 RHI	93138	posthole	Iron Age	10	-	-	+	-	-	-	-	-	-	N	Y	
973	F1 RHI	93184	linear feature	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
974	F1 RHI	92955	linear feature	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
975	F1 RHI	93193	pit	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
976	F1 RHI	92954	linear feature	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
977	F1 RHI	93200	foundation slot?	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
978	F1 RHI	93202	foundation slot?	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
979	F1 RHI	93204	foundation slot?	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
980	F1 RHI	93198	foundation slot	Iron Age	18	-	-	-	-	-	-	-	-	-	N	N	
981	E	30083	smithing hearth	Iron Age?	11	-	-	-	-	-	-	-	-	-	N	N	
982	E	30089	posthole	Iron Age?	29	-	-	-	-	-	-	-	-	-	N	N	
983	E	30089	posthole	Iron Age?	3	-	-	-	-	-	-	-	-	-	N	N	
984	E	30088	posthole	Iron Age?	5	-	-	+	-	-	-	-	-	-	N	N	Cinder/slag
985	E	30049	fire pit?	Iron Age?	40	-	-	-	-	-	-	-	-	-	N	N	
987	F1 RHI	93215	pit	Iron Age	10	-	-	+	-	-	-	-	-	-	N	Y	
988	F1 FE	93231	OGS	Bronze Age	10	-	-	-	-	-	-	-	-	-	N	N	
989	F1 FE	93232		Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
990	F1 FE	93233	deposit	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
991	F1 FE	93236	OGS	Bronze Age	170	-	-	+	-	-	-	-	-	-	N	Y	
992	F1 FE	93051	posthole	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
993	F1 FE	93055	posthole	Iron Age	0	-	-	-	-	-	-	-	-	-	N	N	
994	F1 FE	93057	posthole	Iron Age	0	-	-	-	-	-	-	-	-	-	N	N	
995	F1 FW	93255	trough	Romano-British?	11	-	-	+	-	-	-	-	-	-	N	Y	
997	F1 FW	93256	trough	Romano-British?	5	-	-	-	-	-	-	-	-	-	N	N	
998	F1 RHI	93240	slot	Iron Age	0	-	-	-	-	-	-	-	-	-	N	N	
999	F1 FE	93252	posthole	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
1000	K1	20071	posthole	Bronze Age?	11	-	-	+	-	-	-	-	-	-	N	Y	
1001	K1	20073	posthole	Bronze Age?	4	-	-	+	-	-	-	-	-	-	N	N	
1002	K2	20076	pit	Unknown	10	-	-	-	-	-	-	-	-	-	N	N	
1005	K2	21027	pit	Unknown	10	-	-	-	-	-	-	-	-	-	N	N	
1006	K2	21028	pit	Unknown	10	-	-	-	-	-	-	-	-	-	N	N	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
1007	I	19066	natural	Natural	21	-	-	++	-	-	-	-	-	-	N	Y	
1009	I	21038	pit	Prehistoric?	16	-	-	+	-	-	-	-	-	-	N	Y	
1013	I	18099	posthole?	Prehistoric	28	-	-	-	-	-	-	-	-	-	N	N	
1014	I	18107	posthole?	Prehistoric	17	-	-	-	-	-	-	-	-	-	N	N	
1016	I	19072	pit	Prehistoric?	19	-	-	+	-	-	-	-	-	-	N	Y	
1017	I	22009	pit	Prehistoric?	8	-	-	+	-	-	-	-	-	-	N	Y	
1018	I	22016	pit	Prehistoric?	2	-	-	-	-	-	-	-	-	-	N	N	
1019	I	18103	pit	Prehistoric	9	-	-	-	-	-	-	-	-	-	N	N	
1021	K1	18126	fire pit?	Bronze Age	10	-	-	+	-	-	-	-	-	-	N	Y	
1023	K1	18128	stakehole	Prehistoric?	6	-	-	+	-	-	-	-	-	-	N	N	
1024	K1	22018	tree bowl?	Natural	27	-	-	!!	-	-	-	-	-	-	N	Y	
1025	K1	22019	tree bowl?	Natural	22	-	-	++	-	-	-	-	-	-	N	Y	
1028	I	22014	pit	Prehistoric?	4	-	-	-	-	-	-	-	-	-	N	N	
1029	I	22010	pit	Prehistoric?	7	-	-	+	-	-	-	-	-	-	N	N	
1030	K1	19099	posthole	Bronze Age?	6	-	-	+	-	-	-	-	-	-	N	N	
1031	K1	19101	posthole	Bronze Age?	6	-	-	+	-	-	-	-	-	-	N	N	
1032	K1	19103	posthole	Bronze Age?	5	-	-	+	-	-	-	-	-	-	N	Y	
1033	K1	18130	stakehole	Prehistoric?	1	-	-	-	-	-	-	-	-	-	N	N	
1034	K1	18132	posthole?	Bronze Age?	39	-	-	+	-	-	-	-	-	-	N	Y	
1035	K1	18134	posthole	Bronze Age?	1	-	-	-	-	-	-	-	-	-	N	N	
1036	K1	18135	posthole	Bronze Age?	4	-	-	+	-	-	-	-	-	-	N	N	
1037	K1	21076	posthole	Bronze Age?	4	-	-	-	-	-	-	-	-	-	N	N	
1039	K1	18153	stakehole?	Bronze Age?	4	-	-	-	-	-	-	-	-	-	N	N	
1041	K1	18168	pit	Bronze Age?	21	-	-	+	-	-	-	-	-	-	N	Y	
1042	K1	18167	pit	Bronze Age?	5	-	-	-	-	-	-	-	-	-	N	N	
1043	K1	23016	ditch	Bronze Age/Iron Age	18	-	-	++	-	-	-	-	-	-	N	Y	
1044	K1	19108	pit	Prehistoric	18	-	-	++	-	-	-	-	-	-	N	Y	
1046	K1	23018	ditch	Bronze Age/Iron Age	9	-	-	-	-	-	-	-	-	-	N	N	
1049	K1	19116	posthole	Prehist?	34	-	-	+	-	-	-	-	-	-	N	Y	
1054	K3	22054		Romano-British?	7	-	-	+	-	-	-	-	-	-	N	N	
1055	H	50006	hollow	Natural	5	-	-	-	-	-	-	-	-	-	N	N	
1057	M2	22065	ditch	Bronze Age	2	-	-	+	-	-	-	-	-	-	N	Y	
1058	M2	22073	ditch	Post medieval	100	-	-	-	-	-	-	-	-	-	N	N	Slag/coke
1059	M2	22070	ditch	Bronze Age	18	-	-	+	-	-	-	-	-	-	N	N	
1060	H	50011	posthole	"Neolithic, Bronze age"	50	-	-	+	-	-	-	-	-	-	N	Y	
1062	H	50040	pit	Early Neolithic	10	-	-	-	-	-	-	-	-	-	N	N	
1063	H	50040	pit	Early Neolithic	25	-	-	+	-	-	-	-	-	-	N	N	
1069	M2	22092	ditch	Bronze Age	0	-	-	+	-	-	-	-	-	-	N	Y	
1070	M2	22108	ditch	Bronze Age	5	-	-	+	-	-	-	-	-	-	N	Y	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
1071	M4	22110	ditch	Bronze Age	0	-	-	+	-	-	-	-	-	-	N	N	
1072	M2	22074	ditch	Bronze Age	0	-	-	+	-	-	-	-	-	-	N	N	
1074	F3	21156	posthole	Unknown	87	-	-	-	-	-	-	-	-	-	N	N	
1075	L3	21191	pit	Prehistoric?	15	-	-	-	-	-	-	-	-	-	N	N	
1077	H	50052	pit	Early Neolithic	8	-	-	+	-	-	-	-	-	-	N	N	
1079	L3	21194	ditch	Unknown/post med?	10	-	-	-	-	-	-	-	-	-	N	N	
1080	H	50053	pit	Early Neolithic	10	-	-	+	-	-	-	-	-	-	N	Y	
1081	L3	21197	pit	Prehistoric?	10	-	-	-	-	-	-	-	-	-	N	N	
1084	M2	22117	posthole	Early Neolithic?	266	-	-	+	-	-	-	-	-	-	N	Y	
1085	L3	21205	pit	Prehistoric?	13	-	-	-	-	-	-	-	-	-	N	N	
1086	L3	22139	pit	Prehistoric?	37	-	-	-	-	-	-	-	-	-	N	N	
1087	H	50063	posthole	Early Neolithic	19	-	-	+	-	-	-	-	-	-	N	N	
1089	H	50076	pit	Early Neolithic	18	-	-	+	-	-	-	-	-	-	N	Y	
1090	H	50064	posthole	Early Neolithic	17	-	-	+	-	-	-	-	-	-	N	N	
1091	H	50063	posthole	Early Neolithic	8	-	-	-	-	-	-	-	-	-	N	N	
1092	H	50066	pit	Early Neolithic	17	-	-	+	-	-	-	-	-	-	N	Y	
1093	H	50068	pit	Early Neolithic	27	-	-	+	-	-	-	-	-	-	N	Y	
1094	H	50055	pit	Early Neolithic	17	-	-	-	-	-	-	-	-	-	N	N	
1095	H	50077	pit	Early Neolithic	20	-	-	+	-	-	-	-	-	-	N	Y	
1096	Ia	21209	natural	Bronze Age	24	-	-	+	-	-	-	-	-	-	N	Y	
1097	H	50083	posthole	Early Neolithic	53	-	-	+	-	-	-	-	-	-	N	Y	
1098	H	2093	OGS?	Early Neolithic	208	-	-	+	-	-	-	-	-	-	N	Y	
1099	H	50081	pit	Neolithic?	22	-	-	+	-	-	-	-	-	-	N	Y	
1100	Ia	21214	pit	Mid Neolithic	19	-	-	+	-	-	-	-	-	-	N	Y	
1104	H	50082	pit	Early Neolithic	4	-	-	+	-	-	-	-	-	-	N	N	
1107	H	50045	pit	Early Neolithic	24	-	-	+	-	-	-	-	-	-	N	N	
1109	H	50090	pit	Early Neolithic	10	-	-	-	-	-	-	-	-	-	N	N	
1110	H	50049	posthole	Early Neolithic	10	-	-	-	-	-	-	-	-	-	N	N	
1111	H	50086	posthole	Early Neolithic	20	-	-	+	-	-	-	-	-	-	N	N	
1114	L3	21226	pit	Prehistoric?	15	-	-	-	-	-	-	-	-	-	N	N	
1118	M2	22126	ditch	Bronze Age?	8	-	-	+	-	-	-	-	-	-	N	Y	
1118	B3	22161	pit	Post medieval?	24	-	-	+++	-	-	-	-	-	-	N	Y	
1119	M3	19127	tree hollow-burnt	Unknown	24	-	-	++	-	-	-	-	-	-	N	Y	
1120	H	50110	hearth	Early Neolithic	10	-	-	+	-	-	-	-	-	-	N	N	
1121	M3	19137	pit?	Unknown	27	-	-	+	-	-	-	-	-	-	N	N	
1122	B3	22164	burnt patch	Post medieval?	13	-	-	+	-	-	-	-	-	-	N	Y	
1123	Ia	21231	corn drier	medieval?	0	-	-	+	-	-	-	-	-	-	N	N	
1129	H	50090	pit	Early Neolithic	15	-	-	-	-	-	-	-	-	-	N	N	
1132	L3	22143	hearth	Prehistoric?	10	-	-	-	-	-	-	-	-	-	N	N	
1134	L3	22169	pit	Prehistoric?	20	-	-	-	-	-	-	-	-	-	N	N	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
1135	L3	22172	patch	Prehistoric?	10	-	-	-	-	-	-	-	-	-	N	N	
1137	L3	22145		Prehistoric?	67	-	-	-	-	-	-	-	-	-	N	N	
1138	L3	22175	posthole	Prehistoric?	15	-	-	-	-	-	-	-	-	-	N	N	
1139	L3	22179	posthole	Prehistoric?	20	-	-	-	-	-	-	-	-	-	N	N	
1140	L3	22181	posthole?	Prehistoric?	15	-	-	-	-	-	-	-	-	-	N	N	
1141	H	50122	hearth	Early Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
1142	H	50123	hearth	Early Neolithic	31	-	-	+	-	-	-	-	-	-	N	Y	
1145	H	50129	stone socket	Early Neolithic	20	-	-	-	-	-	-	-	-	-	N	N	
1147	H	50135	posthole	Early Neolithic	20	-	-	+	-	-	-	-	-	-	N	Y	
1148	H	50128	pit	Early Neolithic	11	-	-	+	-	-	-	-	-	-	N	N	
1149	H	50134	pit	Early Neolithic	13	-	-	+	-	-	-	-	-	-	N	N	
1150	H	50105	posthole	Early Neolithic	15	-	-	+	-	-	-	-	-	-	N	Y	
1151	H	50137	posthole	Early Neolithic	0	-	-	+	-	-	-	-	-	-	N	N	
1151	H	50137	posthole	Early Neolithic	15	-	-	+	-	-	-	-	-	-	N	N	
1152	H	50141	pit	Early Neolithic	14	-	-	+	-	-	-	-	-	-	N	Y	
1153	H	50098	posthole	Early Neolithic	14	-	-	-	-	-	-	-	-	-	N	N	
1154	H	50038	posthole	Neolithic	15	-	-	+	-	-	-	-	-	-	N	N	
1156	H	50144	posthole	Early Neolithic	15	-	-	+	-	-	-	-	-	-	N	Y	
1157	M4	40002	pit?	Unknown	15	-	-	+	-	-	-	-	-	-	N	N	
1159	M4	40001	pit	Prehistoric?	8	-	-	-	-	-	-	-	-	-	N	N	
1160	M4	40005	non feature	Natural	8	-	-	-	-	-	-	-	-	-	N	N	
1161	M4	40011	posthole	Bronze Age	16	-	-	-	-	-	-	-	-	-	N	N	
1162	H	50152	posthole	Early Neolithic	15	-	-	+	-	-	-	-	-	-	N	N	
1163	H	50146	hearth	Early Neolithic	37	-	-	+	-	-	-	-	-	-	N	Y	
1165	H	50102	posthole	Early Neolithic	41	-	-	+	-	-	-	-	-	-	N	Y	
1166	H	50158		Early Neolithic	31	-	-	+	-	-	-	-	-	-	N	Y	
1179	J1/J2	70028	posthole?	Modern?	55	-	-	-	-	-	-	-	-	-	N	N	
1182	D3	60102	pit	Beaker/Neolithic?	20	-	-	+	-	-	-	-	-	-	N	N	
1183	D3	60101	hearth	Bronze Age	38	-	-	-	-	-	-	-	-	-	N	N	
1186	H	50183	posthole	Early Neolithic	19	-	-	+	-	-	-	-	-	-	N	Y	
1187	H	50184	posthole	Early Neolithic	27	-	-	+	-	-	-	-	-	-	N	Y	
1189	D3	60146	tree hollow-unburnt	Unknown	15	-	-	+	-	-	-	-	-	-	N	Y	
1194	H	50188	posthole	Early Neolithic	15	-	-	+	-	-	-	-	-	-	N	Y	
1195	H	50193	posthole	Early Neolithic	15	-	-	+	-	-	-	-	-	-	N	Y	
1196	H	50197	pit	Early Neolithic	6	-	-	+	-	-	-	-	-	-	N	N	
1197	H	50165	beam slot	Early Neolithic	5	-	-	+	-	-	-	-	-	-	N	N	
1199	H	50194	pit	Early Neolithic	28	-	-	+	-	-	-	-	-	-	N	N	
1200	H	50201	pit	Early Neolithic	10	-	-	-	-	-	-	-	-	-	N	N	
1201	J1/J2	70063	pit	Prehistoric?	36	-	-	-	-	-	-	-	-	-	N	N	
1202	J1/J2	70032	posthole	Prehistoric	5	-	-	-	-	-	-	-	-	-	N	N	
1203	J1/J2	70034	stakehole	Prehistoric	48	-	-	+	-	-	-	-	-	-	N	Y	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
1204	J1/J2	70036	stakehole	Prehistoric	20	-	-	-	-	-	-	-	-	-	N	N	
1206	J1/J2	70040	stakehole	Prehistoric	10	-	-	-	-	-	-	-	-	-	N	N	
1207	J1/J2	70044	animal burrow?	Prehistoric	58	-	-	+	-	-	-	-	-	-	N	Y	
1208	J1/J2	70046	stakehole	Prehistoric	10	-	-	-	-	-	-	-	-	-	N	N	
1209	H	50203	posthole	Early Neolithic	10	-	-	+	-	-	-	-	-	-	N	N	
1211	J1/J2	70096	tree hollow-unburnt	Unknown	0	-	-	-	-	-	-	-	-	-	N	N	
1212	H	50198	posthole	Early Neolithic	6	-	-	-	-	-	-	-	-	-	N	N	
1213	J1/J2	70067	posthole	Prehistoric	5	-	-	-	-	-	-	-	-	-	N	N	
1215	J1/J2	70075	stakehole	Prehistoric	5	-	-	+	-	-	-	-	-	-	N	N	
1216	J1/J2	70077	stakehole	Prehistoric	5	-	-	-	-	-	-	-	-	-	N	N	
1217	J1/J2	70079	posthole	Prehistoric	10	-	-	+	-	-	-	-	-	-	N	Y	
1218	J1/J2	70093	tree hollow-unburnt	Prehistoric?	60	-	-	-	-	-	-	-	-	-	N	N	
1219	H	50204	pit?	Early Neolithic	20	-	-	-	-	-	-	-	-	-	N	N	
1221	H	50211	slot	Early Neolithic	20	-	-	+	-	-	-	-	-	-	N	Y	
1222	H	50208	posthole	Early Neolithic	20	-	-	+	-	-	-	-	-	-	N	N	
1223	H	50216	gully	Early Neolithic	10	-	-	+	-	-	-	-	-	-	N	N	
1224	J1/J2	70121	pit	Prehistoric	5	-	-	-	-	-	-	-	-	-	N	N	
1225	J1/J2	70123	pit	Prehistoric	5	-	-	-	-	-	-	-	-	-	N	N	
1226	J1/J2	70125	posthole	Prehistoric	5	-	-	-	-	-	-	-	-	-	N	N	
1227	J1/J2	70108	pit	Prehistoric	5	-	-	-	-	-	-	-	-	-	N	N	
1228	H	50083	posthole	Early Neolithic	15	-	-	+	-	-	-	-	-	-	N	N	
1229	H	50099	foundation slot	Early Neolithic	10	-	-	+	-	-	-	-	-	-	N	N	
1230	H	50155	posthole	Early Neolithic	72	-	-	-	-	-	-	-	-	-	N	N	
1231	H	50217	posthole	Early Neolithic	10	-	-	-	-	-	-	-	-		N	N	
1232	J1/J2	70139	posthole	Prehistoric	3	-	-	-	-	-	-	-	-	-	N	N	
1233	H	50165	beam slot	Early Neolithic	10	-	-	-	-	-	-	-	-		N	N	
1234	H	50220	pit	Early Neolithic	10	-	-	-	-	-	-	-	-	-	N	N	
1235	H	50222	pit	Early Neolithic	6	-	-	-	-	-	-	-	-	-	N	N	
1239	J1/J2	70157	posthole	Prehistoric	2	-	-	-	-	-	-	-	-	-	N	N	
1240	J1/J2	70053	pit	Prehistoric	0	-	-	-	-	-	-	-	-	-	N	N	
1242	H	50234	beam slot	Early Neolithic	10	-	-	+	-	-	-	-	-	-	N	Y	
1243	J1/J2	70127	linear feature	Bronze Age	5	-	-	-	-	-	-	-	-	-	N	N	
1244	J1/J2	70089	posthole	Prehistoric	9	-	-	+	-	-	-	-	-	-	N	Y	
1246	J1/J2	70170	stakehole	Prehistoric?	0	-	-	-	-	-	-	-	-	-	N	N	
1248	J1/J2	70166	stakehole	Prehistoric	9	-	-	+	-	-	-	-	-	-	N	N	
1249	J1/J2	70167	stakehole	Prehistoric	8	-	-	-	-	-	-	-	-	-	N	N	
1252	J1/J2	70189	posthole	Prehistoric	0	-	-	-	-	-	-	-	-	-	N	N	
1253	H	50238	pit	Early Neolithic	10	-	-	+	-	-	-	-	-	-	N	Y	

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1254	J1/J2	70184	posthole	Prehistoric?	0	-	-	-	-	-	-	-	-	-	N	N	
1255	J1/J2	70187	posthole	Prehistoric?	0	-	-	-	-	-	-	-	-	-	N	N	
1257	J1/J2	70180	burnt patch	Unknown	36	-	-	++	-	-	-	-	-	-	N	N	
1258	H	50242	pit	Early Neolithic	10	-	-	-	-	-	-	-	-	-	N	N	
1259	H	50246	pit	Early Neolithic	10	-	-	+	-	-	-	-	-	-	N	N	
1262	J1/J2	70200	pit	Prehistoric	10	-	-	-	-	-	-	-	-	-	N	N	
1264	J1/J2	70197	posthole	Prehistoric	10	-	-	-	-	-	-	-	-	-	N	N	
1265	J1/J2	70055	pit	Bronze Age	30	-	-	-	-	-	-	-	-	-	N	N	
1268	J1/J2	70129	pit	Prehistoric	20	-	-	-	-	-	-	-	-	-	N	N	
1270	H	50255	stakehole	Early Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
1271	J1/J2	70201	pit	Prehistoric	9	-	-	+	-	-	-	-	-	-	N	Y	
1272	H	50265	posthole	Neolithic?	10	-	-	+	-	-	-	-	-	-	N	Y	
1273	J1/J2	70218	posthole	Prehistoric	6	-	-	-	-	-	-	-	-	-	N	N	
1274	H	50261	pit	Early Neolithic	29	-	-	+	-	-	-	-	-	-	N	N	
1275	H	50268	burnt patch	Early Neolithic	10	-	-	+	-	-	-	-	-	-	N	N	
1276	J1/J2	70229	posthole	Prehistoric	2	-	-	-	-	-	-	-	-	-	N	N	
1277	J1/J2	70227	stakehole	Prehistoric	4	-	-	-	-	-	-	-	-	-	N	N	
1278	J1/J2	70222	pit	Prehistoric	4	-	-	-	-	-	-	-	-	-	N	N	
1279	H	50259	pit	Neolithic?	10	-	-	-	-	-	-	-	-	-	N	N	
1280	J1/J2	70088	posthole	Prehistoric	10	-	-	-	-	-	-	-	-	-	N	N	
1281	H	50273	gully	Early Neolithic	10	-	-	-	-	-	-	-	-	-	N	N	
1282	H	50275	hollow	Post medieval	144	-	-	-	-	-	-	-	-	-	N	N	
1285	J1/J2	70248	posthole	Prehistoric	3	-	-	-	-	-	-	-	-	-	N	N	
1286	J1/J2	70250	stakehole	Prehistoric	4	-	-	-	-	-	-	-	-	-	N	N	
1289	J1/J2	70251	posthole	Prehistoric	4	-	-	-	-	-	-	-	-	-	N	N	
1290	J1/J2	70258	stonehole	Prehistoric	0	-	-	-	-	-	-	-	-	-	N	N	
1292	J1/J2	70269	pit	Romano-British	10	-	-	-	-	-	-	-	-	-	N	N	
1293	J1/J2	70284	posthole	Prehistoric	10	-	-	-	-	-	-	-	-	-	N	N	
1294	J1/J2	70286	pit	Prehistoric	10	-	-	-	-	-	-	-	-	-	N	N	
1295	J1/J2	70288	pit	Prehistoric	8	-	-	-	-	-	-	-	-	-	N	N	
1296	J1/J2	70296	tree hollow-unburnt	Unknown	20	-	-	-	-	-	-	-	-	-	N	N	
1297	J1/J2	70289	posthole	Prehistoric	15	-	-	-	-	-	-	-	-	-	N	N	
1298	J1/J2	70291	posthole	Prehistoric	52	-	-	-	-	-	-	-	-	-	N	N	
1299	J1/J2	70293	posthole	Prehistoric	13	-	-	+	-	-	-	-	-	-	N	N	
1300	J1/J2	70298	stakehole	Prehistoric	1	-	-	-	-	-	-	-	-	-	N	N	
1301	J1/J2	70300	stakehole	Prehistoric	5	-	-	-	-	-	-	-	-	-	N	N	
1302	J1/J2	70301	pit	Prehistoric	28	-	-	-	-	-	-	-	-	-	N	N	
1303	J1/J2	70305	posthole	Prehistoric	10	-	-	-	-	-	-	-	-	-	N	N	
1304	J1/J2	70308	stakehole	Prehistoric	10	-	-	-	-	-	-	-	-	-	N	N	
1305	J1/J2	70309	pit	Post medieval?	10	-	-	+	-	-	-	-	-	-	N	N	
1306	J1/J2	70315	pit	Prehistoric	21	-	-	+	-	-	-	-	-	-	N	N	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
1307	J1/J2	70318	tree hollow-unburnt	Unknown	188	-	-	!!	-	-	-	-	-	-	N	Y	
1308	J1/J2	70053	pit	Prehistoric	10	-	-	+	-	-	-	-	-	-	N	N	
1309	J1/J2	70129	pit	Prehistoric	10	-	-	-	-	-	-	-	-	-	N	N	
1310	J1/J2	70127	linear feature	Bronze Age	20	-	-	-	-	-	-	-	-	-	N	N	
1311	J1/J2	70314	pit	Prehistoric	10	-	-	-	-	-	-	-	-	-	N	N	
1312	J1/J2	70312	pit	Prehistoric	10	-	-	-	-	-	-	-	-	-	N	N	
1313	J1/J2	70264	posthole	Prehistoric	10	-	-	-	-	-	-	-	-	-	N	N	
1315	M4	40026	ditch	Post medieval	59	-	-	-	-	-	-	-	-	-	N	N	Slag/coke
1316	M4	40027	ditch	Bronze Age	8	-	-	-	-	-	-	-	-	-	N	N	
1317	M4	40022	ditch	Bronze Age	18	-	-	-	-	-	-	-	-	-	N	N	
1318	M4	40032	ditch	Post medieval	33	-	-	-	-	-	-	-	-	-	N	N	Slag/coke
1319	M4	40031	ditch	Bronze Age	4	-	-	-	-	-	-	-	-	-	N	N	
1320	M4	40035	ditch recut	Post medieval	14	-	-	-	-	-	-	-	-	-	N	N	
1321	M4	40031	ditch	Bronze Age	8	-		-							N	N	
1322	M4	40034	ditch recut	Post medieval	4	-	-	-							N	N	
1323	M4	40019	ditch	Bronze Age	8	-	-	-	-	-	-	-	-	-	N	N	
1324	M4	40037	pit	Prehistoric?	29	-	-	+	-	-	-	-	-	-	N	N	
1325	M4	40039	pit	Prehistoric?	19	-	-	-	-	-	-	-	-	-	N	N	
1326	M4	40041	pit	Prehistoric	14	-	-	-	-	-	-	-	-	-	N	N	
1327	M4	40043	pit	Prehistoric?	3	-	-	-	-	-	-	-	-	-	N	N	
1328	M4	40045	pit	Prehistoric?	7	-	-	-	-	-	-	-	-	-	N	N	
1329	M4	40047	pit	Prehistoric?	6	-	-	-	-	-	-	-	-	-	N	N	
1330	M4	40051	ditch	Prehistoric?	43	-	-	-	-	-	-	-	-	-	N	N	
1331	M4	40054	natural	Natural	10	-	-	+	-	-	-	-	-	-	N	N	
1332	M4	40055	natural	Natural	9	-	-	-	-	-	-	-	-	-	N	N	
1333	M4	40064	pit	Prehistoric?	11	-	-	-	-	-	-	-	-	-	N	N	
1334	M4	40062	tree hollow-burnt	Unknown	9	-	-	-	-	-	-	-	-	-	N	N	
1335	M4	40060	burnt patch	Prehistoric?	6	-	-	-	-	-	-	-	-	-	N	N	
1337	M4	40075	posthole	Bronze Age?	9	-	-	-	-	-	-	-	-	-	N	N	
1338	M4	40077	pit	Post medieval?	217	-	-	!!	-	-	-	-	-	-	N	Y	
1338	M4	40077	pit	Post medieval?	383	-	-	!!	-	-	-	-	-	-	N	Y	
1339	M4	40082	stakehole	Bronze Age/Modern	16	-	-	+	-	-	-	-	-	-	N	Y	
1340	M4	40084	posthole	Prehistoric?	26	-	-	+	-	-	-	-	-	-	N	N	
1341	M4	40089	posthole	Bronze Age	19	-	-	+	-	-	-	-	-	-	N	Y	
1342	M4	40080	pit	Early Neolithic?	108	-	-	+	-	-	-	-	-	-	N	Y	
1344	M4	40087	pit	Prehistoric?	23	-	-	+	-	-	-	-	-	-	N	Y	
1345	M4	40015	ditch recut	Post medieval	38	-	-	-	-	-	-	-	-	-	N	N	
1346	M4	40091	ring ditch	Bronze Age	59	-	-	+	-	-	-	-	-	-	N	N	
1347	M4	40086	pit	Prehistoric?	271	-	-	+	-	-	-	-	-	-	N	Y	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
1348	M4	40100	pit	Prehistoric?	21	-	-	+	-	-	-	-	-	-	N	Y	
1349	M4	40102	hollow	Unknown	12	-	-	+	-	-	-	-	-	-	N	N	
1350	M4	40095	pit	Prehistoric?	12	-	-	+	-	-	-	-	-	-	N	N	
1351	M4	40096	posthole	Prehistoric?	23	-	-	+	-	-	-	-	-	-	N	N	
1352	M4	40098	posthole	Prehistoric?	5	-	-	-	-	-	-	-	-	-	N	N	
1354	M4	40108	pit	Prehistoric	23	-	-	-	-	-	-	-	-	-	N	N	
1355	M4	40106	pit	Prehistoric?	28	-	-	+	-	-	-	-	-	-	N	N	
1356	H	50277	beam slot	Early Neolithic	27	-	-	+	-	-	-	-	-	-	N	Y	
1357	H	50278		Early Neolithic	17	-	-	+	-	-	-	-	-	-	N	N	
1358	M4	40112	short cist	Post medieval?	34	-	-	+	-	-	-	-	-	-	N	N	
1359	M4	40113	short cist	Modern	183	-	-	-	-	-	-	-	-	-	N	N	
1360	M4	40115	short cist	Early Bronze Age	65	-	-	-	-	-	-	-	-	-	N	N	Slag/coke
1362	M4	40120	short cist	Early Bronze Age	58	-	-	+	-	-	-	-	-	-	N	N	
1363	M4	40123	deposit	Bronze Age	25	-	-	-	-	-	-	-	-	-	N	N	
1364	M4	40122	short cist	Early Bronze Age	12	-	-	-	-	-	-	-	-	-	N	N	Sand
1364	M4	40122	short cist	Early Bronze Age	94	-	-	+	-	-	-	-	-	-	N	Y	
1366	M4	40195	pit	Bronze Age??	31	-	-	-	-	-	-	-	-	-	N	N	
1367	M4	40133	short cist	Early Bronze Age	10	-	-	-	-	-	-	-	-	-	N	N	
1369	M4	40093	posthole	Prehistoric	26	-	-	+	-	-	-	-	-	-	N	N	
1370	M4	40130	short cist	Early Bronze Age	14	-	-	-	-	-	-	-	-	-	N	N	
1371	M4	40128	short cist	Early Bronze Age	15	-	-	-	-	-	-	-	-	-	N	N	
1372	M4	40133	short cist	Early Bronze Age	15	-	-	-	-	-	-	-	-	-	N	N	
1373	M4	40136	short cist	early Bronze Age	35	-	-	-	-	-	-	-	-	-	N	N	
1374	M4	40153	posthole	Post medieval	46	-	-	-	-	-	-	-	-	+++	N	N	
1374	M4	40153	posthole	Post medieval	214	-	+	+	-	-	-	-	-	+++	N	Y	As 1374 M –treebark 2nd bag?
1375	M4	40156	natural	Natural	30	-	-	-	-	-	-	-	-	-	N	N	
1376	M4	40155	cist	Early Bronze Age	10	-	-	-	-	-	-	-	-	-	N	N	
1377	M4	40157	short cist	Early Bronze Age	11	-	-	-	-	-	-	-	-	-	N	N	
1377	M4	40157	short cist	Early Bronze Age	33	-	-	-	-	-	-	-	-	-	N	N	
1378	M4	40158	short cist	Early Bronze Age	68	-	-	-	-	-	-	-	-	-	N	N	
1378	M4	40158	short cist	Early Bronze Age	35	-	-	-	-	-	-	-	-	-	N	N	
1379	K7	80019	grave	early medieval	80	-	-	+	-	-	-	-	-	-	N	Y	
1380	K7	80020	grave	early medieval	59	-	-	++	-	-	-	-	-	-	N	Y	
1381	M4	40160	short cist	Early Bronze Age	5	-	-	-	-	-	-	-	-	-	N	N	
1381	M4	40160	short cist	Early Bronze Age	34	-	-	-	-	-	-	-	-	-	N	N	
1382	M4	40163	short cist	Early Bronze Age	9	-	-	-	-	-	-	-	-	-	N	N	
1382	M4	40163	short cist	Early Bronze Age	8	-	-	-	-	-	-	-	-	-	N	N	
1383	M4	40172	pit	Natural	18	-	-	+	-	-	-	-	-	-	N	N	
1384	M4	40176	cist	Early Bronze Age	30	-	-	-	-	-	-	-	-	-	N	N	
1385	M4	40176	cist	Early Bronze Age	20	-	-	-	-	-	-	-	-	-	N	N	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
1385	M4	40176	cist	Early Bronze Age	48	-	-	-	-	-	-	-	-	-	N	N	
1386	M4	40167	short cist	Early Bronze Age	39	-	-	-	-	-	-	-	-	-	N	N	
1387	M4	40177	short cist	Early Bronze Age	102	-	-	-	-	-	-	-	-	-	N	N	
1387	M4	40177	short cist	Early Bronze Age	66	-	-	-	-	-	-	-	-	-	N	N	
1388	M4	40077	pit	Post medieval?	2	-	-	-	-	-	-	-	-	-	N	N	
1388	M4	40175	cist grave	Early Bronze Age	24	-	-	-	-	-	-	-	-	-	N	N	
1389	M4	40184	short cist	Early Bronze Age	56	-	-	-	-	-	-	-	-	-	N	N	
1390	M4	40183	pit	Early Bronze Age	10	-	-	-	-	-	-	-	-	-	N	N	
1391	M4	40181	pit	Early Bronze Age	60	-	-	-	-	-	-	-	-	-	N	N	
1392	M4	40185	pit	Early Bronze Age	76	-	-	-	-	-	-	-	-	-	N	N	
1393	M4	40190	short cist	Early Bronze Age	55	-	-	-	-	-	-	-	-	-	N	N	
1394	M4	40150	natural	Natural	15	-	-	-	-	-	-	-	-	-	N	N	
1394	M4	40150	natural	Natural	12	-	-	+	-	-	-	-	-	-	N	N	
1395	M4	40160	short cist	Early Bronze Age	35	-	-	-	-	-	-	-	-	-	N	N	
1396	M4	40192	short cist	Early Bronze Age	32	-	-	-	-	-	-	-	-	-	N	N	
1397	M4	40190	short cist	Early Bronze Age	20	-	-	-	-	-	-	-	-	-	N	N	
1399	M4	40196	short cist	early bronze age	0	-	-	-	-	-	-	-	-	-	N	N	
1400	M4	40196	short cist	early bronze age	13	-	-	-	-	-	-	-	-	-	N	N	
1400	M4	40196	short cist	early bronze age	110	-	-	-	-	-	-	-	-	-	N	N	
1401	M4	40198	deposit	Bronze Age??	5	-	-	-	-	-	-	-	-	-	N	N	
1403	K7	80139	corn drier	Medieval?	2	-	-	+	-	-	-	-	-	-	N	N	
1404	K7	80142	corn drier	Medieval?	337	-	-	+	-	-	-	-	-	-	N	Y	
1405	K7	80144	posthole	Prehistoric?	80	-	-	+	-	-	-	-	-	-	N	Y	
1406	K7	80005	grave	early medieval	3	-	-	-	-	-	-	-	-	-	N	N	
1407	K7	80005	grave	early medieval	3	-	-	-	-	-	-	-	-	-	N	N	
1408	K7	80007	grave	early medieval	2	-	-	-	-	-	-	-	-	-	N	N	
1409	K7	80007	grave	early medieval	0	-	-	-	-	-	-	-	-	-	N	N	
1410	K7	80005	grave	early medieval	0	-	-	-	-	-	-	-	-	-	N	N	
1411	K7	80005	grave	early medieval	0	-	-	-	-	-	-	-	-	-	N	N	
1412	K7	80005	grave	early medieval	0	-	-	-	-	-	-	-	-	-	N	N	
1413	K7	80005	grave	early medieval	96	-	-	-	-	-	-	-	-	-	N	N	
1414	K7	80009	grave	early medieval	6	-	-	-	-	-	-	-	-	-	N	N	
1415	K7	80005	grave	early medieval	2	-	-	-	-	-	-	-	-	-	N	N	
1416	K7	80009	grave	early medieval	12	-	-	-	-	-	-	-	-	-	N	N	
1417	K7	80012	grave	early medieval	2	-	-	-	-	-	-	-	-	-	N	N	
1420	K7	80178	pit	Iron Age?	4	-	-	-	-	-	-	-	-	-	N	N	
1421	K7	80198	pit	Iron Age?	32	-	-	-	-	-	-	-	-	-	N	N	
1421	K7	80199	pit	Iron Age?	4	-	-	-	-	-	-	-	-	-	N	N	
1423	K7	80204	posthole	Iron Age?	2	-	-	-	-	-	-	-	-	-	N	N	
1424	K7	80201	posthole	Iron Age?	2	-	-	-	-	-	-	-	-	-	N	N	
1425	K7	80183	pit	Iron Age?	2	-	-	-	-	-	-	-	-	-	N	N	
1426	K7	80184	pit	Iron Age?	22	-	-	-	-	-	-	-	-	-	N	N	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
1427	K7	80212	posthole	Iron Age?	2	-	-	-	-	-	-	-	-	-	N	N	
1428	K7	80217	stakehole	Iron Age?	6	-	-	-	-	-	-	-	-	-	N	N	
1429	K7	80203	posthole	Iron Age?	6	-	-	-	-	-	-	-	-	-	N	N	
1429	K7	80203	posthole	Iron Age?	15	-	-	+	-	-	-	-	-	-	N	Y	
1430	K7	80214	posthole	Iron Age?	3	-	-	-	-	-	-	-	-	-	N	N	
1431	K7	80187	posthole	Iron Age?	3	-	-	-	-	-	-	-	-	-	N	N	
1432	K7	80209	posthole	Iron Age?	2	-	-	-	-	-	-	-	-	-	N	N	
1433	K7	80222	burnt patch	Iron Age?	4	-	-	-	-	-	-	-	-	-	N	N	
1434	K7	80197	floor?	Iron Age	6	-	-	-	-	-	-	-	-	-	N	N	
1435	K7	80182	burnt patch	Iron Age?	4	-	-	-	-	-	-	-	-	-	N	N	
1436	K7	80219	stakehole	Iron Age?	9	-	-	+	-	-	-	-	-	-	N	Y	
1438	K7	80223	posthole	Iron Age?	6	-	-	-	-	-	-	-	-	-	N	N	
1439	K7	80225	posthole	Iron Age?	5	-	-	-	-	-	-	-	-	-	N	N	
1440	K7	80230	pit	Iron Age?	4	-	-	+	-	-	-	-	-	-	N	N	
1441	K7	80230	pit	Iron Age?	6	-	-	-	-	-	-	-	-	-	N	N	
1442	K7	80181	gully	Iron Age?	47	-	-	+	-	-	-	-	-	-	N	N	
1443	K7	80228	natural	Iron Age?	9	-	-	-	-	-	-	-	-	-	N	N	
1444	K7	80229	hearth feature	Iron Age?	5	-	-	+	-	-	-	-	-	-	N	N	
1445	K7	80231	pit	Iron Age?	5	-	-	-	-	-	-	-	-	-	N	N	
1446	K7	80238	drain	Iron Age	35	-	-	-	-	-	-	-	-	-	N	N	
1447	K7	80240	posthole	Iron Age	8	-	-	-	-	-	-	-	-	-	N	N	
1448	K7	80242	posthole	Iron Age?	4	-	-	-	-	-	-	-	-	-	N	N	
1449	K7	80244	posthole	Iron Age?	4	-	-	+	-	-	-	-	-	-	N	N	
1451	E (hollow)	31009	trough	Late Neo?	7	-	-	+	-	-	-	-	-	-	N	Y	
1454	K7	80255	wall	Iron Age?	49	-	-	-	-	-	-	-	-	-	N	N	
1455	K7	80271	deposit	Iron Age?	10	-	-	-	-	-	-	-	-	-	N	N	
1456	K7	80268	layer	Iron Age?	5	-	-	-	-	-	-	-	-	-	N	N	
1456	K7	80268	layer	Iron Age?	9	-	-	-	-	-	-	-	-	-	N	N	
1457	K7	80270	deposit	Iron Age?	15	-	-	-	-	-	-	-	-	-	N	N	
1458	K7	80274	deposit	Iron Age?	5	-	-	-	-	-	-	-	-	-	N	N	
1459	K7	80285	deposit	Iron Age?	4	-	-	+	-	-	-	-	-	-	N	N	
1460	K	80264		Iron Age?	2	-	-	-	-	-	-	-	-	-	N	N	
1461	K7	80267	layer	Iron Age?	9	-	-	+	-	-	-	-	-	-	N	Y	
1462	K7	80326	demolition deposit	iron Age?	4	-	-	-	-	-	-	-	-	-	N	N	
1463	K7	80263	layer	Iron Age?	5	-	-	-	-	-	-	-	-	-	N	N	
1464	K7	80329	natural	Natural	10	-	-	+	-	-	-	-	-	-	N	Y	
1465	K7	80340	abandonment deposit	Iron Age	8	-	-	-	-	-	-	-	-	-	N	N	
1466	K7	80343	natural	Unknown	5	-	-	-	-	-	-	-	-	-	N	N	
1467	K7	80345	deposit	Iron Age	6	-	-	-	-	-	-	-	-	-	N	N	

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1468	K7	80326	demolition deposit	iron Age?	22	-	-	+	-	-	-	-	-	-	N	Y	
1469	K7	80347	natural	Iron Age?	23	-	-	+	-	-	-	-	-	-	N	Y	
1471	K7	80353	posthole	Iron Age?	4	-	-	-	-	-	-	-	-	-	N	N	
1472	K7	80289	drain	Iron Age?	6	-	-	-	-	-	-	-	-	-	N	N	
1473	K7	80260	drain	Iron Age?	41	-	-	-	-	-	-	-	-	-	N	N	
1474	K7	80360	drain	Iron Age	9	-	-	-	-	-	-	-	-	-	N	N	
1475	K7	80363	linear	Natural	5	-	-	-	-	-	-	-	-	-	N	N	
1476	K7	80332	wall	Iron Age?	8	-	-	-	-	-	-	-	-	-	N	N	
1477	K7	80364	stakehole	Iron Age?	3	-	-	-	-	-	-	-	-	-	N	N	
1479	K7	80289	drain	Iron Age?	5	-	-	-	-	-	-	-	-	-	N	N	
1480	K7	80366	drain	Iron Age?	16	-	-	-	-	-	-	-	-	-	N	N	
1481	K7	80367	drain	Iron Age?	10	-	-	-	-	-	-	-	-	-	N	N	
1482	K7	80360	drain	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
1483	K7	80350	drain	Iron Age?	5	-	-	-	-	-	-	-	-	-	N	N	
1484	K7	80334	roof collapse?	Iron Age?	27	-	-	-	-	-	-	-	-	-	N	N	
1486	K7	80374	pit	Iron Age	28	-	-	-	-	-	-	-	-	-	N	N	
1487	K7	80375	pit	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
1489	K7	80387	pit	Iron Age?	2	-	-	-	-	-	-	-	-	-	N	N	
1491	K7	80376	pit	Iron Age	3	-	-	+	-	-	-	-	-	-	N	N	
1492	K7	80378	pit	Iron Age	3	-	-	-	-	-	-	-	-	-	N	N	
1494	K7	80351	deposit	Unknown	6	-	-	-	-	-	-	-	-	-	N	N	
1495	K7	80381	burnt patch	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
1495	K7	80381	burnt patch	Iron Age	4	-	-	-	-	-	-	-	-	-	N	N	
1496	K7	80391	posthole	Prehistoric	4	-	-	-	-	-	-	-	-	-	N	N	
1497	K7	80395	pit	Iron Age	4	-	-	-	-	-	-	-	-	-	N	N	
1498	K7	80396	pit	iron age	4	-	-	-	-	-	-	-	-	-	N	N	
1499	K7	80397	pit	Iron Age	3	-	-	-	-	-	-	-	-	-	N	N	
1500	K7	80417	drain	Iron Age	0	-	-	-	-	-	-	-	-	-	N	N	
1501	K7	80399	posthole	Prehistoric	2	-	-	-	-	-	-	-	-	-	N	N	
1502	K7	80269	wall tumble	Iron Age?	1	-	-	-	-	-	-	-	-	-	N	N	
1503	K7	80334	roof collapse?	Iron Age?	4	-	-	-	-	-	-	-	-	-	N	N	
1504	K7	80401	pit	Prehistoric	1	-	-	-	-	-	-	-	-	-	N	N	
1504	K7	80401	pit	Prehistoric	4	-	-	-	-	-	-	-	-	-	N	N	
1505	K7	80380	occupation deposit	Iron Age	16	-	-	-	-	-	-	-	-	-	N	N	
1506	K7	80398	occupation deposit	Iron Age	4	-	-	+	-	-	-	-	-	-	N	N	
1507	K7	80406	drain	Iron Age	1	-	-	-	-	-	-	-	-	-	N	N	
1508	K7	80388	drain	Iron Age?	27	-	-	-	-	-	-	-	-	-	N	N	
1509	K7	80389	drain	Iron Age?	12	-	-	+	-	-	-	-	-	-	N	N	
1510	K7	80390	drain	Iron Age?	12	-	-	-	-	-	-	-	-	-	N	N	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
1511	K7	80330	gully	Iron Age	46	-	-	+	-	-	-	-	-	-	N	N	
1512	K7	80390	drain	Iron Age?	6	-	-	-	-	-	-	-	-	-	N	N	
1513	K7	80390	drain	Iron Age?	6	-	-	+	-	-	-	-	-	-	N	N	
1514	K7	80390	drain	Iron Age?	6	-	-	-	-	-	-	-	-	-	N	N	
1515	K7	80407	drain	Iron Age?	7	-	-	+	-	-	-	-	-	-	N	N	
1516	K7	80366	drain	Iron Age?	3	-	-	-	-	-	-	-	-	-	N	N	
1517	K7	80289	drain	Iron Age?	27	-	-	-	-	-	-	-	-	-	N	N	
1518	K7	80368	drain	Iron Age?	6	-	-	-	-	-	-	-	-	-	N	N	
1519	K7	80368	drain	Iron Age?	8	-	-	+	-	-	-	-	-	-	N	N	
1520	K7	80370	drain	Iron Age?	22	-	-	+	-	-	-	-	-	-	N	Y	
1521	K7	80369	drain	Iron Age?	71	-	-	-	-	-	-	-	-	-	N	N	
1522	K7	80415	drain	Iron Age?	5	-	-	-	-	-	-	-	-	-	N	N	
1523	K7	80416	drain	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
1524	K7	80370	drain	Iron Age?	16	-	-	-	-	-	-	-	-	-	N	N	
1525	K7	80404	drain	Iron Age	5	-	-	+	-	-	-	-	-	-	N	Y	
1526	K7	80317	wall	Iron Age?	4	-	-	-	-	-	-	-	-	-	N	N	
1527	K7	80418	hollow	Iron Age?	9	-	-	+	-	-	-	-	-	-	N	Y	
1528	K7	80421	posthole	Iron Age?	11	-	-	-	-	-	-	-	-	-	N	N	
1529	K7	80423	posthole	Prehistoric	4	-	-	-	-	-	-	-	-	-	N	N	
1530	K7	80425	posthole	Prehistoric	2	-	-	-	-	-	-	-	-	-	N	N	
1532	K7	80367	drain	Iron Age?	7	-	-	-	-	-	-	-	-	-	N	N	
1533	K7	80402	pit	Prehistoric	4	-	-	-	-	-	-	-	-	-	N	N	
1534	K7	80429	pit	Iron Age	8	-	-	-	-	-	-	-	-	-	N	N	
1536	K7	80334	roof collapse?	Iron Age?	10	-	-	-	-	-	-	-	-	-	N	N	
1536	K7	80334	roof collapse?	Iron Age?	6	-	-	+	-	-	-	-	-	-	N	Y	
1537	K7	80334	roof collapse?	Iron Age?	6	-	-	+	-	-	-	-	-	-	N	N	
1537	K7	80334	roof collapse?	Iron Age?	4	-	-	-	-	-	-	-	-	-	N	N	
1538	K7	80334	roof collapse?	Iron Age?	7	-	-	+	-	-	-	-	-	-	N	Y	
1538	K7	80334	roof collapse?	Iron Age?	6	-	-	-	-	-	-	-	-	-	N	N	
1543	K8	80437	burnt patch	Unknown	137	-	-	!!	-	-	-	-	-	-	N	Y	
1547	I	50321	posthole	Prehistoric	10	-	-	+	-	-	-	-	-	-	N	Y	
1550	H	50401		Post medieval	10	-	-	-	-	-	-	-	-	-	N	N	
1552	H	50454	pit	Unknown	21	-	-	-	-	-	-	-	-	-	N	N	
1553	H	50455	pit	Unknown	48	-	-	++	-	-	-	-	-	-	N	Y	
1554	H	50422	tree hollow-burnt	Unknown	60	-	-	!!	-	-	-	-	-	-	N	Y	
1555	H	50396	pit	Unknown	69	-	-	!!	-	-	-	-	-	-	N	Y	
1556	K7	80322	pit	Unknown	6	-	-	-	-	-	-	-	-	-	N	N	
1557	E (hollow)	31628	slot	Neolithic	8	-	-	+	-	-	-	-	-	-	N	Y	
1558	E (hollow)	31624	pit	Neolithic	5	-	-	+	-	-	-	-	-	-	N	N	

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1560	E (hollow)	31630	posthole	Neolithic	5	-	-	+	-	-	-	-	-	-	N	Y	
1561	E (hollow)	31650	pit	Neolithic	10	-	-	+	-	-	-	-	-	-	N	N	
1562	E (hollow)	31661	pit	Neolithic?	5	-	-	-	-	-	-	-	-	-	N	N	
1563	E (hollow)	31651	pit	Neolithic	5	-	-	+	-	-	-	-	-	-	N	N	
1564	E	31025	relict soil	Pre-Neolithic	12	-	-	+	-	-	-	-	-	-	N	Y	
1566	E (hollow)	31643	posthole	Neolithic	4	-	-	-	-	-	-	-	-	-	N	N	
1567	E (hollow)	31645	pit	Neolithic	4	-	-	+	-	-	-	-	-	-	N	Y	
1568	E (hollow)	31663	pit	Neolithic	5	-	-	+	-	-	-	-	-	-	N	N	
5001	F1 RHI	92947	postpipe	Iron Age	36	-	-	-	-	-	-	-	-	-	N	N	
5002	F1 FW	93028	pit	Romano-British?	5	-	-	-	-	-	-	-	-	-	N	N	
5003	F1 FE	93297	posthole	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
5004	F1 FW	93309		Romano-British?	5	-	-	-	-	-	-	-	-	-	N	N	
5005	F1 FW	93294		Romano-British?	5	-	-	+	-	-	-	-	-	-	N	Y	
5007	F1 FE	93171	OGS	Bronze Age	13	-	-	+	-	-	-	-	-	-	N	Y	
5010	F1 RHI	93332	posthole	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
5011	F1 FW	93328		Romano-British?	3	-	-	-	-	-	-	-	-	-	N	N	
5012	F1 FE	93234	deposit	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
5013	F1 FW	93360		Romano-British?	5	-	-	-	-	-	-	-	-	-	N	N	
5014	F1 RHI	93354	posthole	Iron Age	24	-	-	-	-	-	-	-	-	-	N	N	
5015	F1 RHI	93365	posthole	Iron Age	109	-	-	-	-	-	-	-	-	-	N	N	
5016	F1 RHI	93363	pit	Iron Age	0	-	-	-	-	-	-	-	-	-	N	N	
5017	F1 FW	93351		Romano-British?	3	-	-	-	-	-	-	-	-	-	N	N	
5018	F1 FW	93397		Romano-British?	5	-	-	-	-	-	-	-	-	-	N	N	
5019	F1 FW	93398		Romano-British?	10	-	-	-	-	-	-	-	-	-	N	N	
5020	F1 FW	93399	trough	Romano-British?	8	-	-	-	-	-	-	-	-	-	N	N	
5021	F1 FW	93412		Romano-British?	8	-	-	-	-	-	-	-	-	-	N	N	
5022	F1 FW	93415		Romano-British?	6	-	-	-	-	-	-	-	-	-	N	N	
5023	F1 RHI	93409	posthole	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
5024	F1 RHI	93380	pit	Iron Age	0	-	-	-	-	-	-	-	-	-	N	N	
5026	F1 RHI	93419	pit	Iron Age	21	-	-	-	-	-	-	-	-	-	N	N	
5027	F1 RHI	93403	pit	Iron Age	45	-	-	+	-	-	-	-	-	-	N	N	
5028	F1 FW	93313		Romano-British?	5	-	-	-	-	-	-	-	-	-	N	N	
5029	F1 RHI	92946	floor	Iron Age	31	-	-	+	-	-	-	-	-	-	N	N	
5030	F1 RHI	93404	posthole	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
5031	F1 RHI	93406	posthole	Iron Age	23	-	-	-	-	-	-	-	-	-	N	N	

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5032	F1 FW	93431		Romano-British?	3	-	-	-	-	-	-	-	-	-	N	N	
5033	F1 RHI	93441	posthole	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
5034	F1 RHI	93435	pit	Iron Age	11	-	-	-	-	-	-	-	-	-	N	N	
5035	F1 RHI	93437	pit	Iron Age	9	-	-	-	-	-	-	-	-	-	N	N	
5036	F1 RHI	93439	posthole	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
5044	F1 RHI	93482	pit	Iron Age	4	-	-	-	-	-	-	-	-	-	N	N	
5045	F1 RHI	93483	pit	Iron Age	4	-	-	-	-	-	-	-	-	-	N	N	
5046	F1 RHI	93347	pit	Iron Age	4	-	-	-	-	-	-	-	-	-	N	N	
5047	F1 RHI	93445	pit	Iron Age	12	-	-	-	-	-	-	-	-	-	N	N	
5055	F1 RHI	93502	pit	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
5056	F1 FE	93466	OGS	Bronze Age	16	-	-	+	-	-	-	-	-	-	N	Y	
5057	F1 RHI	93489	pit	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
5058	F1 RHI	93490	pit	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
5059	F1 RHI	93492	posthole?	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
5060	F1 RHI	93503	gully	Iron Age	4	-	-	-	-	-	-	-	-	-	N	N	
5065	F1 RHI	93509	pit	Iron Age	4	-	-	-	-	-	-	-	-	-	N	N	
5066	F1 RHI	93424	pit	Iron Age	4	-	-	-	-	-	-	-	-	-	N	N	
5067	F1 RHI	93522	pit	Iron Age	10	-	-	+	-	-	-	-	-	-	N	N	
5068	F1 RHI	93524	posthole	Iron Age	9	-	-	+	-	-	-	-	-	-	N	N	
5069	F1 RHI	93430	pit	Iron Age	6	-	-	+	-	-	-	-	-	-	N	Y	
5070	F1 FE	93466	OGS	Bronze Age	27	-	-	-	-	-	-	-	-	-	N	N	
5071	F1 RHI	93529	pit	Iron Age	40	-	-	+	-	-	-	-	-	-	N	Y	
5072	F1 FE	93530	void	void	95	-	-	-	-	-	-	-	-	-	N	N	
5073	F1 RHI	93532	posthole	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
5074	F1 RHI	93534	gully	Iron Age	26	-	-	-	-	-	-	-	-	-	N	N	
5075	F1 RHI	93519	pit	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
5076	F1 RHI	93535	pit	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
5077	F1 RHI	93542	pit	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
5079	F1 RHI	93543	pit	Iron Age	39	-	-	-	-	-	-	-	-	-	N	N	
5080	F1 RHI	93547	pit	Iron Age	33	-	-	-	-	-	-	-	-	-	N	N	
5081	F1 RHI	93551	pit	Iron Age	14	-	-	-	-	-	-	-	-	-	N	N	
5082	F1 RHI	93548	pit	Iron Age	13	-	-	-	-	-	-	-	-	-	N	N	
5083	F1 RHI	93554	floor	Iron Age	63	-	-	+	-	-	-	-	-	-	N	N	
5084	F1 RHI	93538	ditch	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
5086	F1 RHI	93558	pit	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
5087	F1 RHI	92945		Iron Age	44	-	-	-	-	-	-	-	-	-	N	N	
5088	F1 RHI	93565	posthole	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
5089	F1 RHI	93562	pit	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
5090	F1 RHI	93567	postpipe	Iron Age	8	-	-	-	-	-	-	-	-	-	N	N	
5091	F1 RHI	93568	posthole	Iron Age	14	-	-	-	-	-	-	-	-	-	N	N	
5092	F1 RHI	93573	posthole	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	
5093	F1 RHI	93579	posthole	Iron Age	5	-	-	-	-	-	-	-	-	-	N	N	

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5094	F1 RHI	93581	pit	Iron Age	13	-	-	-	-	-	-	-	-	-	N	N	
5095	F1 RHI	93584	stakehole	Iron Age	8	-	-	-	-	-	-	-	-	-	N	N	
5096	F1 RHI	93586	stakehole	Iron Age	3	-	-	-	-	-	-	-	-	-	N	N	
5097	F1 RHI	93603	posthole	Iron Age	8	-	-	-	-	-	-	-	-	-	N	N	
5099	F1 RHI	93587	posthole	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
5100	F1 RHI	93605	posthole	Iron Age	12	-	-	-	-	-	-	-	-	-	N	N	
5101	K9a	80443	Trough fill	Romano-British?	25	-	-	-	-	-	-	-	-	-	N	N	
5102	F1 RHI	93591	linear feature	Iron Age	10	-	-	-	-	-	-	-	-	-	N	N	
5103	F1 RHI	93593	linear feature	Iron Age	20	-	-	+	-	-	-	-	-	-	N	Y	
5104	F1 RHI	93606	structural slot	Iron Age	47	-	-	-	-	-	-	-	-	-	N	N	
5105	F1 FE	93169	redeposited natural	Iron Age	3	-	-	-	-	-	-	-	-	-	N	N	
5106	K9a	80448	posthole	Romano-British?	252	-	-	-	-	-	-	-	-	-	N	N	
5107	K9a	80451	trough	Romano-British	25	-	-	-	-	-	-	-	-	-	N	N	
5108	K9a	80454	posthole	Romano-British?	8	-	-	-	-	-	-	-	-	-	N	N	
5109	K9a	80456	pit	Romano-British?	8	-	-	-	-	-	-	-	-	-	N	N	
5110	K9a	80458	pit	Romano-British?	8	-	-	-	-	-	-	-	-	-	N	N	
5111	K9a	80445	posthole?	Romano-British?	11	-	-	+	-	-	-	-	-	-	N	Y	
5112	K9a	80442	Trough backfill	Romano-British?	11	-	-	-	-	-	-	-	-	-	N	N	
5113	K9a	80472	pit?	Romano-British?	5	-	-	-	-	-	-	-	-	-	N	N	
5114	K9a	80469	trough lining	Romano-British?	5	-	-	-	-	-	-	-	-	-	N	N	
5115	K9a	80470	Trough lining	Romano-British?	3	-	-	-	-	-	-	-	-	-	N	N	
5116	K9a	80467		Romano-British?	3	-	-	-	-	-	-	-	-	-	N	N	
5117	K9a	80460	pit	Romano-British?	2	-	-	-	-	-	-	-	-	-	N	N	
5118	K9a	80464	pit	Romano-British?	20	-	-	-	-	-	-	-	-	-	N	N	
5119	K9a	80462	posthole	Romano-British?	10	-	-	-	-	-	-	-	-	-	N	N	
5120	K9a	80478	pit?	Unknown	10	-	-	-	-	-	-	-	-	-	N	N	
5121	K9a	80480	pit?	Unknown	5	-	-	-	-	-	-	-	-	-	N	N	
5122	K9a	80482	pit?	Unknown	8	-	-	-	-	-	-	-	-	-	N	N	
5123	K9a	80483	posthole	Romano-British?	8	-	-	+	-	-	-	-	-	-	N	Y	
5124	K9a	80486	pit	Romano-British?	5	-	-	-	-	-	-	-	-	-	N	N	
5126	K9a	80503	pit	Romano-British?	2	-	-	-	-	-	-	-	-	-	N	N	
5127	K9a	80535	pit	Romano-British?	15	-	-	-	-	-	-	-	-	-	N	N	
5129	K9a	80550	posthole	Romano-British?	0	-	-	-	-	-	-	-	-	-	N	N	
5130	K9a	80547	pit	Romano-British?	8	-	-	+	-	-	-	-	-	-	N	N	
5131	K9a	80552	pit	Romano-British?	15	-	-	-	-	-	-	-	-	-	N	N	
5136	K9a	80604	posthole	Romano-British?	51	-	-	-	-	-	-	-	-	-	N	N	
5137	K9a	80612	posthole	Romano-British?	15	-	-	+	-	-	-	-	-	-	N	N	
5140	L5	3095	posthole	Post medieval?	43	-	-	+	-	-	-	-	-	-	N	N	
5142	K9a	80654	pit?	Prehistoric	370	-	-	-	-	-	-	-	-	-	N	N	Cinder/slag
5143	K9a	80615	pit?	Romano-British?	3	-	-	-	-	-	-	-	-	-	N	N	

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5144	K9a	80657	pit	Prehistoric	60	-	-	-	-	-	-	-	-	-	N	N	Cinder/slag
5149	K9a	80646	pit	Prehistoric?	10	-	-	+	-	-	-	-	-	-	N	N	
5151	K9a	80663	posthole	Romano-British?	10	-	-	-	-	-	-	-	-	-	N	N	
5152	K9a	80665	posthole?	Romano-British?	8	-	-	-	-	-	-	-	-	-	N	N	
5153	K9a	80670	pit	Romano-British?	0	-	-	-	-	-	-	-	-	-	N	N	
5154	K9a	80644	pit?	Romano-British?	0	-	-	-	-	-	-	-	-	-	N	N	
5155	K9a	80640	pit?	Romano-British?	23	-	-	-	-	-	-	-	-	-	N	N	
5156	K9a	80667	posthole	Romano-British?	10	-	-	-	-	-	-	-	-	-	N	N	
5158	K9a	80680	posthole	Romano-British?	10	-	-	-	-	-	-	-	-	-	N	N	
5161	K9a	80728	pit?	Romano-British?	23	-	-	-	-	-	-	-	-	-	N	N	
5163	K9a	80748	posthole	Romano-British?	9	-	-	-	-	-	-	-	-	-	N	N	
5164	K9a	80726	pit?	Romano-British?	0	-	-	-	-	-	-	-	-		N	N	
5165	K9a	80607	pit	Prehistoric?	0	-	-	+	-	-	-	-	-	-	N	N	
5166	K9a	80739	posthole	Prehistoric?	5	-	-	+	-	-	-	-	-	-	N	N	
5167	K9a	80589	ditch	Romano-British?	10	-	-	+	-	-	-	-	-	-	N	N	
5168	K9a	80591	ditch	Romano-British?	15	-	-	-	-	-	-	-	-	-	N	N	
5500	M4	40077	pit	Post medieval?	618	-	-	!!	-	-	-	-	-	-	N	Y	
5501	K9a	80638	pit	Mid Neolithic	0	-	-	-	-	-	-	-	-	-	N	N	
5502	H	50018	pit?	Prehistoric?	10	-	-	+	-	-	-	-	-	-	N	N	
5503	H	50161	hearth	Early Neolithic	12	-	-	+	-	-	-	-	-	-	N	Y	
5504	B2 RHA	91011		Iron Age	2	-	-	+	-	-	-	-	-	-	N	Y	
5505	B3	9014	natural	Natural	8	-	-	+	-	-	-	-	-	-	N	Y	
5528	H	50183	posthole	Early Neolithic	6	-	-	+	-	-	-	-	-	-	N	N	
5529	H	50137	posthole	Early Neolithic	9	-	-	+	-	-	-	-	-	-	N	N	
5530	H	50144	posthole	Early Neolithic	0	-	-	+	-	-	-	-	-	-	N	N	
5531	H	50418	pit	Unknown	12	-	-	+	-	-	-	-	-	-	N	N	
5532	M4	40018	ditch	Bronze Age	48	-	-	-	-	-	-	-	-	-	N	N	
5605	K9b	80879	drain	Romano-British	11	-	-	+		-	-	-			N	N	
5606	K9b	80880	drain	Romano-British	7	-	-	+		-	-	-			N	N	
5608	K9b	80889	corn dryer	Romano-British	3	-	-	+							N	N	
5614	J3	70352	posthole	Prehistoric	10	-	-	-							N	N	
5615	K9b	80900	occupation layer?	Romano-British	28	-	-	+		-	-	-			N	N	
5617	K9b	80806		Romano-British?	15	-	-	+		-	-	-			N	N	
5618	K9b	80838		Romano-British	23	-	-	+		-	-	-			N	N	
5620	K9b	80906	pit	Romano-British	4	-	-	-							N	N	
5623	K9b	80884		Romano-British	25	-	-	+		-	-	-			N	N	
5624	K9b	80903	drain	Romano-British	5	-	-	-			-				N	N	
5625	K9b	80912		Romano-British	4	-	-	+		-	-	-			N	N	
5626	K9b	80909	Floor?	Romano-British	5	-	-	+		-	-	-			N	N	
5627	K9b	80928	gully	Romano-British	1	-	-	+		-	-	-			N	N	
5628	K9b	80910		Romano-British	6	-	-	+		-	-	-			N	N	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
5629	K9b	80910		Romano-British	11	-	-	+		-	-	-			N	N	
5631	K9b	80910		Romano-British	3	-	-	+		-	-	-			N	N	
5632	K9b	80930		Romano-British	4	-	-	+		-	-	-			N	N	
5633	K9b	80910		Romano-British	4	-	-	+		-	-	-			N	N	
5634	K9b	80949	pit	Romano-British	2	-	-	-							N	N	
5635	K9b	80941	pit	Romano-British	2	-	-	-			-				N	N	
5636	K9b	80904		Romano-British	8	-	-	-							N	N	
5639	K9b	80904		Romano-British	4	-	-	-							N	N	
5640	K9b	80951	posthole	Romano-British	10	-	-	-							N	N	
5641	K9b	80947	pit	Romano-British	6	-	-	-							N	N	
5642	K9b	80953	pit	Romano-British	1	-	-	-							N	N	
5643	K9b	80957	pit	Romano-British	1	-	-	-							N	N	
5645	K9b	80963	posthole	Romano-British	1	-	-	-							N	N	
5646	K9b	80967	posthole	Romano-British	4	-	-	-							N	N	
5647	K9b	80969	posthole	Romano-British	12	-	-	-							N	N	
5648	K9b	80971	posthole	Romano-British	10	-	-	+		-	-	-			N	N	
5649	K9b	80943	pit	Romano-British	4	-	-	-			-				N	N	
5650	K9b	80945	pit	Romano-British	6	-	-	+		-	-	-			N	N	
5651	K9b	80910		Romano-British	5	-	-	-							N	N	
5654	K9b	80977		Romano-British	10	-	-	-							N	N	
5655	K9b	80965	pit	Romano-British	11	-	-	+		-	-	-			N	N	
5656	K9b	80978	pit	Romano-British	13	-	-	+		-	-	-			N	N	
5657	K9b	80847		Romano-British	5	-	-	-							N	N	
5658	K9b	81002	furnace?	Romano-British	11	-	-	-							N	N	
5659	K9b	80982		Romano-British	0	-	-	-							N	N	
5660	K9b	80983		Romano-British	0	-	-	-							N	N	
5661	K9b	81011	posthole	Romano-British	0	-	-	-							N	N	
5662	K9b	80897	gully	Romano-British	4	-	-	-			-				N	N	
5663	K9b	80917	linear	Romano-British	4	-	-	-							N	N	
5664	K9b	81019	gully	Romano-British	1	-	-	-							N	N	
5666	K9b	80958		Romano-British	2	-	-	-							N	N	
5667	K9b	80998	posthole?	Romano-British	2	-	-	-							N	N	
5668	K9b	80874		Romano-British	2	-	-	-							N	N	
5669	K9b	80926	corn dryer?	Romano-British	36	-	-	-			-				N	N	
5672	K9b	81029	pit?	Romano-British	5	-	-	-							N	N	
5673	K9b	81033		Romano-British	3	-	-	-							N	N	
5674	K9b	81031	pit?	Romano-British	3	-	-	-							N	N	
5675	K9b	81035	posthole	Romano-British	2	-	-	-							N	N	
5676	K9b	80903	drain	Romano-British	5	-	-	-			-				N	N	
5678	K9b	81048	pit	Romano-British	1	-	-	-							N	N	
5679	K9b	81050	pit	Romano-British	1	-	-	-							N	N	
5680	K9b	80937	posthole	Romano-British	2	-	-	+		-	-	-			N	N	

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5683	K9b	81067	pit	Romano-British	1	-	-	-							N	N	
5684	K9b	81044	posthole	Romano-British	2	-	-	+		-	-	-			N	N	
5687	K9b	81042	pit	Romano-British	20	-	-	+		-	-	-			N	N	
5688	K9b	80849	pit	Romano-British	12	-	-	+		-	-	-			N	N	
5689	K9b	80864	posthole	Romano-British	4	-	-	+		-	-	-			N	N	
5690	K9b	81076	pit	Romano-British	2	-	-	-							N	N	
5691	K9b	81053		Romano-British	4	-	-	+		-	-	-			N	N	
5692	K9b	80805		Romano-British?	4	-	-	+		-	-	-			N	N	
5694	K9b	81052		Romano-British	6	-	-	+		-	-	-			N	N	
5695	K9b	81079	pit?	Romano-British	7	-	-	-							N	N	
5696	K9b	80934		Romano-British	1	-	-	+		-	-	-			N	N	
5697	K9b	81094		Romano-British	5	-	-	-							N	N	
5698	K9b	81087	pit	Romano-British	4	-	-	-							N	N	
5699	K9b	81101	pit	Romano-British	4	-	-	+		-	-	-			N	N	
5700	K9b	81100	pit	Romano-British	5	-	-	+		-	-	-			N	N	
5701	K9b	81095	pit	Romano-British	1	-	-	-							N	N	
5702	K9b	81014	gully?	Romano-British	6	-	-	-							N	N	
5703	K9b	81016	gully?	Romano-British	1	-	-	+		-	-	-			N	N	
5704	K9b	81108	posthole	Romano-British	10	-	-	+		-	-	-			N	N	
5705	K9b	81106		Romano-British	1	-	-	-							N	N	
5707	K9b	81088		Romano-British	6	-	-	-							N	N	
5709	K9b	81097	pit	Romano-British	6	-	-	+		-	-	-			N	N	
5710	K9b	81129	pit	Romano-British	8	-	-	+		-	-	-			N	N	
5711	K9b	81070		Romano-British	12	-	-	-							N	N	
5713	K9b	81130	pit	Romano-British	13	-	-	-							N	N	
5715	K9b	81165	posthole	Romano-British	5	-	-	+		-	-	-			N	N	
5716	K9b	81167	posthole?	Romano-British	4	-	-	-							N	N	
5717	K9b	81171	layer	Romano-British	4	-	-	+		-	-	-			N	N	
5718	K9b	81177	pit	Romano-British	15	-	-	+		-	-	-			N	N	
5719	K9b	81181	pit	Romano-British	1	-	-	+		-	-	-			N	N	
5720	K9b	81172	pit	Romano-British	24	-	-	+		-	-	-			N	N	
5721	K9b	80553	scarp/terrace	Romano-British?	7	-	-	-							N	N	
5722	K9b	81059	posthole/pit?	Romano-British	5	-	-	+		-	-	-			N	N	
5724	K9b	81057	pit	Romano-British	3	-	-	+		-	-	-			N	N	
5725	K9b	81055	posthole	Romano-British	3	-	-	+		-	-	-			N	N	
5726	K9b	81063	posthole	Romano-British	5	-	-	+		-	-	-			N	N	
5727	K9b	81077	posthole	Romano-British	4	-	-	+		-	-	-			N	N	
5728	K9b	81162	posthole	Romano-British	10	-	-	-							N	N	
5729	K9b	80876	Drain	Romano-British	4	-	-	+		-	-	-			N	N	
5730	K9b	81234	posthole?	Romano-British	1	-	-	+		-	-	-			N	N	
5731	K9b	81232	gully	Romano-British	2	-	-	-							N	N	
5733	K9b	81237	posthole	Romano-British	18	-	-	+		-	-	-			N	N	

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5734	K9b	81247	pit	Romano-British	5	-	-	+		-	-	-			N	N	
5735	K9b	81119	posthole	Romano-British	4	-	-	-							N	N	
5736	K9b	81212	pit	Romano-British	16	-	-	+		-	-	-			N	N	
5737	K9b	81225	pit	Romano-British	15	-	-	+		-	-	-			N	N	
5738	K9b	81251	pit	Romano-British	53	-	-	-							N	N	
5739	K9b	81253	pit	Romano-British	3	-	-	-							N	N	
5740	K9b	81255	posthole	Romano-British	10	-	-	+		-	-	-			N	N	
5742	K9b	81307		Romano-British	8	-	-	+		-	-	-			N	N	
5743	K9b	81261	gully	Romano-British	4	-	-	+		-	-	-			N	N	
5744	K9b	81258	pit	Romano-British	9	-	-	+		-	-	-			N	N	
5745	K9b	81205	furnace	Romano-British	12	-	-	-							N	N	
5746	K9b	81206	furnace	Romano-British	12	-	-	+		-	-	-			N	N	
5747	K9b	81240	hearth	Romano-British	4	-	-	+		-	-	-			N	N	
5748	K9b	81264	pit	Romano-British	4	-	-	+		-	-	-			N	N	
5749	K9b	81166		Romano-British	10	-	-	-							N	N	
5750	K9b	81005		Romano-British	4	-	-	+		-	-	-			N	N	
5751	K9b	81304	posthole?	Romano-British	2	-	-	+		-	-	-			N	N	
5752	K9b	81218	pit	Romano-British	2	-	-	+		-	-	-			N	N	
5753	K9b	81246	trough	Romano-British	1	-	-	-							N	N	
5754	K9b	81221	trough	Romano-British	4	-	-	+		-	-	-			N	N	
5755	K9b	81243	trough	Romano-British	4	-	-	+		-	-	-			N	N	
5756	K9b	81244	trough	Romano-British	1	-	-	+		-	-	-			N	N	
5757	K9b	81245	trough	Romano-British	20	-	-	-							N	N	
5758	K9b	81305		Romano-British	1	-	-	-							N	N	
5759	K9b	81306		Romano-British	3	-	-	-							N	N	
5760	K9b	81307		Romano-British	3	-	-	-							N	N	
5761	K9b	81283	pit	Romano-British	4	-	-	-							N	N	
5762	K9b	81285	pit	Romano-British	3	-	-	+		-	-	-			N	N	
5763	K9b	80981	pit?	Romano-British	10	-	-	+		-	-	-			N	N	
5764	K9b	81252	pit	Romano-British	3	-	-	+		-	-	-			N	N	
5765	K9b	81179	pit	Romano-British	2	-	-	-							N	N	
5766	K9b	80854	hollow/pit	Romano-British	4	-	-	-							N	N	
5767	K9b	81287	pit	Romano-British	6	-	-	+		-	-	-			N	N	
5768	K9b	81276	gully	Romano-British	1	-	-	-							N	N	
5769	K9b	81278	stakehole	Romano-British	2	-	-	-							N	N	
5770	K9b	81173	posthole	Romano-British	1	-	-	+		-	-	-			N	N	
5771	K9b	81164	posthole	Romano-British	1	-	-	-							N	N	
5772	K9b	81217	posthole?	Romano-British	21	-	-	-							N	N	
5773	K9b	81216	posthole?	Romano-British	1	-	-	-							N	N	
5774	K9b	80930		Romano-British	21	-	-	+		-	-	-			N	N	
5775	K9b	81241	posthole	Romano-British	1	-		-							N	N	
5778	J3	70386	pit	Prehistoric?	4	-	-	-							N	N	

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5779	J3	70395	posthole	Prehistoric?	7	-	-	-							N	N	
5780	J3	70396	posthole	Prehistoric?	7	-	-	-							N	N	
5781	J3	70400	posthole	Prehistoric?	2	-	-	-							N	N	
5782	J3	70406	tree hollow-burnt	Unknown	11	-	-	-							N	N	
5783	J3	70408	posthole	Prehistoric?	6	-	-	-							N	N	
5784	J3	70381	posthole	Prehistoric?	7	-	-	-							N	N	
5785	J3	70410	posthole	Prehistoric?	7	-	-	-							N	N	
5786	J3	70412	posthole	Prehistoric?	1	-	-	-							N	N	
5787	J3	70415	posthole	Prehistoric?	10	-	-	-							N	N	
5788	J3	70419	pit	Prehistoric?	1	-	-	-							N	N	
5789	J3	70423	posthole	Prehistoric?	6	-	-	-							N	N	
5790	J3	70421	posthole	Prehistoric?	9	-	-	-							N	N	
5791	J3	70429	posthole	Prehistoric?	1	-	-	-							N	N	
5792	J3	70427	posthole?	Prehistoric?	1	-	-	-							N	N	
5793	J3	70434	pit	Prehistoric?	1	-	-	-							N	N	
5794	J3	70436	pit	Prehistoric?	10	-	-	-							N	N	
5795	J3	70439	posthole	Post medieval?	34	-	-	++		-	-	-			N	Y	
5796	J3	70425	posthole?	Prehistoric?	12	-	-	-							N	N	
5797	J3	70437	deposit	Prehistoric?	20	-	-	-							N	N	
5798	J3	70391	posthole?	Prehistoric?	26	-	-	-							N	N	
5799	J3	70461	posthole?	Prehistoric?	1	-	-	+		-	-	-			N	N	
5800	J3	70465	pit	Modern	12	-	-	+		-	-	-			N	N	
5801	J3	70466	posthole?	Prehistoric?	1	-	-	-							N	N	
5802	J3	70468	posthole?	Prehistoric?	0	-	-	-							N	N	
5803	J3	70476	pit	Prehistoric?	7	-	-	+		-	-	-			N	N	
5805	J3	70492	ditch	Post medieval	2	-	-	-							N	N	
5806	J3	70499	tree hollow-burnt	Unknown	15	-	-	++		-	-	-			N	Y	
5808	J3	70472	posthole	Prehistoric?	3	-	-	+		-	-	-			N	N	
5810	J3	70518	burnt patch	post medieval?	20	-	-	+		-	-	-			N	N	
5811	J3	70497	ditch	Post medieval	1	-	-	-							N	N	
5812	J3	70521	tree hollow-burnt	Unknown	28	-	-	++		-	-	-			N	N	
5813	J3	70512	pit	Prehistoric?	3	-	-	+		-	-	-			N	N	
5814	J3	70483	posthole	Prehistoric?	2	-	-	+		-	-	-			N	N	
5816	J3	70531	pit	Prehistoric?	1	-	-	-							N	N	
5817	J3	70530	pit	Prehistoric	1	-	-	-							N	N	
5818	J3	70532	pit	Prehistoric	0	-	-	-							N	N	
5819	J3	70533	pit	Prehistoric	0	-	-	-							N	N	
5820	J3	70534	pit	Prehistoric	0	-	-	-							N	N	
5821	J3	70535	pit	Prehistoric	0	-	-	-							N	N	

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5823	J3	70538	pit	Prehistoric?	1	-	-	+		-	-	-			N	N	
5824	J3	70537	bank	Romano-British	9	-	-	+		-	-	-			N	N	
5825	J3	70548	tree hollow-unburnt	Unknown	7	-	-	+		-	-	-			N	N	
5827	J3	70551	posthole	Prehistoric	1	-	-	-							N	N	
5828	J3	70552	posthole	Prehistoric	1	-	-	-							N	N	
5830	J3	70556	posthole	Prehistoric	1	-	-	-							N	N	
5831	J3	70557	posthole	Prehistoric	1	-	-	-							N	N	
5832	J3	70559	posthole	Prehistoric	0	-	-	-							N	N	
5833	J3	70519	pit	Prehistoric?	4	-	-	+		-	-	-			N	N	
5837	J3	70597	posthole?	Prehistoric?	1	-	-	-							N	N	
5838	J3	70665	deposit	Romano-British?	1	-	-	+		-	-	-			N	N	
5839	J3	70607	posthole	Prehistoric?	0	-	-	-							N	N	
5840	J3	70610	posthole	Prehistoric?	1	-	-	+		-	-	-			N	N	
5841	J3	70611	posthole	Prehistoric?	1	-	-	+		-	-	-			N	N	
5842	J3	70613	posthole	Prehistoric?	1	-	-	+		-	-	-			N	N	
5843	J3	70579	pit	Prehistoric?	13	-	-	+		-	-	-			N	N	
5844	J3	70619	wall	Romano-British?	10	-	-	-							N	N	
5845	J3	70558	posthole	Prehistoric	0	-	-	-							N	N	
5846	J3	70573	pit	Prehistoric?	3	-	-	+		-	-	-			N	N	
5847	J3	70561	pit	Prehistoric?	1	-	-	-							N	N	
5848	J3	70569	stakehole	Prehistoric?	2	-	-	+		-	-	-			N	N	
5849	J3	70634	posthole	Prehistoric?	1	-	-	-							N	N	
5850	J3	70628	posthole	Prehistoric	1	-	-	-							N	N	
5851	J3	70629	posthole	Prehistoric	0	-	-	-							N	N	
5852	J3	70636	posthole	Prehistoric?	0	-	-	-							N	N	
5853	J3	70641	pit	Prehistoric?	0	-	-	-							N	N	
5854	J3	70638	posthole	Prehistoric?	0	-	-	-							N	N	
5855	J3	70648	posthole	Modern	4	-	-	-							N	N	
5856	J3	70656	posthole	Romano-British?	3	-	-	-							N	N	
5857	J3	70633	ditch	Post medieval	3	-	-	-							N	N	
5858	J3	70673	posthole?	Prehistoric?	0	-	-	-							N	N	
5859	J3	70684	posthole	Prehistoric?	2	-	-	+		-	-	-			N	N	
5862	J3	70661	pit	Unknown	10	-	-	+		-	-	-			N	N	
5863	J3	70686	pit	Post medieval	14	-	-	-							N	N	
5864	J3	70683	posthole	Post medieval	1	-	-	-							N	N	
5869	J3	70516	surface	Romano-British?	0	-	-	-							N	N	
5870	J3	70665	deposit	Romano-British?	0	-	-	-							N	N	
5871	J3	70542	ditch	Romano-British?	0	-	-	-							N	N	
5872	J3	70658	bank	Romano-British?	0	-	-	-							N	N	
5873	J3	70668	ditch	Romano-British	0	-	-	-							N	N	
5874	J3	70670	ditch	Romano-British	0	-	-	-							N	N	

Sample	Area	Context	Feature type	Period	Flot weight (gms)	Fish Bone	Animal Bone	Charcoal	Mollusc or Marine Shell	Chaff	Grain	Hazelnuts	Insect Remains	W Logged	Further Analysis	C14 Possible	Comments on Flot
5875	J3	70586	ditch	Romano-British?	1	-	-	-							N	N	
5876	J3	70526	natural	Early Holocene?	1	-	-	-							N	N	
5877	J3	70520	surface	Romano-British?	1	-	-	-							N	N	
5878	J3	70681	deposit	Post Roman?	1	-	-	-							N	N	
5879	J3	70698	deposit	Post Roman?	1	-	-	-							N	N	
5880	J3	70680	deposit	Post Roman?	1	-	-	-							N	N	
5881	J3	70707	gully	Post medieval	1	-	-	+		-	-	-			N	N	
5882	J3	70709	pit	Post medieval?	1	-	-	-							N	N	
5883	J3	70715	posthole?	Post medieval?	1	-	-	-							N	N	
5884	J3	70717	posthole?	Post medieval?	1	-	-	-							N	N	
5885	J3	70719	posthole?	Post medieval?	1	-	-	-							N	N	
5886	J3	70720	stakehole	Romano-British	4	-	-	+		-	-	-			N	N	
10078	B1	5066	pit	Prehistoric?	10	-	-	-	-	-	-	-	-	-	N	N	
10079	B1	5067	pit	Prehistoric?	10	-	-	-	-	-	-	-	-	-	N	N	
101403	M4	40200	animal burrow	Unknown	17	-	-	+	-	-	-	-	-	-	N	N	

Part XIX.2: Detailed assessment of charcoal in samples proposed for futher analysis

Rosalind McKenna

Introduction

An archaeological excavation was carried out by Gwynedd Archaeological Trust at Parc Cybi, Holyhead, centred on NGR SH 2555 8075, between January 2006 and February 2010. The site covers over 41 hectares of pasture land to the south of Holyhead on Holy Island (centred on SH 2555 8075) (Figure 1). The terrain is characterised by rocky outcrops, often covered by gorse or rough grassland with marshy hollows between, and some better pastureland. The site lies between the A55 and Kingsland Road, with Lôn Trefignath running through its eastern side.

The excavated features ranged in date from the Mesolithic to the 19th century and the finds included pottery, lithics, glass, metal artefacts and palaeoenvironmental data. The major sites include a rectangular early Neolithic building of national and international importance. This seems to have been aligned on the Trefignath Chambered tomb and had firepits dug through the demolished remains of the building. Other early Neolithic settlement of a different character was also present on site and extensive activity continued into the mid and later Neolithic, providing the potential to contribute to the re-evaluation of Peterborough and Grooved Ware in this region. The Bronze Age was represented by a complex of ceremonial monuments, including a possible multiple-cist barrow, the ring ditch of a barrow and a deep-ditched enclosure. In relation to the standing stone in the middle of the site and the larger barrow excavated near Tw Mawr Farm to the north this suggests a ritual landscape of national importance. The period was also represented by two burnt mounds and a timber roundhouse that was poorly dated but probably of Bronze Age date. A settlement of stone roundhouses with complex stratigraphy was accompanied by several outlining roundhouses and other structures as well as possibly contemporary field boundaries. The extent and variety of Iron Age settlement on the site means that this has a very high potential for studying all aspects of settlement development and use in this period. Settlement focus seems to have shifted in the Roman period but activity continued. A group of structures seem to have had industrial and storage functions and running from them was a trackway with associated traces of a field system. A small early medieval cemetery was found on top of a hill, one of an important group on Holy Island. The use of the site into the high medieval period may be indicated by the smithing within the area of the cemetery and possibly by several corn driers. Excavation evidence has extended the knowledge of the changing field boundaries of the area gained from the historic maps and suggests early fields that might have a medieval or earlier origin.

A programme of soil sampling was implemented during the excavation, which included the collection of soil samples from sealed contexts. The aim of the sampling was:

- To assess the type of preservation and the potential of the biological remains
- To record any human activities undertaken on the site – both domestic and industrial
- To provide information on the past environment of the area.

Methods

Following selection, subsamples of raw sediment from the selected samples were processed. The samples were examined in the laboratory, where they were described using a pro forma. The subsamples were processed by staff at Gwynedd Archaeological Trust using their standard water flotation methods.

The flot (the sum of the material from each sample that floats) was sieved to 0.5mm and air dried. The heavy residue (the material which does not float) was not examined, and therefore the results presented here are based entirely on the material from the flot. The flot was examined under a low-power binocular microscope at magnifications between x12 and x40.

The flot was then sieved into convenient fractions (4, 2, 1 and 0.3mm) for sorting and identification of charcoal fragments. Identifiable material was only present within the 4 and 2mm fractions. A random selection of ten fragments of charcoal of varying sizes was made, which were then identified. Where samples did not contain ten identifiable fragments, all fragments were studied and recorded. Identification was made using the wood identification guides of Schweingruber (1978) and Hather (2000). The full species list appears in Table XIX.2.1 at the end of this report. Each sub table presents the data from each project number / area within the excavation site as a whole. Where a project number is absent, the results are shown based on the area of the site the samples originated.

Taxa identified only to genus cannot be identified more closely due to a lack of defining characteristics in charcoal material.

Results

Three hundred and seven samples are the basis of this investigation.

Charcoal fragments were present in all of the samples, scoring between a '1' and '4' on the semi quantitative scale. The preservation of the charcoal fragments was poor. The majority of the fragments were too small to enable successful fracturing that reveals identifying morphological characteristics. Where fragments were large enough, the fragments were very brittle, and the material crumbled or broke in uneven patterns making the identifying characteristics difficult to distinguish and interpret, and so only a limited amount of environmental data can be gained from the samples. Forty samples contained material that was too poorly preserved to enable identification. Identifiable remains were however present in two hundred and sixty seven of the samples. The results of this analysis can be seen in Table XIX.2.1 below.

The total range of taxa comprises oak (Quercus), willow / poplar (Salix / Populus), hazel (Corylus avellana), ash (Fraxinus excelsior), alder (Alnus glutinosa), the rose family (ROSACEAE), and possible buckthorn (cf. *Rhamnus*). These taxa belong to the groups of species represented in the native British flora. As seen in Table XIX.2.2, oak has the highest number of identified charcoal fragments within the samples. It is possible that these were the preferred fuel woods obtained from a local environment containing a broader choice of species.

PRN 14599 – Area B2 / F1

Sixty samples originated from this area which dates to the Iron Age. It is a settlement with three stone built roundhouses and a timber roundhouse as well as numerous ancillary buildings, a wall running through the settlement and a possible enclosing wall and ditch. Twelve of the samples contained only charcoal remains that was so poorly preserved it was impossible to identify to species level. Of the samples with identifiable remains, thirty two were dominated by oak, eight by willow / poplar, two by rosaceae and a further three contained equal amounts of willow / poplar and oak charcoal.

Eight of the samples originated from hearth features, but four of those samples were from a hearth (90638), which was radiocarbon dated to the Late Neolithic and was not part of the roundhouse settlement as it first appeared. The early samples were dominated by oak charcoal, as were all but one of the Iron Age samples, which was dominated by willow/poplar charcoal. Hazel was present in all the early samples but absent from the later ones, though in one of these rosaceae were also present.

Four samples originated from the stone platform under roundhouses A and E, which was radiocarbon dated to the Early Iron Age. One sample contained indeterminate charcoal remains, while the rest were dominated by oak with willow / poplar charcoal also recorded. A possible levelling layer related either to the platform or the earlier Late Neolithic activity produced a single sample that contained only oak charcoal. A sample from the soil or turf layer (92148) that developed over the platform was dominated by oak charcoal with a small amount of willow /poplar.

Two samples were from stake hole features – one was dominated by oak charcoal, and the other only unidentifiable fragments. Eight samples originated from floor deposits – two of these contained only unidentifiable charcoal fragments, two were dominated by oak, two were dominated by willow / poplar charcoal and a further two by rosaceae charcoal. A single sample from a stone deposit contained equal amounts of willow / poplar and oak charcoal. Six samples originated from post hole features – two contained only poorly preserved material which could not be identified, and the other four were dominated by oak charcoal with willow / poplar also present. A further two samples originated from a possible robbing disturbance – one contained only indeterminate remains, and the other was dominated by oak with willow / poplar charcoal also present. A sample from a burnt layer, and one from a pit / posthole feature contained material that was unidentifiable. A single sample from a post slot contained, only oak charcoal, possibly indicating the remains of the oak post. Ten samples originated from pit features – six were dominated by oak charcoal and two by willow / poplar charcoal, with two samples containing only unidentifiable remains. Four samples originated from burnt patches or burnt spreads – one contained only willow / poplar charcoal, two only oak and the other only indeterminate charcoal. A single sample from a passageway was contained both willow / poplar and oak charcoal in equal quantities. Willow / poplar with a smaller amount of oak was recorded in a stony layer. A sample from a wall feature was dominated by willow / poplar with a smaller amount of oak charcoal. Indeterminate charcoal were the only fragments present in a sample from a slot feature. Two samples from occupation layers were dominated by oak charcoal with willow / poplar also recorded. A single sample from a stone surface contained only oak charcoal.

Two samples originated from an old ground surface – one was dominated by oak with willow / poplar and hazel also present, and the other was dominated by oak with willow / poplar charcoal also recorded. Remains from a floor / hearth base contained only willow / poplar charcoal. Three samples originated from layers, one was dominated by oak with a smaller amount of willow / poplar charcoal, and the other two samples contained only remains of indeterminate charcoal.

PRN 18403 - Area E
A single sample from a pit smithing feature recorded only unidentifiable charcoal remains.

PRN 18406 – Area E
Sixteen samples from this area of early Neolithic temporary occupation produced samples for assessment. The area is a natural hollow containing pits, post holes, stake holes and hearths associated with a patch of buried soil. The activity probably represents short term occupation taking place repeatedly over a considerable period of time. Fifteen of the samples were dominated by oak charcoal, and one by hazel charcoal. Willow / poplar was also recorded in smaller amounts.

Nine of the samples originated from pit features. Three of these contained only oak, three were dominated by oak with willow / poplar and two were dominated by oak with hazel charcoal also recorded. One sample contained only hazel charcoal. A single sample originated from a post hole feature and contained only oak. Oak alongside smaller amounts of hazel and willow / poplar charcoal were recorded from a hollow feature. Two further samples – one from a layer and one from a burnt patch contained only oak charcoal.

PRN 31570 – Area H
Forty eight samples originated from this area, which represents a Neolithic rectangular building. The structure appears to have been sub divided internally into three separate compartments. Several hearth pits were located within the structure, but some cut structural features and must be later than the building – perhaps activity marking its demolition. Forty seven of the samples were dominated by oak charcoal, and one by hazel charcoal. Willow / poplar and rosaceae were also recorded within the samples.

Twelve of the samples originated from post hole features associated with the structure. Eight of these contained only oak, two contained oak with hazel and willow / poplar charcoal, one oak with hazel and a further one was dominated by oak with hazel and alder charcoal. It is possible the dominance of oak reflects the remains of the posts associated with the structure. Twenty one of the samples originated in hearth pit features, with seventeen of these containing only oak charcoal. A further three were dominated by oak, one also contained hazel and two willow / poplar charcoal. One sample was dominated by hazel charcoal with a smaller amount of oak also present. Four of the samples originated from pit features – three contained only oak charcoal and one was dominated by hazel with smaller amounts of oak and rosaceae charcoal. Five samples originated from beam slots – four contained only oak charcoal, and one was dominated by oak with smaller amounts of hazel and willow / poplar charcoal. A single sample from a gully feature was dominated b y oak and also contained hazel. Six further samples – one from a hearth, one from a slot, two from the natural and a non-feature all contained only oak charcoal.

PRN 31571 – Area M
Six samples from this area of early Neolithic activity recorded remains of charcoal. The area represents some settlement activity with a small group of pits and post holes. Five of the samples that produced charcoal originated in pit features. Three of these contained only oak charcoal, one was dominated by oak with smaller amounts of hazel and willow / poplar, and one dominated by rosaceae with smaller amounts of hazel and willow / poplar. A single feature originated in cist 2 feature, and contained only oak charcoal.

PRN 31572 – Area Ia
Eight samples from a mid Neolithic pit group produced charcoal remains from this area. Two of these samples contained removes that were too poorly preserved to enable identification. Of identifiable remains, five samples contained only oaky charcoal and a final sample was dominated by oak with a smaller amount of hazel charcoal.

PRN 31573 – Area K9
A pit group dating to the mid Neolithic period produced seven samples with charcoal remains from this area. Two contained only oak charcoal, one was dominated by oak with smaller amounts of hazel and willow / poplar, two were dominated by hazel with smaller quantities of oak charcoal, one was dominated by hazel with oak and willow / poplar charcoal and a final sample contained equal amounts of oak and hazel charcoal.

PRN 31574 – Area D3
This area represents late Neolithic activity in the form of a hearth and associated pits. Five samples produced charcoal remains. Two of these were dominated by oak with smaller amounts of hazel charcoal, one was dominated by oak with smaller amounts of hazel and willow / poplar charcoal, and two were dominated by hazel with smaller amounts of oak charcoal.

PRN 31578 – Area J
This area dates to the possible Bronze Age and represents settlement activity in the form of a small structure with pits around it. Two samples produced identifiable charcoal remains – one contained only oak charcoal and the other was dominated by hazel with a small amount of oak charcoal.

PRN 31580 - Area J
Two samples from this area of pits reflecting possible Bronze Age activity produced charcoal remains. One contained only oak charcoal and the other was dominated by oak with a small amount of willow / poplar also recorded from the sample.

PRN 31581 - Area J
A group of twenty five features including many small stake holes, alongside some well defined post holes and larger pits show some settlement activity dating to the possible Bronze Age. A single sample from a post hole produced remains of charcoal, and this was dominated by willow / poplar with a small amount of oak.

PRN 31582 – Area E
This area of activity dates to the Beaker period, and is represented by a large burnt mound with pits, water trough and a possible dry cooking pit, as well as a large pit that may have functioned as a well. Nine samples with charcoal remains were assessed. Of these, one contained only indeterminate charcoal, six were dominated by oak and one was dominated by willow / poplar charcoal. Hazel was also recorded within the samples in smaller numbers. Three samples originated in trough features – all were dominated by oak and contained hazel and willow / poplar charcoal. Three samples originated from the well feature – one contained only oak charcoal and the other was dominated by oak with a smaller amount of hazel and willow / poplar charcoal. The three remaining samples originated from the burnt mound feature, and one of these was too poorly preserved to enable identification. Of the other two samples, one was dominated by oak with willow / poplar and hazel charcoal and the other dominated by willow / poplar with hazel and oak charcoal also recorded.

PRN 31583 – Area E
A small burnt mound dating to the late Neolithic period with an associated trough or pit represents the activity from this area. Four samples produced identifiable charcoal remains – two were dominated by oak, one by hazel and one contained equal amounts of both oak and hazel. Two of the samples originated from the trough feature – one contained only oak and the other was dominated by hazel with a smaller amount of oak charcoal. Two samples originated in the burnt mound feature – one contained equal amounts of oak and hazel charcoal, and the other was dominated by oak with smaller amounts of hazel charcoal.

PRN 31584 – Area E
This possible earth oven may be associated with a burnt mound that lies outside the excavation area. One sample with charcoal remains was assessed and this was dominated by oak charcoal, but also contained willow / poplar

PRN 31585 – Area E
Samples from two pits were assessed, both were dominated by oak, one also with hazel charcoal and the other with some hazel and willow / poplar.

PRN 31586 – Area E
A pit which resembled a small burnt mound pit, without traces of a mound or other features dating to the possible Bronze age represents the activity in this area. A single sample produced identifiable remains, which was dominated by hazel charcoal with smaller amounts of willow / poplar and hazel also recorded.

PRN 31587 – Area L5
This area of activity dated to the Bronze Age, and consisted of a number of pits that resembled burnt mounds with the presence of burnt stones. Both samples that produced charcoal were dominated by oak, one contained a small amount of willow / poplar and the other a small amount of hazel and willow / poplar charcoal.

PRN 31588 – Area K1
This area of activity was defined by a series of heavily truncated post holes defining a timber roundhouse, with an inner post ring and an outer wall, possible dating to the Bronze Age. Eleven samples produced identifiable charcoal remains – eight were dominated by oak, one was dominated by willow / poplar, one was dominated by alder and one was dominated by hazel charcoal. Rosaceae charcoal was also recorded within the samples. Six of the samples originated from pit features – three contained only oak charcoal, one was dominated by oak with a small amount of rosaceae, one was dominated by hazel with oak charcoal also recorded, and one was dominated by willow / poplar with hazel and oak also present in smaller numbers. A Single samples from a charcoal patch contained only oak charcoal. A single sample from a furrow / ditch feature was dominated by alder with hazel, willow / poplar and oak also present. Three samples originated from post holes, and these all contained only oak charcoal, which may represent remains of the original posts from within the features.

PRN 31589 – Area M
This area dating to the Bronze Age, has been defined as a short cist cemetery, consisting of eight graves, possibly under a barrow. Two samples produced identifiable charcoal remains, both of which recorded only oak charcoal within them.

PRN 31591 – Area M
This area is characterised by a deep ditched enclosure, with some possible associated small pits in and around it, dating to the Bronze Age. Six samples produced identifiable charcoal remains. Five of these were from ditch features and one from a pit feature. All contained only oak charcoal.

PRN 31592 – Area B1
This area dates to the Iron Age and is characterised by a group of pits, many of which had traces of in situ burning. Twenty six samples from this area were submitted for assessment, with identifiable remains present in twenty two of the samples – four contained only indeterminate charcoal. Twelve of the samples were dominated by oak, three were dominated by rosaceae, two were dominated by willow / poplar, three contained equal amounts of willow / poplar and oak, and one contained equal amounts of alder and oak charcoal.

Nineteen of the samples originated from pit features, and of these two contained only indeterminate charcoal. Five of the samples contained only oak charcoal, one was dominated by oak with alder and hazel also recorded, four were dominated by oak with a smaller amount of willow / poplar charcoal, one was dominated by oak with willow / poplar and ash, and three were dominated by oak with willow / poplar and hazel charcoal also recorded. One of the samples contained only rosaceae charcoal, one was dominated by rosaceae with willow / poplar also present and a further sample was dominated by rosaceae with oak and willow / poplar charcoal also recorded. Two of the samples originated fro gully features – one contained only indeterminate charcoal, and one was dominated by willow / poplar with a smaller amount of oak charcoal.

PRN 31593 – Area L3
This area dates to the Iron Age, and shows the remains of a sub circular structure, with post holes around the edge and a hearth in the middle. A sample from a post hole contained only indeterminate charcoal remains. One sample from a deposit within the building terrace contained only charcoal fragments that were too poorly preserved to enable identification, but another contained oak charcoal.

PRN 31594 – Area K7
A single sample from a pit feature was submitted for an assessment, and it was dominated by oak with a smaller amount of hazel charcoal.

PRN 31595 – Area K7
This area produced two roundhouses, possibly with clay walls and internal drains, which dates to the Iron Age. Four samples contained charcoal remains – one from a layer feature contained indeterminate charcoal. Three further samples from roof collapse features produced charcoal remains – one contained indeterminate remains, and the other two only oak charcoal.

PRN 31596 – Area K9
This area contained the remains of a Roman period building complex, which may possibly be a farmstead. It was characterised by a square stone building and a clay lined round house with a trackway that runs through the middle of the complex. Thirty of the samples were submitted for an assessment of the remains, and ten of these contained only indeterminate charcoal. Of the twenty samples with identifiable remains, sixteen were dominated

by oak, one was dominated by willow / poplar, one was dominated by hazel, and two contained equal amounts of hazel and oak charcoal.

Eight of the samples originated in pit features, and three of these contained only indeterminate charcoal. Two of the samples contained only charcoal, two were dominated by oak with willow / poplar also recorded, and one sample was dominated by hazel with a smaller amount of oak. A single sample from a post hole feature contained only oak charcoal, while three further samples from pit features contained only indeterminate charcoal. A single sample from a hollow feature was dominated by willow / poplar with oak and roasceae also recorded. Three samples from boulder hearth deposits contained identifiable remains – one contained only oak, one was dominated by oak with smaller amounts of hazel and one was dominated by hazel with smaller amounts of oak present. Two samples from layers contained charcoal remains – one contained only indeterminate charcoal remains and the other only oak charcoal. Two samples from demolition layers contained charcoal – one was dominated by oak with hazel also present, and the other was dominated by oak with hazel and willow / poplar also recorded. Five samples originated from floor depositis – three contained only oak charcoal, one was dominated by oak with hazel, and the other was dominated by hazel with oak charcoal also present. Two samples from occupation layers contained only oak charcoal. A single sample from a corn dryer / firebox feature contained only indeterminate charcoal fragments. A fire pit feature also contained only unidentifiable charcoal remains.

PRN 31597 – Area K9 / J
The area dates to the Roman period and shows the remains of a trackway and possible field system in the form of ditches. Four samples from this area all originated from post hole features and contained only oak charcoal.

PRN 31598 – Area I
This area shows a period of occupation dating to the Iron Age. It is characterised by a group of pits and post holes focused around an irregular shaped hollow. Two of the samples contained charcoal remains, but these were too poorly preserved to enable identification.

PRN 31599 – Area I
A hearth with an adjacent earth oven dating to the Iron Age characterises the activity in this area. A single sample from the earth oven contained only oak charcoal.

PRN 31600 – Area K7
A single sample from this area which was characterised as a long cist cemetery dating to either the late Medieval or late Roman periods was assessed. The sample from a smithing pit contained only indeterminate charcoal.

PRN 31601 – Area K7
A corn drier formed of two linked pits – possibly one a fire chamber and the other a drying pit characterised the activity in the area. It is possible that the features date to the Medieval period. Five samples all from the corn dryer feature produced charcoal remains. Two of the samples contained only possible buckthorn charcoal, one was dominated by buckthorn with alder / hazel and oak charcoal, one was dominated by buckthorn with hazel and oak also recorded, and one sample was dominated by alder with smaller amounts of oak charcoal also present.

PRN 31602 – Area K7
A possible Medieval corn drier from this area produced a two samples which contained only willow / poplar charcoal.

PRN 31603 – Area K1
A figure of eight shaped corn drier, possibly dating to the Medieval period was the activity recorded in this area. Two samples from the corn dryer feature were assessed, both of which were dominated by oak charcoal with rosaceae and hazel charcoal also present.

PRN 31604 – Area IA
A dumb bell shaped corn drier feature dating to the possible Medieval period produced a single sample with charcoal remains. This was dominated by willow / poplar charcoal with oak, ash and rosaceae also present.

PRN 74831 – Area J
A series of pits and a post hole dating to the mid Neolithic period characterised the activity at this area. Three samples, all dominated by hazel charcoal, and oak, willow / poplar and rosaceae charcoal were also present in

smaller aounts. Two of the samples originated from pit features – one was dominated by hazel with smaller amounts of oak, and the other was dominated by hazel with oak, willow / poplar and rosaceae also present. The remains from the post hole feature was dominated by hazel charcoal with a smaller amount of oak charcoal.

PRN 74832 – Area J
Two large intercutting pits with a complex sequence of fills dating to the Neolithic period were recorded in this area. One sample from a post hole feature contained only oak charcoal. Three samples originated from pit features – one contained only hazel and two were dominated by oak with hazel and willow / poplar also present within the sample.

PRN 76098 – Area I
An isolated pit with possible beaker pottery was recorded in this area. A single sample from this pit feature contained only oak charcoal.

PRN 76099 – Area I
Two samples from a small isolated pit dating to the mid Neolithic were assessed. One of these contained only indeterminate charcoal, and one only oak charcoal.

PRN 76100 – Area K9
A corn drier cut into the demolition rubble at the corner of a Roman period building, possibly dating to the Medieval period characterises the activity in this area. Seven samples from this feature produced identifiable charcoal remains. Two of these contained only oak charcoal, one was dominated by oak with willow / poplar also recorded, one was dominated by oak with willow / poplar and hazel charcoal also recorded. One sample was dominated by hazel with willow / poplar and oak charcoal also present, and a final sample was dominated by hazel with a smaller amount of oak charcoal also present.

PRN 76101 – Area K9
Another corn drier in a Roman period building, possibly dating to the Medieval period produced five samples with charcoal remains. One was dominated by oak with hazel charcoal also recorded, one was dominated by oak with hazel and willow / poplar charcoal also present, one was dominated by willow / poplar charcoal with smaller amounts of hazel and oak present, a further sample was dominated by hazel with oak and willow / poplar charcoal also recorded, and a final sample was dominated by hazel charcoal with a smaller amount of oak charcoal.

PRN 81343 - Area B3
Two samples from pit [22158], that may have been a corn dryer, produced identifiable charcoal remains – one contained only oak charcoal and the other was dominated by oak with hazel charcoal also recorded.

AREA H
A single sample from an isolated post hole contained only oak charcoal.

AREA I
Three samples from isolated pit features contained identifiable charcoal reains. One contained only oak charcoal, one contained equal amounts of oak and willow / poplar charcoal with a smaller amount of hazel present, and one sample contained equal amounts of rosaceae, hazel and willow / poplar with smaller amounts of oak charcoal.

AREA J
One sample from an isolated post hole was dominated by oak with hazel charcoal also present.

Generally, there are various, largely unquantifiable, factors that effect the representation of species in charcoal samples including bias in contemporary collection, inclusive of social and economic factors, and various factors of taphonomy and conservation (Thiery-Parisot 2002). On account of these considerations, the identified taxa are not considered to be proportionately representative of the availability of wood resources in the environment in a definitive sense, and are possibly reflective of particular choice of fire making fuel from these resources.

Conclusion
The samples produced some environmental material of interpretable value, with the identifiable charcoal remains from two hundred and sixty seven of the samples.

The charcoal remains showed the exploitation of several species native to Britain. Oak has good burning properties and would have made a fire suitable for most purposes (Edlin 1949). Oak is a particularly useful fire fuel as well as being a commonly used structural/artefactual wood that may have had subsequent use as a fire fuel (Rossen and Olsen 1985). Ash is strong and tough, and makes excellent firewood producing both heat and flame. It will also burn when green (Grogan et al. 2007, 30). Hazel is recorded as a good fuel wood and was widely available within oak woodlands, particularly on the fringes of cleared areas (Grogan *et al.* 2007, 30). Alder was also represented in the samples. This wood is a poor fuel as it burns quickly and gives off little heat, but has been found suitable for charcoal production. This may indicate some small scale charcoal production, but given that it was only recorded in small numbers, it may merely represent a selection of available firewood. Willow/Poplar are species that are ideal to use for kindling. They are anatomically less dense than for example, oak and ash and burn quickly at relatively high temperatures (Gale & Cutler 2000, 34, 236, Grogan *et al.* 2007, 29-31). This property makes them good to use as kindling, as the high temperatures produced would encourage the oak to ignite and start to burn. Common buckthorn is a species typical of scrubland (Stace 1997). The Rosaceae family are deciduous and includes herbs, shrubs and trees. Several economically important products come from the family including many edible fruits such as apples, pears, plums, cherries, and are also trees and shrubs such as rowans and hawthorns.

Dryland wood species indicates the presence of an oak-ash woodland close to the site. This would have consisted of oak, which would be the dominant large tree species (Gale & Cutler 2000, 120, 205). On the marginal areas of oak woodlands or in clearings hazel thrives. There is also some evidence of a damp area, or carr fen woodland, which would have consisted of alder, willow and poplar - trees that thrive in waterlogged and damp soils, particularly in areas close to streams or with a high water table (Stuijts 2005, 143 and Gale & Cutler 2000).

As asserted by Scholtz (1986) cited in Prins and Shackleton (1992:632), the "Principle of Least Effort" suggests that communities of the past collected firewood from the closest possible available wooded area, and in particular the collection of economically less important kindling fuel wood (which was most likely obtained from the area close to the site).

It is thought to be problematic using charcoal and plant macrofossil records from archaeological sites, as they do not accurately reflect the surrounding environment. Wood was gathered before burning or was used for building which introduces an element of bias. Plant remains were also gathered foods, and were generally only burnt by accident. Despite this, plant and charcoal remains can provide good information about the landscapes surrounding the sites presuming that people did not travel too far to gather food and fuel.

Recommendations

The samples have been assessed, and interpretable data has been retrieved and is the basis of this report. Further charcoal work is required on two hundred and thirty of the samples, and plant macrofossil analysis should be carried out on seventeen of the samples. A list of these recommendations can be seen in Tables XIX.2.2 and 3 below. Once the full analyses have been undertaken, comparisons with other sites in the area, regionally and nationally for each period of activity should be carried out.

No further work is required on the remaining samples: thirty one contained only poorly preserved charcoal fragments, and eighteen samples originated in features that are less significant in terms of archaeological data. Any material recovered by further excavations should be processed to 0.3mm in accordance with standardised processing methods such as Kenward *et al.* 1980, and the English Heritage guidelines for Environmental Archaeology.

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Table XIX.2.1: Charcoal - Complete list of taxa recovered from excavations at Parc Cybi (G1701)
Taxonomy and nomenclature follow Schweingruber (1978). Numbers are identified charcoal fragment for each sample.

PRN 14599 – Area B2 / F1

Sample Number		**163**	**164**	**165**	**166**	**207**	**211**	**222**	**226**
Feature Number		**90509**	**90509**	**90509**	**90509**		**90862**	**90900**	**90617**
Context Number		**90638**	**90638**	**90638**	**90638**	**90833**	**90861**	**90899**	**90616**
Feature type		**hearth**	**hearth**	**hearth**	**hearth**	**Rubble platform**	**Stakehole**	**floor**	**stakehole**
Area: PRN		**B2: RHA.1**	**B2: RHA.1**	**B2: RHA.1**	**B2: RHA.1**	**B2: platform for RHA**	**B2: RHA.1**	**B2: RHB.2**	**B2: RHB.2**
Period		**Late Neolithic**	**Late Neolithic**	**Late Neolithic**	**Late Neolithic**	**Early Iron Age**	**Late Neolithic?**	**Iron Age**	**Iron Age**
No. fgts.		**10**	**10**	**10**	**10**	**10**	**10**		
Max. size (mm)		**16**	**16**	**15**	**13**	**18**	**12**		
Latin	**Vernacular**								
Corylus avellana	Hazel	2	1	1					
Salix / Populus	Willow / Poplar					3			
Quercus	Oak	8	9	9	10	7	10		
Indeterminate	Indeterminate							10	10

Sample Number		**237**	**240**	**241**	**242**	**246**	**260**	**267A**	**267B**
Feature Number			**90987**		**90986**				
Context Number		**90875**	**90986**	**90794**	**90988**	**90960**	**91712**	**90970**	**90970**
Feature type		**stone deposit**	**posthole**	**Layer**	**posthole**	**levelling layer?**	**floor**	**Robbing disturbance?**	**Robbing disturbance?**
Area: PRN		**B2: RHB.2**	**B2: RHB.2**	**B2: RHA**	**B2: RHB.2**	**B2: RHE.1**	**B2: RHC.2**	**B2: post-RHA**	**B2: post-RHA**
Period		**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**	**Late Neolithic?**	**Iron Age**	**Iron Age**	**Iron Age**
No. fgts.		**10**		**10**		**10**	**10**	**10**	
Max. size (mm)		**13**		**15**		**15**	**16**	**26**	
Latin	**Vernacular**								
ROSACEAE							8		
Salix / Populus	Willow / Poplar	5		2			2	3	
Quercus	Oak	5		6		10		7	
Indeterminate	Indeterminate		10	2	10				10

Sample Number		**268**	**270**	**277**	**311**	**340**	**346**
Feature Number				**91149**	**91332**	**90597**	
Context Number		**91102**	**91114**	**91148**	**91301**	**90596**	**91011**
Feature type		**burnt layer**	**Layer against wall of RHA**	**Pit/posthole**	**Pit**	**Post slot**	**Platform under RHA**
Area: PRN		**B2: structure F**	**B2: RHA**	**B2: RHA**	**B2: passageway to RHA**	**B2: RHA.2**	**B2: platform**
Period		**Romano-British?**	**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**	**Early Iron Age**
No. fgts.						**10**	
Max. size (mm)						**16**	
Latin	**Vernacular**						
ROSACEAE							
Salix / Populus	Willow / Poplar						
Quercus	Oak					10	
Indeterminate	Indeterminate	10	10	10	10		10

Sample Number		**350**	**364**	**367**	**369**	**372**	**383**	**386**
Feature Number			**91498**	**91519**		**91433**		
Context Number		**91158**	**91501**	**91520**	**91544**	**91434**	**91540**	**91333**
Feature type		**Floor**	**Pit**	**Pit**	**Burnt patch**	**Pit**	**Hearth**	**Midden**
Area: PRN		**B2: RHB.1**	**B2: passageway to RHA**	**B2: under RHA**	**B2: RHC.1**	**B2: RHC.2**	**B2: RHE deposit**	**B2: passageway to RHA**
Period		**Iron Age**	**Iron Age**	**Early Iron Age?**	**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**
No. fgts.		**10**	**10**	**10**	**10**	**10**	**10**	**10**
Max. size (mm)		**14**	**15**	**11**	**20**	**21**	**13**	**13**
Latin	**Vernacular**							
ROSACEAE		8		1				
Salix / Populus	Willow / Poplar		7		10			5
Quercus	Oak	2	3	9		10	10	5
Indeterminate	Indeterminate							

Sample Number		**466**	**470**	**473**	**476**	**479**	**485**	**495**	**501**
Feature Number		**91805**	**91785**	**91914**		**92004**			
Context Number		**91882**	**91786**	**91915**	**91011**	**91060**	**90990**	**91906**	**92059**
Feature type		**wall**	**Pit**	**posthole**	**Platform under RHA**	**slot**	**Floor**	**Platform under RHE**	**Occupation layer**
Area: PRN		**B2: Pre-RHC**	**B2: RHB.1**	**B2: RHB.2**	**B2: platform**	**B2: RHB.1**	**B2: RHB.1**	**B2: platform**	**B2: passageway to RHA**
Period		**Iron Age**	**Iron Age**	**Iron Age**	**Early Iron Age**	**Iron Age**	**Iron Age**	**Early Iron Age**	**Iron Age**
No. fgts.		**10**	**10**	**10**	**10**			**10**	**10**
Max. size (mm)		**13**	**20**	**14**	**12**			**19**	**15**
Latin	**Vernacular**								
Salix / Populus	Willow / Poplar	8	6	4	4			3	
Quercus	Oak	2	4	6	6			7	10
Indeterminate	Indeterminate					10	10		

Sample Number		**392**	**393**	**398**	**409**	**430**	**444**	**448**	**449**
Feature Number			**91619**			**91737**	**91776**		**91785**
Context Number		**90882**	**91620**	**91664**	**91681**	**91738**	**91777**	**90924**	**91786**
Feature type		**floor**	**hearth**	**Floor**	**Burnt patch**	**Pit**	**Pit**	**stony layer**	**Pit**
Area: PRN		**B2: RHB.2**	**B2: RHB.1**	**B2: RHB.1**	**B2: below RHC**	**B2: RHC.1**	**B2: RHB.1**	**B2: RHA**	**B2: RHB.1**
Period		**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**
No. fgts.		**10**	**10**	**10**		**10**	**10**	**10**	**10**
Max. size (mm)		**15**	**15**	**15**		**22**	**12**	**18**	**17**
Latin	**Vernacular**								
Corylus avellana	Hazel								1
Salix / Populus	Willow / Poplar	10	2	2				8	3
Quercus	Oak		8	8		10	10	2	6
Indeterminate	Indeterminate				10				

Sample Number		**538**	**555**	**606**	**632**	**682**	**683**	**684**	**685**	**710**
Feature Number				**92328**	**92421**					
Context Number		**92118**	**91607**	**92327**	**92408**	**92141**	**92147**	**92148**	**92145**	**92633**
Feature type		**Occupation layer**	**Occupation layer**	**pit**	**Pit**	**hearth**	**Floor/hearth base**	**Soil/turf layer**	**Hearth deposit**	**stone surface**
Area: PRN		**B2: passageway**	**B2: passageway**	**B2: RHE.1**	**B2: passageway**	**B2: RHE.1**	**B2: RHE.1**	**B2: RHE.1**	**B2: RHE.1**	**F1: struct G.2**
Period		**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**	**Early Iron Age**	**Iron Age**	**Iron Age**
No. fgts.			**10**	**10**		**10**	**10**	**10**	**10**	**10**
Max. size (mm)			**16**	**13**		**21**	**12**	**20**	**15**	**11**
Latin	**Vernacular**									
ROSACEAE						1				
Salix / Populus	Willow/Poplar		2	1		9	10	3		
Quercus	Oak		8	8				7	10	10
Indeterminate	Indeterminate	10			10					

Sample Number		**713**	**716**	**790**	**810**	**972**	**996**	**5009**	**5015**
Feature Number			**92768**		**93080**		**93254**		**93367**
Context Number		**92691**	**92769**	**92945**	**92948**	**93171**	**93225**	**93326**	**93365**
Feature type		**Charcoal patch**	**posthole**	**Burnt spread**	**Posthole**	**Old ground surface**	**trough**	**Old ground surface**	**Post hole**
Area: PRN		**F1: structure G.1**	**F1: Bronze Age?**	**F1: RHI**	**F1: RHI**	**F1**	**F1: group 93308**	**F1**	
Period		**Iron Age**	**Bronze Age?**	**Iron Age**	**Iron Age**	**Bronze Age?**	**Romano-British??**	**Bronze Age**	
No. fgts.		**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Max. size (mm)		**19**	**21**	**9**	**14**	**13**	**11**	**17**	**14**
Latin	**Vernacular**								
Corylus avellana	Hazel					2	2		
Salix / Populus	Willow/Poplar		2		4	3	1	5	2
Quercus	Oak	10	8	10	6	5	6	5	8
Fraxinus excelsior	Ash						1		

PRN 14602 – Area K2

Sample Number		**1003**
Feature Number		**20077**
Context Number		**20078**
Feature type		**pit**
Area: PRN		**K2: PRN 14602**
Period		**Iron Age/RB??**
No. fgts.		**10**
Max. size (mm)		**23**
Latin	**Vernacular**	
Quercus	Oak	10

PRN* 18403 - *Area E

Sample Number		**878**
Feature Number		**31152**
Context Number		**31153**
Feature type		**Pit with smithing**
Area: PRN		**Area E: Tyddyn Pioden**
Period		**Medieval**
No. fgts.		
Max. size (mm)		
Latin	**Vernacular**	
	Indeterminate	10

PRN 18406 – Area E

Sample Number		**821**	**850**	**860**	**870**	**871**	**874**	**875**	**891**	**892**	**894**
Feature Number		**31016**	**31023**	**31082**	**31147**	**31147**	**31138**	**31138**	**31212**		
Context Number		**31004**	**31022**	**31024**	**31148**	**31149**	**31139**	**31140**	**31208**	**31209**	**31207**
Feature type		**posthole**	**Pit**	**hollow**	**pit**	**pit**	**pit**	**pit**	**pit**	**Layer**	**Burnt patch**
Area: PRN		**E: PRN 18406**	**E: PRN 18406**	**E: PRN 18406**	**E: PRN 18406**	**E: PRN 18406**	**E: PRN 18406**	**E: PRN 18406**	**E: PRN 18406**	**E: PRN 18406**	**E: PRN 18406**
Period		**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**
No. fgts.		**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Max. size (mm)		**15**	**22**	**14**	**10**	**21**	**33**	**21**	**28**	**11**	**10**
Latin	**Vernacular**										
Corylus avellana	Hazel			2			10				
Salix / Populus	Willow / Poplar			1	1			2			
Quercus	Oak	10	10	7	9	10		8	10	10	10

Sample Number		**924**	**961**	**967**	**969**	**1559**	**1565**
Feature Number		**31509**	**31595**	**31595**	**31610**	**31631**	**31640**
Context Number		**31510**	**31956**	**31602**	**31611**	**31632**	**31641**
Feature type		**pit**	**pit**	**Pit**	**posthole**	**posthole**	**posthole**
Area: PRN		**E: PRN 18406**	**E: PRN 18406**	**E: PRN 18406**	**E: PRN 18406**	**E: PRN 18406**	**E: PRN 18406**
Period		**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**
No. fgts.		**10**	**10**	**10**	**10**	**10**	**10**
Max. size (mm)		**14**	**25**	**21**	**29**	**13**	**26**
Latin	**Vernacular**						
Corylus avellana	Hazel		2	2			
Salix / Populus	Willow / Poplar	4					
Quercus	Oak	6	8	8	10	10	10

PRN 31570 – Area H

Sample Number		**92**	**1064**	**1065**	**1088**	**1105**	**1106**	**1124**	**1126**	**1127**
Feature Number		**20047**	**50044**	**50044**	**50059**	**50044**	**50044**	**50116**	**50116**	**50107**
Context Number		**20048**	**02100**	**50045**	**50060 / 50061**	**02100**	**02100 / 50045**	**50108**	**50110**	**50106**
Feature type		**pothole**	**Hearth pit**	**Hearth pit**	**pit**	**Hearth pit**	**Hearth pit**	**Hearth pit**	**Hearth pit**	**Pit**
Area: PRN		**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**
Period		**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**
No. fgts.		**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Max. size (mm)		**14**	**32**	**17**	**16**	**52**	**21**	**11**	**15**	**23**
Latin	**Vernacular**									
ROSACEAE					2					
Alnus glutinosa	Alder	1								
Corylus avellana	Hazel	4		6	4			3		
Quercus	Oak	5	10	4	4	10	10	7	10	10

Sample Number		**1128A**	**1128B**	**1130**	**1141**	**1143**	**1144**	**1146**	**1155**
Feature Number		**50116**	**50116**	**50120**	**50116**	**50133**	**50126**	**50133**	**50133**
Context Number		**50115**	**50115**	**50117**	**50122**	**50124**	**50125**	**50127**	**50132**
Feature type		**Hearth pit**	**Hearth pit**	**pit**	**Hearth pit**	**Hearth pit**	**pit**	**Hearth pit**	**Hearth pit**
Area: PRN		**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**
Period		**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**
No. fgts.		**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Max. size (mm)		**13**	**15**	**25**	**14**	**21**	**20**	**15**	**32**
Latin	**Vernacular**								
Salix / Populus	Willow / Poplar				2				1
Quercus	Oak	10	10	10	8	10	10	10	9

Sample Number		**1164**	**1167**	**1168**	**1169**	**1170**	**1171**	**1172**	**1173**
Feature Number		**50145**	**50145**	**50164**	**50145**	**50145**	**50145**	**50145**	**50145**
Context Number		**50147**	**50154**	**50159**	**50153**	**50161**	**50161**	**50163**	**50170**
Feature type		**Hearth pit**	**Hearth pit**	**posthole**	**Hearth pit**	**Hearth pit**	**Hearth pit**	**Hearth pit**	**Hearth pit**
Area: PRN		**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**
Period		**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**
No. fgts.		**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Max. size (mm)		**24**	**25**	**15**	**27**	**26**	**25**	**16**	**17**
Latin	**Vernacular**								
Corylus avellana	Hazel			2					
Salix / Populus	Willow / Poplar			1					
Quercus	Oak	10	10	7	10	10	10	10	10

Sample Number		**1174**	**1175**	**1176**	**1178**	**1186**	**1188**	**1191**	**1192**	**1193**	**1220**
Feature Number		**50166**	**50173**	**50174**	**50178**	**50182**	**50179**	**50179**	**50179**	**50176**	**50207**
Context Number		**50165**	**50171**	**50172**	**50177**	**50183**	**50189**	**50190**	**50191**	**50148**	**50206**
Feature type		**Beam slot**	**posthole**	**posthole**	**posthole**	**Posthole**	**Posthole**	**Posthole**	**Posthole**	**Gully**	**Hearth**
Area: PRN		**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**
Period		**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**
No. fgts.		**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Max. size (mm)		**14**	**16**	**14**	**11**	**31**	**19**	**28**	**15**	**21**	**15**
Latin	**Vernacular**										
Corylus avellana	Hazel	2		3	2				4	2	
Salix / Populus	Willow / Poplar	1			2						
Quercus	Oak	7	10	7	6	10	10	10	6	8	10

Sample Number		**1236**	**1241**	**1245**	**1247**	**1263**	**1266**	**1267**	**1269**	**1283**	**1284**
Feature Number		**50136**	**50232**	**50232**	**50228**	**50166**	**50248**	**50166**	**50167**	**50164**	**50164**
Context Number		**50135**	**50233**	**50235**	**50229**	**50213**	**50247**	**50213**	**50168**	**50102**	**50159**
Feature type		**Slot**	**Beam slot**	**Beam slot**	**Non-feature**	**Beam slot**	**posthole**	**Beam slot**	**posthole**	**Posthole**	**posthole**
Area: PRN		**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**
		Early Neolithic	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**
No. fgts.		**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Max. size (mm)		**17**	**14**	**15**	**23**	**25**	**16**	**15**	**13**	**20**	**14**
Latin	**Vernacular**										
Quercus	Oak	10	10	10	10	10	10	10	10	10	10

Sample Number		**1287**	**1288**	**5512**
Feature Number		**50264**	**50266**	**50145**
Context Number		**50267**	**50267**	**50162**
Feature type		**Natural**	**natural**	**Hearth pit**
Area: PRN		**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**
		Early Neolithic	**Early Neolithic**	**Early Neolithic**
No. fgts.		**10**	**10**	**10**
Max. size (mm)		**24**	**17**	**46**
Latin	**Vernacular**			
Quercus	Oak	10	10	10

PRN 31571 – Area M

Sample Number		**1336**	**1343**	**1353**	**1360**	**1361**	**1368**
Feature Number		**40071**	**40085**	**40103**	**40127**	**40117**	**40137**
Context Number		**40072**	**40086 / 40087**	**40104**	**40115**	**40118**	**40138**
Flot Number							
Feature type		**pit**	**Pit**	**pit**	**Cist 2**	**pit**	**Pit**
Area: PRN		**M4: PRN 31571**	**M4: PRN 31571**	**M4: PRN 31571**	**M4: PRN 31571**	**M4: PRN 31571**	**M4: PRN 31571**
Period		**Prehistoric?**	**Prehistoric?**	**Prehistoric**	**Prehistoric**	**Prehistoric**	**Prehistoric**
No. fgts.		**10**	**10**	**10**		**10**	**10**
Max. size (mm)		**9**	**23**	**26**		**17**	**15**
Latin	**Vernacular**						
ROSACEAE				6			
Corylus avellana	Hazel		2	3			
Salix / Populus	Willow / Poplar		1	1			
Quercus	Oak	10	7		10	10	10

PRN 31572 – Area Ia

Sample Number		**88**	**1101**	**1102**	**1103**	**1108**	**1112**	**1113**	**1115**
Feature Number		**18063**	**21212**	**21210**	**21215**	**21217**	**21219**	**21219**	**21221**
Context Number		**18064**	**21213**	**21211**	**21216**	**21218**	**21220**	**21224**	**21222**
Flot Number									
Feature type		**pit**	**pit**	**pit**	**pit**	**pit**	**pit**	**Pit**	**Pit**
Area: PRN		**I: PRN 31572**	**Ia: PRN 31572**	**Ia: PRN 31572**	**Ia: PRN 31572**	**Ia: PRN 31572**	**Ia: PRN 31572**	**Ia: PRN 31572**	**Ia: PRN 31572**
Period		**Mid Neolithic**	**Mid Neolithic**	**Mid Neolithic**	**Mid Neolithic**	**Mid Neolithic**	**Mid Neolithic**	**Mid Neolithic**	**Mid Neolithic**
No. fgts.		**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Max. size (mm)		**17**	**10**	**10**	**12**	**14**	**16**	**14**	**19**
Latin	**Vernacular**								
Corylus avellana	Hazel	3							
Quercus	Oak	7	10	10			10	10	10
Indeterminate	Indeterminate				10	10			

PRN 31573 – Area K9

Sample Number		**5145**	**5146**	**5147**	**5148**	**5150**	**5159**	**5160**
Feature Number		**80594**	**80594**	**80602**	**80606**	**80606**	**80686**	**80686**
Context Number		**80593**	**80638**	**80601**	**80605**	**80609**	**80684**	**80685**
Flot Number								
Feature type		**pit**	**pit**	**pit**	**Pit**	**Pit**	**Pit**	**pit**
Area: PRN		**K9: PRN 31573**	**K9: PRN 31573**	**K9: PRN 31573**	**K9: PRN 31573**	**K9: PRN 31573**	**K9: PRN 31573**	**K9: PRN 31573**
Period		**Mid Neolithic**	**Mid Neolithic**	**Mid Neolithic**	**Mid Neolithic**	**Mid Neolithic**	**Mid Neolithic**	**Mid Neolithic**
No. fgts.		**10**	**10**	**10**	**10**	**10**	**10**	**10**
Max. size (mm)		**11**	**18**	**14**	**16**	**16**	**26**	**18**
Latin	**Vernacular**							
Corylus avellana	Hazel	5	9	5		7		1
Salix / Populus	Willow / Poplar	2						2
Quercus	Oak	3	1	5	10	3	10	7

PRN 31574 – Area D3

Sample Number		**1180**	**1181**	**1184**	**1185**	**1190**
Feature Number		**60093**	**60093**	**60125**	**60135**	**60162**
Context Number		**60092**	**60100**	**60124**	**60136**	**60163**
Flot Number						
Feature type		**pit**	**pit**	**Hearth**	**pit**	**Pit**
Area: PRN		**D3: PRN 31574**	**D3: PRN 31574**	**D3: PRN 31574**	**D3: PRN 31574**	**D3: PRN 31574**
Period		**Mid Neolithic**	**Mid Neolithic**	**Mid Neolithic**	**Mid Neolithic**	**Mid Neolithic**
No. fgts.		**10**	**10**	**10**	**10**	**10**
Max. size (mm)		**15**	**19**	**17**	**15**	**17**
Latin	**Vernacular**					
Corylus avellana	Hazel	2	3	7	2	8
Salix / Populus	Willow / Poplar				1	
Quercus	Oak	8	7	3	7	2

PRN 31578 – Area J

Sample Number		**1205**	**1214**
Feature Number		**70039**	**70062**
Context Number		**70038**	**70061**
Flot Number			
Feature type		**Posthole**	**Posthole**
Area: PRN		**J: PRN 31578**	**J: PRN 31578**
Period		**Bronze Age?**	**Bronze Age?**
No. fgts.		**10**	**10**
Max. size (mm)		**26**	**12**
Latin	**Vernacular**		
Corylus avellana	Hazel		9
Quercus	Oak	10	1

PRN 31580 – Area J

Sample Number		**1210**	**1291**
Feature Number		**70054**	**70268**
Context Number		**70053**	**70267**
Flot Number			
Feature type		**pit**	**animal burrow?**
Area: PRN		**J: PRN 31580**	**J: PRN 31580**
		Bronze Age	**Prehistoric?**
No. fgts.		**10**	**10**
Max. size (mm)		**10**	**19**
Latin	**Vernacular**		
Salix / Populus	Willow / Poplar		2
Quercus	Oak	10	8

PRN 31581 – Area J

Sample Number		**5807**
Feature Number		**70452**
Context Number		**70451**
Flot Number		
Feature type		**Posthole**
Area: PRN		**J: PRN 31581**
Period		**Bronze Age?**
No. fgts.		**10**
Max. size (mm)		**11**
Latin	**Vernacular**	
Salix / Populus	Willow / Poplar	8
Quercus	Oak	2

PRN 31582 – Area E

Sample Number		**900**	**917**	**922**	**947**	**952**	**955**	**956**	**960**	**962**
Feature Number		**31283**	**31415**	**31289**	**31415**	**31523**			**31593**	
Context Number		**31284**	**31370**	**31288**	**31561**	**31559**	**31422**	**31429**	**31594**	**31597**
Flot Number										
Feature type		**trough**	**Well**	**trough**	**well**	**Trough**	**Burnt mound**	**Burnt mound**	**well**	**Burnt mound**
Area: PRN		**E: PRN 31582**	**E: PRN 31582**	**E: PRN 31582**	**E: PRN 31582**	**E: PRN 31582**	**E: PRN 31582**	**E: PRN 31582**	**E: PRN 31582**	**E: PRN 31582**
Period		**Beaker period**	**Beaker period**	**Beaker period**	**Beaker period**	**Beaker period**	**Beaker period**	**Beaker period**	**Beaker period**	**Beaker period**
No. fgts.		**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	
Max. size (mm)		**14**	**12**	**13**	**12**	**15**	**13**	**20**	**12**	
Latin	**Vernacular**									
Corylus avellana	Hazel	3	2	2		1	1	3	3	
Salix / Populus	Willow / Poplar	2	1	1		1	2	5	2	
Quercus	Oak	5	7	7	10	8	7	2	5	
Indeterminate	Indeterminate									10

PRN 31583 – Area E

Sample Number		**1450**	**1450**	**1452**	**1453**
Feature Number				**31008**	**31008**
Context Number		**31002**	**31002**	**31017**	**31018**
Flot Number		**A**	**B**		
Feature type		**Burnt mound**	**Burnt mound**	**trough**	**Trough**
Area: PRN		**E: PRN 31583**	**E: PRN 31583**	**E: PRN 31583**	**E: PRN 31583**
Period		**Late Neolithic**	**Late Neolithic**	**Late Neolithic**	**Late Neolithic**
No. fgts.		**10**	**10**	**10**	**10**
Max. size (mm)		**10**	**8**	**14**	**13**
Latin	**Vernacular**				
Corylus avellana	Hazel	4	5	6	
Quercus	Oak	6	5	4	10

PRN 31584 – Area E

Sample Number		**923**
Feature Number		**31436**
Context Number		**31435**
Flot Number		
Feature type		**Earth oven/burnt mound pit?**
Area: PRN		**E: PRN 31584**
Period		**Bronze Age?**
No. fgts.		**10**
Max. size (mm)		**30**
Latin	**Vernacular**	
Salix / Populus	Willow / Poplar	2
Quercus	Oak	8

PRN 31585 – Area E

Sample Number		**908**	**925**
Feature Number		**31306**	**31513**
Context Number		**31304**	**31512**
Feature type		**Earth oven**	**Earth oven**
Area: PRN		**E: PRN 31585**	**E: PRN 31585**
Period		**Bronze Age**	**Bronze Age**
No. fgts.		**10**	**10**
Max. size (mm)		**13**	**17**
Latin	**Vernacular**		
Corylus avellana	Hazel	4	2
Salix / Populus	Willow / Poplar		1
Quercus	Oak	6	7

PRN 31586 – Area A

Sample Number		**100**
Feature Number		**07023**
Context Number		**07022**
Flot Number		
Feature type		**pit**
Area: PRN		**A: PRN 31586**
Period		**Prehistoric?**
No. fgts.		**10**
Max. size (mm)		**25**
Latin	**Vernacular**	
Corylus avellana	Hazel	7
Salix / Populus	Willow / Poplar	1
Quercus	Oak	2

PRN 31587 – Area L5

Sample Number		**5138**	**5139**
Feature Number		**03078**	**03082**
Context Number		**03080**	**03083**
Flot Number			
Feature type		**Trough**	**trough**
Area: PRN		**L5: PRN 31587**	**L5: PRN 31587**
Period		**Bronze Age?**	**Bronze Age?**
No. fgts.		**10**	**10**
Max. size (mm)		**26**	**13**
Latin	**Vernacular**		
Corylus avellana	Hazel		1
Salix / Populus	Willow / Poplar	1	2
Quercus	Oak	9	7

PRN 31588 – Area K1

Sample Number		**1004**	**1020**	**1038**	**1040**	**1045**	**1047**	**1048**	**1050**	**1051**	**1052**	**1053**
Feature Number		**20081**	**18124**	**18156**	**21024**	**18169**	**19113**	**21086**	**21085**	**18169**	**19117**	**18172**
Context Number		**19110**	**18125**	**18157**	**21025**	**18171**	**19114**	**21087**	**21088**	**18170**	**19118**	**18173**
Feature type		**pit (with cordoned urn)**	**pit**	**Charcoal patch**	**Furrow/ ditch**	**posthole**	**Pit**	**pit**	**pit**	**posthole**	**Pit**	**posthole**
Area: PRN 31588												
Period		**Bronze Age**	**Bronze Age**	**Bronze Age?**	**Post-medieval**	**Prehistoric ?**	**Prehistoric ?**	**Post medieval ?**	**Post medieval?**	**Prehistoric?**	**Prehistoric ?**	**Prehistoric ?**
No. fgts.		**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Max. size (mm)		**13**	**16**	**18**	**12**	**14**	**16**	**22**	**20**	**16**	**13**	**27**
Latin	**Vernacular**											
ROSACEAE			1									
Alnus glutinosa	Alder				5							
Corylus avellana	Hazel	4			1						6	
Salix / Populus	Willow / Poplar	5			2							
Quercus	Oak	1	9	10	2	10	10	10	10	10	4	10

PRN 31589 – Area M

Sample Number		**1398**	**1402**
Feature Number			
Context Number		**40198 / 40199 / 40200**	**40199**
Flot Number			
Feature type		**Tree hollow/animal burrowing?**	**Tree hollow/animal burrowing?**
Area: PRN		**M4: PRN 31589**	**M4: PRN 31589**
Period		**Prehistoric**	**Prehistoric**
No. fgts.		**10**	**10**
Max. size (mm)		**14**	**20**
Latin	**Vernacular**		
Quercus	Oak	10	10

PRN 31591 – Area M

Sample Number		**1056**	**1058**	**1061**	**1066**	**1067**	**1068**
Feature Number		**22059**	**22072**	**22072**	**22082**	**22082**	**22082**
Context Number		**22058**	**22073**	**22077**	**22083**	**22084**	**22085**
Flot Number							
Feature type		**Pit**	**Ditch**	**Ditch**	**ditch**	**Ditch**	**Ditch**
Area: PRN		**M: PRN 31591**	**M: PRN 31591**	**M: PRN 31591**	**M: PRN 31591**	**M: PRN 31591**	**M: PRN 31591**
Period		**Bronze Age?**	**Bronze Age**	**Bronze Age**	**Bronze Age**	**Bronze Age**	**Bronze Age**
No. fgts.		**10**	**10**	**10**	**10**	**10**	**10**
Max. size (mm)		**15**	**13**	**12**	**20**	**18**	**12**
Latin	**Vernacular**						
Quercus	Oak	10	10	10	10	10	10

PRN 31592 – Area B1

Sample Number		**1**	**6**	**7**	**9**	**13**	**14**	**15**	**17**	**18**	**22**	**25**
Feature Number		**6034**	**6088**	**07015**	**08047**	**8048**	**6090**	**10001**	**10001**	**10001**	**07057**	**5039**
Context Number		**6032**	**6089**	**07051**	**08046/8**	**8047**	**3026**	**10002/3**	**10002**	**10003**	**07056**	**3023**
Flot Number												
Feature type		**pit**	**pit**	**pit**	**pit**	**pit**	**pit**	**pit**	**pit**	**pit**	**pit?**	**pit**
Area: PRN		**B1: PRN 31592**	**B1: PRN 31592**	**B1: PRN 31592**	**B1: PRN 31592**	**B1: PRN 31592**	**B1: PRN 31592**	**B1: PRN 31592**	**B1: PRN 31592**	**B1: PRN 31592**	**B1: PRN 31592**	**B1: PRN 31592**
Period		**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**
No. fgts.				**10**		**10**	**10**	**10**	**10**	**10**	**10**	**10**
Max. size (mm)				**17**		**7**	**9**	**15**	**14**	**15**	**16**	**6**
Latin	**Vernacular**											
ROSACEAE								7	5			
Alnus glutinosa	Alder										4	
Corylus avellana	Hazel										2	
Salix / Populus	Willow / Poplar					1		3	2			2
Quercus	Oak		2	10		1	3		3	2	4	
Fraxinus excelsior	Ash											
Indeterminate	Indeterminate	10	8		10	8	7			8		8

Sample Number		**27**	**28**	**29**	**30**	**46**	**50**	**51**	**53**
Feature Number		**03024**	**03024**	**03024**	**10012**	**06044**	**04003**	**04003**	**13011**
Context Number		**10010 / 10011**	**10011**	**10010**	**10013**	**10017**	**13009**	**13010**	**13012**
Flot Number									
Feature type		**Pit**	**Pit**	**pit**	**Pit**	**Pit**	**gully**	**gully**	**pit**
Area: PRN		**B1: PRN 31592**	**B1: PRN 31592**	**B1: PRN 31592**	**B1: PRN 31592**	**B1**	**B1**	**B1**	**B1: PRN 31592**
Period		**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**	**Unknown**	**Unknown**	**Unknown**	**Unknown**
No. fgts.		**10**	**10**	**10**	**10**		**10**		**10**
Max. size (mm)		**17**	**17**	**21**	**26**		**21**		**24**
Latin	**Vernacular**								
ROSACEAE									
Alnus glutinosa	Alder								
Corylus avellana	Hazel								
Salix / Populus	Willow / Poplar	5	2				8		
Quercus	Oak	5	7	10	10		2		10
Fraxinus excelsior	Ash		1						
Indeterminate	Indeterminate					10		10	

Sample Number		**57**	**59**	**62**	**63**	**65**	**66**	**1078**
Feature Number		**04017**	**13013**	**11017**	**11019**	**11019**	**11019**	**21192**
Context Number		**10018**	**13016**	**11018**	**11020 /11021**	**11020**	**11021**	**21193**
Flot Number								
Feature type		**pit**	**pit**	**Pit**	**Pit**	**Pit**	**pit**	**pit**
Area: PRN		**B1: PRN 31592**	**B1: PRN 31592**	**B1: PRN 31592**	**B1: PRN 31592**	**B1: PRN 31592**	**B1: PRN 31592**	**B3: PRN 31592**
Period		**Iron Age**	**Unknown**	**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**
No. fgts.		**10**	**8**	**10**	**10**	**10**	**10**	**10**
Max. size (mm)		**23**	**10**	**16**	**26**	**23**	**35**	**16**
Latin	**Vernacular**							
ROSACEAE			8					
Corylus avellana	Hazel	2				1	1	
Salix / Populus	Willow / Poplar	3		2	1	1	2	7
Quercus	Oak	5		8	9	8	7	3

PRN 31593 – Area L3

Sample Number		**1082**	**1136**	**1137**
Feature Number		**21200**	**22171**	**22171**
Context Number		**21201**	**22144**	**22145**
Flot Number				
Feature type		**posthole**	**Building terrace**	**Building terrace**
Area: PRN		**L3: PRN 31593**	**L3**	**L3**
Period		**Iron Age?**	**Iron Age?**	**Iron Age**
No. fgts.				**10**
Max. size (mm)				**16**
Latin	**Vernacular**			
Quercus	Oak			10
Indeterminate	Indeterminate	10	10	

PRN 31594 – Area K7

Sample Number		**32**
Feature Number		**11014**
Context Number		**11013**
Flot Number		
Feature type		**pit?**
Area: PRN		**B3: 31594**
Period		**Unknown**
No. fgts.		**10**
Max. size (mm)		**23**
Latin	**Vernacular**	
Corylus avellana	Hazel	3
Quercus	Oak	7

PRN 31595 – Area K7

Sample Number		**1456**	**1478**	**1485**	**1535**
Feature Number					
Context Number		**80268**	**80334**	**80358**	**80334**
Flot Number					
Feature type		**Layer**	**Roof collapse**	**Roof collapse**	**Roof collapse**
Area: PRN		**K7: PRN 31595**	**K7: PRN 31595**	**K7: PRN 31595**	**K7: PRN 31595**
Period		**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**
No. fgts.				**10**	**10**
Max. size (mm)				**19**	**15**
Latin	**Vernacular**				
Quercus	Oak			10	10
Indeterminate	Indeterminate	10	10		

PRN 31596 – Area K9

Sample Number		**5106**	**5125**	**5128**	**5132**	**5133**	**5134**	**5135**	**5141**	**5142**
Feature Number		**80448**	**80523**	**80541**	**80556**	**80560**	**80562**	**80567**	**80651**	**80654**
Context Number		**80447**	**80524**	**80542**	**80555**	**80559**	**80561**	**80566**	**80652**	**80653**
Flot Number										
Feature type		**Post hole**	**Pit**	**posthole**	**pit**	**Pit**	**Pit**	**Hollow**	**Pit**	**Post hole**
Area: PRN		**K9: PRN 31596**	**K9: PRN 31596**	**K9: PRN 31596**	**K9: PRN 31596**	**K9: PRN 31596**	**K9: PRN 31596**	**K9: PRN 31596**	**K9: PRN 31596**	**K9: PRN 31596**
Period		**Romano-British**	**Romano-British**	**Romano-British**	**Romano-British**	**Romano-British**	**Romano-British**	**Romano-British**	**Prehistoric**	**Romano-British**
No. fgts.			**10**	**10**	**10**		**10**	**10**	**10**	
Max. size (mm)			**41**	**15**	**22**		**16**	**18**	**20**	
Latin	**Vernacular**									
ROSACEAE								1		
Corylus avellana	Hazel									
Salix / Populus	Willow / Poplar		3		3			6		
Quercus	Oak		7	10	7		10	3	10	
Indeterminate	Indeterminate	10				10				10

Sample Number		**5144**	**5162**	**5603**	**5604**	**5607**	**5612**	**5613**
Feature Number		**80657**	**80729**	**80938**	**80938**			
Context Number		**80655**	**80729**	**80840**	**80866**	**80846**	**80893**	**80811**
Flot Number								
Feature type		**Post hole**	**Pit**	**Boulder hearth**	**Boulder hearth**	**Layer**	**Demolition rubble**	**Floor?**
Area: PRN		**K9: PRN 31596**	**K9: PRN 31596**	**K9: PRN 31596**	**K9: PRN 31596**	**K9: PRN 31596**	**K9: PRN 31596**	**K9: PRN 31596**
Period		**Romano – British**	**Romano – British**	**Romano-British**	**Romano-British**	**Romano-British**	**Romano-British**	**Romano-British**
No. fgts.				**10**	**10**	**10**	**10**	**10**
Max. size (mm)				**14**	**10**	**26**	**22**	**13**
Latin	**Vernacular**							
ROSACEAE								
Corylus avellana	Hazel			8	2		4	
Salix / Populus	Willow / Poplar							
Quercus	Oak			2	8	10	6	10
Indeterminate	Indeterminate	10	10					

Sample Number		**5616**	**5619**	**5621**	**5622**	**5637**	**5638**	**5652**	**5653**
Feature Number				**80907**				**80938**	
Context Number		**80807**	**80899**	**80908**	**80884**	**80904**	**80904**	**80939**	**80847**
Flot Number									
Feature type		**Demolition rubble**	**Floor**	**Pit**	**Floor**	**occupation layer?**	**Occupation layer?**	**Boulder hearth**	**Floor?**
Area: PRN		**K9: PRN 31596**	**K9: PRN 31596**	**K9: PRN 31596**	**K9: PRN 31596**	**K9: PRN 31596**	**K9: PRN 31596**	**K9: PRN 31596**	**K9: PRN 31596**
Period		**Romano-British**	**Romano-British**	**Prehistoric**	**Romano-British**	**Romano-British**	**Romano-British**	**Romano-British**	**Romano-British**
No. fgts.		**10**	**10**		**10**	**10**	**10**	**10**	**10**
Max. size (mm)		**16**	**16**		**16**	**13**	**11**	**10**	**10**
Latin	**Vernacular**								
Corylus avellana	Hazel	3	5						3
Salix / Populus	Willow / Poplar	3							
Quercus	Oak	4	5		10	10	10	10	7
Indeterminate	Indeterminate			10					

Sample Number		**5671**	**5677**	**5693**	**5712**	**5738**
Feature Number					**81143**	**81251**
Context Number		**80921**	**80847**	**81073**	**81144**	**81224**
Flot Number						
Feature type		**layer**	**floor**	**Corn dryer/firebox**	**Pit**	**Fire pit**
Area: PRN		**K9: PRN 31596**	**K9: PRN 31596**	**K9: PRN 31596**	**K9: PRN 31596**	**K9: PRN 31596**
Period		**Romano-British**	**Romano-British**	**Romano-British**	**Romano-British**	**Romano-British**
No. fgts.			**10**		**10**	
Max. size (mm)			**38**		**16**	
Latin	**Vernacular**					
Corylus avellana	Hazel				5	
Quercus	Oak		10		5	
Indeterminate	Indeterminate	10		10		10

PRN 31597 – Area J

Sample Number		**5861**	**5865**	**5866**	**5867**
Feature Number		**70692**	**70692**	**70692**	**70692**
Context Number		**70693**	**70693**	**70694**	**70696**
Flot Number					
Feature type		**Posthole**	**Posthole**	**Posthole**	**posthole**
Area: PRN		**J: PRN 31597**	**J: PRN 31597**	**J: PRN 31597**	**J: PRN 31597**
Period		**Roman?**	**Roman?**	**Roman?**	**Roman?**
No. fgts.		**10**	**10**	**10**	**10**
Max. size (mm)		**19**	**24**	**17**	**25**
Latin	**Vernacular**				
Quercus	Oak	10	10	10	10

PRN 31598 – Area I

Sample Number		**1008**	**1015**
Feature Number		**18078**	**19084**
Context Number		**18079**	**19085**
Flot Number			
Feature type		**pit**	**pit**
Area: PRN		**I: PRN 31598**	**I: PRN 31598**
Period		**Iron Age**	**Iron Age**
No. fgts.			
Max. size (mm)			
Latin	**Vernacular**		
Indeterminate	Indeterminate	10	10

PRN 31599 – Area I

Sample Number		**1010**
Feature Number		**21039**
Context Number		**21041**
Flot Number		
Feature type		**Earth oven**
Area: PRN		**I: PRN 31599**
Period		**Iron Age**
No. fgts.		**10**
Max. size (mm)		**26**
Latin	**Vernacular**	
Quercus	Oak	10

PRN 31600 – Area K7

Sample Number		**733**
Feature Number		**80044**
Context Number		**80013**
Flot Number		
Feature type		**Smithing pit**
Area: PRN		**K7: cemetery**
Period		**late Roman**
No. fgts.		
Max. size (mm)		
Latin	**Vernacular**	
Indeterminate	Indeterminate	10

PRN 31601 – Area K7

Sample Number		**741**	**742**	**787**	**788**	**789**
Feature Number		**80056**	**80056**	**80056**	**80056**	**80056**
Context Number		**80057**	**80058**	**80125**	**80126**	**80127**
Flot Number						
Feature type		**Corn dryer**	**Corn dryer**	**Corn dryer**	**Corn dryer**	**Corn dryer**
Area: PRN		**K7: cemetery**	**K7: cemetery**	**K7: cemetery**	**K7: cemetery**	**K7: cemetery**
Period		**Medieval**	**Medieval**	**Medieval**	**Medieval**	**Medieval**
No. fgts.		**10**	**10**	**10**	**10**	**10**
Max. size (mm)		**46**	**24**	**19**	**26**	**21**
Latin	**Vernacular**					
	?Buckthorn	10		10	6	5
Alnus glutinosa	Alder		6			
Alnus / Corylus	Alder / Hazel				2	
Corylus avellana	Hazel					3
Quercus	Oak		4		2	2

PRN 31602 – Area K7

Sample Number		**1403**	**1404**
Feature Number		**80137**	**80137**
Context Number		**80139**	**80142**
Flot Number			
Feature type		**Corn dryer**	**Corn dryer**
Area: PRN		**K7: PRN 31602**	**K7: PRN 31602**
Period		**Medieval**	**Medieval**
No. fgts.		**10**	**10**
Max. size (mm)		**21**	**19**
Latin	**Vernacular**		
Salix / Populus	Willow / Poplar	10	10

PRN 31603 – Area K1

Sample Number		**1026**	**1027**
Feature Number		**21051**	**21051**
Context Number		**21052**	**21053**
Flot Number			
Feature type		**Corn dryer**	**Corn dryer**
Area: PRN		**K1: PRN 31603**	**K1: PRN 31603**
Period		**Medieval**	**Medieval**
No. fgts.		**10**	**10**
Max. size (mm)		**24**	**23**
Latin	**Vernacular**		
ROSACEAE		3	3
Corylus avellana	Hazel	2	1
Quercus	Oak	5	6

PRN 31604 – Area Ia

Sample Number		**1123**
Feature Number		**21229**
Context Number		**21231**
Flot Number		
Feature type		**Corn dryer**
Area: PRN		**Ia: PRN 31604**
Period		**Medieval**
No. fgts.		**10**
Max. size (mm)		**17**
Latin	**Vernacular**	
ROSACEAE		1
Salix / Populus	Willow / Poplar	5
Quercus	Oak	3
Fraxinus excelsior	Ash	1

PRN 74831 – Area J

Sample Number		**1250**	**1251**	**1256**
Feature Number		**70173**	**70173**	**70181**
Context Number		**70171**	**70172**	**70182**
Flot Number				
Feature type		**Pit**	**Posthole**	**Pit**
Area: PRN		**J: PRN 74831**	**J: PRN 74831**	**J: PRN 74831**
		Mid Neolithic	**Mid Neolithic**	**Prehistoric**
No. fgts.		**10**	**10**	**10**
Max. size (mm)		**17**	**23**	**25**
Latin	**Vernacular**			
ROSACEAE		1		
Corylus avellana	Hazel	4	7	8
Salix / Populus	Willow / Poplar	2		
Quercus	Oak	3	3	2

PRN 74832 – Area J

Sample Number		**5804**	**5809**	**5815**	**5822**
Feature Number		**70480**	**70503**	**70529**	**70529**
Context Number		**70479**	**70502**	**70528**	**70536**
Feature type		**Posthole**	**pit**	**Pit**	**pit**
Area: PRN		**J: PRN 74832**	**J: PRN 74832**	**J: PRN 74832**	**J: PRN 74832**
Period		**Late Neolithic**	**Late Neolithic**	**Late Neolithic**	**Late Neolithic**
No. fgts.		**10**	**10**	**10**	**10**
Max. size (mm)		**21**	**19**	**12**	**22**
Latin	**Vernacular**				
Corylus avellana	Hazel		10	2	3
Salix / Populus	Willow / Poplar			3	1
Quercus	Oak	10		5	6

PRN 76098 – Area I

Sample Number		**86**
Feature Number		**18059**
Context Number		**18060**
Feature type		**Pit**
Area: PRN		**I: PRN 76098**
Period		**Beaker?**
No. fgts.		**10**
Max. size (mm)		**27**
Latin	**Vernacular**	
Quercus	Oak	10

PRN 76099 – Area I

Sample Number		**1011**	**1011**
Feature Number		**19075**	**19075**
Context Number		**19076**	**19076**
Flot Number		**A**	**B**
Feature type			
Area: PRN		**I: PRN 76099**	**I: PRN 76099**
Period		**Mid Neolithic**	**Mid Neolithic**
No. fgts.			
Max. size (mm)			
Latin	**Vernacular**		
Quercus	Oak		10
Indeterminate	Indeterminate	10	

PRN 76100 – Area K9

Sample Number		**5600**	**5601**	**5602**	**5608**	**5609**	**5610**	**5611**
Feature Number		**80835**	**80835**	**80835**	**80835**	**80835**	**80835**	**80835**
Context Number		**80830**	**80837**	**80837**	**80889**	**80885**	**80882**	**80887**
Flot Number								
Feature type		**Corn dryer**	**Corn dryer**	**Corn dryer**	**Corn dryer**	**Corn dryer**	**Corn dryer**	**Corn dryer**
Area: PRN		**K9: PRN 76100**	**K9: PRN 76100**	**K9: PRN 76100**	**K9: PRN 76100**	**K9: PRN 76100**	**K9: PRN 76100**	**K9: PRN 76100**
Period		**Medieval?**	**Medieval?**	**Medieval?**	**Medieval?**	**Medieval?**	**Medieval?**	**Medieval?**
No. fgts.		**10**	**10**	**10**	**10**	**10**	**10**	**10**
Max. size (mm)		**24**	**15**	**15**	**14**	**13**	**11**	**12**
Latin	**Vernacular**							
Corylus avellana	Hazel	2				7	7	
Salix / Populus	Willow / Poplar	2	2			2		
Quercus	Oak	6	8	10	10	1	3	10

PRN 76101 – Area K9

Sample Number		**5669**	**5670**	**5681**	**5682**	**5685**
Feature Number		**80924**	**80924**	**80924**	**80924**	**80924**
Context Number		**80923**	**81006**	**81027**	**81034**	**81072**
Flot Number						
Feature type		**Corn dryer**	**Corn dryer**	**Corn dryer**	**Corn dryer**	**Corn dryer**
Area: PRN		**K9: PRN 76101**	**K9: PRN 76101**	**K9: PRN 76101**	**K9: PRN 76101**	**K9: PRN 76101**
Period		**Medieval?**	**Medieval?**	**Medieval?**	**Medieval?**	**Medieval?**
No. fgts.		**10**	**10**	**10**	**10**	**10**
Max. size (mm)		**16**	**34**	**18**	**16**	**21**
Latin	**Vernacular**					
Corylus avellana	Hazel	6	5	2	2	3
Salix / Populus	Willow / Poplar		1	6	2	
Quercus	Oak	4	4	2	6	7

PRN 81343 - Area B3

Sample Number		**1116**	**1117**
Feature Number		**22158**	**22158**
Context Number		**22156**	**22157**
Feature type		**Possible corn dryer**	**Possible corn dryer**
Area: PRN		**B3**	**B3**
Period		**Early Medieval?**	**Early Medieval?**
No. fgts.		**10**	**10**
Max. size (mm)		**31**	**14**
Latin	**Vernacular**		
Corylus avellana	Hazel		2
Quercus	Oak	10	8

AREA H (isolated feature)

Sample Number		**1549**
Feature Number		**50398**
Context Number		**50399**
Feature type		**Posthole**
Area: PRN		**H: isolated feature**
Period		**Prehistoric?**
No. fgts.		**10**
Max. size (mm)		**18**
Latin	**Vernacular**	
Quercus	Oak	10

AREA I (isolated features)

Sample Number		**1012A**	**1012B**	**1125**
Feature Number		**21042**	**21042**	**50112**
Context Number		**21043**	**21043**	**50111**
Feature type		**Pit**	**Pit**	**Pit**
Area: PRN		**I**	**I**	**I**
Period		**Unknown**	**Unknown**	**Prehistoric?**
No. fgts.		**10**	**10**	**10**
Max. size (mm)		**29**	**23**	**21**
Latin	**Vernacular**			
ROSACEAE			3	
Corylus avellana	Hazel	2	3	
Salix / Populus	Willow / Poplar	4	3	
Quercus	Oak	4	1	10

AREA J (isolated feature)

Sample Number		**1314**
Feature Number		**70324**
Context Number		**70325**
Flot Number		
Feature type		**Posthole**
Area: PRN		**J: isolated feature**
Period		**Prehistoric?**
No. fgts.		**10**
Max. size (mm)		**12**
Latin	**Vernacular**	
Corylus avellana	Hazel	2
Quercus	Oak	8

Table XIX.2.2: Full analysis of charcoal remains needed from samples from excavations at Parc Cybi

Sample Number	Feature Number	Context Number	Feature Type	Area	Period
163	90509	90638	Hearth	B2.RHA 1	Iron Age
164	90509	90638	Hearth	B2.RHA 1	Iron Age
165	90509	90638	Hearth	B2.RHA 1	Iron Age
166	90509	90638	Hearth	B2.RHA 1	Iron Age
207		90833	Rubble platform	B2 – platform for RHA	Iron Age
211	90862	90861	Stake hole	B2.RHA 1	Iron Age
237		90875	Stone deposit	B2.RHB. 2	Iron Age
241		90794	Layer	B2 – passageway to RHA	Iron Age
246		90960	Levelling layer	B2.RHE. 1	Iron Age
260		91712	Floor	B2.RHC. 1	Iron Age
267A		90970	Robbing disturbance	B2 – post RHA	Iron Age
340	90597	90596	Post slot	B2.RHA. 2	Iron Age
350		91158	Floor	B2.RHB. 2	Iron Age
364	91498	91501	Pit	B2 – passageway to RHA	Iron Age
367	91519	91520	Pit	B2 under RHA	Iron Age
369		91544	Burnt patch	B2.RHC. 1	Iron Age
372	91433	91434	Pit	B2.RHC. 2	Iron Age
386		91333	Midden	B2 – passageway to RHA	Iron Age
392		90882	Floor	B2.RHB. 2	Iron Age
393	91619	91620	Hearth	B2.RHB.1	Iron Age
398		91664	Floor	B2.RHB. 1	Iron Age
430	91737	91738	Pit	B2.RHC. 1	Iron Age
444	91776	91777	Pit	B2.RHB. 1	Iron Age
448		90924	Stony layer	B2. RHA	Iron Age
449	91785	91786	Pit	B2.RHB. 1	Iron Age
446	91805	91882	Wall	B2 – pre RHC	Iron Age
470	91785	91786	Pit	B2.RHB. 1	Iron Age
473	91914	91915	Post hole	B2.RHB. 2	Iron Age
476		91011	Platform under RHA	B2 - platform	Iron Age
495		91906	Platform under RHE	B2 – platform	Iron Age
501		92059	Occupation layer	B2 – passageway to RHA	Iron Age
555		91607	Occupation layer	B2 – passageway to RHA	Iron Age
583		91540	Hearth	B2. RHE	Iron Age
606	92328	92327	Pit	B2.RHE. 1	Iron Age
632	92421	92408	Pit	B2 – passageway to RHA	Iron Age
682		91241	Hearth	B2.RHE. 1	Iron Age
683		91247	Floor / hearth base	B2.RHE. 1	Iron Age
684		91248	Floor	B2.RHE. 1	Iron Age
685		91245	Hearth deposit	B2.RHE. 1	Iron Age
710		92633	Stone surface	F1 – structure G.2	Iron Age
713		92691	Charcoal patch	F1 – structure G.2	Iron Age
716	92768	92769	Post hole	F1	Bronze Age
810	93080	92948	Post hole	F1.RH1	Iron Age
972		93171	Old ground surface	F1	Bronze Age
996	93254	93225	Trough	F1 – group 93308	Romano British
5009		93326	Old ground surface	F1	Bronze Age
1003	20077	20078	Pit	K2. PRN 14602	Iron Age / Romano British
821	31016	31004	Post hole	E – PRN 18406	Early Neolithic
850	31023	31022	Pit	E – PRN 18406	Early Neolithic

860	31082	31024	Hollow	E – PRN 18406	Early Neolithic
870	31147	31148	Pit	E – PRN 18406	Early Neolithic
871	31147	31149	Pit	E – PRN 18406	Early Neolithic
874	31138	31139	Pit	E – PRN 18406	Early Neolithic
875	31138	31140	Pit	E – PRN 18406	Early Neolithic
891	31212	31208	Pit	E – PRN 18406	Early Neolithic
892		31209	Layer	E – PRN 18406	Early Neolithic
894		31207	Burnt patch	E – PRN 18406	Early Neolithic
924	31509	31510	Pit	E – PRN 18406	Early Neolithic
961	31595	31596	Pit	E – PRN 18406	Early Neolithic
967	31595	31602	Pit	E – PRN 18406	Early Neolithic
969	31610	31611	Post hole	E – PRN 18406	Early Neolithic
1559	31631	31632	Post hole	E – PRN 18406	Early Neolithic
1565	31640	31641	Post hole	E – PRN 18406	Early Neolithic
92	20047	20048	Post hole	H – PRN 31570	Early Neolithic
1064	50044	02100	Hearth pit	H – PRN 31570	Early Neolithic
1065	50044	50045	Hearth pit	H – PRN 31570	Early Neolithic
1088	50059	50060 / 50061	Pit	H – PRN 31570	Early Neolithic
1105	50044	02100	Hearth pit	H – PRN 31570	Early Neolithic
1106	50044	02100 / 50045	Hearth pit	H – PRN 31570	Early Neolithic
1124	50116	50108	Hearth pit	H – PRN 31570	Early Neolithic
1126	50116	50110	Hearth pit	H – PRN 31570	Early Neolithic
1127	50107	50106	Pit	H – PRN 31570	Early Neolithic
1128A	50116	50115	Hearth pit	H – PRN 31570	Early Neolithic
1128B	50116	50115	Hearth pit	H – PRN 31570	Early Neolithic
1130	50120	50117	Pit	H – PRN 31570	Early Neolithic
1141	50116	50122	Hearth pit	H – PRN 31570	Early Neolithic
1143	50133	50124	Hearth pit	H – PRN 31570	Early Neolithic
1144	50126	50125	Pit	H – PRN 31570	Early Neolithic
1146	50133	50127	Hearth pit	H – PRN 31570	Early Neolithic
1155	50133	50132	Hearth pit	H – PRN 31570	Early Neolithic
1164	50145	50147	Hearth pit	H – PRN 31570	Early Neolithic
1167	50145	50154	Hearth pit	H – PRN 31570	Early Neolithic
1168	50164	50159	Post hole	H – PRN 31570	Early Neolithic
1169	50145	50143	Hearth pit	H – PRN 31570	Early Neolithic
1170	50145	50161	Hearth pit	H – PRN 31570	Early Neolithic
1171	50145	50161	Hearth pit	H – PRN 31570	Early Neolithic
1172	50145	50163	Hearth pit	H – PRN 31570	Early Neolithic
1173	50145	50170	Hearth pit	H – PRN 31570	Early Neolithic
1174	50166	50165	Beam slot	H – PRN 31570	Early Neolithic
1175	50173	50171	Post hole	H – PRN 31570	Early Neolithic
1178	50178	50177	Post hole	H – PRN 31570	Early Neolithic
1186	50182	50183	Post hole	H – PRN 31570	Early Neolithic
1188	50179	50189	Post hole	H – PRN 31570	Early Neolithic
1191	50179	50190	Post hole	H – PRN 31570	Early Neolithic
1192	50179	50191	Post hole	H – PRN 31570	Early Neolithic
1193	50176	50148	Gully	H – PRN 31570	Early Neolithic
1220	50207	50206	Hearth	H – PRN 31570	Early Neolithic
1236	50136	50135	Slot	H – PRN 31570	Early Neolithic
1241	50232	50233	Beam slot	H – PRN 31570	Early Neolithic
1245	50232	50235	Beam slot	H – PRN 31570	Early Neolithic
1263	50166	50213	Beam slot	H – PRN 31570	Early Neolithic
1266	50248	50247	Post hole	H – PRN 31570	Early Neolithic
1267	50166	50213	Beam slot	H – PRN 31570	Early Neolithic
1269	50167	50168	Post hole	H – PRN 31570	Early Neolithic

1283	50164	50102	Post hole	H – PRN 31570	Early Neolithic
1284	50164	50159	Post hole	H – PRN 31570	Early Neolithic
5512	50145	50162	Hearth pit	H – PRN 31570	Early Neolithic
1336	40071	40072	Pit	M4: PRN 31571	?Prehistoric
1343	40085	40086 / 40087	Pit	M4: PRN 31571	?Prehistoric
1353	40103	40104	Pit	M4: PRN 31571	?Prehistoric
1361	40117	40118	Pit	M4: PRN 31571	?Prehistoric
1368	40137	40138	Pit	M4: PRN 31571	?Prehistoric
88	18063	18064	Pit	I: PRN 31572	Mid Neolithic
1101	21212	21213	Pit	I: PRN 31572	Mid Neolithic
1102	21210	21211	Pit	I: PRN 31572	Mid Neolithic
1112	21219	21220	Pit	I: PRN 31572	Mid Neolithic
1113	21219	21224	Pit	I: PRN 31572	Mid Neolithic
1115	21221	21222	Pit	I: PRN 31572	Mid Neolithic
5145	80594	80593	Pit	K9: PRN 31573	Mid Neolithic
5146	80594	80638	Pit	K9: PRN 31573	Mid Neolithic
5147	80602	80601	Pit	K9: PRN 31573	Mid Neolithic
5148	80606	80605	Pit	K9: PRN 31573	Mid Neolithic
5150	80606	80609	Pit	K9: PRN 31573	Mid Neolithic
5159	80686	80684	Pit	K9: PRN 31573	Mid Neolithic
5160	80686	80685	Pit	K9: PRN 31573	Mid Neolithic
1180	60093	60092	Pit	D3: PRN 31574	Mid Neolithic
1181	60093	60100	Pit	D3: PRN 31574	Mid Neolithic
1184	60125	60124	Hearth	D3: PRN 31574	Mid Neolithic
1185	60135	60136	Pit	D3: PRN 31574	Mid Neolithic
1190	60162	60163	Pit	D3: PRN 31574	Mid Neolithic
1205	70039	70038	Post hole	J: PRN 31578	?Bronze Age
1214	70062	70061	Post hole	J: PRN 31578	?Bronze Age
1210	70054	70053	Pit	J: PRN 31580	Bronze Age
5807	70452	70451	Post hole	J: PRN 31581	?Bronze Age
900	31283	31284	Trough	E: PRN 31582	Beaker period
917	31415	31370	Well	E: PRN 31582	Beaker period
922	31289	31288	Trough	E: PRN 31582	Beaker period
947	31415	31561	Well	E: PRN 31582	Beaker period
952	31523	31559	Trough	E: PRN 31582	Beaker period
955		31422	Burnt mound	E: PRN 31582	Beaker period
956		31429	Burnt mound	E: PRN 31582	Beaker period
960	31593	31594	Well	E: PRN 31582	Beaker period
1450A		31002	Burnt mound	E: PRN 31583	Late neolithic
1450B		31002	Burnt mound	E: PRN 31583	Late neolithic
1452	31008	31017	Trough	E: PRN 31583	Late neolithic
1453	31008	31018	Trough	E: PRN 31583	Late neolithic
923	31436	31435	Earth oven / burnt mound pit	E: PRN 31584	Bronze Age
925	31513	31512	Earth Oven	E: PRN 31584	Bronze Age
938	31306	31304	Earth Oven	E: PRN 31585	Bronze Age

100	07023	07022	Pit	A: PRN 31586	?Prehistoric
5138	03078	03080	Trough	L5: PRN 31587	?Bronze Age
5139	03082	03083	Trough	L5: PRN 31587	?Bronze Age
1004	20081	19110	Pit	K1: PRN 31588	Bronze Age
1020	18124	18125	Pit	K1: PRN 31588	Bronze Age
1038	18156	18157	Charcoal patch	K1: PRN 31588	Bronze Age
1045	18169	18171	Post hole	K1: PRN 31588	?Prehistoric
1047	19113	19114	Pit	K1: PRN 31588	?Prehistoric
1051	18169	18170	Post hole	K1: PRN 31588	?Prehistoric
1052	19117	19118	Pit	K1: PRN 31588	?Prehistoric
1053	18172	18173	Post hole	K1: PRN 31588	?Prehistoric
1398		40198 / 40199 / 40200	Tree hollow / animal burrowing	M4 :PRN 31589	Prehistoric
1402		40199	Tree hollow / animal burrowing	M4 :PRN 31589	Prehistoric
1056	22059	22058	Pit	M: PRN 31591	Bronze Age
1058	22072	22073	Ditch	M: PRN 31591	Bronze Age
1061	22072	22077	Ditch	M: PRN 31591	Bronze Age
1066	22082	22083	Ditch	M: PRN 31591	Bronze Age
1067	22082	22084	Ditch	M: PRN 31591	Bronze Age
1068	22082	22085	Ditch	M: PRN 31591	Bronze Age
6	6088	6089	Pit	B1: PRN 31592	Iron Age
7	07015	07051	Pit	B1: PRN 31592	Iron Age
13	8048	8047	Pit	B1: PRN 31592	Iron Age
14	6090	3026	Pit	B1: PRN 31592	Iron Age
15	10001	10002 / 10003	Pit	B1: PRN 31592	Iron Age
17	10001	10002	Pit	B1: PRN 31592	Iron Age
18	10001	10003	Pit	B1: PRN 31592	Iron Age
22	07057	07056	Pit	B1: PRN 31592	Iron Age
25	5039	3023	Pit	B1: PRN 31592	Iron Age
27	03024	10010 / 10011	Pit	B1: PRN 31592	Iron Age
28	03024	10011	Pit	B1: PRN 31592	Iron Age
29	03024	10010	Pit	B1: PRN 31592	Iron Age
30	10012	10013	Pit	B1: PRN 31592	Iron Age
53	13011	13012	Pit	B1: PRN 31592	Unknown
57	04017	10018	Pit	B1: PRN 31592	Iron Age
59	13013	13016	Pit	B1: PRN 31592	Unknown
62	11017	11018	Pit	B1: PRN 31592	Iron Age
63	11019	11020 / 11021	Pit	B1: PRN 31592	Iron Age
65	11019	11020	Pit	B1: PRN 31592	Iron Age
66	11019	11021	Pit	B1: PRN 31592	Iron Age
1078	21192	21193	Pit	B1: PRN 31592	Iron Age
1485		80358	Roof collapse	K7: PRN 31595	Iron Age
1535		80334	Roof collapse	K7: PRN 31595	Iron Age
5125	80523	80524	Pit	K9: PRN 31596	Romano British
5128	80541	80542	Post hole	K9: PRN 31596	Romano British

5132	80556	80555	Pit	K9: PRN 31596	Romano British
5134	80562	80561	Pit	K9: PRN 31596	Romano British
5135	80567	80566	Hollow	K9: PRN 31596	Romano British
5141	80651	80652	Pit	K9: PRN 31596	Prehistoric
5162	80729	80729	Pit	K9: PRN 31596	Romano British
5603	80938	80940	Boulder hearth	K9: PRN 31596	Romano British
5604	80938	80866	Boulder hearth	K9: PRN 31596	Romano British
5607		80846	Layer	K9: PRN 31596	Romano British
5612		80893	Demolition rubble	K9: PRN 31596	Romano British
5613		80811	Floor	K9: PRN 31596	Romano British
5616		80807	Demolition rubble	K9: PRN 31596	Romano British
5619		80899	Floor	K9: PRN 31596	Romano British
5622		80884	Floor	K9: PRN 31596	Romano British
5637		80904	Occupation layer	K9: PRN 31596	Romano British
5638		80904	Occupation layer	K9: PRN 31596	Romano British
5652	80938	80939	Boulder hearth	K9: PRN 31596	Romano British
5653		80847	Floor	K9: PRN 31596	Romano British
5677		80847	Floor	K9: PRN 31596	Romano British
5712	81143	81144	Pit	K9: PRN 31596	Romano British
5861	70692	70693	Post hole	J: PRN 31597	?Roman
5865	70692	70693	Post hole	J: PRN 31597	?Roman
5866	70692	70694	Post hole	J: PRN 31597	?Roman
5867	70692	70696	Post hole	J: PRN 31597	?Roman
1010	21039	21041	Earth oven	I: PRN 31599	Iron Age
741	80056	80057	Corn dryer	K7: cemetery	Medieval
742	80056	80058	Corn dryer	K7: cemetery	Medieval
787	80056	80125	Corn dryer	K7: cemetery	Medieval
788	80056	80126	Corn dryer	K7: cemetery	Medieval
789	80056	80127	Corn dryer	K7: cemetery	Medieval
1403	80137	80139	Corn dryer	K7: PRN 31602	Medieval
1404	80137	80142	Corn dryer	K7: PRN 31602	Medieval
1026	21051	21052	Corn dryer	K1: PRN 31603	Medieval
1027	21051	21053	Corn dryer	K1: PRN 31603	Medieval
1123	21229	21231	Corn dryer	Ia: PRN 31604	Medieval
1250	70173	70171	Pit	J: PRN 74831	Mid Neolithic
1251	70173	70172	Post hole	J: PRN 74831	Mid Neolithic
1256	70181	70182	Pit	J: PRN 74831	Prehistoric
5804	70480	70479	Post hole	J: PRN 74832	Late Neolithic
5809	70503	70502	Pit	J: PRN 74832	Late Neolithic
5815	70529	70528	Pit	J: PRN 74832	Late Neolithic
5822	70529	70536	Pit	J: PRN 74832	Late Neolithic
86	18059	18060	Pit	I: PRN 76098	?Beaker
5600	80835	80830	Corn dryer	K9: PRN 76100	Medieval
5601	80835	80837	Corn dryer	K9: PRN 76100	Medieval
5602	80835	80837	Corn dryer	K9: PRN 76100	Medieval
5608	80835	80889	Corn dryer	K9: PRN 76100	Medieval
5609	80835	80885	Corn dryer	K9: PRN 76100	Medieval
5610	80835	80882	Corn dryer	K9: PRN 76100	Medieval

5611	80835	80887	Corn dryer	K9: PRN 76100	Medieval
5669	80924	80926	Corn dryer	K9 : PRN 76101	?Medieval
5670	80924	81006	Corn dryer	K9 : PRN 76101	?Medieval
5682	80924	81034	Corn dryer	K9 : PRN 76101	?Medieval
5685	80924	81072	Corn dryer	K9 : PRN 76101	?Medieval
1116	22158	22156	Corn dryer	B3	?Early Medieval
1117	22158	22157	Corn dryer	B3	?Early Medieval
5015	93367	93365	Post hole	F1: RHI	Iron Age
5681	80924	81027	Corn dryer	K9	?Medieval
1137	22171	22145	Building terrace	L3	Iron Age

Table 3: Full plant macrofossil work need of samples from excavations at Parc Cybi

Sample Number	Feature Number	Context Number	Feature Type	Area
241		90794	Layer	B2. RHA
538		92118	Occupation layer	B2. RHA
683		92147	Floor / hearth base	B2. RHE 1
685		92145	Hearth deposit	B2. RHE 1
741	80056	80057	Corn drier	K7
742	80056	80058	Corn drier	K7
787	80056	80125	Corn drier	K7
1004	20081	19110	Fill of cordoned urn pit 20081	K
1117	22158	22157	Corn drier	B3
1027	21051	21053	Corn drier	K1
1126	50116	50110	Hearth in ENB	H
1128	50116	50115	Hearth in ENB	H
1136	22171	22144	Building terrace	L3
1137	22171	22145	Building terrace	L3
1184	60125	60124	Hearth with grooved ware pits	D3
1186	50182	50183	Post hole in ENB	H
1190	60162	60163	Pit with grooved ware pottery	D3
1478		80334	Roof collapse in roundhouse 80248	K
1535		80334	Roof collapse in roundhouse 80248	K
5669	80924	80926	Corn drier	K9
5693		81073	Corn drier / firebox	K9
5804	70480	70479	Post hole with grooved ware	J
5822	70529	70536	Pit with grooved ware	J

Part XIX.3: Full analysis of charcoal from selected samples

Rosalind McKenna

Introduction

An archaeological excavation was carried out by Gwynedd Archaeological Trust at Parc Cybi, Holyhead, centred on NGR SH 2555 8075, between January 2006 and February 2010. The site covers over 41 hectares of pasture land to the south of Holyhead on Holy Island (centred on SH 2555 8075) (Figure 1). The terrain is characterised by rocky outcrops, often covered by gorse or rough grassland with marshy hollows between, and some better pastureland. The site lies between the A55 and Kingsland Road, with Lôn Trefignath running through its eastern side.

The excavated features ranged in date from the Mesolithic to the 19th century and the finds included pottery, lithics, glass, metal artefacts and palaeoenvironmental data. The major sites include a rectangular early Neolithic building of national and international importance. This seems to have been aligned on the Trefignath Chambered tomb and had firepits dug through the demolished remains of the building. Other early Neolithic settlement of a different character was also present on site and extensive activity continued into the mid and later Neolithic, providing the potential to contribute to the re-evaluation of Peterborough and Grooved Ware in this region. The Bronze Age was represented by a complex of ceremonial monuments, including a possible multiple-cist barrow, the ring ditch of a barrow and a deep-ditched enclosure. In relation to the standing stone in the middle of the site and the larger barrow excavated near Tw Mawr Farm to the north this suggests a ritual landscape of national importance. The period was also represented by two burnt mounds and a timber roundhouse that was poorly dated but probably of Bronze Age date. A settlement of stone roundhouses with complex stratigraphy was accompanied by several outlining roundhouses and other structures as well as possibly contemporary field boundaries. The extent and variety of Iron Age settlement on the site means that this has a very high potential for studying all aspects of settlement development and use in this period. Settlement focus seems to have shifted in the Roman period but activity continued. A group of structures seem to have had industrial and storage functions and running from them was a trackway with associated traces of a field system. A small early medieval cemetery was found on top of a hill, one of an important group on Holy Island. The use of the site into the high medieval period may be indicated by the smithing within the area of the cemetery and possibly by several corn driers. Excavation evidence has extended the knowledge of the changing field boundaries of the area gained from the historic maps and suggests early fields that might have a medieval or earlier origin.

A programme of soil sampling was implemented during the excavation, which included the collection of soil samples from sealed contexts. The aim of the sampling was:

- To assess the type of preservation and the potential of the biological remains
- To record any human activities undertaken on the site – both domestic and industrial
- To provide information on the past environment of the area.

Methods

Following selection, subsamples of raw sediment from the selected samples were processed. The samples were examined in the laboratory, where they were described using a pro forma. The subsamples were processed by staff at Gwynedd Archaeological Trust using their standard water flotation methods.

The flot (the sum of the material from each sample that floats) was sieved to 0.5mm and air dried. The heavy residue (the material which does not float) was not examined, and therefore the results presented here are based entirely on the material from the flot. The flot was examined under a low-power binocular microscope at magnifications between x12 and x40.

The flot was then sieved into convenient fractions (4, 2, 1 and 0.3mm) for sorting and identification of charcoal fragments. Identifiable material was only present within the 4 and 2mm fractions. A random selection of ten fragments of charcoal of varying sizes was made, which were then identified. Where samples did not contain ten identifiable fragments, all fragments were studied and recorded. Identification was made using the wood identification guides of Schweingruber (1978) and Hather (2000). The full species lists appear in Table XIX.3.1 to 35 at the end of this report. Each sub table presents the data from each project number / area within the excavation site as a whole. Where a project number is absent, the results are shown based on the area of the site the samples originated.

Taxa identified only to genus cannot be identified more closely due to a lack of defining characteristics in charcoal material.

Results

Two hundred and sixty samples are the basis of this investigation. A previous assessment by the author (McKenna, this volume part XIX.2) had identified these samples as containing identifiable remains, and coupled with the archaeological context and feature information these were selected as being able to add information to the archaeological data set.

Charcoal fragments were present in all of the samples, scoring between a '1' and '4' on the semi quantitative scale. The preservation of the charcoal fragments was poor. Many of the fragments were too small to enable successful fracturing that reveals identifying morphological characteristics. Where fragments were large enough, the fragments were very brittle, and the material crumbled or broke in uneven patterns making the identifying characteristics difficult to distinguish and interpret, and so only a limited amount of environmental data can be gained from the samples. The results of this analysis can be seen in Tables XIX.3.1 - 35 below.

The total range of taxa comprises oak (Quercus), willow / poplar (Salix / Populus), hazel (Corylus avellana), ash (Fraxinus excelsior), alder (Alnus glutinosa), the rose family (ROSACEAE), and possible buckthorn (cf. *Rhamnus*). These taxa belong to the groups of species represented in the native British flora. As seen in the tables below, oak has the highest number of identified charcoal fragments within the samples. It is possible that these were the preferred fuel woods obtained from a local environment containing a broader choice of species.

PRN 14599 – Area B2 / F1

Forty two samples with identifiable charcoal remains originated from this area. It is an Iron Age settlement with three stone built roundhouses and a timber roundhouse as well as numerous ancillary buildings, a wall running through the settlement and a possible enclosing wall and ditch. Of the samples with identifiable remains, thirty two were dominated by oak, six by willow / poplar, two by rosaceae and a further two contained equal amounts of willow / poplar and oak charcoal. The area has been sub-divided into different groups based upon location and association to the round houses and other features within the area. The results will be discussed based upon these areas.

B2 - Stone platform under RHA and RHE

This stone platform was radiocarbon dated to the Early Iron Age and preceeded the roundhouses. Two samples from this platform under RHA contained oak charcoal with a little willow / poplar also present. A sample from the platform under RHE also contained oak charcoal with a smaller amount of willow / poplar also recorded.

A sample from the soil or turf layer (92148) that developed over the platform was dominated by oak charcoal with a small amount of willow /poplar.

Roundhouse A

B2: Pre-roundhouse

Four features from this area all originated from hearth feature [90509], which was radiocarbon dated to the Late Neolithic and proved not to belong to the roundhouse settlement. All the samples were were dominated by oak charcoal with small amounts of hazel charcoal also being recorded. A stakehole [90862] associated with the hearth contained only oak charcoal. It is probable therefore that the selected fire wood for this activity was oak, with hazel perhaps representing the kindling.

B2: RHA.1

A sample from a layer (90794) was dominated by oak with a smaller amount of willow / poplar – and may well be associated with the spent fuel from the hearth feature. A further sample from a stony layer was dominated by willow / poplar with a small amount of oak charcoal also present.

B2: RHA.2

A single sample from post slot [90597] contained only oak charcoal, and may represent the original structural post.

B2: passageway to RHA

Two sample originated in occupation levels from this area – one contained only oak (92059), and the other was dominated by oak with a smaller amount of willow / poplar charcoal (91607). A sample from a midden deposit

(91333) was dominated by oak and also contained willow / poplar charcoal. A single sample from a pit feature [91498] was dominated by willow / /poplar with a smaller amount of oak charcoal.

B2: under RHA
A pit located under RHA contained oak charcoal with a small amount of rosaceae charcoal.

B2: post RHA
This area represents a phase of robbing disturbance (90970) and contains oak charcoal with a little willow / poplar.

Round house B
B2: RHB.1
A single sample from a hearth deposit [91619] contained oak charcoal, and willow / poplar. Two samples originated from floor deposits – one contained oak charcoal and willow / poplar in smaller amounts (91664), and the other was dominated by rosaceae with a small amount of oak also present. Three samples originated from pit features, one [91776] contained only oak charcoal, the other two samples originated from feature [91785] – one was dominated by oak with willow / poplar and hazel charcoal also recorded, and the other was dominated by willow / poplar charcoal with a smaller amount of oak charcoal.

B2: RHB.2
One sample from this area originated from a post hole [91914], and contained an equal amount of oak and willow /poplar charcoal. A further sample from a stone deposit also contained equal amounts of oak and willow / poplar charcoal.

Round house C
B2: RHC.1
A single sample from a pit feature contained only oak charcoal. A further sample from a burnt patch contained only willow / poplar charcoal.

B2: RHC.2
A single sample from a pit feature [91433] contained only oak charcoal. A further sample from a floor layer (91712) was dominated by rosaceae with a smaller amount of willow / poplar also recorded.

B2: pre RHC
A single sample from a wall feature [91805] contained willow / poplar with a small amount of oak also recorded.

Round house E
B2: RHE.1
A single sample from a pit feature [92328] was dominated by oak with a little willow / poplar charcoal also present. Of the two samples from hearth features, one was dominated by oak with a small amount of willow / poplar charcoal also present (92141), and the other contained only oak charcoal (92145). A sample from a floor / hearth base deposit contained only willow / poplar charcoal (92147). A final sample from a levelling layer (90960) contained only oak charcoal.

F1: Roundhouse I
Samples from post holes [93080] and [93367] were dominated by oak with a smaller amount of willow / poplar charcoal also present.

F1: Structure G1
A single sample from a charcoal patch (92691) contained only oak charcoal.

F1: Structure G2
A single sample from a stone surface (92633) contained only oak charcoal.

F1: Group 93380
A single sample from a trough feature [93254] was dominated by oak charcoal with a smaller amount of hazel and willow / poplar also present.

F1: ?Bronze Age feature

A single sample from a posthole feature [92768] was dominated by oak with a smaller amount of willow / poplar charcoal also present. Another sample from an old ground surface (93171) was dominated by oak charcoal with a smaller amount of willow / poplar and hazel charcoal.

Oak dominated the charcoal remains from this area, both in terms of the number of samples and the fragment count. Willow / poplar was also recorded in significant numbers, with rosaceae and hazel also present in smaller quantities.

PRN 14602 – AREA K2
Evaluation trenching suggested the possible presence of stone-built roundhouses in Area K5 and a narrow strip along the edge of this field (Area K2) revealed some undated features, including a patch of possible clay flooring cut by several posts or postholes with a possible pit [20077] below it.
A single sample from a pit feature [20077] contained only oak charcoal.

PRN 18406 – Area E
Sixteen samples from this area of early Neolithic temporary occupation produced samples with identifiable remains. The area is a natural hollow containing pits, post holes, stake holes and hearths associated with a patch of buried soil. The activity probably represents short term occupation taking place repeatedly over a considerable period of time. Fifteen of the samples were dominated by oak charcoal, and one by hazel charcoal. Willow / poplar was also recorded in smaller amounts.

Postholes
Four of the samples originated from post hole features: [31016], [31610], [31631], and [31640] and all contained only oak charcoal. It is possible that being only this species, the samples represent the remains of the original posts.

Pits
Nine samples originated from pit features. Three of these samples [31023], [31147] and [31212] contained only oak charcoal. Three of the samples [31147], [31138] and [31509] were dominated by oak charcoal with a smaller amount of willow / poplar also present. Two of the samples, both from feature [31595] were dominated by oak charcoal with a smaller amount of hazel also present. A final sample from pit [31138] contained only hazel charcoal.

Hollow
A single sample from a hollow feature [31082] was dominated by oak charcoal with hazel and willow / poplar also present.

Layer
A single sample from a layer (31209) contained only oak charcoal.

Burnt Patch
A single sample from a burnt patch (31207) contained only oak charcoal.

Oak dominated the charcoal remains from this area, with willow / poplar and hazel also present in smaller amounts.

PRN 31570 – Area H
Thirty six samples originated from this area, which represents a Neolithic rectangular building. The structure appears to have been sub divided internally into three separate compartments. Several hearth pits were located within the structure, but some cut structural features and must be later than the building – perhaps activity marking its demolition. Thirty five of the samples were dominated by oak charcoal, and one by hazel charcoal. Willow / poplar and rosaceae were also recorded within the samples.

Post holes
Twelve of the samples originated from post hole features. A single sample from [20047] was dominated by oak, with smaller amounts of hazel and alder also recorded. Three samples originated from feature [50164] – two contained only oak, and one was dominated by oak with hazel and willow / poplar also present. A single sample from feature [50167] contained only oak charcoal. A single sample from [50173] contained oak charcoal with smaller amounts of hazel and willow / polar also recorded. A single sample from [50178] was also dominated by oak, with smaller amounts of hazel and willow / poplar charcoal also recorded. Three samples from post hole

[50179] all contained only oak charcoal. A single sample from [50182] also contained only oak charcoal. A further sample from [50248] also contained only oak charcoal.

Hearth Pits
Twelve samples originated from hearth pits. Four samples originated from feature [50044] – three of these contained only oak charcoal, and the final sample was dominated by hazel with a smaller amount of oak also recorded. Five samples originated from feature [50116]. Three of these samples contained only oak charcoal, one was dominated by oak with a smaller amount of hazel charcoal, and the last was dominated by oak with a smaller amount of willow / poplar charcoal. The final three samples originated from post hole [50133] – two contained only oak charcoal, and the final was dominated by oak with a small amount of willow / poplar charcoal.

Pits
Four samples from pit features contained identifiable remains. Feature [50059] was dominated by oak charcoal with a smaller amount of hazel and a little alder charcoal. The other three samples from features [50107], [50120] and [50126] contained only oak charcoal.

Beam Slot
Five samples originated from beam slots. Of the three samples from feature [50166], two contained only oak charcoal, and one was dominated by oak with smaller amounts of hazel and willow / poplar charcoal. The other two samples originated from feature [50232], and contained only oak charcoal.

Slot
A single sample from slot feature [50136] contained only oak charcoal.

Gully
A single sample from gully feature [50176] was dominated by oak charcoal with a small amount of hazel also present.

Hearth
A single sample from hearth feature [50207] contained only oak charcoal.

PRN 31571 – Area M
Five samples from this area of early Neolithic activity recorded remains of charcoal. The area represents some settlement activity with a small group of pits and post holes. The samples that produced charcoal all originated in pit features. Three of these [40071], [40117] and [40137] contained only oak charcoal, one [40085] was dominated by oak with smaller amounts of hazel and willow / poplar, and one [40103] was dominated by rosaceae with smaller amounts of hazel and willow / poplar.

PRN 31572 – Area Ia
Six samples from a mid Neolithic pit group produced charcoal remains from this area. Five samples from features [21212], [21210], [21219] and [21221] contained only oak charcoal and a final sample [18063] was dominated by oak with a smaller amount of hazel charcoal.

PRN 31573 – Area K9
A pit group dating to the mid Neolithic period produced seven samples with charcoal remains from this area. Of the two samples from [80606] one contained only oak charcoal and the other was dominated by hazel with smaller amounts of oak charcoal. Two samples originated from feature [80686] – one contained only oak charcoal, and the other was dominated by oak with smaller amounts of willow / poplar and hazel charcoal also present. A single sample from feature [80602] contained equal amounts of hazel and oak charcoal. Two samples originated from feature [80594], both were dominated by hazel, one also contained a small amount of oak, and the other contained remains of oak and willow / poplar charcoal.

PRN 31574 – Area D3
This area represents late Neolithic activity in the form of a hearth and associated pits. Five samples produced charcoal remains. Four of these samples originated from pit features. Two samples from feature [60093] were dominated by oak charcoal with smaller amounts of hazel also recorded. A single sample from [60135] was dominated by oak with smaller amounts of hazel and willow / poplar charcoal also present. A sample from [60162] was dominated by hazel charcoal with smaller amounts of oak also present. A single sample from a hearth feature [60125] was dominated by hazel, with a smaller amount of oak charcoal also present.

PRN 31578 – Area J
This area dates to the possible Bronze Age and represents settlement activity in the form of a small structure with pits around it. Two samples from post hole features produced identifiable charcoal remains – one [70039] contained only oak charcoal and the other [70062] was dominated by hazel with a small amount of oak charcoal.

PRN 31580 - Area J
A single sample from this area of pits reflecting possible Bronze Age activity produced charcoal remains. The sample from pit feature [70054] contained only oak charcoal.

PRN 31581 - Area J
A group of twenty five features including many small stake holes, alongside some well defined post holes and larger pits show some settlement activity dating to the possible Bronze Age. A single sample from post hole [70452] was dominated by willow / poplar with a small amount of oak.

PRN 31582 – Area E
This area of activity dates to the Beaker period, and is represented by a large burnt mound with pits, water trough and a possible dry cooking pit, as well as a large pit that may have functioned as a well. Eight samples recorded identifiable remains. Three samples originated in trough features [31283], [31289] and [31523] – all were dominated by oak and contained hazel and willow / poplar charcoal. Three samples originated from the well feature two from cut [31415] – one of which contained only oak charcoal, and the other was dominated by oak with smaller amounts of hazel and willow / poplar charcoal. The final well sample from feature [31593] was also dominated by oak with smaller amounts of hazel and willow / poplar charcoal. The two remaining samples originated from the burnt mound feature, one (31422) was dominated by oak with willow / poplar and hazel charcoal and the other (31429) dominated by willow / poplar with hazel and oak charcoal also recorded.

PRN 31583 – Area E
A small burnt mound dating to the late Neolithic period with an associated trough or pit represents the activity from this area. Four samples produced identifiable charcoal remains. Two of the samples originated from the trough feature [31008] – one contained only oak and the other was dominated by hazel with a smaller amount of oak charcoal. Two samples from the burnt mound feature (31002) contained equal amounts of hazel and oak charcoal.

PRN 31584 – Area E
This possible earth oven may be associated with a burnt mound that lies outside the excavation area. One sample with charcoal remains was assessed and this was dominated by oak charcoal, but also contained willow / poplar.

PRN 31585 – Area E
A sample from an earth oven [31306] produced remains of identifiable charcoal, which was dominated by oak with hazel charcoal also recorded. The sample from pit [31513] was also dominated by oak charcoal, and contained some hazel and willow / poplar.

PRN 31586 – Area E
A pit which resembled a small burnt mound pit, without traces of a mound or other features dating to the possible Bronze age represents the activity in this area. A single sample from pit [07023] produced identifiable remains, which was dominated by hazel charcoal with smaller amounts of willow / poplar and oak also recorded.

PRN 31587 – Area L5
This area of activity possibly dated to the Bronze Age, and consisted of a number of pits that resembled burnt mounds with the presence of burnt stones. Both samples that produced charcoal were dominated by oak, one [03078] contained a small amount of willow / poplar and the other [03082] a small amount of hazel and willow / poplar charcoal.

PRN 31588 – Area K1
This area of activity was defined by a series of heavily truncated post holes defining a timber roundhouse, with an inner post ring and an outer wall, possible dating to the Bronze Age. Eight of the samples produced identifiable charcoal remains, although only one of these came from within the area of the timber roundhouse.

Pits

Four of the samples originated from pit features. One [20081] was dominated by willow / poplar with smaller amounts of hazel and oak charcoal. Feature [18124] was dominated by oak with a smaller amount of rosaceae also present. Feature [19113] contained only oak charcoal. The final pit feature [19117] was dominated by hazel charcoal with a smaller amount of oak also present.

Post holes
Three samples originated from post holes, two of these were from features [18169] - one contained only oak charcoal and the other was dominated by hazel with smaller amounts of oak also recorded. Another sample from feature [18172] contained only oak charcoal. It is possible the samples may represent remains of the original posts from within the features.

Charcoal patch
A single sample from the charcoal patch [18156] contained only oak charcoal.

PRN 31589 – Area M
This area dating to the Bronze Age, has been defined as a short cist cemetery, consisting of eight graves, possibly under a barrow. Two samples from (40199) produced identifiable charcoal remains, both of which recorded only oak charcoal within them.

PRN 31591 – Area M
This area is characterised by a deep ditched enclosure, with some possible associated small pits in and around it, dating to the Bronze Age. Six samples produced identifiable charcoal remains. Five of the samples originated from ditch features – three from [22082] and two from [22072], and all of these contained only oak charcoal. A further sample from a pit feature [22059] contained only oak charcoal.

PRN 31592 – Area B1
This area dates to the Iron Age and is characterised by a group of pits, many of which had traces of in situ burning. Twenty one samples from pit features produced identifiable remains. The quality of the charcoal remains from these features was poor in comparison to the remains from the rest of the site. This is probably related to very high temperatures during the burning episodes, which may be associated with the activities being carried out in the features. Five samples from different pits [6088], [07015], [6090], [10012] and [13012] contained only oak charcoal. A single sample from pit [8048] was dominated by oak with a smaller amount of willow / poplar. Three samples originated from pit [1001] – one contained only oak charcoal, one was dominated by rosaceae with a small amount of willow / poplar and the final was dominated by rosaceae with smaller amounts of oak and willow / poplar also recorded. A single sample from pit [07057] contained equal amounts of alder and oak with smaller amounts of hazel. A single sample from pit [5039] contained only willow / poplar charcoal. Three samples from pit [03024] contained identifiable remains – one contained only oak, one was dominated by oak with smaller amounts of willow / /poplar and ash charcoal, and the final sample contained equal amounts of willow / poplar and oak charcoal. A sample from pit [04017] was dominated by oak with smaller amounts of willow / poplar and hazel also recorded. The remains from pit [13013] contained only rosaceae charcoal. A single sample from pit feature [11017] was dominated by oak charcoal with a smaller amount of willow / poplar charcoal also present. Three samples from pit [11019] contained identifiable remains – one was dominated by oak with smaller amounts hazel charcoal, and the other two were dominated by oak with smaller amounts of willow / poplar and hazel charcoal. A final sample from pit [21192] was dominated by willow / poplar with smaller amounts of oak charcoal.

PRN 31593 – Area L3
A single sample from a building terrace [22171] contained only oak charcoal.

PRN 31595 – Area K7
This area produced two roundhouses, possibly with clay walls and internal drains, which dates to the Iron Age. Two samples from roof collapse features (80358) and (80334) produced charcoal remains of only oak charcoal.

PRN 31596 – Area K9
This area contained the remains of a Roman period building complex, which may possibly be a farmstead. It was characterised by a square stone building and a clay lined round house with a trackway that runs through the middle of the complex. Of the twenty samples with identifiable remains, sixteen were dominated by oak, one was dominated by willow / poplar, one was dominated by hazel, and two contained equal amounts of hazel and oak charcoal.

Pits
Five of the samples originated in pit features. Two of the samples from pits [80562] and [80651] contained only oak charcoal. Pit feature [81143] contained equal amounts of oak and hazel charcoal. Two samples from pits [80523] and [80556] were dominated by oak with smaller amounts of willow / poplar also present.

Post hole
A single sample from a post hole feature [80541] contained only oak charcoal.

Hollow
A single sample from a hollow feature [80567] was dominated by willow / poplar with oak and roasceae also recorded.

Boulder hearth
Three samples from boulder hearth deposits [80938] contained identifiable remains – one contained only oak, one was dominated by oak with smaller amounts of hazel and one was dominated by hazel with smaller amounts of oak present.

Layers
Three samples from layers contained charcoal remains – one sample from (80846) and two samples from (80904) contained only oak charcoal.

Demolition rubble
Two samples from demolition layers contained charcoal – one (80893) was dominated by oak with hazel also present, and the other (80807) was dominated by oak with hazel and willow / poplar also recorded.

Floors
Five samples originated from floor deposits – two from deposits (80811) and (80884) contained only oak charcoal. One sample from (80899) contained equal aounts of oak and hazel charcoal. Of the two samples from (80847), one contained only oak charcoal, and the other was dominated by oak charcoal with smaller amounts of hazel also recorded.

PRN 31597 – Area K9 / J
The area dates to the Roman period and shows the remains of a trackway and possible field system in the form of ditches. Four samples from this area all originated from post hole feature [70692] contained only oak charcoal.

PRN 31599 – Area I
A hearth with an adjacent earth oven dating to the Iron Age characterises the activity in this area. A single sample from the earth oven [21039] contained only oak charcoal.

PRN 31601 – Area K7
A corn drier formed of two linked pits – possibly one a fire chamber and the other a drying pit characterised the activity in the area. This feature dates to the Early Medieval period. Five samples all from the corn dryer feature [80056] produced charcoal remains. Two of the samples contained only possible buckthorn charcoal, one was dominated by buckthorn with alder / hazel and oak charcoal, one was dominated by buckthorn with hazel and oak also recorded, and one sample was dominated by alder with smaller amounts of oak charcoal also present.

PRN 31602 – Area K7
An Early Medieval corn drier [80137] from this area produced a two samples which contained only willow / poplar charcoal.

PRN 31603 – Area K1
A figure of eight shaped corn drier, dating to the Early Medieval period, was the activity recorded in this area. Two samples from the corn dryer feature [21051] were assessed, both of which were dominated by oak charcoal with rosaceae and hazel charcoal also present.

PRN 31604 – Area IA
A dumb bell shaped corn drier feature [21229], dating to the Early Medieval period, produced a single sample with charcoal remains. This was dominated by willow / poplar charcoal with oak, ash and rosaceae also present.

PRN 74831 – Area J
Two pits and a post hole dating to the mid Neolithic period characterised the activity at this area. Three samples produced identifiable remains. Two of the samples originated from pit [70173]; one was dominated by hazel charcoal with a smaller amount of oak charcoal, the other was dominated by hazel with oak, willow / poplar and rosaceae also present. The sample from pit [70181] was dominated by hazel with smaller amounts of oak.

PRN 74832 – Area J
Two large intercutting pits with a complex sequence of fills dating to the Neolithic period were recorded in this area. One sample from a post hole feature [70480] contained only oak charcoal. Three samples originated from pit features – one from pit [70503] contained only hazel and two from pit [70529] were dominated by oak with hazel and willow / poplar also present within the samples.

PRN 76098 – Area I
An isolated pit with possible beaker pottery was recorded in this area. A single sample from this pit feature [18059] contained only oak charcoal.

PRN 76100 – Area K9
A corn drier cut into the demolition rubble at the corner of a Roman period building. This was radiocarbon dated to the Early Medieval period. Seven samples from this feature [80835] produced identifiable charcoal remains. Two of these contained only oak charcoal, one was dominated by oak with willow / poplar also recorded, one was dominated by oak with willow / poplar and hazel charcoal also recorded. One sample was dominated by hazel with willow / poplar and oak charcoal also present, and a final sample was dominated by hazel with a smaller amount of oak charcoal also present.

PRN 76101 – Area K9
Another corn drier [80924] near the Roman period building, also dating to the Early Medieval period, produced four samples with charcoal remains. One was dominated by oak with hazel charcoal also recorded, one was dominated by oak with hazel and willow / poplar charcoal also present, one was dominated by willow / poplar charcoal with smaller amounts of hazel and oak present, a further sample was dominated by hazel with oak and willow / poplar charcoal also recorded, and a final sample was dominated by hazel charcoal with a smaller amount of oak charcoal.

Generally, there are various, largely unquantifiable, factors that effect the representation of species in charcoal samples including bias in contemporary collection, inclusive of social and economic factors, and various factors of taphonomy and conservation (Thiery-Parisot 2002). On account of these considerations, the identified taxa are not considered to be proportionately representative of the availability of wood resources in the environment in a definitive sense, and are possibly reflective of particular choice of fire making fuel from these resources.

Conclusion
The samples produced some environmental material of interpretable value, with the identifiable charcoal remains from two hundred and sixty of the samples. The charcoal assemblages are all similar with little difference between contexts and phases. In general, oak dominates the assemblages, with a small range of other species also utilised.

Charcoal as a material does impose some limitations. It represents only a fraction of the material that was burnt, with the majority generally burning down to unidentifiable flecks or ash. Also, wood species differ in their resistance to burning. Soft woods such as birch, alder, hazel and willow, burn more easily to ashes than hardwoods such as oak, therefore oak tends to be over represented in the lists of identified species. Smaller wood pieces such as branches and chips also burn more easily than thick logs, and this can affect the identification results. In the identification process itself, a complicating factor is that during carbonisation, part of the characteristics of wood are lost. Some woods are very difficult to identify in a charred condition, or cannot be distinguished from other very similar wood species, as is the case with alder, birch, willow and poplar. Other species such as oak and ash can often be identified even in severely burnt conditions.

The charcoal remains showed the exploitation of several species native to Britain. Oak has good burning properties and would have made a fire suitable for most purposes (Edlin 1949). Oak is a particularly useful fire fuel as well as being a commonly used structural/artefactual wood that may have had subsequent use as a fire fuel (Rossen and Olsen 1985). Ash is strong and tough, and makes excellent firewood producing both heat and flame. It will also burn when green (Grogan et al. 2007, 30). Hazel is recorded as a good fuel wood and was widely available within oak woodlands, particularly on the fringes of cleared areas (Grogan *et al.* 2007, 30).

Alder was also represented in the samples. This wood is a poor fuel as it burns quickly and gives off little heat, but has been found suitable for charcoal production. This may indicate some small scale charcoal production, but given that it was only recorded in small numbers, it may merely represent a selection of available firewood. Willow/Poplar are species that are ideal to use for kindling. They are anatomically less dense than for example, oak and ash and burn quickly at relatively high temperatures (Gale & Cutler 2000, 34, 236, Grogan *et al.* 2007, 29-31). This property makes them good to use as kindling, as the high temperatures produced would encourage the oak to ignite and start to burn. Common buckthorn is a species typical of scrubland (Stace 1997). The Rosaceae family are deciduous and includes herbs, shrubs and trees. Several economically important products come from the family including many edible fruits such as apples, pears, plums, cherries, and are also trees and shrubs such as rowans and hawthorns.

Dryland wood species indicates the presence of an oak-ash woodland close to the site. This would have consisted of oak, which would be the dominant large tree species (Gale & Cutler 2000, 120, 205). On the marginal areas of oak woodlands or in clearings hazel thrives. There is also some evidence of a damp area, or carr fen woodland, which would have consisted of alder, willow and poplar - trees that thrive in waterlogged and damp soils, particularly in areas close to streams or with a high water table (Stuijts 2005, 143 and Gale & Cutler 2000).

As asserted by Scholtz (1986) cited in Prins and Shackleton (1992:632), the "Principle of Least Effort" suggests that communities of the past collected firewood from the closest possible available wooded area, and in particular the collection of economically less important kindling fuel wood (which was most likely obtained from the area close to the site).

Selection of wood use over time

When the woods used over the different periods are compared, we see the continuity in the species selected. Oak dominated all of the periods associated with the various features. Two sites, producing nine samples dated to the Beaker period and these contained oak, hazel and willow / poplar. Nine sites, producing 86 samples dated to the Neolithic period and contained oak, willow / poplar, rosaceae and hazel. Ten sites produced fifty samples that dated to the Bronze Age, which contained oak, hazel, willow / poplar and rosaceae. The Iron Age was represented by four sites, which produced sixty six samples that contained oak, willow / poplar, rosaceae, hazel and ash was also recorded for the first time. This may indicate an introduction of the species into the local environment, or it may have been more readily available to the inhabitants or was consciously selected by them. Given that it was present in such few samples and in very low numbers, it is impossible to ascertain its presence. Two sites with twenty four samples dated to the Roman period and contained remains of oak, willow / poplar, hazel and rosaceae. The Medieval period was represented by six sites that produced twenty one samples which contained the most diverse remains in terms of species – oak, willow / poplar, hazel and rosaceae were recorded, along with the presence of alder and buckthorn.

Comparison

At present, the quality of the charcoal evidence for sites in Wales is extremely poor, with only very small numbers of fragments being identified for most sites. Charcoal has primarily been identified to provide material suitable for radiocarbon dating, and Caseldine (2015) does not even include charcoal in her summary of environmental work in Wales over the last 30 years. To move beyond simply recording the wood species present in assemblages and to begin addressing specific research questions such as woodland composition, the management of woodlands (i.e. coppicing), fuel use (i.e. industrial processes) or 'ritual' use of wood species (i.e. cremations) it is necessary to generate higher quality datasets. Keepax (1988: 120) recommends that 100 charcoal fragments should be identified per sample in order to reliably characterise the diversity of wood species present in an assemblage. This quantity of charcoal has been identified from a small number of sites (Borras Quarry (ASUD 2010, 2013), Mynydd Mwyn Farm (McKenna 2010), Ysgol yr Hendre (McKenna 2013), Snail Cave Rockshelter (McKenna 2014)).

The current charcoal dataset for Neolithic Wales is very limited. Despite these limitations, it is possible to extract some useful information concerning woodland composition and exploitation. A wide range of wood species were exploited throughout the Neolithic and the main taxa recorded are hazel, oak and Maloideae. These three taxa are also commonly recorded in Mesolithic sites in Wales in addition to Neolithic sites in England (Murphy 2001; Smith 2002; Huntley 2010) and in north-western Europe (Jansen and Nelle 2014; Salavert et al. 2014). This can also be seen from the remains from this period at the site, oak dominates the assemblages with significant amounts of hazel and smaller amounts of willow / poplar and rosaceae.

In the Bronze Age, charcoal remains are often abundant in burnt mounds due to the large quantities of wood for fuel necessary to heating stones to heat the water (Flook and Kenney 2008; Rackham and Challinor 2014). The large numbers of burnt mounds suggests that the sourcing firewood required substantial investment and this could have had a considerable impact on local woodlands (Rackham and Challinor 2014: 150). The analysis of charcoal from burnt mounds (and in some instances, plant remains) provides the opportunity to examine the local environmental context of these sites. Taking a broad chronological view (c.2500 – 800 cal BC) there are some clear patterns in the wood species exploited in burnt mounds with oak, hazel and alder being the most common species present, with generally smaller quantities of other species such as blackthorn, ash, Maloideae-type, birch and holly (Caseldine and Murphy 1989; Thompson 1993; Denne 2002; Akeret 2007; Schmidl et al. 2008; Carruthers 2009a; Maynard 2012; Challinor et al. 2014; Rackham and Challinor 2014). Both oak and hazel would have provided good quality firewood with a high burning temperature and both these species are also common in domestic assemblages (Grogan et al. 2007). In comparison, alder is a poor quality firewood unless well-seasoned or converted to charcoal (Gale and Cuttler 2000: 34). Alder grows in damp, wet soils (Gale and Cuttler 2000: 34) and considering that many burnt mounds are situated close to water sources it is likely to have been common in the vicinity of the sites. The charcoal species present do not give an indication of highly selective wood exploitation, rather wood species present in the local environments appear to have been exploited. The wood species present in burnt mounds in Wales are similar charcoal evidence from burnt mounds in Ireland (Grogan et al. 2007) and the West Midlands (Gale 2008b, c, d). These species were also recorded at features associated with burnt mounds at this site – oak dominated the samples with hazel, willow / poplar and rosaceae also recorded in smaller quantities. Other features dating to the Bronze Age such as pits, postholes and ditches also produced similar assemblages as those associated with burnt mounds. This may suggest continuity in wood use in other activities, as well as the available wood that could be utilised around the site.

Iron Age sites that have been examined for charcoal generally have assemblages that are too small and of poor quality to allow even basic discussions concerning the use of woodland resources. Caseldine (1990) states that the taxa most frequently recorded from various sites within this period are oak, hazel and ash. The remains from the various different features and phases at this site show a consistent utilisation and dominance of oak within the assemblages, with hazel, willow / poplar, ash and rosaceae also present in the surrounding area and utilised.

Oak dominates the remains from the Roman period in Wales, with ash, hazel, willow, possibly poplar, hawthorn, cherry and birch also recorded (Caseldine 1990). The charcoal remains from the site reflect this data. Oak dominates assemblages from the Roman period at this site, with willow / poplar, hazel and rosaceae also utilised.

The Medieval phase of activity at the site across the various different groups and features does differ from the earlier phases. Whilst oak is still present in high number in the assemblages, fewer are dominated by this species. Possible buckthorn and willow / poplar are present in higher numbers, alongside hazel, alder, ash and rosaceae. This also shows a change in the available woods during this period, as is the general consensus that the woodland and species within them expanded during the post Roman period, which can be seen in the evidence from other sites dating to this period. Results from Newton, Llanstadwell produced remains of oak, hazel and cherry / buckthorn (Crane 2004). Charcoal remains from Cefn Graianog (Kenney & Roberts 2008) revealed the presence of oak and hazel, with occasional remains of birch, alder, willow and trees of the apple family. The charcoal revealed a landscape at Llanbeblig that was dominated by oak with hazel, willow / poplar, ash, elm and alder (Kenney & Parry 2013).

Recommendations

The samples have been assessed, and interpretable data has been retrieved and is the basis of this report. No further work is required on the remaining samples. Any material recovered by further excavations should be processed to 0.3mm in accordance with standardised processing methods such as Kenward *et al.* 1980, and the English Heritage guidelines for Environmental Archaeology.

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Tables

Charcoal - *Complete list of taxa recovered from excavations at Parc Cybi (G1701)*
Taxonomy and nomenclature follow Schweingruber (1978). Numbers are identified charcoal fragment for each sample.

Table XIX.3.1: PRN 14599 – Area B2 / F1

Sample Number		**163**	**164**	**165**	**166**	**207**	**211**	**237**	**241**
Feature Number		**90509**	**90509**	**90509**	**90509**		**90862**		
Context Number		**90638**	**90638**	**90638**	**90638**	**90833**	**90861**	**90875**	**90794**
Feature type		**Hearth**	**hearth**	**Hearth**	**hearth**	**Rubble platform**	**Stakehole**	**stone deposit**	**Layer**
Area: PRN		**B2: RHA.1**	**B2: RHA.1**	**B2: RHA.1**	**B2: RHA.1**	**B2: platform for RHA**	**B2: RHA.1**	**B2: RHB.2**	**B2: RHA.1**
Period		**Late Neolithic**	**Late Neolithic**	**Late Neolithic**	**Late Neolithic**	**Early Iron Age**	**Late Neolithic?**	**Iron Age**	**Iron Age**
No. fgts.		**2600+**	**3000+**	**2000+**	**10,000+**	**1800+**	**800+**	**1500+**	**900+**
Max. size (mm)		**16**	**16**	**15**	**13**	**18**	**12**	**13**	**15**
Latin	**Vernacular**								
Corylus avellana	Hazel	19	8	5					
Salix / Populus	Willow / Poplar					21		50	29
Quercus	Oak	81	92	95	100	79	100	50	68
Indeterminate	Indeterminate								3

Sample Number		**246**	**260**	**267A**	**340**	**350**	**364**	**367**
Feature Number					**90597**		**91498**	**91519**
Context Number		**90960**	**91712**	**90970**	**90596**	**91158**	**91501**	**91520**
Feature type		**levelling layer?**	**floor**	**Robbing disturbance?**	**Post slot**	**Floor**	**Pit**	**Pit**
Area: PRN		**B2: RHE.1**	**B2: RHC.2**	**B2: post-RHA**	**B2: RHA.2**	**B2: RHB.1**	**B2: passageway**	**B2: under RHA**
Period		**Early Iron Age?**	**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**
No. fgts.		**800+**	**1100+**	**600+**	**3000+**	**2500+**	**3000+**	**1800+**
Max. size (mm)		**15**	**16**	**26**	**16**	**14**	**15**	**11**
Latin	**Vernacular**							
ROSACEAE			83			80		9
Salix / Populus	Willow / Poplar		17	32			75	
Quercus	Oak	100		68	100	20	25	91
Indeterminate	Indeterminate							

Sample Number		**369**	**372**	**383**	**386**	**392**	**393**	**398**
Feature Number			**91433**				**91619**	
Context Number		**91544**	**91434**	**91540**	**91333**	**90882**	**91620**	**91664**
Feature type		**Burnt patch**	**Pit**	**Hearth**	**Midden**	**floor**	**hearth**	**Floor**
Area: PRN		**B2: RHC.1**	**B2: RHC.2**	**B2: RHE deposit**	**B2: passageway to RHA**	**B2: RHB.2**	**B2: RHB.1**	**B2: RHB.1**
Period		**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**
No. fgts.		**3500+**	**5000+**	**1200+**	**6000+**	**1000+**	**3500+**	**1400+**
Max. size (mm)		**20**	**21**	**13**	**13**	**15**	**15**	**15**
Latin	**Vernacular**							
ROSACEAE								
Salix / Populus	Willow / Poplar	100			50	100	22	24
Quercus	Oak		100	100	50		78	76
Indeterminate	Indeterminate							

Sample Number		**430**	**444**	**448**	**449**	**466**	**470**	**473**	**476**
Feature Number		**91737**	**91776**		**91785**	**91805**	**91785**	**91914**	
Context Number		**91738**	**91777**	**90924**	**91786**	**91882**	**91786**	**91915**	**91011**
Feature type		**Pit**	**Pit**	**stony layer**	**Pit**	**wall**	**Pit**	**posthole**	**Platform under RHA**
Area: PRN		**B2: RHC.1**	**B2: RHB.1**	**B2: RHA**	**B2: RHB.1**	**B2: Pre-RHC**	**B2: RHB.1**	**B2: RHB.2**	**B2: platform**
Period		**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**	**Early Iron Age**
No. fgts.		**1900+**	**2000+**	**1600+**	**2000+**	**11,000+**	**3000+**	**1700+**	**2500+**
Max. size (mm)		**22**	**12**	**18**	**17**	**13**	**20**	**14**	**12**
Latin	**Vernacular**								
Corylus avellana	Hazel				5				
Salix / Populus	Willow / Poplar			82	28	65	61	43	41
Quercus	Oak	100	100	18	68	35	39	57	59
Indeterminate	Indeterminate								

Sample Number		**495**	**501**	**555**	**606**	**682**	**683**	**684**
Feature Number					**92328**			
Context Number		**91906**	**92059**	**91607**	**92327**	**92141**	**92147**	**92148**
Feature type		**Platform under RHE**	**Occupation layer**	**Occupation layer**	**pit**	**hearth**	**Floor/hearth base**	**Soil/turf layer**
Area: PRN		**B2: platform**	**B2: passageway to RHA**	**B2: passageway to RHA**	**B2: RHE.1**	**B2: RHE.1**	**B2: RHE.1**	**B2: RHE.1**
Period		**Early Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**	**Early Iron Age**
No. fgts.		**5000+**	**4800+**	**1200+**	**1000+**	**1000+**	**1000+**	**3200+**
Max. size (mm)		**19**	**15**	**16**	**13**	**21**	**12**	**20**
Latin	**Vernacular**							
Salix / Populus	Willow / Poplar	32		22	5	8	100	29
Quercus	Oak	68	100	78	95	92		71
Indeterminate	Indeterminate							

Sample Number		**685**	**710**	**713**	**716**	**810**	**972**	**996**	**5015**
Feature Number					**92768**	**93080**		**93254**	**93367**
Context Number		**92145**	**92633**	**92691**	**92769**	**92948**	**93171**	**93225**	**93365**
Feature type		**Hearth deposit**	**stone surface**	**Charcoal patch**	**posthole**	**Posthole**	**Old ground surface**	**trough**	**Post hole**
Area: PRN		**B2: RHE.1**	**F1: structure G.2**	**F1: structure G.1**	**F1: Bronze Age?**	**F1: RHI**	**F1**	**F1: group 93308**	**F1: RHI**
Period		**Iron Age**	**Iron Age**	**Iron Age**	**Bronze Age?**	**Iron Age**	**Bronze Age?**	**Romano-British??**	**Iron Age**
No. fgts.		**5000+**	**100+**	**2000+**	**150+**	**4500+**	**800+**	**200+**	**3500+**
Max. size (mm)		**15**	**11**	**19**	**21**	**14**	**13**	**11**	**14**
Latin	**Vernacular**								
Corylus avellana	Hazel						15	18	
Salix / Populus	Willow / Poplar				16	31	30	5	21
Quercus	Oak	100	100	100	84	69	55	71	79
Fraxinus excelsior	Ash							6	

Table XIX.3.2: PRN 14602 – Area K2

Sample Number		**1003**
Feature Number		**20077**
Context Number		**20078**
Feature type		**Pit**
Area: PRN		**K2: PRN 14602**
Period		**Iron Age/RB??**
No. fgts.		**400+**
Max. size (mm)		**23**
Latin	**Vernacular**	
Quercus	Oak	100

Table 3: PRN 18406 – Area E

Sample Number		**821**	**850**	**860**	**870**	**871**	**874**	**875**	**891**	**892**	**894**
Feature Number		**31016**	**31023**	**31082**	**31147**	**31147**	**31138**	**31138**	**31212**		
Context Number		**31004**	**31022**	**31024**	**31148**	**31149**	**31139**	**31140**	**31208**	**31209**	**31207**
Feature type		**posthole**	**Pit**	**hollow**	**pit**	**pit**	**pit**	**pit**	**pit**	**Layer**	**Burnt patch**
Area: PRN		**E: PRN 18406**	**E: PRN 18406**	**E: PRN 18406**	**E: PRN 18406**	**E: PRN 18406**	**E: PRN 18406**	**E: PRN 18406**	**E: PRN 18406**	**E: PRN 18406**	**E: PRN 18406**
Period		**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**
No. fgts.		**1700+**	**600+**	**3000+**	**400+**	**2000+**	**3600+**	**300+**	**9000+**	**300+**	**3000+**
Max. size (mm)		**15**	**22**	**14**	**10**	**21**	**33**	**21**	**28**	**11**	**10**
Latin	**Vernacular**										
Corylus avellana	Hazel			18			100				
Salix / Populus	Willow / Poplar			6	11			17			
Quercus	Oak	100	100	76	89	100		83	100	100	100

Sample Number		**924**	**961**	**967**	**969**	**1559**	**1565**
Feature Number		**31509**	**31595**	**31595**	**31610**	**31631**	**31640**
Context Number		**31510**	**31956**	**31602**	**31611**	**31632**	**31641**
Feature type		**Pit**	**pit**	**Pit**	**posthole**	**posthole**	**posthole**
Area: PRN		**E: PRN 18406**	**E: PRN 18406**	**E: PRN 18406**	**E: PRN 18406**	**E: PRN 18406**	**E: PRN 18406**
Period		**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**
No. fgts.		**700+**	**20,000+**	**700+**	**1000+**	**100+**	**100+**
Max. size (mm)		**14**	**25**	**21**	**29**	**13**	**26**
Latin	**Vernacular**						
Corylus avellana	Hazel		23	22			
Salix / Populus	Willow / Poplar	38					
Quercus	Oak	62	77	78	100	100	100

Table 4: PRN 31570 – Area H

Sample Number		**92**	**1064**	**1065**	**1088**		**1106**	**1124**	**1126**	**1127**
Feature Number		**20047**	**50044**	**50044**	**50059**	**50044**	**50044**	**50116**	**50116**	**50107**
Context Number		**20048**	**02100**	**50045**	**50060 / 50061**	**02100**	**02100 / 50045**	**50108**	**50110**	**50106**
Feature type		**posthole**	**Hearth pit**	**Hearth pit**	**pit**	**Hearth pit**	**Hearth pit**	**Hearth pit**	**Hearth pit**	**Pit**
Area: PRN		**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**
Period		**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**
No. fgts.		**200+**	**35,000+**	**6000+**	**2500+**	**40,000+**	**5000+**	**4000+**	**7000+**	**5000+**
Max. size (mm)		**14**	**32**	**17**	**16**	**52**	**21**	**11**	**15**	**23**
Latin	**Vernacular**									
ROSACEAE					22					
Alnus glutinosa	Alder	5								
Corylus avellana	Hazel	43		55	40			34		
Quercus	Oak	52	100	45	38	100	100	66	100	100

Sample Number		**1128A**	**1128B**	**1130**	**1141**	**1143**	**1144**	**1146**	**1155**
Feature Number		**50116**	**50116**	**50120**	**50116**	**50133**	**50126**	**50133**	**50133**
Context Number		**50115**	**50115**	**50117**	**50122**	**50124**	**50125**	**50127**	**50132**
Feature type		**Hearth pit**	**Hearth pit**	**Pit**	**Hearth pit**	**Hearth pit**	**pit**	**Hearth pit**	**Hearth pit**
Area: PRN		**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**
Period		**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**
No. fgts.		**6000+**	**6500+**	**5000+**	**500+**	**35,000+**	**3000+**	**2000+**	**23,000+**
Max. size (mm)		**13**	**15**	**25**	**14**	**21**	**20**	**15**	**32**
Latin	**Vernacular**								
Salix / Populus	Willow / Poplar				22				8
Quercus	Oak	10	100	100	78	100	100	100	92

Sample Number		**1164**	**1167**	**1168**	**1169**	**1170**	**1171**	**1172**	**1173**
Feature Number		**50145**	**50145**	**50164**	**50145**	**50145**	**50145**	**50145**	**50145**
Context Number		**50147**	**50154**	**50159**	**50153**	**50161**	**50161**	**50163**	**50170**
Feature type		**Hearth pit**	**Hearth pit**	**posthole**	**Hearth pit**	**Hearth pit**	**Hearth pit**	**Hearth pit**	**Hearth pit**
Area: PRN		**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**
Period		**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**
No. fgts.		**5000+**	**800+**	**1700+**	**2600+**	**7000+**	**4000+**	**10,000+**	**4000+**
Max. size (mm)		**24**	**25**	**15**	**27**	**26**	**25**	**16**	**17**
Latin	**Vernacular**								
Corylus avellana	Hazel			16					
Salix / Populus	Willow / Poplar			7					
Quercus	Oak	100	100	77	100	100	100	100	100

Sample Number		**1174**	**1175**	**1178**	**1186**	**1188**	**1191**	**1192**	**1193**	**1220**

Feature Number		**50166**	**50173**	**50178**	**50182**	**50179**	**50179**	**50179**	**50176**	**50207**
Context Number		**50165**	**50171**	**50177**	**50183**	**50189**	**50190**	**50191**	**50148**	**50206**
Feature type		**Beam slot**	**posthole**	**Posthole**	**Posthole**	**Posthole**	**Posthole**	**Posthole**	**Gully**	**Hearth**
Area: PRN		**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**
Period		**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**
No. fgts.		**1000+**	**1000+**	**2000+**	**3000+**	**2000+**	**900+**	**500+**	**20,000+**	**1000+**
Max. size (mm)		**14**	**16**	**11**	**31**	**19**	**28**	**15**	**21**	**15**
Latin	**Vernacular**									
Corylus avellana	Hazel	22		20				42	18	
Salix / Populus	Willow / Poplar	11		19						
Quercus	Oak	67	100	61	100	100	100	58	82	100

Sample Number		**1236**	**1241**	**1245**	**1263**	**1266**	**1267**	**1269**	**1283**	**1284**	**5512**
Feature Number		**50136**	**50232**	**50232**	**50166**	**50248**	**50166**	**50167**	**50164**	**50164**	**50145**
Context Number		**50135**	**50233**	**50235**	**50213**	**50247**	**50213**	**50168**	**50102**	**50159**	**50162**
Feature type		**Slot**	**Beam slot**	**Beam slot**	**Beam slot**	**Posthole**	**Beam slot**	**posthole**	**Posthole**	**Posthole**	**Hearth pit**
Area: PRN		**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**	**H: PRN 31570**
		Early Neolithic	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**
No. fgts.		**300+**	**300+**	**1100+**	**600+**	**2000+**	**1000+**	**800+**	**600+**	**500+**	**400+**
Max. size (mm)		**17**	**14**	**15**	**25**	**16**	**15**	**13**	**20**	**14**	**46**
Latin	**Vernacular**										
Quercus	Oak	100	100	100	100	100	100	100	100	100	100

Table XIX.3.5: PRN 31571 – Area M

Sample Number		**1336**	**1343**	**1353**	**1361**	**1368**	
Feature Number		**40071**	**40085**	**40103**	**40117**	**40137**	
Context Number		**40072**	**40086 / 40087**	**40104**	**40118**	**40138**	
Feature type		**pit**	**Pit**	**pit**	**pit**	**Pit**	
Area: PRN		**M4: PRN 31571**	**M4: PRN 31571**	**M4: PRN 31571**	**M4: PRN 31571**	**M4: PRN 31571**	
Period		**Prehistoric?**	**Prehistoric?**	**Prehistoric**	**Prehistoric**	**Prehistoric**	
No. fgts.		**800+**	**1000+**	**700+**	**500+**	**9000+**	
Max. size (mm)		**9**	**23**	**26**	**17**	**15**	
Latin	**Vernacular**						
ROSACEAE				59			
Corylus avellana	Hazel		22	33			
Salix / Populus	Willow / Poplar		6	8			
Quercus	Oak	100	72		100	100	

Table XIX.3.6: PRN 31572 – Area Ia

Sample Number		**88**	**1101**	**1102**	**1112**	**1113**	**1115**
Feature Number		**18063**	**21212**	**21210**	**21219**	**21219**	**21221**
Context Number		**18064**	**21213**	**21211**	**21220**	**21224**	**21222**
Feature type		**pit**	**pit**	**pit**	**pit**	**Pit**	**Pit**
Area: PRN		**I: PRN 31572**	**Ia: PRN 31572**	**Ia: PRN 31572**	**Ia: PRN 31572**	**Ia: PRN 31572**	**Ia: PRN 31572**
Period		**Mid Neolithic**	**Mid Neolithic**	**Mid Neolithic**	**Mid Neolithic**	**Mid Neolithic**	**Mid Neolithic**
No. fgts.		**3000+**	**100+**	**100+**	**500+**	**1000+**	**7000+**
Max. size (mm)		**17**	**10**	**10**	**16**	**14**	**19**
Latin	**Vernacular**						
Corylus avellana	Hazel	30					
Quercus	Oak	70	100	100	100	100	100

Table XIX.3.7: PRN 31573 – Area K9

Sample Number		**5145**	**5146**	**5147**	**5148**	**5150**	**5159**	**5160**
Feature Number		**80594**	**80594**	**80602**	**80606**	**80606**	**80686**	**80686**
Context Number		**80593**	**80638**	**80601**	**80605**	**80609**	**80684**	**80685**
Feature type		**pit**	**pit**	**pit**	**Pit**	**Pit**	**Pit**	**pit**
Area: PRN		**K9: PRN 31573**	**K9: PRN 31573**	**K9: PRN 31573**	**K9: PRN 31573**	**K9: PRN 31573**	**K9: PRN 31573**	**K9: PRN 31573**
Period		**Mid Neolithic**	**Mid Neolithic**	**Mid Neolithic**	**Mid Neolithic**	**Mid Neolithic**	**Mid Neolithic**	**Mid Neolithic**
No. fgts.		**400+**	**1000+**	**1000+**	**700+**	**300+**	**6,000+**	**200+**
Max. size (mm)		**11**	**18**	**14**	**16**	**16**	**26**	**18**
Latin	**Vernacular**							
Corylus avellana	Hazel	52	89	50		65		1
Salix / Populus	Willow / Poplar	12						2
Quercus	Oak	36	11	50	100	35	100	7

Table XIX.3.8: PRN 31574 – Area D3

Sample Number		**1180**	**1181**	**1184**	**1185**	**1190**
Feature Number		**60093**	**60093**	**60125**	**60135**	**60162**
Context Number		**60092**	**60100**	**60124**	**60136**	**60163**
Feature type		**pit**	**Pit**	**Hearth**	**pit**	**Pit**
Area: PRN		**D3: PRN 31574**	**D3: PRN 31574**	**D3: PRN 31574**	**D3: PRN 31574**	**D3: PRN 31574**
Period		**Mid Neolithic**	**Mid Neolithic**	**Mid Neolithic**	**Mid Neolithic**	**Mid Neolithic**
No. fgts.		**2000+**	**2000+**	**100+**	**600+**	**1000+**
Max. size (mm)		**15**	**19**	**17**	**15**	**17**
Latin	**Vernacular**					
Corylus avellana	Hazel	20	32	74	23	75
Salix / Populus	Willow / Poplar				8	
Quercus	Oak	80	68	26	69	25

Table XIX.3.9: PRN 31578 – Area J

Sample Number		**1205**	**1214**
Feature Number		**70039**	**70062**
Context Number		**70038**	**70061**
Flot Number			
Feature type		**Posthole**	**Posthole**
Area: PRN		**J: PRN 31578**	**J: PRN 31578**
Period		**Bronze Age?**	**Bronze Age?**
No. fgts.		**800+**	**200+**
Max. size (mm)		**26**	**12**
Latin	**Vernacular**		
Corylus avellana	Hazel		86
Quercus	Oak	100	14

Table XIX.3.10: PRN 31580 – Area J

Sample Number		**1210**
Feature Number		**70054**
Context Number		**70053**
Flot Number		
Feature type		**pit**
Area: PRN		**J: PRN 31580**
		Bronze Age
No. fgts.		**300+**
Max. size (mm)		**10**
Latin	**Vernacular**	
Salix / Populus	Willow / Poplar	
Quercus	Oak	100

Table XIX.3.11: PRN 31581 – Area J

Sample Number		**5807**
Feature Number		**70452**
Context Number		**70451**
Flot Number		
Feature type		**Posthole**
Area: PRN		**J: PRN 31581**
Period		**Bronze Age?**
No. fgts.		**1000+**
Max. size (mm)		**11**
Latin	**Vernacular**	
Salix / Populus	Willow / Poplar	83
Quercus	Oak	17

Table XIX.3.12: PRN 31582 – Area E

Sample Number		**900**	**917**	**922**	**947**	**952**	**955**	**956**	**960**
Feature Number		**31283**	**31415**	**31289**	**31415**	**31523**			**31593**
Context Number		**31284**	**31370**	**31288**	**31561**	**31559**	**31422**	**31429**	**31594**
Feature type		**trough**	**Well**	**Trough**	**well**	**Trough**	**Burnt mound**	**Burnt mound**	**well**
Area: PRN		**E: PRN 31582**	**E: PRN 31582**	**E: PRN 31582**	**E: PRN 31582**	**E: PRN 31582**	**E: PRN 31582**	**E: PRN 31582**	**E: PRN 31582**
Period		**Beaker period**	**Beaker period**	**Beaker period**	**Beaker period**	**Beaker period**	**Beaker period**	**Beaker period**	**Beaker period**
No. fgts.		**500+**	**300+**	**1300+**	**700+**	**600+**	**2600+**	**3100+**	**1500+**
Max. size (mm)		**14**	**12**	**13**	**12**	**15**	**13**	**20**	**12**
Latin	**Vernacular**								
Corylus avellana	Hazel	30	25	17		9	5	31	23
Salix / Populus	Willow / Poplar	17	10	8		11	23	54	21
Quercus	Oak	53	65	75	100	80	72	15	56
Indeterminate	Indeterminate								

Table XIX.3.13: PRN 31583 – Area E

Sample Number		**1450A**	**1450B**	**1452**	**1453**
Feature Number				**31008**	**31008**
Context Number		**31002**	**31002**	**31017**	**31018**
Feature type		**Burnt mound**	**Burnt mound**	**trough**	**Trough**
Area: PRN		**E: PRN 31583**	**E: PRN 31583**	**E: PRN 31583**	**E: PRN 31583**
Period		**Late Neolithic**	**Late Neolithic**	**Late Neolithic**	**Late Neolithic**
No. fgts.		**900+**	**300+**	**3000+**	**700+**
Max. size (mm)		**10**	**8**	**14**	**13**
Latin	**Vernacular**				
Corylus avellana	Hazel	36	50	56	
Quercus	Oak	64	50	44	100

Table XIX.3.14: PRN 31584 – Area E

Sample Number		**923**
Feature Number		**31436**
Context Number		**31435**
Feature type		**Earth oven/burnt mound pit?**
Area: PRN		**E: PRN 31584**
Period		**Bronze Age?**
No. fgts.		**38,000+**
Max. size (mm)		**30**
Latin	**Vernacular**	
Salix / Populus	Willow / Poplar	23
Quercus	Oak	77

Table XIX.3.15: PRN 31585 – Area E

Sample Number		**908**	**925**
Feature Number		**31306**	**31513**
Context Number		**31304**	**31512**
Feature type		**Earth oven**	**Earth oven**
Area: PRN		**E: PRN 31585**	**E: PRN 31585**
Period		**Bronze Age**	**Bronze Age**
No. fgts.		**500+**	**800+**
Max. size (mm)		**13**	**17**
Latin	**Vernacular**		
Corylus avellana	Hazel	36	21
Salix / Populus	Willow / Poplar		8
Quercus	Oak	64	71

Table XIX.3.16: PRN 31586 – Area A

Sample Number		**100**
Feature Number		**07023**
Context Number		**07022**
Feature type		**pit**
Area: PRN		**A: PRN 31586**
Period		**Prehistoric?**
No. fgts.		**8000+**
Max. size (mm)		**25**
Latin	**Vernacular**	
Corylus avellana	Hazel	73
Salix / Populus	Willow / Poplar	8
Quercus	Oak	19

Table XIX.3.17: PRN 31587 – Area L5

Sample Number		**5138**	**5139**
Feature Number		**03078**	**03082**
Context Number		**03080**	**03083**
Feature type		**Trough**	**trough**
Area: PRN		**L5: PRN 31587**	**L5: PRN 31587**
Period		**Bronze Age?**	**Bronze Age?**
No. fgts.		**2500+**	**1800+**
Max. size (mm)		**26**	**13**
Latin	**Vernacular**		
Corylus avellana	Hazel		11
Salix / Populus	Willow / Poplar	13	23
Quercus	Oak	87	67

Table XIX.3.18: PRN 31588 – Area K1

Sample Number		**1004**	**1020**	**1038**	**1045**	**1047**	**1051**	**1052**	**1053**
Feature Number		**20081**	**18124**	**18156**	**18169**	**19113**	**18169**	**19117**	**18172**
Context Number		**19110**	**18125**	**18157**	**18171**	**19114**	**18170**	**19118**	**18173**
Feature type		**pit (with cordoned urn)**	**pit**	**Charcoal patch**	**posthole**	**Pit**	**posthole**	**Pit**	**posthole**
Area: PRN		**K1: PRN 31588**	**K1: PRN 31588**	**K1: PRN 31588**	**K1: PRN 31588**	**K1: PRN 31588**	**K1: PRN 31588**	**K1: PRN 31588**	**K1: PRN 31588**
Period		**Bronze Age**	**Bronze Age**	**Bronze Age?**	**Prehistoric?**	**Prehistoric?**	**Prehistoric?**	**Prehistoric?**	**Prehistoric?**
No. fgts.		**1800+**	**10,000+**	**3000+**	**9000+**	**4000+**	**3500+**	**800+**	**6000+**
Max. size (mm)		**13**	**16**	**18**	**14**	**16**	**16**	**13**	**27**
Latin	**Vernacular**								
ROSACEAE			11						
Corylus avellana	Hazel	40						55	
Salix / Populus	Willow / Poplar	50							
Quercus	Oak	10	89	100	100	100	100	45	100

Table XIX.3.19: PRN 31589 – Area M

Sample Number		**1398**	**1402**
Feature Number			
Context Number		**40198 / 40199 / 40200**	**40199**
Feature type		**Tree hollow/animal burrowing?**	**Tree hollow/animal burrowing?**
Area: PRN		**M4: PRN 31589**	**M4: PRN 31589**
Period		**Prehistoric**	**Prehistoric**
No. fgts.		**4000+**	**1500+**
Max. size (mm)		**14**	**20**
Latin	**Vernacular**		
Quercus	Oak	100	100

Table XIX.3.20: PRN 31591 – Area M

Sample Number		**1056**	**1058**	**1061**	**1066**	**1067**	**1068**
Feature Number		**22059**	**22072**	**22072**	**22082**	**22082**	**22082**
Context Number		**22058**	**22073**	**22077**	**22083**	**22084**	**22085**
Feature type		**Pit**	**Ditch**	**Ditch**	**Ditch**	**Ditch**	**Ditch**
Area: PRN		**M: PRN 31591**	**M: PRN 31591**	**M: PRN 31591**	**M: PRN 31591**	**M: PRN 31591**	**M: PRN 31591**
Period		**Bronze Age?**	**Bronze Age**	**Bronze Age**	**Bronze Age**	**Bronze Age**	**Bronze Age**
No. fgts.		**3000+**	**2500+**	**6000+**	**4500+**	**4000+**	**3000+**
Max. size (mm)		**15**	**13**	**12**	**20**	**18**	**12**
Latin	**Vernacular**						
Quercus	Oak	100	100	100	100	100	100

Table XIX.3.21: PRN 31592 – Area B1

Sample Number		**6**	**7**	**13**	**14**	**15**	**17**	**18**	**22**	**25**	**27**
Feature Number		**6088**	**07015**	**8048**	**6090**	**10001**	**10001**	**10001**	**07057**	**5039**	**03024**
Context Number		**6089**	**07051**	**8047**	**3026**	**10002/3**	**10002**	**10003**	**07056**	**3023**	**10010 / 10011**
Feature type		**pit**	**pit**	**pit**	**Pit**	**pit**	**pit**	**pit**	**pit?**	**pit**	**Pit**
Area: PRN		**B1: PRN 31592**	**B1: PRN 31592**	**B1: PRN 31592**	**B1: PRN 31592**	**B1: PRN 31592**	**B1: PRN 31592**	**B1: PRN 31592**	**B1: PRN 31592**	**B1: PRN 31592**	**B1: PRN 31592**
Period		**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**
No. fgts.		**1000+**	**2000+**	**900+**	**1100+**	**800+**	**800+**	**1000+**	**5000+**	**300+**	**3000+**
Max. size (mm)		**11**	**17**	**7**	**9**	**15**	**14**	**15**	**16**	**6**	**17**
Latin	**Vernacular**										
ROSACEAE						75	55				
Alnus glutinosa	Alder								41		
Corylus avellana	Hazel								16		
Salix / Populus	Willow / Poplar			36		25	25			56	48
Quercus	Oak	22	100	35	32		20	72	43		52
Fraxinus excelsior	Ash										
Indeterminate	Indeterminate	78		29	68			28		44	

Sample Number		**28**	**29**	**30**	**53**	**57**	**59**	**62**	**63**
Feature Number		**03024**	**03024**	**10012**	**13011**	**04017**	**13013**	**11017**	**11019**
Context Number		**10011**	**10010**	**10013**	**13012**	**10018**	**13016**	**11018**	**11020 /11021**
Feature type		**Pit**	**pit**	**Pit**	**pit**	**Pit**	**pit**	**Pit**	**Pit**
Area: PRN		**B1: PRN 31592**	**B1: PRN 31592**	**B1: PRN 31592**	**B1: PRN 31592**	**B1: PRN 31592**	**B1: PRN 31592**	**B1: PRN 31592**	**B1: PRN 31592**
Period		**Iron Age**	**Iron Age**	**Iron Age**	**Unknown**	**Iron Age**	**Unknown**	**Iron Age**	**Iron Age**
No. fgts.		**1000+**	**4000+**	**11,000+**	**3000+**	**9000+**	**500+**	**8500+**	**10,000+**
Max. size (mm)		**17**	**21**	**26**	**24**	**23**	**10**	**16**	**26**
Latin	**Vernacular**								
ROSACEAE							83		
Alnus glutinosa	Alder								
Corylus avellana	Hazel					16			
Salix / Populus	Willow / Poplar	18				32		23	8
Quercus	Oak	70	100	100	100	52		77	92
Fraxinus excelsior	Ash	12							
Indeterminate	Indeterminate						17		

Sample Number		**65**	**66**	**1078**
Feature Number		**11019**	**11019**	**21192**
Context Number		**11020**	**11021**	**21193**
Feature type		**Pit**	**pit**	**pit**
Area: PRN		**B1: PRN 31592**	**B1: PRN 31592**	**B1: PRN 31592**
Period		**Iron Age**	**Iron Age**	**Iron Age**
No. fgts.		**2500+**	**4000+**	**20,000+**
Max. size (mm)		**23**	**35**	**16**
Latin	**Vernacular**			
ROSACEAE				
Corylus avellana	Hazel	15	10	
Salix / Populus	Willow / Poplar	14	23	71
Quercus	Oak	71	67	29

Table XIX.3.22: PRN 31593 – Area L3

Sample Number		**1137**
Feature Number		**22171**
Context Number		**22145**
Feature type		**Building terrace**
Area: PRN		**L3**
Period		**Iron Age**
No. fgts.		**4000+**
Max. size (mm)		**16**
Latin	**Vernacular**	
Quercus	Oak	100

Table XIX.3.23: PRN 31595 – Area K7

Sample Number		**1485**	**1535**
Feature Number			
Context Number		**80358**	**80334**
Feature type		**Roof collapse**	**Roof collapse**
Area: PRN		**K7: PRN 31595**	**K7: PRN 31595**
Period		**Iron Age**	**Iron Age**
No. fgts.		**900+**	**800+**
Max. size (mm)		**19**	**15**
Latin	**Vernacular**		
Quercus	Oak	100	100

Table XIX.3.24: PRN 31596 – Area K9

Sample Number		**5125**	**5128**	**5132**	**5134**	**5135**	**5141**	**5603**	**5604**	**5607**
Feature Number		**80523**	**80541**	**80556**	**80562**	**80567**	**80651**	**80938**	**80938**	
Context Number		**80524**	**80542**	**80555**	**80561**	**80566**	**80652**	**80840**	**80866**	**80846**
Feature type		**Pit**	**posthole**	**pit**	**Pit**	**Hollow**	**Pit**	**Boulder hearth**	**Boulder hearth**	**Layer**
Posthole group/ structure		**Group C**	**Group A**	**Group B**	**Group B**	**Group B**	**Group A**	**Structure 80527**	**Structure 80527**	**Structure 80527**
Period		**Romano-British**	**Romano-British**	**Romano-British**	**Romano-British**	**Romano-British**	**Prehistoric**	**Romano-British**	**Romano-British**	**Romano-British**
No. fgts.		**12,000+**	**800+**	**800+**	**1000+**	**2000+**	**4000+**	**1000+**	**1000+**	**2000+**
Max. size (mm)		**41**	**15**	**22**	**16**	**18**	**20**	**14**	**10**	**26**
Latin	**Vernacular**									
ROSACEAE						15				
Corylus avellana	Hazel							78	17	
Salix / Populus	Willow / Poplar	30		25		52				
Quercus	Oak	70	100	75	100	33	100	22	83	100

Sample Number		**5612**	**5613**	**5616**	**5619**	**5622**	**5637**	**5638**
Feature Number								
Context Number		**80893**	**80811**	**80807**	**80899**	**80884**	**80904**	**80904**
Feature type		**Demolition rubble**	**Floor?**	**Demolition rubble**	**Floor**	**Floor**	**occupation layer?**	**Occupation layer?**
Posthole group/ structure		**Structure 80527**	**Structure 80526**	**Structure 80527**	**Structure 80527**	**Structure 80527**	**Structure 80527**	**Structure 80527**
Period		**Romano-British**	**Romano-British**	**Romano-British**	**Romano-British**	**Romano-British**	**Romano-British**	**Romano-British**
No. fgts.		**800+**	**300+**	**500+**	**800+**	**2500+**	**200+**	**700+**
Max. size (mm)		**22**	**13**	**16**	**16**	**16**	**13**	**11**
Latin	**Vernacular**							
ROSACEAE								
Corylus avellana	Hazel	39		28	50			
Salix / Populus	Willow / Poplar			29				
Quercus	Oak	61	100	42	50	100	100	100

Sample Number		**5652**	**5653**	**5677**	**5712**
Feature Number		**80938**			**81143**
Context Number		**80939**	**80847**	**80847**	**81144**
Feature type		**Boulder hearth**	**Floor?**	**floor**	**Pit**
Posthole group/ structure		**Structure 80527**	**Structure 80527**	**Structure 80527**	**Structure 80527**
Period		**Romano-British**	**Romano-British**	**Romano-British**	**Romano-British**
No. fgts.		**300+**	**600+**	**600+**	**1100+**
Max. size (mm)		**10**	**10**	**38**	**16**
Latin	**Vernacular**				
Corylus avellana	Hazel		33		52
Salix / Populus	Willow / Poplar				
Quercus	Oak	100	67	100	48

Table XIX.3.25: PRN 31597 – Area K9 / J

Sample Number		**5861**	**5865**	**5866**	**5867**
Feature Number		**70692**	**70692**	**70692**	**70692**
Context Number		**70693**	**70693**	**70694**	**70696**
Feature type		**Posthole**	**Posthole**	**Posthole**	**posthole**
Area: PRN		**J: PRN 31597**	**J: PRN 31597**	**J: PRN 31597**	**J: PRN 31597**
Period		**Roman?**	**Roman?**	**Roman?**	**Roman?**
No. fgts.		**1000+**	**1300+**	**10,000+**	**15,000+**
Max. size (mm)		**19**	**24**	**17**	**25**
Latin	**Vernacular**				
Quercus	Oak	100	100	100	100

Table XIX.3.26: PRN 31599 – Area I

Sample Number		**1010**
Feature Number		**21039**
Context Number		**21041**
Feature type		**Earth oven**
Area: PRN		**I: PRN 31599**
Period		**Iron Age**
No. fgts.		**15,000+**
Max. size (mm)		**26**
Latin	**Vernacular**	
Quercus	Oak	100

Table XIX.3.27: PRN 31601 – Area K7

Sample Number		**741**	**742**	**787**	**788**	**789**
Feature Number		**80056**	**80056**	**80056**	**80056**	**80056**
Context Number		**80057**	**80058**	**80125**	**80126**	**80127**
Feature type		**Corn dryer**	**Corn dryer**	**Corn dryer**	**Corn dryer**	**Corn dryer**
Area: PRN		**K7: cemetery**	**K7: cemetery**	**K7: cemetery**	**K7: cemetery**	**K7: cemetery**
Period		**Early Medieval**	**Early Medieval**	**Early Medieval**	**Early Medieval**	**Early Medieval**
No. fgts.		**3000+**	**3000+**	**1500+**	**1500+**	**1000+**
Max. size (mm)		**46**	**24**	**19**	**26**	**21**
Latin	**Vernacular**					
	?Buckthorn	100		100	58	53
Alnus glutinosa	Alder		64			
Alnus / Corylus	Alder / Hazel				18	
Corylus avellana	Hazel					27
Quercus	Oak		46		24	20

Table XIX.3.28: PRN 31602 – Area K7

Sample Number		**1403**	**1404**
Feature Number		**80137**	**80137**
Context Number		**80139**	**80142**
Feature type		**Corn dryer**	**Corn dryer**
Area: PRN		**K7: PRN 31602**	**K7: PRN 31602**
Period		**Early Medieval**	**Early Medieval**
No. fgts.		**4800+**	**1000+**
Max. size (mm)		**21**	**19**
Latin	**Vernacular**		
Salix / Populus	Willow / Poplar	100	100

Table XIX.3.29: PRN 31603 – Area K1

Sample Number		**1026**	**1027**
Feature Number		**21051**	**21051**
Context Number		**21052**	**21053**
Feature type		**Corn dryer**	**Corn dryer**
Area: PRN		**K1: PRN 31603**	**K1: PRN 31603**
Period		**Early Medieval**	**Early Medieval**
No. fgts.		**1200+**	**2000+**
Max. size (mm)		**24**	**23**
Latin	**Vernacular**		
ROSACEAE		31	31
Corylus avellana	Hazel	28	7
Quercus	Oak	41	62

Table XIX.3.30: PRN 31604 – Area Ia

Sample Number		**1123**
Feature Number		**21229**
Context Number		**21231**
Feature type		**Corn dryer**
Area: PRN		**Ia: PRN 31604**
Period		**Early Medieval**
No. fgts.		**4000+**
Max. size (mm)		**17**
Latin	**Vernacular**	
ROSACEAE		8
Salix / Populus	Willow / Poplar	52
Quercus	Oak	25
Fraxinus excelsior	Ash	15

Table XIX.3.31: PRN 74831 – Area J

Sample Number		**1250**	**1251**	**1256**
Feature Number		**70173**	**70173**	**70181**
Context Number		**70171**	**70172**	**70182**
Feature type		**Pit**	**Pit**	**Pit**
Area: PRN		**J: PRN 74831**	**J: PRN 74831**	**J: PRN 74831**
		Mid Neolithic	**Mid Neolithic**	**Prehistoric**
No. fgts.		**8000+**	**10,000+**	**2500+**
Max. size (mm)		**17**	**23**	**25**
Latin	**Vernacular**			
ROSACEAE		11		
Corylus avellana	Hazel	42	67	81
Salix / Populus	Willow / Poplar	17		
Quercus	Oak	30	33	19

Table XIX.3.32: PRN 74832 – Area J

Sample Number		**5804**	**5809**	**5815**	**5822**
Feature Number		**70480**	**70503**	**70529**	**70529**
Context Number		**70479**	**70502**	**70528**	**70536**
Feature type		**Posthole**	**pit**	**Pit**	**pit**
Area: PRN		**J: PRN 74832**	**J: PRN 74832**	**J: PRN 74832**	**J: PRN 74832**
Period		**Late Neolithic**	**Late Neolithic**	**Late Neolithic**	**Late Neolithic**
No. fgts.		**1000+**	**300+**	**100+**	**400+**
Max. size (mm)		**21**	**19**	**12**	**22**
Latin	**Vernacular**				
Corylus avellana	Hazel		100	20	26
Salix / Populus	Willow / Poplar			30	14
Quercus	Oak	100		50	60

Table XIX.3. 33: PRN 76098 – Area I

Sample Number		**86**
Feature Number		**18059**
Context Number		**18060**
Feature type		**Pit**
Area: PRN		**I: PRN 76098**
Period		**Beaker?**
No. fgts.		**10,000+**
Max. size (mm)		**27**
Latin	**Vernacular**	
Quercus	Oak	100

Table XIX.3. 34: PRN 76100 – Area K9

Sample Number		**5600**	**5601**	**5602**	**5608**	**5609**	**5610**	**5611**
Feature Number		**80835**	**80835**	**80835**	**80835**	**80835**	**80835**	**80835**
Context Number		**80830**	**80837**	**80837**	**80889**	**80885**	**80882**	**80887**
Feature type		**Corn dryer**	**Corn dryer**	**Corn dryer**	**Corn dryer**	**Corn dryer**	**Corn dryer**	**Corn dryer**
Area: PRN		**K9: PRN 76100**	**K9: PRN 76100**	**K9: PRN 76100**	**K9: PRN 76100**	**K9: PRN 76100**	**K9: PRN 76100**	**K9: PRN 76100**
Period		**Early Medieval**	**Early Medieval**	**Early Medieval**	**Early Medieval**	**Early Medieval**	**Early Medieval**	**Early Medieval**
No. fgts.		**1200+**	**100+**	**700+**	**500+**	**800+**	**200+**	**400+**
Max. size (mm)		**24**	**15**	**15**	**14**	**13**	**11**	**12**
Latin	**Vernacular**							
Corylus avellana	Hazel	18				65	68	
Salix / Populus	Willow / Poplar	20	16			23		
Quercus	Oak	62	84	100	100	12	32	100

Table XIX.3.35: PRN 76101 – Area K9

Sample Number		**5669**	**5670**	**5681**	**5682**	**5685**
Feature Number		**80924**	**80924**	**80924**	**80924**	**80924**
Context Number		**80923**	**81006**	**81027**	**81034**	**81072**
Feature type		**Corn dryer**	**Corn dryer**	**Corn dryer**	**Corn dryer**	**Corn dryer**
Area: PRN		**K9: PRN 76101**	**K9: PRN 76101**	**K9: PRN 76101**	**K9: PRN 76101**	**K9: PRN 76101**
Period		**Early Medieval**	**Early Medieval**	**Early Medieval**	**Early Medieval**	**Early Medieval**
No. fgts.		**700+**	**5000+**	**500+**	**3000+**	**1800+**
Max. size (mm)		**16**	**34**	**18**	**16**	**21**
Latin	**Vernacular**					
Corylus avellana	Hazel	59	47	18	17	28
Salix / Populus	Willow / Poplar		8	63	20	
Quercus	Oak	41	45	19	63	72

Part XIX.4: Full analysis of charred plant remains from selected samples

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Introduction

An archaeological excavation was carried out by Gwynedd Archaeological Trust at Parc Cybi, Holyhead, centred on NGR SH 2555 8075, between January 2006 and February 2010. The site covers over 41 hectares of pasture land to the south of Holyhead on Holy Island (centred on SH 2555 8075). The terrain is characterised by rocky outcrops, often covered by gorse or rough grassland with marshy hollows between, and some better pastureland. The site lies between the A55 and Kingsland Road, with Lôn Trefignath running through its eastern side.

The excavated features ranged in date from the Mesolithic to the 19th century and the finds included pottery, lithics, glass, metal artefacts and palaeoenvironmental data. The major sites include a rectangular early Neolithic building of national and international importance. This seems to have been aligned on the Trefignath Chambered tomb and had firepits dug through the demolished remains of the building. Other early Neolithic settlement of a different character was also present on site and extensive activity continued into the mid and later Neolithic, providing the potential to contribute to the re-evaluation of Peterborough and Grooved Ware in this region. The Bronze Age was represented by a complex of ceremonial monuments, including a possible multiple-cist barrow, the ring ditch of a barrow and a deep-ditched enclosure. In relation to the standing stone in the middle of the site and the larger barrow excavated near Tw Mawr Farm to the north this suggests a ritual landscape of national importance. The period was also represented by two burnt mounds and a timber roundhouse that was poorly dated but probably of Bronze Age date. A settlement of stone roundhouses with complex stratigraphy was accompanied by several outlining roundhouses and other structures as well as possibly contemporary field boundaries. The extent and variety of Iron Age settlement on the site means that this has a very high potential for studying all aspects of settlement development and use in this period. Settlement focus seems to have shifted in the Roman period but activity continued. A group of structures seem to have had industrial and storage functions and running from them was a trackway with associated traces of a field system. A small early medieval cemetery was found on top of a hill, one of an important group on Holy Island. The use of the site into the high medieval period may be indicated by the smithing within the area of the cemetery and possibly by several corn driers. Excavation evidence has extended the knowledge of the changing field boundaries of the area gained from the historic maps and suggests early fields that might have a medieval or earlier origin.

A programme of soil sampling was implemented during the excavation, which included the collection of soil samples from sealed contexts. The aim of the sampling was:

To assess the type of preservation and the potential of the biological remains
To record any human activities undertaken on the site – both domestic and industrial
To provide information on the past environment of the area.
To provide suitable material for a comprehensive radiocarbon dating strategy.

Methods

Following selection, subsamples of raw sediment from the selected samples were processed. The samples were examined in the laboratory, where they were described using a pro forma. The subsamples were processed by staff at Gwynedd Archaeological Trust, using their standard water flotation methods. The samples were machine floated through a 0.5mm mesh, and the flot (the sum of the material from each sample that floats) was collected in a 0.25mm sieve. Heavy residues from selected samples were also sorted.

The flot was examined under a low-power binocular microscope at magnifications between x12 and x40. Identification was carried out using published keys (Jacomet 2006, Biejerinkc 1976, Jones – unpublished and Zohary & Hopf 2000), online resources (http://www.plantatlas.eu/za.php), the authors own reference collection. The full species list appears in Table XIX.4.1 at the end of this report. Taxonomy and nomenclature follow Stace (1997). Where identifications are uncertain, the abbreviation 'cf.' (*confer* or 'compares favourably with') is used. Fragments of cereal grains and grass seeds were quantified by scoring apical and embryo ends, with the largest group summed together with whole grains. Habitat information for the species was also gathered, and Table XIX.4.2 below reflects the habitats represented from the remains recorded in the samples.

Two previous assessments carried out by Grinter (this volume part XIX.1) and McKenna (this volume part XIX.2) highlighted thirty seven samples for full analysis of the charred plant macrofossil remains. These are listed below:

Sample Number	Feature Number	Context Number	Feature Type	Date	Area
241		90794	Layer	Iron Age	B2. RHA
538		92118	Occupation layer / deposit	Iron Age	B2. RHA
683		92147	Floor / hearth base	Iron Age	B2. rhe 1
685		92145	Hearth deposit	Iron Age	B2 . rhe 1
741	80056	80057	Corn drier	Early Medieval	K7
742	80056	80058	Corn drier	Early Medieval	K7
787	80056	80125	Corn drier	Early Medieval	K7
788	80056	80126	Corn drier	Early Medieval	K7
789	80056	80127	Corn drier	Early Medieval	K7
1004	20081	19110	Fill of cordoned urn pit 20081	Bronze Age	K1
1011	19075	19076	Pit	Mid Neolithic	I
1027	21051	21053	Corn drier	Early Medieval	K1
1101	21212	21213	Pit	Mid Neolithic	I
1102	21210	21211	Pit	Mid Neolithic	I
1103	21215	21216	Pit	Mid Neolithic	I
1108	21217	21218	Pit	Mid Neolithic	I
1112	21219	21220	Pit	Mid Neolithic	I
1113	21219	21231	Pit	Mid Neolithic	I
1116	22158	22156	Corn Drier	Early Medieval	B3
1117	22158	22157	Corn drier	Early Medieval	B3
1123	21229	21231	Corn Drier	Early Medieval	I
1126	50116	50110	Hearth in ENB	Early Neolithic	H
1128	50116	50115	Hearth in ENB	Early Neolithic	H
1136	22171	22144	Building terrace	Late Iron Age	L3 / B2
1137	22171	22145	Building terrace	Late Iron Age	L3
1184	60125	60124	Hearth with groove ware pits	Late Neolithic	D3
1186	50182	50183	Post hole in ENB	Early Neolithic	H
1190	60162	60163	Pit with groove ware pottery	Late Neolithic	D3
1403	80137	80139	Corn drier	Early Medieval	K7
1478		80334	Roof collapse in roundhouse 80248	Iron Age	K7
1535		80334	Roof collapse in roundhouse 80248	Iron Age	K7
5601	80835	80837	Corn drier	Early Medieval	K9
5602	80835	80837	Corn drier	Early Medieval	K9
5669	80924	80926	Corn drier	Early Medieval	K9
5693	80841	81073	Corn drier / firebox	Romano – British	K9
5804	70480	70479	Post hole with groove ware	Late Neolithic	J
5822	70529	70536	Pit with groove ware	Late Neolithic	J

Whilst undertaking the assessment of the samples (McKenna, this volume part XIX.2), it is worth noting that whilst the majority of the samples did not contain sufficient remains to warrant further work, many of them contained small quantities of charred plant macrofossils. These were mainly in the form of indeterminate cereal grain, chaff fragments and hazel nut shell fragments, but were in such small quantities that other than to state their presence, nothing of further interpretative value could be gained.

Results

The full list of species recovered from the samples can be seen in table XIX.4.1a – 1j at the end of the report. A brief outline of these on a sample by sample basis can be seen here:

Area B2

This area represents an Iron Age settlement with three stone built roundhouses and another roundhouse, possibly also with a stone wall, as well as numerous ancillary buildings, and a wall running through the settlement.

Area B2.RHA

Two samples from this area produced suites of plant macrofossils.

Sample 241 (90794) – layer – Iron Age. This sample was characterised by large quantities of cereal chaff stem fragments, with smaller quantities of spikelet forks and glume bases. A few cereal grains and weed seeds were also recorded. [This layer represents the use of the cobbled passage-way leading to roundhouse A].
Sample 538 (92118) – occupation layer / deposit – Iron Age. Like the previous sample, the assemblage was dominated by cereal chaff stem fragments with smaller quantities of spikelet forks and glume bases, and a few indeterminate cereal grains and weed seeds. [This layer proved to be part of the buried soil under the roundhouses and over the earlier stone platform].

Area B2.RHE
Sample 683 (92147) – floor / hearth base – Iron Age. The sample contained mainly chaff fragments. Wheat spikelet forks dominated the assemblage, along side emmer wheat spikelet forks and both wheat and emmer glume bases. Culms fragments and rachis internodes were also recorded with small amounts of weed seeds.
Sample 685 (92145) – hearth deposit - Iron Age. As above, the sample was dominated by chaff fragments. Wheat spikelet forks were the most frequently recorded remains, along with emmer wheat spikelet forks, and both wheat and emmer wheat glume bases. Culm fragments, internodes and weed seeds were also present.

Area B3
In this area was an isolated pit suspected as being a corn dryer. It was not dated but all other corn dryers on the site were dated to the early medieval period.
Sample 1116 (22156) [22158] – corn drier - ?early Medieval. This sample was a grain rich deposit. Indeterminate cereal grains were the most frequently recorded remain, with over 8000 present. Amongst the identifiable remains Barley dominated, with smaller amounts of oat and wheat grains, which are possibly cultivated given the presence of lemna bases. Weed seeds typically associated with cultivation were also recorded within the sample.
Sample 1117 (22157) [22158] – corn drier - ?early Medieval. The sample was very similar to Sample 1116 from the same feature, but with smaller quantities.
The samples both contained sprouted grains and detached embryos, which may be indicative of malting.

Area D3 – PRN 31574
This area represents late Neolithic activity in the form of a hearth and associated pits.
Sample 1184 (60124) [60125] – hearth – late Neolithic. The sample was dominated by hazel nut shell fragments, with over four hundred recorded. A very small number of indeterminate cereal grains were also present.
Sample 1190 (60163) [60162] – pit – late Neolithic. The sample was again dominated by hazel nut shell fragments with over one thousand present. Very small quantities of indeterminate cereal grains and weeds associated with cultivation were also present.

Area H – PRN 31570
This area represents a Neolithic rectangular building. The structure appears to have been sub divided internally into three separate compartments. Several hearth pits were located within the structure, but some cut structural features and must be later than the building – perhaps activity marking its demolition.
Sample 1126 (50110) [50116] – hearth – early Neolithic. The most frequently recorded remain was hazel nut shell fragments. Over one hundred indeterminate cereal grains were also present, alongside chaff fragments in the form of spikelet forks, glume base, culms and detached embryos.
Sample 1128 (50115) [50116] – hearth – early Neolithic. The most dominant macrofossil present was indeterminate cereal grains with small quantities of chaff fragments. Hazel nut shell fragments were also present in significant numbers.
Sample 1186 (50183) [50182] – post hole – early Neolithic. Hazel nut shell fragments were the most frequently recorded remain within the sample. Smaller numbers of indeterminate cereal grains and very small quantities of chaff fragments were also present.

Area I – PRN 76099, 31572 and 31604
This area contained a group of Middle Neolithic pits as well as other isolated pits, some of which were also Neolithic in date. A classic dumb-bell shaped corn dryer was dated to the Early Medieval period.
PRN 76099 - an isolated pit containing Fengate Ware pottery
Sample 1011 (19076) [19075] – pit – mid Neolithic. This sample contained only hazel nut shell fragments.
PRN 31572 - a mid Neolithic pit group
Sample 1101 (21213) [21212] – pit- mid Neolithic. The sample was dominated by hazel nut shell fragments with a minimal amount of indeterminate cereal grains.
Sample 1102 (21211) [21210] – pit – mid Neolithic. The sample contained only hazel nut shell fragments.

Sample 1103 (21216) [21215] – pit – mid Neolithic. The sample was dominated by hazel nut shell fragments, with very small quantities of indeterminate cereal grains.
Sample 1108 (21218) [21217] – pit – mid Neolithic. The sample was dominated by hazel nut shell fragments, with very small numbers of indeterminate cereal grains and grass seeds.
Sample 1112 (21220) [21219] – pit – mid Neolithic. The sample was dominated by hazel nut shell fragments, with very small numbers of indeterminate cereal grains and grass seeds.
Sample 1113 (21224) [21219] – pit – mid Neolithic. The sample was dominated by hazel nut shell fragments, with very small numbers of indeterminate cereal grains and grass seeds.
PRN 31604 - A dumb bell shaped corn drier feature [21229] dating to the Early Medieval period
Sample 1123 (21213) [21229] – pit / corn drier – Early Medieval. The sample was dominated by indeterminate cereal grains, with over eight thousand recorded. Amongst the identifiable remains, oat was the most numerous species present, with grains, awn fragments and lemna bases also present. Barley grains, alongside rachis internodes and glume bases were also recorded. Wheat was also present with small amouns of spikelet forks and glume bases. Weed seeds typically associated with cultivation were also present.

Area J – PRN 74832
Two large intercutting pits with a complex sequence of fills dating to the late Neolithic period were recorded in this area.
Sample 5804 (70479) [70480] – post hole – late Neolithic. The sample contained only hazel nut shell fragments.
Sample 5822 (70536) [70529] – pit – late Neolithic. The samples contained only hazel nut shell fragments.

Area K1 – PRN 31588 and 31603
PRN 31588 - This area of activity was defined by a series of heavily truncated post holes defining a timber roundhouse, with an inner post ring and an outer wall, possible dating to the Bronze Age. Around this structure were pits of possibly various dates. The sample comes from a pit containing sherds of an Early Bronze Age cordoned urn.
Sample 1004 (19110) [20081] – fill of urn pit – Bronze Age. The sample was dominated by indeterminate cereal grains. Amongst the identifiable remains, wheat was the dominant species, with barley also present. Small quantities of chaff and weed seeds were also recorded.
PRN 31603 - A figure of eight shaped corn drier, dating to the Early Medieval period was the activity recorded in this area.
Sample 1027 (21053) [21051] – corn drier – Early Medieval. The sample was dominated by indeterminate cereal grains. Where remains were identifiable, barley was the most frequently recorded species, including rachis fragments. Oat grains were also present, along with more awn fragments than grains. Cereal chaff and weed seeds were also present within the sample.

Area K7 – PRN 31601, 31602 and 31595
PRN 31601 was an area characterised by a corn drier formed of two linked pits – possibly one a fire chamber and the other a drying pit characterised the activity in the area. This feature was dated to the Early Medieval period.
Sample 741 (80057) [80056] – Corn drier – Early Medieval.
Sample 742 (80058) [80056] – Corn drier – Early Medieval
Sample 787 (80125) [80056] – Corn drier – Early Medieval
Sample 788 (80126) [80056] – Corn drier – Early Medieval
Sample 789 (80127) [80056] – Corn drier – Early Medieval.
All of the samples were dominated by indeterminate cereal grains. Where identifiable remains were present, barley dominated the samples along with smaller quantities of wheat and oat grains. Chaff and weed seeds were also recorded within the samples.
PRN 31602 was an Early Medieval corn drier [80137]
Sample 1403 (80139) [80137] – Corn drier – Early Medieval. Where identifiable remains were present, barley dominated the samples along with smaller quantities of oat and wheat grains. Chaff and weed seeds were also recorded within the samples.
PRN 31595 - This area produced two roundhouses, possibly with clay walls and internal drains, which date to the Iron Age.
Sample 1478 (80334) - Roof collapse in roundhouse [80248] – Iron Age
Sample 1535 (80334) - Roof collapse in roundhouse [80248] – Iron Age
These two samples were both dominated by cereal chaff. Cereal culm fragments were the dominant remain recorded with over 16000 present within both samples. Wheat spikelet forks and glume bases were recorded in high numbers, alongside smaller quantities of emmer wheat spikelet fork and glume bases. Very small quantities of indeterminate cereal, emmer, wheat, spelt and oat grains, alongside weed seeds were also present.

Area K9 – PRN 76100, 76101 and 31596

PRN 76100 - A corn drier, dated to the Early Medieval period, cut into the demolition rubble at the corner of a Roman period building.

Sample 5601 (80837) [80835] – Corn drier – Early Medieval

Sample 5602 (80837) [80835] – Corn drier – Early Medieval.

The samples were dominated by indeterminate cereal grains. Where identifiable remains were present, barley dominated the species, with wheat and oats also present. Smaller quantities of chaff and weed seeds were also recorded.

PRN 76101 - A corn drier [80924], dated to the Early Medieval period, near a Roman period building.

Sample 5669 (80926) [80924] – Corn drier – Early Medieval. The sample was dominated by indeterminate cereal grains. Where identifiable remains were present, barley dominated the species, with wheat, oats and emmer also present. Smaller quantities of chaff and weed seeds were also recorded.

Sample 5681 (81027) [80924] – Corn drier – Early Medieval. The samples were dominated by indeterminate cereal grains. Where identifiable remains were present, barley dominated the species, with wheat and oats also present. Smaller quantities of chaff and weed seeds were also recorded.

PRN 31596 - This area contained the remains of a Roman period building complex, which may possibly be a farmstead. It was characterised by a square stone building and a clay lined round house with a trackway that runs through the middle of the complex.

Sample 5693 (81073) – Corn drier – Romano British. The sample was dominated by indeterminate cereal grains. Where identifiable remains were present, barley dominated the species, with wheat, oats and emmer also present. Smaller quantities of chaff and weed seeds were also recorded.

Area L3

Sample 1136 (22144) [22171] – Building terrace – Late Iron Age. The sample was dominated by wheat glume bases and spikelt forks. Wheat, barley and oat grains were also present in very small quantities, alongside chaff fragments and weeds typically associated with cultivation.

Sample 1137 (22145) [22171] – Building terrace – Late Iron Age. The sample was dominated by wheat spikelet forks and glum bases. Emmer glume bases and spikelet forks, and spelt spikelet forks and glume bases were also recorded. Smaller quantities of indeterminate cereal, wheat and barley grains were also present, alongside other chaff fragments and weeds associated with cultivation.

Discussion

Survival and preservation

The preservation of the archaeobotanical remains was variable. The majority of the charred macrofossils were generally relatively well preserved. However, most cereal grains were warped or exploded through charring and lacked identifying morphological characteristics. A significant amount was preserved well enough to still exhibit morphological characteristics and thus enable identification, even if only to species level. The presence of such high amounts of chaff fragments, such as wheat glume bases and spikelet forks, within some of the samples further shows some good preservation levels.

Root / rootlet fragments were present in a lot of the samples, which indicates the disturbance of the archaeological features, whether through close proximity of the deposits to the surface (e.g. exposing them to possible plough damage or bioturbation), or from deep root action through vegetation growing at the site. This disturbance is further confirmed through the presence of earthworm egg capsules and insect fragments within some of the samples. Some of the flots contained some several uncharred, modern seeds (mostly Chenopodiaceae). Because Chenopodiaceae seeds are black and hard coated 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.

Eating and Drinking

Cereals

Cereal grains were present in the form of indeterminate cereal grains from the Neolithic period onwards. The shift can be seen from wheat and barley in the Bronze Age, to emmer wheat in the Iron Age, to a mixture of barley, emmer, wheat and oats in the Roman period to barley and oats dominating during the Medieval period.

Barley

Of the cereal grains that could be identified to species level, barley was the most frequently recorded and abundant species present. The grains were generally deformed or the surface had been lost, so it was not possible to characterise ear and row form. A small amount of chaff could be securely identified as barley in the form of lemna bases and rachis internodes. Barley was often grown as a dredge crop along with oats as a buffer against adverse weather; it was also mixed with oats to make coarse bread for the lower classes in society (Stone 2009, 12). Barley was used to brew ale because of its distinctive taste (Dinely and Dinely 2000). Whilst some of the grains showed evidence of sprouting and were recovered alongside detached embryos, it is not possible to ascertain whether this represents evidence for malting / ale production, or reflects germinated grains of a spoilt crop.

Oat

Remains of possible cultivated oats were present within the samples. Many of the oat grains in the samples were in poor condition, and so cannot be confirmed as cultivated. However, the presence of oat floret bases with the characteristic disarticulation scar close to the lemna-base also confirmed the presence of cultivated oats. Oats are very tolerant to poor growing conditions and were often grown alongside barley as dredge (Stone 2009). Oats were also traditionally cultivated as a spring crop because they are not very frost hardy, and were sometimes planted with barley for use both as human food or animal fodder. Oats grow best on water-retentive soils such as loams and clays. They are valued for the high energy fodder they provide to livestock, particularly draught animals. Oats form an important source of animal feed, particularly for horses, but are also an important human food. Markham, writing in the 17th century, writes 'of the excellency of oats and the many singular virtues and uses of them in a family' (Markham 1668, 175-180) which include malt for ale, and as oatmeal used in place of salt, for a variety of foods including bread, oaten biscuits, haggis and greets, as well as animal feed. Oats require drying prior to storage as they are liable to shatter when harvested ripe and so are often harvested in a semi-ripe state (Straker 1997, Carruthers 2010). Oats also require parching to assist the removal of the lemmas prior to oatmeal or groats preparation (Monk 1987). Charring accidents within corn-dryers are likely to have been common. Wild oats are still a troublesome weed of corn fields today and occur frequently is assemblages of most periods (Behrendt & Hanf 1979, Cope & Gray 2009). However, Jones (1988) points out that the presence of some grains of large seeded edible grasses may have been tolerated without concern.

Wheat

Wheat grains and chaff were recovered from Iron Age, Romano British and Medieval period samples. Wheat was also present amongst the identifiable remains. It is probable, based on the general size and remaining identifying morphological characteristics that the main species of wheat utilised was emmer wheat.

Emmer is tightly enclosed by its lemna and paea (glumes), which allows for easy storage, as well as protection from insect and animal infestation. However, the glumes meant an additional step in processing whereby the grain was heated or ground to remove the hulls prior to grinding for flour. This wheat was consumed in breads and porridges, although the breads would have been coarse and heavy. Emmer is normally identified as the principal wheat crop in the British Neolithic and Bronze Age but was to varying extent replaced by spelt in later periods (M. Jones 1984, van der Veen 1992). Given the remains were from later periods, it is probable that these grains were relic weeds of another cereal crop species. The strongest evidence for emmer wheat is the remains of chaff fragments within the samples, especially those from an area of probable roof collapse [80248] in Are K7 and possible remains of flooring material in building terrace [22171] in Area L3. These chaff rich samples contained many identifiable glume bases and spikelet forks that can be confirmed as emmer, as well as many more which could only be identified as wheat.

Spelt wheat is also an hulled wheat, whereby the chaff is fixed firmly to the grain and is therefore more difficult to remove. Although de-husking would have been a time-consuming activity in the past, spelt wheat chaff does give the grains protection in the field and in storage, providing a useful barrier against water and insect damage. Spelt wheat can tolerate poorer soils and less intensive management systems than the more commonly grown bread wheat.

Wild / other food types

Evidence of the use of non cereal food plants was very minimal, with the exception of hazel nut shell fragments (*Corylus avellana*). The consistent presence of hazel nut shell fragments within the samples in significant numbers throughout the Neolithic period (Areas D3, H, I and J) may represent the exploitation of hazel nuts as a food source throughout the site during this time. Whilst it is possible these were gathered foods, they may also have entered the assemblages as the weeds of cultivation / settlement / fuel debris. Hazel-nuts are valuable nutritionally, as well as being readily available. The hazelnut shell recovered may be indicative of a food source being consumed, perhaps as a snack and their husks being added to the fires as a method of waste disposal.

However, the hazelnut shell fragments show no marks typically associated with processed shells. Together with the hazel charcoal also recorded from the samples, it may indicate that they are merely representative of hazel wood trees being burnt, which could be either a natural or a man-made process.

Weed / Wild taxa
Another, although indirect, indicator of cultivation is the proportion of remains of arable weeds that were found in most of the samples. Of the plant taxa recorded in the samples, goosefoot/orache, dock, stinking chamomile, and bedstraws all seem likely to have arrived as crop weeds, and the remains of various grass species such as rye grass and brome, identified only to genus, may also fall in this group. All these species would almost certainly have been brought to the site together with harvested cereals.

Taphonomy
In terms of taphonomy, it is likely that the samples from pits and post holes represent the secondary deposition of charred plant remains. This probably occurred through intentional dumping.

The use of cereal processing waste as fuel is well attested (Hillman 1981; 1984) and disposal of spent fuel either into features such as pits or ditches/gullies or directly dumped onto the site seems a likely explanation for the arrival of this material on site. This is the likely explanation for the chaff rich assemblages recovered from Area B2 relating to the hearth [92145] and hearth base [92147]. It is likely that it represents the fine sieving residue (weeds and glume bases / spikelet forks) that were then used as fuel for the hearth.

The deposits from the corn driers and hearths dating to the Early Medieval period (Area I, K1, K7 and K9), Romano British period (Area K9) and Bronze Age (K1), contain a mixture of grain and similarly sized weed seeds, such as grasses (POACEAE), which most likely represent the fine sieve product (i.e. the cereal grain and larger sized weed seeds retained by a fine sieve) in the crop processing sequence (Hillman 1981; 1984; 1985 and Jones 1984). Fine sieving was most likely performed just before milling (Jones 1984, 46) or some other use, such as malting or parching (Hillman 1981, 137). Large seeded weeds of crops were most likely removed by hand prior to preparing the grain for use in milling, parching, malting, cooking etc. (Jones 1984, 46). The fact that the samples have produced broadly similar results suggests that these secondary deposits do not result from deposition of debris from accidental charring events, but instead represent a consistent pattern of charring cereal grain, chaff and crop weeds over the period of occupation and using the waste for fuel. Indeed, Campbell (2000) has suggested that a combination of glume wheat chaff and barley grains may be the result of the glume wheat by products being used as fuel to dry the grains of barley (and perhaps other crops) prior to storage. Alternatively, Charles and Boggard (2001) have suggested that a mixture of barley grain and glume wheat chaff may represent a deliberate fodder mixture.

The remains from corn drier [22158] Area B3, contained sprouted grains and detached embryos. Some of these showed one or more of the four signs of germination identified by Carruthers (2011): extended sprout, collapsed grain, pre depositional loss of embryo, and dorsal groves made by sprouts. Germination of grains may occur unintentionally in damp storage conditions, but is also deliberately stimulated by steeping in water as part of the malting process. Germinated grain is then roasted to stop the germination process (van der Veen 1989) and it is possible that at this stage the grain can become inadvertently charred. The waste material would then most likely be removed from its original location and be disposed of by burning *in situ*.

The presence of germinated grain in a carbonised assemblage is not clear evidence for malting. Germination may occur accidentally in stored grain, especially if harvested damp or becoming damp during storage (cf. Hillman 1981). One way of distinguishing 'spoilt' grain from malt is to consider the proportion of grain affected by germination. In modern malt, a germination level of 70% is normal but this may have been far lower in ancient times (Van der Veen 1989). The levels of grains with germination are very low within these samples, hence it is not possible to state that this represents evidence of malting at the site. Malting is very difficult to identify archaeobotanically, and can only be suggested where combined evidence of sample-composition (usually based on multiple samples) and archaeological context exist.

A grain store affected by germination may have been considered 'spoilt', and destroyed by fire, resulting in carbonisation. Alternatively, low levels of germination may not have been perceived as spoilage, and so have had no effect on how grain was used or carbonised (Hall and Kenward 2007). There is also a possibility that such grain was parched, perhaps in a corn drier, to arrest germination and prevent further germination/spoilage (Hillman 1981).

The interpretation of chaff-rich versus grain-rich assemblages has received considerable discussion and van der Veen and Jones (2006, 2007) have convincingly argued that proportion of grains and chaff is not related to whether sites were producers or consumers of cereals (cf. Hillman 1984; Jones 1985) or differences in processing (cf. Stevens 2003) but rather the scale of production. Cereal-grain rich assemblages are interpreted as representing large scale production and/or consumption (van der Veen and Jones 2006, 2007). Whilst it is possible that the differences in the archaeobotanical assemblages above could reflect differing scales of production, it is impossible to assess the significance of these differences due to the very small number of samples analysed for each period.

Mixed cropping – variously known as maslin, mixtil, dredge or other terms depending upon the crops involved – cannot be conclusively demonstrated in archaeobotanical samples here, but neither can the possibility be entirely excluded, especially when some of the samples show more than one species. Since one of the purposes of maslin cultivation is risk-buffering, through the juxtaposition of crops with different tolerances or preferences, it is possible that the remains reflect this.

The remains of a mixture of cereal types and / or cereals and legumes together in the samples, could point to the waste of pottage – a dish consumed on a daily basis, by people from all backgrounds, from the medieval periods onwards (Black 2003). Parallel historical evidence for the later medieval period (Dyer 1989) shows that the actual food grains that were used varied according to what was available and were made into pottage.

It is possible that the chaff rich remains from Area B2 layer contexts (90794) and (92118) represent the remains of some sort of flooring material. The remains from Area L3 building terrace [22171] may also represent flooring material. If not flooring material, it could possibly be the remains of cereal processing debris deposited as waste across as floor layer.

Two samples 1478 and 1535 (80334) from Area K7 have been interpreted archaeologically as the roof collapse of Roundhouse [80248]. The archaeobotanical remains seem to confirm this. The chaff / straw was preserved in large quantities by charring, as it is very combustible and usually burns away to fine ash in the presence of oxygen. The survival of these chaff fragments, suggest that delicate material preserved under reducing conditions in a fire had been rapidly buried in the feature or possibly burnt in situ.

Crop husbandry

The cereals in the samples may grow in a range of soils although oats grow best on heavier soils and barley prefers lighter well drained soils. All the cereals in the samples may be sown in both autumn and spring although wheat is usually winter sown and oat spring sown as it is less resistant to frost.

The environment

As can be seen from Table XIX.4.2 below, a number of 'weed' seeds were present within some of the samples, and a limited amount of data can be gained relating to the surrounding environment. The largest percentage of the 'weed' seeds recovered probably originated from areas of cultivated ground; cornfields and arable land. Species such as *Galium aparine* (cleavers), *Rumex* (docks) and *Cehenpodium/Atriplex* (goosefoot/orache), are examples of this. Species commonly found on waste or rough ground were the next most represented group, *Anthemis cotula* (stinking chamomile), *Polygonum aviculare* (pale persicaria) and *Raphanus raphanistrum* (wild raddish). The presence of trees / scrubland can be seen with the presence of hazel nuts. Grassland was represented by the numerous grass seeds recorded as well as *Plantago lanceolata* (ribwort plantain). *Persicaria lapathifolia* (pale persicaria), *Juncus* (rushes) and *Eleocharis palustris* (common spike rush) are also typical of wet / damp ground. The presence of gallium aparine is usually considered to be evidence of autumn sowing. The presence of wild radish mericarp (Raphanus raphanistrum ssp. raphanistrum) indicates the cultivation of acidic, sandy soils. It is likely that these remains are indicative of the surrounding environment, and were brought into the site with the cultivated cereal crops.

Plant macrofossils over time

When the plant macrofossils from the different periods are studied, it is clear to see a development in the exploitation of species. During the Neolithic period (early, mid and late), hazel nut shell fragments are the most frequently recorded remain, along with very small quantities of indeterminate cereal grains and chaff fragments. During the Bronze Age, evidence for the cultivation of cereals begins with the presence of indeterminate cereal grains, wheat and barley grains, chaff fragments and weed seeds typical of cultivation. The remains from the Iron Age samples / features are dominated by the presence of chaff fragments and few grains of indeterminate cereal, wheat, barley and oat. The samples are from features that represent roof collapse and layers which may reflect flooring debris. These features differ from those of later periods such as pits etc so direct comparison to

utilisation of species is difficult. It is possible to state that remains of indeterminate cereal, wheat, barley and oats were present. Samples dating to the Romano British period show the continuing utilisation of cereal grains, including oat, barley, wheat and emmer alongside chaff and weeds typically associated with cultivation. Samples dating to the Early Medieval period produced the most abundant suites of plant macrofossils, and were extremely grain rich. As these features were associated with corn driers however that is to be expected. Barley dominated the samples, and the presence of detached embryos and sprouted grains may be indicative of brewing. Oat and wheat along with chaff fragments and weeds seeds typical of cultivation were also recorded.

Comparable Sites

Neolithic

Based on data gathered from several sites, it is probable that cereals were probably introduced into Wales in around 3700 cal BC (Treasure 2016). In a current synthesis of the evidence for prehistoric plant remains in Wales, Treasure (2016) states that cereals only identified as indeterminate cereal grains due to poor preservation dominated assemblages. Emmer was the most commonly identified species, followed by barley and naked wheat (although it is probable the latter are obtrusive). In terms of quantity, most sites from the Welsh Neolithic have produced extremely small assemblages of cereal grains consisting of between 1 – 25 grains, or in even smaller quantities in many instances.

Weed seeds associated with cereal crops have been used to examine agricultural practices in Neolithic Britain (Bogaard and Jones 2007) and central Europe (Bogaard 2004); however, weed seeds are extremely rare in Neolithic Wales and few, if any, can be directly related to the cultivation of cereals.

Although it is argued that cereal cultivation and wild plant exploitation were both significant dietary components in the Neolithic (e.g. Jones and Rowley-Conwy 2007; Rowley-Conwy 2004; Rowley-Conwy and Legge 2015), there appears little evidence to suggest that cereals formed the mainstay of the economy for Neolithic Wales (Treasure 2016).

Cereal grains are present in moderate quantities in Early Neolithic pits clusters at Carrog, north-west Wales (Caseldine et al. 2014), Cwm Meudwy B, south-west Wales (Caseldine and Griffiths 2006b) and at Borras Quarry, north-east Wales, if the evidence from four pit clusters is combined (ASUD 2010, 2013), although all of these assemblages also contained large assemblages of hazelnut shells.

Hazelnuts are particularly frequent during the whole Neolithic period, and occur in greater quantities than cereal grains. On the basis of the consistent evidence for hazelnuts in Neolithic Wales (and elsewhere in Britain) particularly in pits/pit clusters it is tempting to suggest that a degree of deliberate human manipulation was involved in their growth.

Taphonomic factors may have led to the significant under-representation of cereals in Neolithic sites relative to hazelnuts. Firstly, cereals typically occur in very low densities in Neolithic sites and it has been suggested that cereals will be under-represented where only limited sampling and small sample sizes are used to recover archaeobotanical evidence (Legge et al. 1998: 90-91; Rowley-Conwy 2000: 43; Jones 2000: 82; Jones and Legge 2008: 476). Secondly, cereals and hazelnut shells have differing probabilities of coming into contact with fire and preserving. Hazelnut shell is a waste-product which may have been deliberately discarded onto fires or used as a source of kindling, whereas cereal grains are intended for consumption and are unlikely to become charred unless accidentally discarded onto fires or destroyed in a conflagration of a stored crop (Legge 1989; Jones 2000; Jones and Rowley-Conwy 2007; Jones and Legge 2008).

Bronze Age

The crop record in Britain during this period is characterised by the gradual replacement of emmer wheat to spelt wheat (Jones, M 1981), although the change is far from uniform (Campbell & Straker 2003) based on geographical location.

There is very little archaeobotanical evidence associated with Earlier Bronze Age settlement sites, and for the Later Bronze Age, only a small number of sites were identified and little archaeobotanical evidence is clearly associated with settlement contexts and even less evidence is associated with roundhouses.

In Treasure's recent synthesis of prehistoric plant remains, early Bronze Age evidence for cereals is sparse in Wales, with small quantities of cereal remains, primarily barley, and hazelnut shells present. A similar pattern of low densities of cereal grains is evident for sites in England (e.g. Hinton 2004/05, 2006; Carruthers 2006a; Hall

and Huntley 2007; Smith 2010), with some exceptions (e.g. Ratcliffe and Straker 1996; Carruthers 1990; Pelling and Campbell 2013).

Cereal remains are present at a number of sites including middle-late Bronze Age roundhouses which have produced small assemblages of cereal grains, primarily barley (Caseldine 2001; Caseldine and Griffiths 2004). A roundhouse at Glanfeinon, central Wales, produced a large assemblage of cereal grains (Britnell et al. 1997), comprising of a cache of >5000 naked barley grains and smaller quantities of hulled barley, barley and emmer grains and chaff in addition to a possible flax seed and weed seeds (Britnell et al. 1997).

There is currently little evidence for a widespread intensification of agriculture across the Early-Middle Bronze Age transition in Wales as the dataset for Wales is too limited to analyse in detail the nature of agricultural practices.

A single sample from a pit fill dated to the Bronze Age, possibly associated with a timber round house, and was dominated by indeterminate cereal grains. The composition of the assemblage differs from others in Wales. Where identification was possible, wheat dominated (although the preservation precluded species specific identification) with smaller amounts of barley grains also present.

Iron Age

The period in Britain is characterised by an increase in the number of possible crops available, ie. the addition of pulses, oat and rye. For most Iron Age sites only very limited sampling for archaeobotanical evidence has been undertaken, although in some instances this can be related to an absence of large scale modern excavations on Iron Age sites in Wales. Recent excavations have been undertaken at a small number of Iron Age sites may provide valuable contributions to the current archaeobotanical datasets, this includes projects at Llanmaes, south-east Wales (Caseldine and Griffiths 2005, 2006c, 2010b; Lodwick and Gwilt 2010), Penycloddiau Hillfort, north-east Wales (Mason and Pope 2012, 2013), Moel y Gaer, north-east Wales (Lock and Pouncett 2013) and Caerau Hillfort, south-east Wales (Wessex Archaeology 2013; Davis and Sharples 2013, 2014).

Arable agriculture appears to be focused purely on cereals and there is currently no evidence for legumes in Wales during this period, although this could reflect a preservation bias (Treasure 2016). For the Earlier Iron Age in Wales, spelt wheat, emmer wheat and barley are the most common crops, although it difficult to assess the relative importance of these different crops due to the paucity of evidence (e.g. Caseldine 2001a; Caseldine and Griffiths 2011a, b; Carruthers 2011b; Caseldine et al. 2014a). Emmer wheat appears to have been an important crop in some areas at least and there appears to be a shift towards spelt wheat with free-threshing wheat also becoming increasingly important.

A pit at Pwllheli to Blaenau Ffestiniog Pipline Plot 3/2 produced a dense concentration of cereal grains (113 grains/litre) and some chaff, with emmer wheat dominant and other cereals included spelt wheat, barley (naked and hulled) and two free-threshing wheat grains (Challinor et al. 2014). Later Iron Age to Romano-British settlements have produced varying evidence for cereals, although the poor dating evidence prevents detailed assessments of the evidence. Cereals were sparse at Parc Bryn Cegin, including emmer wheat, spelt wheat, free-threshing wheat, barley and oats (Schmidl et al. 2008)) and at Cefn Cwmwd and Gwinlin Glan Morfa cereals were sparse (Akeret 2007; Ciaraldi 2012). In comparison, Cefn Du produced abundant cereal remains, dominated by spelt wheat, with considerable evidence for free threshing wheat, although only three samples were analysed and these can only be tentatively assigned to this period (Ciaraldi 2012). Spelt wheat is also reported to be dominant at Cefn Graenog (Monk 1998).

The archaeological interpretation of features may mean direct comparison to other sites dating to this period cannot be possible. These remains have been interpreted as flooring / roofing remains, as opposed to the remains of cereal processing / storage such as at other sites. The chaff rich remains here show the dominance of wheat, as well as emmer and spelt wheat, with barley and oat also present. Whilst it confirms the importance of wheat and emmer as an important crop, it does not confirm the shift towards spelt wheat.

Romano British Period

Of the single sample that dated to the Roman period from a corn drier feature, oats dominated the species alongside barley, with small amounts of wheat and emmer also present. Smaller quantities of chaff, particularly wheat glume bases and spikelet forks and weed seeds were also recorded. This dominance of oat differs from

most other sites of the period. Whilst it has been recorded in significant numbers alongside barley it has not been the dominant species in such quantities.

Spelt wheat was the main crop being cultivated in the area at this time with evidence from North Wales including farmsteads on Anglesey, such as Cefn Du, Melin y Plas and Cefn Cwmwd (Ciaraldi 2012), as well as on the mainland, for example Cefn Graeanog (Hillman 1998), and with that from the Roman fort at Segontium (Nye 1993) where spelt tends to dominate. Small amounts of bread wheat and barley and evidence for cultivated oat in some samples at sites, perhaps suggest a change taking place in the crops being grown in the area compared with earlier. Similar changes have also been noted at other sites (Caseldine 1998; Ciaraldi 2012).

The status of barley as a main crop in Wales is very unclear as it appears only occasionally in charred plant assemblages of this period (Caseldine 1990, Nye 1993, Longley *et al* 1998). The predominance of barley grains, however is not reflected on that of barley chaff. This could be due to the fact that barley chaff consists principally of rachis internodes, which are more fragile than glume bases and spikelet forks, typical by-products of glume wheat processing. As at Cefn Du (Ciaraldi 2012) the remains from this site produced a good amount of emmer chaff. Barley has been found as a predominant crop also at Bryn Eryr (Casldine 1998) and Tw Mawr (Williams 1986) in both cases also in association with oat.

The contemporary presence of barley and oat is common to other Welsh sites of this period, suggesting that they might have been cultivated together as a maslin. Their contemporary cultivation in the same field meant that they were more resistant to adverse atmospheric phenomena (for instance wind) and would have provided a good yield in case of the failure of one of the crops.

The term dredge, in fact, is specifically referred to as a mixture of barley and oats (1:1) generally sown in the Spring (Slicher van Bath 1963) and mentioned by Gerald of Wales (cited in G.R. Jones 1972) to have been cultivated in the 13th century in Anglesey. A maslin of barley and oats could have been used as fodder, for brewing, but also in the human diet. Hillman (1998) suggests that the maslin is often adopted as a strategy to protect the crop from the wind, a problem particularly serious in deforested areas, as must have been the case on Anglesey. Jones and Halstead (1995), instead suggests that maslin crops are often used as buffer crops in difficult periods, in order to guarantee a good yield in the case of failure of one of the crops. The association of the two crops seems to be characteristic of various sites of the Roman period on Anglesey and could be evidence that the two cereals were cultivated as a maslin well before the 13th century.

Medieval Period

In the Medieval period there is a shift in cereal use away from spelt, barley and emmer towards bread wheat, rivet wheat, barley, rye and oats (van der Veen 2013). These grains are all free threshing cereals. These are processed differently than the traditional hulled cereals, and often this is done away from the settlement. This means that the by product of the harvest (weeds and chaff) are less frequently found within Medieval settlements.

Oats dominate the record at medieval sites in England, often forming the bulk of deposits or present as large deposits in association with barley, for example at late Saxon sites in Oxford (Robinson 2000; Pelling 2006), and similarly at sites in Ipswich (Murphy 1987; 1991). The preservation of oats in large quantities frequently appears to be a product of chance. An 11th century AD deposit of charred oats from Foundation Street in Ipswich (Murphy 1991) was found with a horse-shoe and spur suggesting that the deposit represented horse fodder which had been burnt by chance. As a crop oats were undoubtedly important in the late Saxon and medieval period, as supported by the historical evidence but their under-representation in relation to wheat and barley particularly and also rye is likely to be related to their common usage as a fodder crop and, therefore the reduced likelihood of them coming into contact with fire as a result of roasting prior to milling, or use in ovens.

Oats appear to be particularly prevalent in assemblages dating to the early medieval period onwards in northern England, Scotland and Wales (Greig 1991; Huntley and Stallibrass 1995; Carruthers 2010), which is probably due to it being particularly well suited to the wetter conditions and the shorter growing season of these areas (Moffett 2006).

Comparisons with other sites in Wales suggest that it was fairly typical for Medieval rural and urban sites to be consuming predominantly oats, which completely differs from the results of this investigation. Recent work by the author at Llanbeblig Road, Caernarfon, Gwynedd (McKenna 2012) shows a dominance of oats with small amounts of barley and wheat also present. Work at Parc Bryn Cegin, Llandygai (Kenny 2008) also produced

samples dominated by oats with barley, naked wheat and rye also present. Dark Age samples from Capel Maelog (Caseldine, 1990, p102) and in a 12th century sample from Loughor Castle, West Glamorgan (Carruthers, 1994), both common cultivated oat (*A. sativa*) and bristle oat (*A. strigosa*) were present. A similar grain assemblage, containing oat, rye and bread wheat, was recovered from another early medieval site at Rhuddlan, North Wales (Williams 1985). The charred seeds of weeds of cultivated ground were also present, and had presumably been harvested with the crop. Other sites, such as TwMawr (South Stack), were dominated by emmer and spelt wheat (Caseldine 1990, p102) which also differs from the dominance of oat in samples dating to the Medieval period. Remains from medieval corn driers at Collfryn, Llansantffraid Deuddr, Powys (Jones and Milles 1984) were dominated by oats, and also quantities of seeds from common weeds of cereal fields, which must have been harvested together with the crop. These included brome (Bromus), amongst other species apparently indicating fields on acid and sandy soils.

The compositions of the samples from this site do not conform to this hypothesis. Bread wheat and rivet wheat are absent from the samples, however barley dominates with significant proportions of oats also recorded. This is similar to records recorded at Bayvill Park, Pembrokeshire (Parker Pearson et al 2018). The corn drier was dominated by hulled barley, as well as a relatively significant proportion of oat grain. A small amount of spelt wheat grains were also present, although no free threshing grains were positively identified. Weed / wild taxa typically associated with cultivated and/or disturbed ground were also present. Charred plant remains from corn-dryer contexts excavated at the early medieval site of South Hook (Pembs.) indicated that hulled barley, common oats, bristle oats and possibly dredge were being dried at different times and in different ovens (Carruthers 2010). A lack of chaff and low proportions of weed seeds indicated that the charred cereal grain is representative of processed crops that were being dried prior to milling or storage. Taxa present in the wild or weed seed assemblage included stinking mayweed, fat hen and wild radish. Charred plant remains from early medieval deposits at the cemetery sites of West Angle Bay (Caseldine and Griffiths 2011) and Brownslade (Carruthers 2011) also consisted largely of hulled barley and oat. The assemblage of wild or weed plants seeds from West Angle Bay included leguminous taxa, docks, goosefoots, ribwort plantain, stinking chamomile and grasses.

Conclusion

Thirty seven samples produced identifiable suites of plant macrofossil remains with enough material in to warrant a full analysis. A large number of seeds were present in the samples, and although the majority of the cereals were recorded as indeterminate cereal (based on their morphological characteristics and shape), where identification was possible barley dominated, with emmer, wheat, spelt and oat grains also present. Hazel nut shell fragments were also the dominant / only remains within a number of the samples.

The results show that after initial utilisation of wild taxa – ie hazel nuts, there was a steady use and increase in the cultivation of cereals at the site or in its wider environs. Barley dominated throughout the various phases with wheats and oats also present alongside chaff fragments and weeds associated with cultivation.

Where the remains represented crop processing waste, there were amounts of cereal chaff and weed seeds which would have been incorporated with the grain during the harvesting process, but due to the low numbers in comparison with the grains, it is unlikely that the sample represents the disposal of crop processing debris associated with threshing and winnowing, and instead represents the fine sieve by-product which is almost fully processed and ready to be used for milling, parching, malting, cooking, etc.

The use of cereal processing waste as fuel is well attested (Hillman 1981; 1984) and disposal of spent fuel either into features such as pits or ditches/gullies or directly dumped onto the site seems a likely explanation for the arrival of this material on site. Those macrofossils present within corn drier / hearth features are likely to represent the waste associated with parching / malting, or the remains of fuel waste which incorporated cereal processing debris alongside charcoal. The presence of hazel nut shell fragments, especially in pit features from Area I shows the utilisation of the resource probably as a snack food and its resulting waste. The clear remains of roofing / thatch material (extremely chaff rich / straw dominant)were also present within the samples, showing the collapse of a roof at some point.

As the majority of the plant remains were found together with charcoal remains, it may suggest that waste or spilt grain and pulses which did not make it into pottage were put on the fire with other rubbish and a small fraction became charred without burning up, and joined the domestic ash on the rubbish heap.

It is thought to be problematic plant macrofossil records from archaeological sites, as they do not accurately reflect the surrounding environment. Plant remains were also gathered foods, and were generally only burnt by

accident. Despite this, plant remains can provide good information about the landscapes surrounding the sites presuming that people did not travel too far to gather food.

Recommendations

The samples have been assessed, and interpretable data has been retrieved and is the basis of this report. No further work is required on any of the other samples. Any material recovered by further excavations should be processed to 0.3mm in accordance with standardised processing methods such as Kenward *et al.* 1980, and the English Heritage guidelines for Environmental Archaeology. A comprehensive radiocarbon dating project has been carried out on material from this investigation, the results of which are included in Hamilton (this volume, part XXIV).

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Tables

Complete list of taxa recovered from selected samples from excavations at Parc Cybi, Holyhead, Anglesey (G1701). Taxonomy and Nomenclature follow Stace (1997)

Table XIX.4.1a: Plant Macrofossils – Area B2

Sample Number	**241**	**538**	**683**	**685**	
Context Number	**90794**	**92118**	**92147**	**92145**	
Feature Type	**Layer**	**Occupation Layer**	**Floor / hearth**	**Hearth**	
Area	**RHA**	**RHA**	**RHE1**	**RHE1**	
Date	**Iron Age**	**Iron Age**	**Iron Age**	**Iron Age**	
LATIN BINOMAL					**COMMON NAME**
Chenepodium spp. / *Atriplex* spp.			5		Goosefoot / Orache
Stellaria media (L.) Vill		1	2	3	Common chickweed
Persicaria lapathafolia (L.) Gray	5	2			Pale persicaria
Polygonum spp.	1	1		2	Knotgrass
Rumex spp.	6	1	2	5	Dock
BRASSICACEAE	4	3	4	7	Cabbage family
Melilotus / *Medicago* / *Trifolium* spp.	2	2	3	12	Melilots, Medicks, Clovers
Bupleurum rotundifolium L.	1				Thorow wax
Plantago lanceolata L.				1	Ribwort plantain
Carex spp.			1	5	Sedge
Carex spp. (2 sided)				1	Sedge (2 sided)
POACEAE (large seeded)			8		Grass (large seeded)
POACEAE (small seeded)	12	6		33	Grass (small seeded)
Avena sativa awn fgt.			2		Oat awn fgt.
Hordeum spp. rachis fgt.				6	Barley rachis fgt.
Triticum spp. spikelet fork			498	252	Wheat spikelet fork
Triticum spp. glume base			31	74	Wheat glume base
Triticum diococum glume base			11	5	Emmer wheat glume base
Triticum diococum spikelet fork			41	17	Emmer wheat spikelet fork
Indeterminate Cereal	22	17	23	29	Indeterminate Cereal
Indeterminate Cereal – detached embryo			8		Indeterminate Cereal detached embryo
Indeterminate Cereal – spikelet fork	137	128			Indeterminate cereal spikelet fork
Indeterminate Cereal – glume base	38	26			Indeterminate cereal glume base
Indeterminate Cereal – rachis internode			2		Indeterminate Cereal – rachis internode
Indeterminate Cereal culm			37	15	Indeterminate Cereal culm
Indeterminate Cereal chaff stem fgts.	8000+	7000+			Indeterminate Cereal chaff stem fgts.
Indeterminate				15	Indeterminate

Table XIX.4.1b: Plant Macrofossils – Area B3

Sample Number	**1116**	**1117**	
Feature Number	**22158**	**22158**	
Context Number	**22156**	**22157**	
Feature Type	**Corn drier**	**Corn drier**	
Date	**?Early Medieval**	**?Early Medieval**	
LATIN BINOMAL			**COMMON NAME**
Corylus avellana nut shell fgts.	29	2	Hazel nut shell fgts.
Chenepodium spp. / *Atriplex* spp.	100	60	Goosefoot / Orache
Stellaria media (L.) Vill	1		Common chickweed
Persicaria lapathafolia (L.) Gray	67	17	Pale persicaria
Polygonum spp.	4	1	Knotgrass
Fallopia convovulus (L.) A. Love	14	1	Black bindweed
Rumex spp.	9	1	Dock
BRASSICACEAE	3	1	Cabbage family
Galium aparine L.	1		Cleavers
FABACEAE		1	Pea family
BORAGINACEAE	1		Borage family
Lapsana communis L.		1	Nipplewort
Eleocharis palustris (L.) Roem & Schult	1		Common spike rush
Carex spp.		1	Sedge
POACEAE	29		Grass
cf. *Avena* spp.	687	95	Oat (possible)
Avena sativa lemna base	1	1	Oat lemna base
Avena sativa awn fgt.	147	1	Oat awn fgt.
Hordeum spp.	1672	193	Barley
Hordeum spp. lemna base	12		Barley lemna base
Hordeum spp. rachis fgt.	21	9	Barley rachis fgt.
Hordeum spp. rachis internodes		2	Barley rachis internodes
Triticum spp.	351	91	Wheat
Triticum spp. spikelet fork	2		Wheat spikelet fork
Indeterminate Cereal	8725	1366	Indeterminate Cereal
Indeterminate Cereal – detached embryo	286	55	Indeterminate Cereal detached embryo
Indeterminate Cereal rachis internodes	57		
Indeterminate Cereal culm	54	2	Indeterminate Cereal culm

Table XIX.4.1c: Plant Macrofossils – Area D3

Sample Number	**1184**	**1190**	
Feature Number	**60125**	**60162**	
Context Number	**60124**	**60163**	
Feature Type	**Hearth**	**Pit**	
PRN	**31574**	**31574**	
Date	**Neolithic**	**Late Neolithic**	
LATIN BINOMAL			**COMMON NAME**
Corylus avellana nut shell fgts.	488	1124	Hazel nut shell fgts.
BRASSICACEAE		1	Cabbage family
Galium aparine L.		1	Cleavers
POACEAE		2	Grass
Indeterminate Cereal	3	2	Indeterminate Cereal
Indeterminate Cereal culm		1	Indeterminate Cereal culm
Indeterminate nuts		2	Indeterminate nuts

Table XIX.4.1d: Plant Macrofossils – Area H

Sample Number	**1126**	**1128**	**1186**	
Feature Number	**50116**	**50116**	**501182**	
Context Number	**50110**	**50115**	**501183**	
Feature Type	**Hearth**	**Hearth**	**Post hole**	
PRN	**31570**	**31570**	**31570**	
Date	**Early Neolithic**	**Early Neolithic**	**Early Neolithic**	
LATIN BINOMAL				**COMMON NAME**
Corylus avellana nut shell fgts.	192	138	182	Hazel nut shell fgts.
POACEAE (large seeded)	2	1		Grass (large seeded)
Indeterminate Cereal	138	213	113	Indeterminate Cereal
Indeterminate Cereal – detached embryo	1			Indeterminate Cereal detached embryo
Indeterminate Cereal – spikelet fork	5	7	9	Indeterminate cereal spikelet fork
Indeterminate Cereal – glume base	1	14	10	Indeterminate cereal glume base
Indeterminate Cereal culm	1	3		Indeterminate Cereal culm
Indeterminate Cereal chaff stem fgts.		1		Indeterminate Cereal chaff stem fgts.

Table XIX.4.1e: Plant Macrofossils – Area I

Sample Number	**1011**	**1101**	**1102**	**1103**	**1108**	**1112**	**1113**	**1123**	
Feature Number	**19075**	**21212**	**21210**	**21215**	**21217**	**21219**	**21219**	**21229**	
Context Number	**19076**	**21213**	**21211**	**21216**	**21218**	**21220**	**21224**	**21231**	
Feature Type	**Pit**	**Pit**	**Pit**	**Pit**	**Pit**	**Pit**	**Pit**	**Corn drier**	
PRN	**76099**	**31572**	**31572**	**31572**	**31572**	**31572**	**31572**	**31604**	
Date	**Mid Neolithic**	**Mid Neolithic**	**Mid Neolithic**	**Mid Neolithic**	**Mid Neolithic**	**Mid Neolithic**	**Mid Neolithic**	**Early Medieval**	
LATIN BINOMAL									**COMMON NAME**
Corylus avellana nut shell fgts.	95	87	44	205	194	143	347		Hazel nut shell fgts.
Chenepodium spp. / *Atriplex* spp.								30	Goosefoot / Orache
Persicaria lapathafolia (L.) Gray								259	Pale persicaria
Polygonum spp.								1	Knotgrass
Fallopia convovulus (L.) A. Love								13	Black bindweed
Rumex spp.								12	Dock
BRASSICACEAE								22	Cabbage family
Melilotus / *Medicago* / *Trifolium* spp.								2	Melilots, Medicks, Clovers
Plantago lanceolata L.								6	Ribwort plantain
Carex spp.								2	Sedge
POACEAE (large seeded)					3	1	1		Grass (large seeded)
Cf. *Avena sativa* spp.								793	? Oat
Avena sativa lemna base								3	Oat lemna base
Avena sativa awn fgt.								208	Oat awn fgts.
Hordeum spp.								594	Barley
Hordeum spp. glume base								22	Barley glume base
Hordeum spp. rachis internodes								41	Barley rachis internodes
Triticum spp.								324	Wheat
Triticum spp. spikelet fork								1	Wheat spikelet fork
Triticum spp. glume base								1	Wheat glume base
Indeterminate Cereal		2		9	2	5	9	8508	Indeterminate Cereal
Indeterminate Cereal – detached embryo								118	Indeterminate Cereal detached embryo
Indeterminate Cereal – spikelet fork									Indeterminate cereal spikelet fork
Indeterminate Cereal – glume base									Indeterminate cereal glume base
Indeterminate Cereal culm								8	Indeterminate Cereal culm
Indeterminate Cereal chaff stem fgts.									Indeterminate cereal chaff stem fgts

Table XIX.4.1f: Plant Macrofossils – Area J

Sample Number	**5804**	**5822**	
Feature Number	**70480**	**70529**	
Context Number	**70479**	**70536**	
Feature Type	**Post hole**	**Pit**	
PRN	**74832**	**74832**	
Date	**Late Neolithic**	**Late Neolithic**	
LATIN BINOMAL			**COMMON NAME**
Corylus avellana nut shell fgts.	219	56	Hazel nut shell fgts.

Table XIX.4.1g: Plant Macrofossils – Area K1

Sample Number	**1004**	**1027**	
Feature Number	**20081**	**21051**	
Context Number	**19110**	**21053**	
Feature Type	**Pit**	**Corndrier**	
PRN	**31588**	**31603**	
Date	**Bronze Age**	**Early Medieval**	
LATIN BINOMAL			**COMMON NAME**
Corylus avellana nut shell fgts.	4		Hazel nut shell fgts.
Chenepodium spp./*Atriplex* spp	2	14	Goosefoot / Orache
Persicaria lapathafolia (L.) Gray	6	2	Pale persicaria
Polygonum spp.	13	3	Knotgrass
Fallopia convovulus (L.) A. Love	2	7	Black bindweed
Rumex spp.	5	3	Dock
BRASSICACEAE	6	8	Cabbage family
Melilotus/*Medicago*/T*rifolium* spp	2	7	Melilots, Medicks, clovers
Plantago lanceolata L.	1		Ribwort plantain
Carex spp.		2	Sedge
POACEAE (large seeded)	17	13	Grass (large seeded)
POACEAE (small seeded)		11	Grass (small seeded)
Avena spp.		132	Oat
Avena sativa lemna base		2	Oat lemna base
Avena sativa awn fgt.		410	Oat awn fgt.
Hordeum spp.	34	199	Barley
Hordeum spp. rachis fgt.		24	Barley rachis fgt.
Triticum spp.	181	51	Wheat
Triticum spp. spikelet fork	3	18	Wheat spikelet fork
Triticum spp. glume base	1	8	Wheat glume base
Indeterminate Cereal	1318	1507	Indeterminate Cereal
Indeterminate Cereal – detached embryo		34	Indeterminate Cereal detached embryo
Indeterminate Cereal – rachis fgt.		72	Indeterminate Cereal rachis fgt.
Indeterminate Cereal – rachis internode	3	28	Indeterminate Cereal – rachis internode
Indeterminate Cereal culm		8	Indeterminate Cereal culm

Table XIX.4.1h: Plant Macrofossils – Area K7

Sample Number	**741**	**742**	**787**	**788**	**789**	**1403**	**1478**	**1535**	
Feature Number	**80056**	**80056**	**80056**	**80056**	**80056**	**80137**	**80248**	**80248**	
Context Number	**80057**	**80058**	**80125**	**80126**	**80127**	**80139**	**80334**	**80334**	
Feature Type	**Corn drier**	**Corn drier**	**Corn drier**	**Corn drier**	**Corn drier**	**Corn drier**	**Roof collapse**	**Roof collapse**	
PRN	**31601**	**31601**	**31601**	**31601**	**31601**	**31602**	**31595**	**31595**	
Date	**Early Med**	**Early Med**	**Early Med**	**Early Med**	**Early Med**	**Early Med**	**Iron Age**	**Iron Age**	
LATIN BINOMAL									**COMMON NAME**
Corylus avellana nut shell fgt.						1			Hazel nut shell fgt.
Urtica spp.							1		Nettles
Chenepodium spp. / *Atriplex* spp.	5	6	2	44	43	21	10	8	Goosefoot / Orache
Stellaria media (L.) Vill				4	3	3	1		Common chickweed
Persicaria lapathafolia (L.) Gray		5	1		7	7	2	4	Pale persicaria
Polygonum spp.	3	2	1	2	6	38	3	5	Knotgrass
Polygonum aviculare L.				5	1		1		Knotgrass
Fallopia convovulus (L.) A. Love		2			1	24			Black bindweed
Rumex spp.	2	1	1	2	3	5	2	3	Dock
BRASSICACEAE	6	2	2	7	2	41	7		Cabbage family
Raphanus rahanistrum L. capsule fgts.		1				42			Wild raddish capsule fgtt.
FABACEAE				1			1		Pea family
Melilotus / *Medicago* / *Trifolium* spp.	5	7	3	2	8	7	9	30	Melilots, Medicks, Clovers
Galeopsis L.		2							Hemp nettles
Plantago lanceolata L.						3	15	2	Ribwort plantain
Lapsana communis L.		1			7				Nipplewort
Sonchus asper (L.) Hill		1							Prickly sow thistle
Juncus L.							1		Rushes
Carex spp.				4			6	5	Sedge
Carex spp. (2 sided)								2	Sedge (2 sided)
POACEAE (large seeded)	1					47	6	5	Grass (large seeded)
POACEAE (small seeded)			3	11		36	32	12	Grass (small seeded)
Avena spp.	2								Oat
cf. *Avena* spp.		103	11	84	29	515	7	2	Oat (possible)
Avena sativa awn fgt.		1		95	54	34	7	2	Oat awn fgt.
Avena sativa lemna base				3					Oat lemna base
Hordeum spp.	102	795	95	610	288	1012			Barley

Sample Number	**741**	**742**	**787**	**788**	**789**	**1403**	**1478**	**1535**	
Feature Number	**80056**	**80056**	**80056**	**80056**	**80056**	**80137**	**80248**	**80248**	
Context Number	**80057**	**80058**	**80125**	**80126**	**80127**	**80139**	**80334**	**80334**	
Feature Type	**Corn drier**	**Corn drier**	**Corn drier**	**Corn drier**	**Corn drier**	**Corn drier**	**Roof collapse**	**Roof collapse**	
PRN	**31601**	**31601**	**31601**	**31601**	**31601**	**31602**	**31595**	**31595**	
Date	**Early Med**	**Early Med**	**Early Med**	**Early Med**	**Early Med**	**Early Med**	**Iron Age**	**Iron Age**	
LATIN BINOMAL									**COMMON NAME**
Hordeum spp. glume base				91	65	3			Barley glume base
Hordeum spp. rachis fgt.	4	6	5				2	2	Barley rachis fgt.
Hordeum spp. rachis internodes			11	168	171				Barley rachis internodes
Secale cereale		37	25	8	8				Rye
Secale cereale rachis fgt.		18							Rye rachis fgt.
Triticum spp.	66	262	91	536	91	354		4	Wheat
Triticum spp. spikelet fork	9	6	2	1		1	1319	182	Wheat spikelet fork
Triticum spp. glume base		2				4	519	133	Wheat glume base
Triticum diococum							27		Emmer wheat
Triticum diococum glume base							101	11	Emmer wheat glume base
Triticum diococum spikelet fork							62	18	Emmer wheat spikelet fork
Triticum spelta							11		Spelt wheat
Triticum spelta glume base							65	1	Spelt wheat glume base
Triticum spelta spikelet fork							59	7	Spelt wheat spikelet fork
Indeterminate Cereal	1328	5566	1696	7009	3959	6252	101	48	Indeterminate Cereal
Indeterminate Cereal – detached embryo	8	1262	111	127	95	61	3	2	Indeterminate Cereal detached embryo
Indeterminate Cereal – glume base	2						244		Indeterminate cereal glume base
Indeterminate Cereal – rachis fgt.	6		3			6	64	17	Indeterminate Cereal rachis fgt.
Indeterminate Cereal – rachis internode	4					7	13		Indeterminate Cereal – rachis internode
Indeterminate Cereal culm	26		9	9	15	7	10,000+	6000+	Indeterminate Cereal culm
Indeterminate Cereal chaff stem fgts.		7				15			Indeterminate Cereal chaff stem fgts.

Table XIX.4.1i: Plant Macrofossils – Area K9

Sample Number	**5601**	**5602**	**5669**	**5681**	**5693**	
Feature Number	**80835**	**80835**	**80924**	**80924**		
Context Number	**80837**	**80837**	**80926**	**81027**	**81073**	
Feature Type	**Corn drier**	**Corn drier**	**Corn drier**	**Corn drier**	**Corn drier**	
PRN	**76100**	**76100**	**76101**	**76101**	**31596**	
Date	**Early Medieval**	**Early Medieval**	**Early Medieval**	**Early Medieval**	**Romano British**	
LATIN BINOMAL						**COMMON NAME**
Corylus avellanan nut shell fgt.				1		Hazel nut shell fgt.
Ranunculus spp.					1	Buttercups
Chenepodium spp. / *Atriplex* spp.	3	21	8	9	9	Goosefoot / Orache
Stellaria media		1				Common chickweed
Persicaria lapathafolia (L.) Gray	7	34	48	4	13	Pale persicaria
Polygonum spp.	2	2	7	18	2	Knotgrass
Polygonum aviculare L.			5		3	Knotgrass
Fallopia convovulus (L.) A. Love		8		4		Black bindweed
Rumex spp.	1	3	6	4	4	Dock
BRASSICACEAE		2	12	5	11	Cabbage family
Raphanus rahanistrum L. capsule fgts.			8	1	2	Wild raddish capsule fgtt.
FABACEAE					5	Pea family
Melilotus / *Medicago* / *Trifolium* spp.	2	6				Melilots, Medicks, Clovers
Vicia / *Lathyrus* spp.			1		2	Vetch / pea
Galeopsis L.				2		Hemp nettle
Plantago lanceolata L.		2			2	Ribwort plantain
ASTERACEAE			1			Daisy family
Centaurea L.			1			Knapweeds
Lapsana communis L.			1			Nipplewort
Anthemis cotula L.					4	Stinking chamomile
Carex spp.			8			Sedge
Carex spp. (2 sided)			4		2	Sedge (2 sided)
POACEAE (large seeded)	4	9	11	10	317	Grass (large seeded)
POACEAE (small seeded)					4	Grass (small seeded)
Avena spp.					767	Oat
cf. *Avena* spp.	81	82	325	138		Oat (possible)
Avena sativa awn fgt.	16	74	7	13	78	Oat awn fgt.
Hordeum spp.	154	183	237	136	158	Barley
Hordeum spp. glume base	4	3		20		Barley glume base

Sample Number	**5601**	**5602**	**5669**	**5681**	**5693**	
Feature Number	**80835**	**80835**	**80924**	**80924**		
Context Number	**80837**	**80837**	**80926**	**81027**	**81073**	
Feature Type	**Corn drier**	**Corn drier**	**Corn drier**	**Corn drier**	**Corn drier**	
PRN	**76100**	**76100**	**76101**	**76101**	**31596**	
Date	**Early Medieval**	**Early Medieval**	**Early Medieval**	**Early Medieval**	**Romano British**	
LATIN BINOMAL						**COMMON NAME**
Hordeum spp. rachis internodes	1	7		9		Barley rachis internodes
Triticum spp.	43	67	42	36	20	Wheat
Triticum spp. spikelet fork	1	9	27	36	519	Wheat spikelet fork
Triticum spp. glume base			11	2	468	Wheat glume base
Triticum diococum			12		10	Emmer wheat
Triticum diococum glume base					11	Emmer wheat glume base
Triticum diococum spikelet fork					37	Emmer wheat spikelet fork
Indeterminate Cereal	466	1240	1784	2603	2072	Indeterminate Cereal
Indeterminate Cereal – detached embryo	6	42	31	12	12	Indeterminate Cereal detached embryo
Indeterminate Cereal – rachis fgt.					40	Indeterminate Cereal rachis fgt.
Indeterminate Cereal – rachis internode			7		7	Indeterminate Cereal – rachis internode
Indeterminate Cereal culm	12	18			9	Indeterminate Cereal culm
Indeterminate			6		2	Indeterminate

Table XIX.4.1j: Plant Macrofossils – Area L3

Sample Number	**1136**	**1137**	
Feature Number	**22171**	**22171**	
Context Number	**22144**	**22145**	
Feature Type	**Building terrace**	**Building terrace**	
PRN	**31593**	**31593**	
Date	**Late Iron Age**	**Late Iron Age**	
LATIN BINOMAL			**COMMON NAME**
Ranunculus spp.		1	Buttercups
Urtica spp.	1		Nettles
Chenepodium spp. / *Atriplex* spp.	6	10	Goosefoot / Orache
Persicaria lapathafolia (L.) Gray		1	Pale persicaria
Polygonum spp.	2	3	Knotgrass
Rumex spp.	3	11	Dock
BRASSICACEAE	5	12	Cabbage family
FABACEAE		2	Pea family
Melilotus /*Medicago* / *Trifolium* spp.	28	61	Melilots, Medicks, Clovers
Plantago lanceolata L.		4	Ribwort plantain
ASTERACEAE		1	Daisy family
Lapsana communis L.		2	Nipplewort
Carex spp.	8	7	Sedge
Carex spp. (2 sided)	2	5	Sedge (2 sided)
POACEAE (large seeded)		43	Grass (large seeded)
POACEAE (small seeded)		40	Grass (small seeded)
cf. *Avena* spp.	4		Oat (possible)
Avena sativa awn fgt.	1		Oat awn fgt.
Hordeum spp.	1	8	Barley
Hordeum spp. rachis fgt.	1	25	Barley rachis fgt.
Triticum spp.	2	42	Wheat
Triticum spp. spikelet fork	38	1849	Wheat spikelet fork
Triticum spp. glume base	442	130	Wheat glume base
Triticum diococum glume base		312	Emmer wheat glume base
Triticum diococum spikelet fork		395	Emmer wheat spikelet fork
Triticum spelta glume base		23	Spelt wheat glume base
Triticum spelta spikelet fork		46	Spelt wheat spikelet fork
Indeterminate Cereal	15	207	Indeterminate Cereal
Indeterminate Cereal – sprouted grain		3	Indeterminate Cereal sprouted grain
Indeterminate Cereal – detached embryo	1	8	Indeterminate Cereal detached embryo
Indeterminate Cereal – rachis fgt.	13	155	Indeterminate Cereal rachis fgt.
Indeterminate Cereal – rachis internode	2	22	Indeterminate Cereal – rachis internode
Indeterminate Cereal culm	12	9	Indeterminate Cereal culm
Indeterminate		4	Indeterminate

Table XIX.4.2: Habitat table
List of taxa and corresponding habitats from excavations at Parc Cybi, Holyhead, Anglesey (G1701)
(Habitat information based on Stace 1997)

HABITAT	**WATERSIDE**	**WET/ DAMP GROUND**	**OPEN GROUND**	**GRASSLAND**	**CORNFIELDS/ ARABLE LAND**	**CULTIVATED GROUND**	**WASTE GROUND**	**ROUGH GROUND**	**HEDGEROW/ SCRUB**	**WOODLAND CLEARINGS/ EDGE**	**WOODLAND**	
Latin Binomial												**English Common Name**
Ranunculus spp.	✓	✓	✓	✓							✓	Buttercup
Corylus avellana L.									✓		✓	Hazel
Stellaria media (L.) Vill			✓			✓						Common chickweed
Persicaria lapathafolia (L.) Gray		✓	✓			✓	✓					Pale persicaria
Polygonum aviculare L.			✓									Knotgrass
Fallopia convovulus (L.) A. Love					✓		✓					Black bindweed
Raphanus raphanistrum L.						✓	✓	✓				Wild raddish
Bupleurum rotundifolium L.					✓							Thorow wax
Plantago lanceolata L.				✓	✓							Ribwort plantain
Galium aparine L.					✓	✓			✓			Cleavers
Lapsana communis L.							✓	✓	✓	✓	✓	Nipplewort
Sonchus asper (L.) Hill						✓	✓					Prickly sow thistle
Anthemis cotula L.					✓		✓	✓				Stinking chamomile
Juncus L.	✓	✓										Rushes
Eleocharis palustris Roem & Schult.	✓	✓										Common spike rush

Part XX: Pollen assessments

It should be noted that there was a delay of several years between the assessment of the pollen cores and the final phase of post-excavation work in which full pollen analysis could be carried out. During this delay the cores deteriorated and were not suitable for further work. They were therefore discarded and full pollen analysis was not carried out. The pollen results presented are therefore from preliminary data not full analysis.

Part XX.1. A Palaeoenvironmental Assessment of Deposits at Parc Cybi

Dr Ben Gearey MIFA, Dr Tom Hill & Dr Emma Tetlow

Summary

Deposits of palaeoenvironmental potential were encountered during archaeological excavations undertaken by Gwynedd Archaeological Trust at Parc Cybi, Ty Mawr, Wales. As a result, Birmingham Archaeo-Environmental was subcontracted to undertake a palaeoenvironmental assessment of the sedimentary sequence. Three sediment cores were taken from the site for palynological assessments. Radiocarbon dating of the sedimentary sequences was also undertaken to provide an outline chronology for the deposits. The results indicate that peat accumulation commenced c.11,140±70yrs BP following the terrestrialisation of a freshwater lake in the Late glacial period, although it is possible that this date is somewhat too old. The palynological assessment suggests that a relatively open landscape initially prevailed, prior to the expansion of birch dominated woodland in response to Holocene climatic amelioration. The woodland subsequently became more dense, with hazel and willow replacing the previously dominant birch scrub/woodland. The presence of alder during the Late-glacial period raises a number of questions regarding the possible presence of a 'cryptic refugia' in north west Wales, primarily because this tree is conventionally thought to have arrived in the UK no earlier than c. 8,000yrs BP. Mid-late Holocene peat deposits appear to have been removed by peat cutting.

Introduction

Two areas of peatland were identified adjacent to archaeological excavations being undertaken by Gwynedd Archaeological Trust (GAT) at Parc Cybi, Ty Mawr. Such deposits have the potential for preserving records of environmental change and human activity in the form of sub-fossil pollen grains. Birmingham Archaeo-Environmental (BA-E) liaised with GAT in order to develop a sampling strategy suitable for the characterization of the deposits and to recover samples for palynological assessment and radiocarbon dating.

Methods

Borehole Survey

Fieldwork was undertaken by BA-E in August 2007. The two locations included one adjacent to the main excavation on the west side of the site (Area G) and a second location (Area K) on the east. Both areas were valley mires, although Area G was somewhat larger.

After completing an initial site walkover, coring was undertaken using a hand operated gouge Eijkelcamp corer. A summary of the stratigraphy encountered during the initial coring survey is provided in Appendix XX.1.1. At Area G, a single transect of ten cores was excavated along the long axis of the mire (Plate XX.1.1). The deposits are relatively thick at this location, with the base of deposits recorded at 1.00 m at the eastern end of the mire increasing to a maximum depth of over 3.00 m at Core 8, before shallowing up to less than 1.00 m at the western end of the transect. The stratigraphy was fairly uniform with grey silty clay overlying red-brown highly humified peat with abundant vegetative remains. This peat unit trended into grey-green *gyttja* (organic mud) with pale rootlets before basal gravels/bedrock was encountered.

For Area K, two intersecting transects comprising a total of 13 cores were excavated. The deposits identified tended to be fairly shallow (up to *c*. 0.50 m) and consist of stiff grey slightly organic clayey-silt over gravels/bed rock. The exception to this was in the western part of the area, where the capping silty clay trends into dark brown well humified silty peat with wood and monocotyledonous remains (grasses/sedges etc), which in turn overlies grey-green *gyttja.* These deposits were deepest at Core 13, with a total depth of nearly 3.0 m.

Following the identification and characterisation of the deepest sediments at each location, cores for subsequent analyses were then collected using a standard pattern Russian corer. Two cores were taken from Area G, one from the deepest area of peat (Core 8) and a second from the edge of the mire (Core 1), proximal to the archaeological excavation. A single core was collected from Area K (Core 13).

Stratigraphic recording
Detailed stratigraphic recording of the three core sequences was undertaken at the Birmingham Archaeo-Environmental laboratory at the University of Birmingham. Each core sample was carefully cut open to ensure the enclosed stratigraphy remained intact prior to recording and sampling. This also enabled the complete stratigraphic sequence of each core to remain intact should further palaeoenvironmental analysis be required.

Sediments were recorded using the Troels-Smith (1955) classification scheme. The scheme breaks down a sediment sample into four main components and allows the inclusion of extra components that are also present, but that are not dominant. Key physical properties of the sediment layers are also identified according to darkness (Da), stratification (St), elasticity (El), dryness of the sediment (Dr) and the sharpness of the upper sediment boundary (UB). A summary of the sedimentary and physical properties classified by Troels-Smith (1955) and the nomenclature used is provided in Table XX.1.1. A full stratigraphic description of the sample boreholes is provided in Appendix XX.1.2.

Pollen Assessments
Subsampling for pollen assessment focused on the organic peat deposits encountered towards the top of each core profile, due to the increased preservation potential of pollen grains in such sediments. The preservation potential of pollen within the calcareous *gyttja* deposits of the deeper strata was regarded as low.

Assessment concentrated on the Area G Core 1 sequence from proximal to the archaeological excavation and subsampling was undertaken at c. 0.08m intervals (12 samples in total). Pollen samples were also taken from the top and base of the other sample cores, Area G Core 8 and Area K Core 13 (four samples in total). Pollen preparation followed standard techniques including potassium hydroxide (KOH) digestion, hydrofluoric acid (HF) treatment and acetylation (Moore *et al*., 1991). As this phase of works required an initial assessment of the pollen assemblages, at least 125 total land pollen grains excluding aquatics and spores were counted for each sample.

Radiocarbon Dating
Two samples (Table XX.1.2) from Area G Core 1 were submitted for radiocarbon dating to Beta Analytic Inc., Florida. Samples were taken from the base and top of the organic unit (at 1.37 m depth and 0.55 m depth respectively).

Results
Radiocarbon Dating
The results of the radiocarbon dating are given in Table XX.1.2 (the radiocarbon certificates are provided in Appendix XX.1.3). Both samples produced plenty of carbon for accurate measurement and all analyses are reported as having proceeded normally. Radiocarbon dates were calibrated using INTCAL04 (Reimer *et al*., 2004). The basal sample (1.37 m) is dated to 11440+70 BP (Beta-263631; 11480-11210 cal. BC; 13430-13160 cal. BP) indicating a date within the Late-glacial Interstadial (*c*. 14000-12600 cal.BP) However, it is possible that this date is too old in comparison to the associated pollen spectra. The sample from 0.55 m is dated to 8960+60 BP (Beta-263630; 8280-7960 cal. BC; 10230-9910cal.BP), suggesting an early Holocene (Mesolithic) date. The early Holocene age obtained from the upper radiocarbon sample suggests that either a significant hiatus in peat accumulation is present at the site, or that peat cutting has taken place in the historic period, resulting in much of the overlying sedimentary sequence being removed. The latter explanation is likely due to the known influence of peat cutting and the lack of the later Holocene record from other sites on Anglesey (W. Eastwood, pers. comm.). This will be discussed further below.

Pollen
The results of the assessments are given as percentage pollen diagrams (Figs XX.1.1-3) produced using the computer programme TILIA and TILIA*GRAPH (Grimm 1991). Pollen nomenclature follows Moore *et al.* (1991) with the modifications suggested by Bennett *et al*. (1994).

Area G Core 1
All subsamples contained abundant and generally well preserved pollen. Fig XX.1.1 provides a summary of the pollen assessments in relation to core stratigraphy. The results of the radiocarbon dating are also included within Fig XX.1.1. To facilitate interpretation, the pollen diagram has been divided in to four provisional local pollen assemblage zones (LPAZs) on the basis of changes in the pollen spectra (given the site prefix 'PC'). All percentages are of TLP (total land pollen) unless otherwise stated.

PC-1 (1.37-1.28 m) *Alnus, Betula, Myriophyllum,* Poaceae

The basal zone is dominated by herb species, with Poaceae (wild grasses), and Cyperaceae (sedges). There is a gradual reduction in the abundance of herb species through the zone, falling from *c*. 70% to *c*. 50% with height. Trees including a peak in *Alnus* (alder) at nearly 20%, *Betula* (birch) (10%) and occasional grains of *Pinus* (pine) are recorded. The aquatic species *Myriophyllum* (alternate water-milfoil) is recorded up to *c*. 20% TLP+aquatics.

PC-2 (1.28-1.12 m) *Betula, Salix, Cyperaceae,* Poaceae, Pteropsida
PC-2 displays a substantial increase in *Betula*, rising from *c*. 20% to *c*. 50% with height through the zone. *Salix* (willow) also increases to *c*. 10%. There is a continued reduction in the abundance of herbs, falling from *c*. 60% to *c*. 30%. Species present include Cyperaceae and Poaceae, with low values for *Filipendula* (meadowsweet), Lactuceae (dandelions etc.), *Rumex* (docks) and *Thalictrum* (meadowrue). Aquatic plants are apparent in the form of *Myriophyllum*. Pteropsida (fern) spores contribute *c*. 20% TLP+spores throughout the zone.

PC-3 (1.12-0.79 m) *Betula, Pinus, Salix,* Cyperaceae, Poaceae, Pteropsida
Betula increases in abundance to *c*.65% with height and tree species increasing to *c*. 75% towards the top of the zone. Shrubs including *Salix* and *Corulys avellana*-type (hazel, sweet gale) are consistently recorded at *c*.10%. An abrupt peak in *Alnus* (c.20%) is apparent at the opening of the zone. *Myriophyllum*, is present in much lower frequencies in this zone and subsequently disappears from the record although *Potamogeton* (pondweed) is present in low values. Cypercaceae and Poaceae continue to be the best represented herbs. Pteropsida contributes *c*. 15-20% TLP+spores through the zone.

PC-4 (0.79-0.56 m) *Corylus, Salix,* Cyperaceae, *Betula*
A significant reduction in *Betula* frequencies is evident at the opening of the zone, dropping to *c*. 15%. There is a marked rise in *Corylus* to 45% and Cyperaceae to 35%, whilst *Salix* also increases to *c*. 15%. *Alnus* also reappears at the top of the zone. Poaceae is recorded at *c*. 10% throughout the zone but other herbs remain scarce.

Area G Core 8
Pollen samples were taken from 0.39 m and 2.28 m depth. Pollen preservation was again found to be good, with a count of 125 pollen grains achievable for both samples. Fig XX.1.2 provides a summary of the pollen assemblages in relation to core stratigraphy. The basal pollen sample (2.28 m depth) is dominated by herb species, with Poaceae (*c*. 40%) and Cyperaceae (*c*.15%) dominating. *Myriophyllum alterniforum* is also relatively abundant (*c*. 20%), whilst tree species contribute *c*. 15%, mainly through *Betula* and occasional *Pinus*. The upper sample (0.39m depth) is almost wholly dominated by *Betula* (*c*.90%), supported by occasional grains of *Pinus*, *Salix* and *Corylus avellana*-type. Grains of Poaceae and *Myriophyllum*, which previously dominated the pollen assemblage within the underlying sample, are absent.

Area K Core 13
Pollen samples were taken from 0.46 m and 2.10 m depth. Pollen preservation was once again high, with the minimum count of 125 pollen grains achievable. Fig XX.1.3 provides a summary of the pollen assemblages encountered in relation to core stratigraphy. The basal pollen sample (2.10 m depth) is dominated by Poaceae and Cyperaceae, contributing *c*. 90%, with low values for tree and shrub taxa (<5%) although occasional *Alnus* and *Betula* grains are apparent. In contrast, the upper sample (0.46 m depth) is dominated by *Alnus* at *c*. 75%, with *Betula*, *Pinus*, *Corylus avellana*-type and *Hedera* (ivy) present. Herbs are absent, but spores of Pterospida are recorded.

Interpretation
The sequence of deposits from Area G is typical of a hydroseral succession, or the gradual transition from freshwater (represented by the gyttja deposits) to terrestrial depositional conditions (represented by the humified peat). The stratigraphic characteristics of the deposits compare with the concept of hydroseral succession proposed initially by Tansley (1939), in which "a gradual change from open water to aquatic macrophytes, followed by colonization by rooted aquatics, emergent plants, a terrestrial fen with a further transition to raised bog (conditions)" occurs (Charman, 2002: 146). The radiocarbon dating suggests that the transition (at a depth of *c*. 1.38 m) from open water at Parc Cybi towards the end of the Lateglacial period. The pollen spectra indicate that following a period of open grassland vegetation around 11440+70 BP (Beta-263631; 11480-11210 cal. BC), birch scrub/woodland expanded throughout zones PC-2 and PC-3. This date would place the basal zone of Core 1 well within the warmer period of the Lateglacial Interstadial, which would seem somewhat unlikely given that there is no clear evidence in the pollen or stratigraphic record for the cold period of the Loch Lomond Stadial (*c*. 12600-11,400 cal. BP). This is manifested at Llanilid, south Wales as a decline in *Betula* (Walker *et al.* 2003). The incorporation of a relatively small quantity of re-worked older carbon in a bulk AMS sample would act to

produce an anomalously 'old' date. However, further work is required to test this hypothesis. The fall in grasses and disappearance of herbs such as meadowsweet, docks and meadowrue after PC-1 suggests that the woodland was relatively dense and replaced herb communities typical of the disturbed soils of the Late-glacial period. It is possible that this event marks the opening of the Holocene. Willow also expanded locally at this time, presumably onto the damper soils at the edge of the wetland. Notably, two pronounced peaks in *Alnus* are apparent at the opening of PC-1 and 2. This would seem to imply that alder was also present near to the sampling site (see below).

By the end of PC-3, total tree and shrub percentages have increased to around 80%, whilst the abundance of herbaceous taxa, in particular grasses and sedges, are reduced relative to PC-1 but remain sufficient to reflect some open habitats. Wetland grasses such as *Phragmites* (common reed) however might be contributing to the Poaceae curve with sedges growing on suitable contexts on the local mire surface. The rise in ferns supports the evidence for dense and closed woodland canopy with a damp shady understorey. The final zone PC-4 is marked by a significant rise in hazel and willow at the expense of birch, marking the beginnings of the establishment of the Holocene woodland cover in this area. Hazel is likely to have formed fringing woodland on the dryland margins of the site, whilst other trees species do not seem to have been significant locally at this time. By the close of the diagram, dated to 8960 +60 BP (8280-7960 Cal. BC) the impression is of a generally wooded landscape of mixed woodland, consisting largely of hazel, birch, alder and willow. Few herbs are recorded indicating a generally closed woodland, with the maintenance of the Poacaeae curve probably reflecting the presence of common reed on the damper soils. Such an impression may be confirmed by the marked drop in Poaceae at the close of the diagram concomitant with the rise in alder, suggesting this tree was expanding into reedswamp communities.

One of the most significant aspects of the pollen data from Parc Cybi relates to the presence of *Alnus* during the Late-glacial/early Holocene in Core 1 from Area G. Alder is generally accepted to have immigrated into the UK from Western Germany or Holland, establishing itself in southeastern England by 8,000 yrs BP (Tallantire, 1992). Alder then gradually spread throughout the UK over the following *c*. 1,000 yrs. Despite the possible problems with the dating of Core 1, the presence of percentages of *Alnus* sufficient to indicate a local presence within a sequence from northwest Wales that is Late-glacial/early Holocene therefore raises a number of questions. It is possible that this can be attributed to sediment reworking whereby older deposits containing alder pollen grains may have been eroded and re-deposited during this period of climatic instability. However, the relative abundance of *Alnus* within the sequence (*c*. 15-20%), combined with the generally good level of preservation suggests the samples have good stratigraphic integrity. An alternative explanation could relate to the potential errors with the radiocarbon dating, although an early Holocene timeframe for the basal zones (PC1-3) is clearly appropriate.

The pollen spectra from Area G Core 8 also suggest that Late-glacial/early Holocene deposits are present at this location, with the basal sample dominated by grasses and sedges and the uppermost sample containing high values for birch. As encountered in Area G, the deposits in Area K have probably been significantly reduced by peat cutting. However, deeper sequences do survive and it is likely on stratigraphic grounds that these deposits relate to the early-mid Holocene. The higher values for *Alnus* in the sample from the top of Core 13 in Area K probably indicate that the peat at this location may be somewhat younger than in Area G; but this may not be very secure considering the issues with alder discussed above.

Given the early timeframe for the samples assessed from Parc Cybi, the sequences do not directly relate to the main phases of archaeological activity at the Parc Cybi site although the record has resonance for any Mesolithic activity in the vicinity. It is possible that intact later Holocene deposits are present in the top *c*. 0.50m of Core 1 from Area G, but this would require assessment of pollen samples at a close interval to detect.

Evaluation of potential

The palynological assessments undertaken at Parc Cybi have revealed a valuable sedimentary sequence worthy of further analysis although the midlater Holocene record appears to have been removed probably by peat cutting. The sequence from Area G covers a substantial period from the Late-glacial through to the earlier Holocene but the precise timeframe is unclear. There is evidence that the alder tree might have been present on Anglesey during the earlier Holocene/Late-glacial and hence a substantial time before its conventional expansion in southern England.

Proposals for further analysis

Given the potential biogeographical importance of these deposits, further palynological study is recommended to investigate the possible early presence of alder with supporting radiocarbon dating. More detailed

palynological study of the record could also investigate whether any environmental impacts arising from Mesolithic activity in the area can be detected. As far as the mid-late Holocene record and potential for linking this to the archaeological excavations, more detailed study of Core 13 is recommended with close resolution assessment of the upper deposits in Core 1 necessary to establish how conformable the later record is at this location.

Archive

Sedimentary cores, pollen samples and stratigraphic records are held at Birmingham Archaeo-Environmental, University of Birmingham. [These have now been discarded].

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Plate XX.1.1: Coring Area G

Degree of Darkness	
nig.4	black
nig.3	
nig.2	
nig.1	
nig.0	white

Degree of Stratification	
strf.4	well stratified
strf.3	
strf.2	
strf.1	
strf.0	no stratification

Degre e of Elasticity	
elas.4	very elastic
elas.3	
elas.2	
elas.1	
elas.0	no elasticity

Degree of Dryness	
sicc.4	very dry
sicc.3	
sicc.2	
sicc.1	
sicc.0	water

	Sharpness of Upper Boundary
lim.4	< 0.5mm
lim.3	< 1.0 & > 0.5mm
lim.2	< 2.0 & > 1.0mm
lim.1	< 10.0 & > 2.0mm
lim.0	> 10.0mm

	Sh	Substantia humosa	Humous substance, homogeneous microscopic structure
I Turfa	Tb	T. bryophytica	Mosses +/- humous substance
	Tl	T. lignosa	Stumps, roots, intertwined rootlets, of ligneous plants
	Th	T. herbacea	Roots, intertwined rootlets, rhizomes of herbaceous plants
II Detritus	Dl	D. lignosus	Fragments of ligneous plants >2mm
	Dh	D. herbosus	Fragments of herbaceous plants >2mm
	Dg	D. granosus	Fragments of ligneous and herbaceous plants <2mm >10mm
III Limus	Lf	L. ferrugineus	Rust, non-hardened. Particles <0.1mm
IV Argilla	As	A.steatodes	Particles of clay
	Ag	A. granosa	Particles of silt
V Grana	Ga	G. arenosa	Mineral particles 0.6 to 0.2mm
	Gs	G. saburralia	Mineral particles 2.0 to 0.6mm
	Gg(min)	G. glareosa minora	Mineral particles 6.0 to 2.0mm
	Gg(maj)	G. glareosa majora	Mineral particles 20.0 to 6.0mm
	Ptm	Particulae testae molloscorum	Fragments of calcareous shells

Table XX.1.1 Physical and sedimentary properties of deposits according to Troels-Smith (1955)

Sample	Code	Depth (m)	Sample pre-treatment	13C/12C Ratio	Conventional radiocarbon age	Calibrated range BC/AD (2 sigma - 95% confidence)
PARC1A-0.55m	Beta-265630	0.55m	silty peat: acid washes	-28.1 o/oo	8960±60 BP	8280-7960 Cal. BC
PARC1A-1.37m	Beta-263631	1.37m	silty peat: acid washes	-24.2 o/oo	11440±70 BP	11480-11210 Cal. BC

Table XX.1.2: Radiocarbon date results from Parc Cybi, Ty Mawr. Refer to Appendix II for radiocarbon certificates.

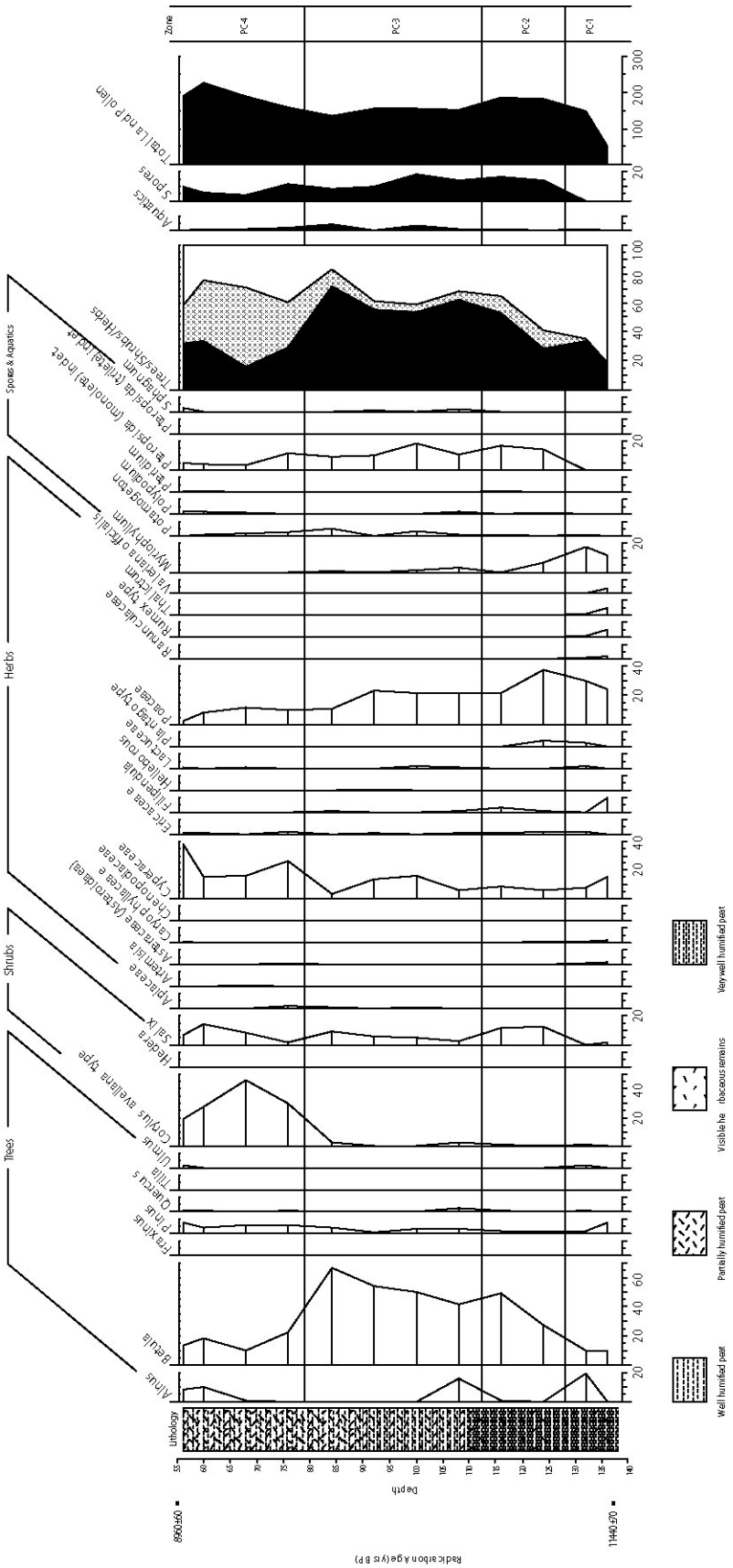


Fig XX.1.1: Area G Core 1 Pollen Diagram

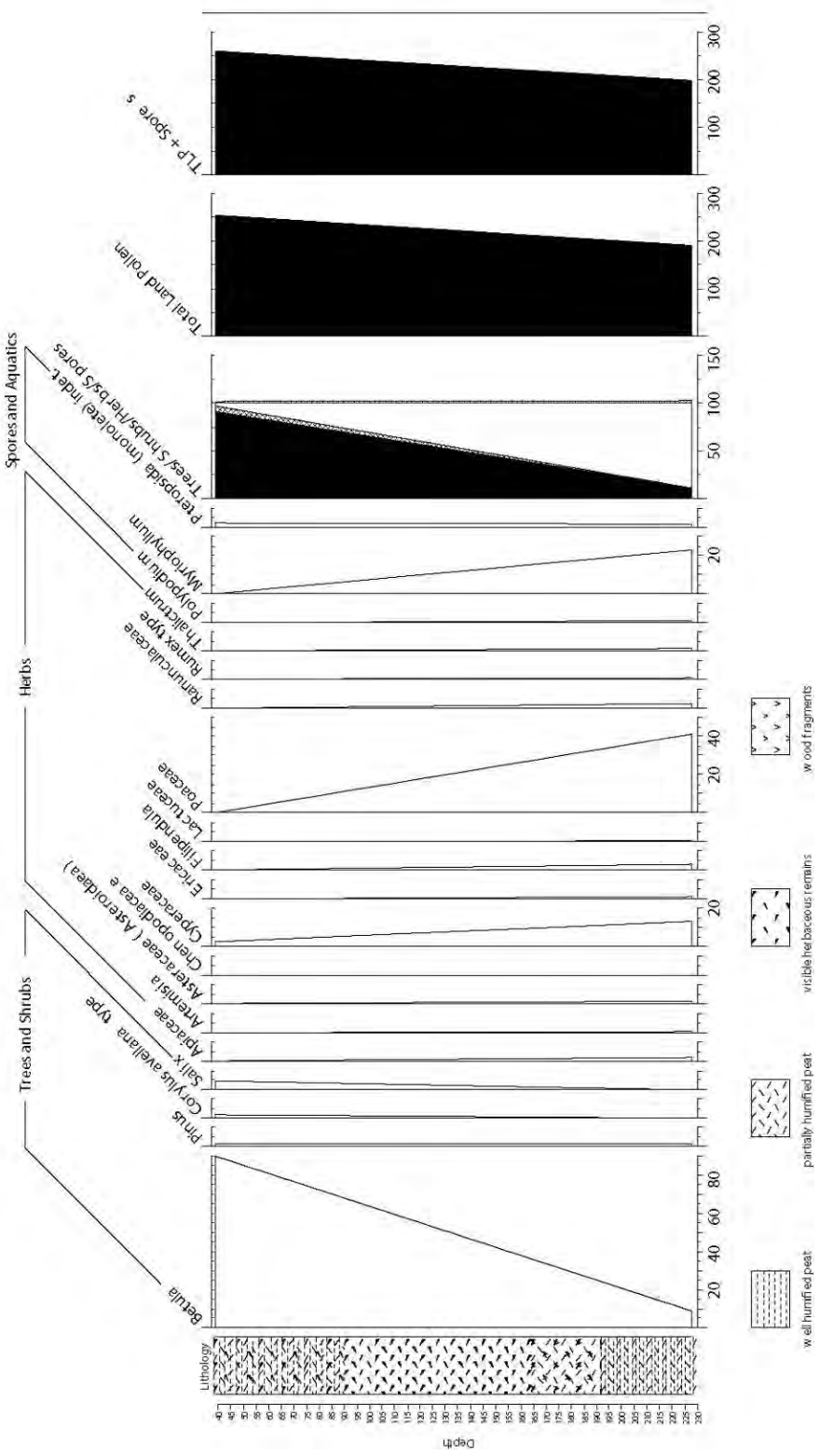


Fig XX.1.2: Area G Core 8 Pollen Diagram

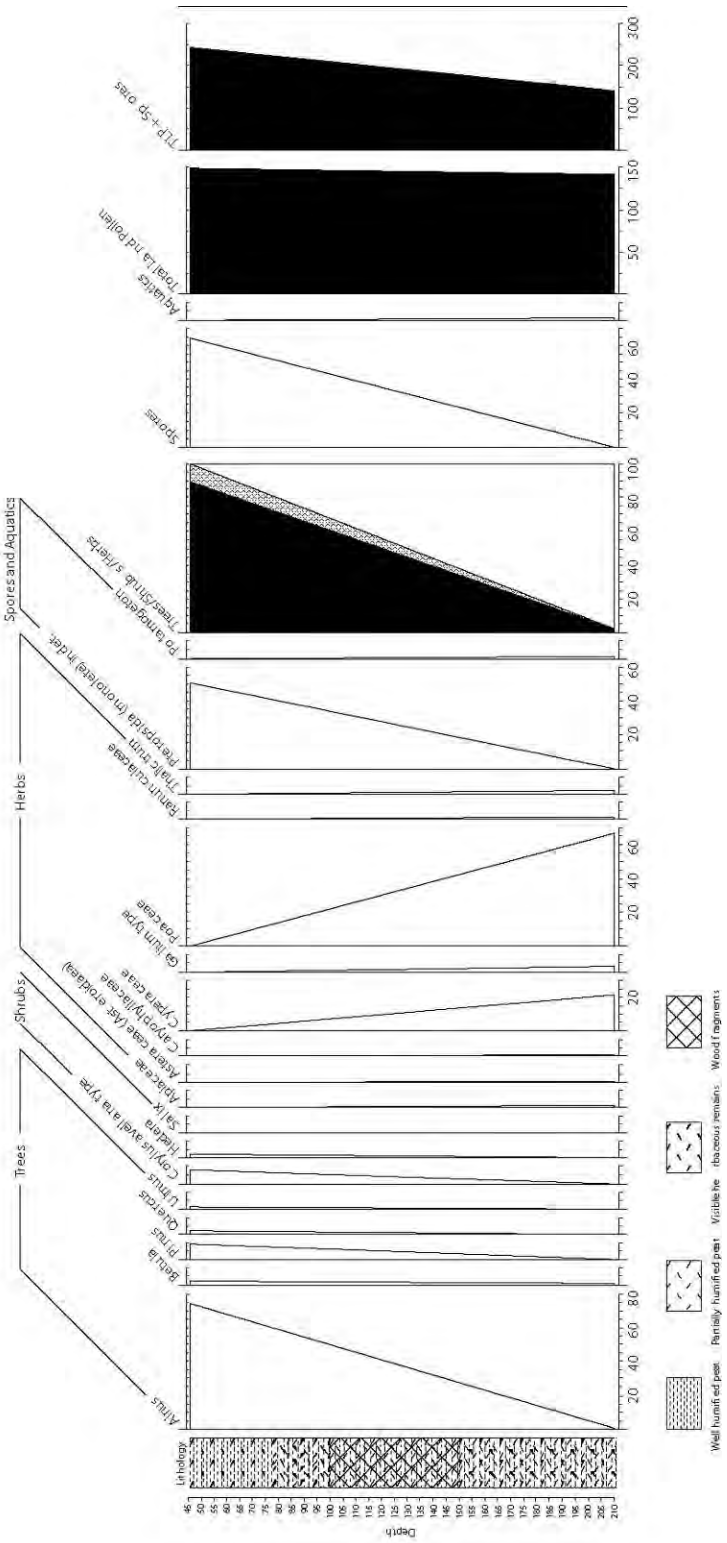


Fig XX.1.3: Area K Core 13 pollen diagram

Appendix XX.1.1: Site Evaluation Coring Stratigraphy

AREA K
Core 1
0.00-0.07m Dark grey silty topsoil
0.07-0.22m Dark grey coarse clay with abundant rootlets, occasional gravel and iron mottling
>0.22m Gravels encountered

Core 2
0.00-0.23m Dark grey coarse clay with abundant rootlets, occasional gravel and iron mottling
>0.23m Gravels encountered

Core 3
0.00-0.24m Dark grey coarse clay with abundant rootlets, occasional gravel and iron mottling
>0.24m Gravels encountered

Core 4
0.00-0.37m Dark grey, slightly organic-rich silt with abundant herbaceous rootlets. Reduction in gravel content as previously encountered in C1, 2 and 3.
>0.37m Gravels encountered

Core 5
0.00-0.38m Dark grey silty clay with occasional rootlets. Occasional sand and gravel within.
0.38-0.55m Dark brown well humified silty peat with abundant herbaceous rootlets
0.55-0.60m Grey-green gyttja with fine herbaceous rootlets and abundant detrital material, occasional wood fragments towards base
>0.60m Gravels encountered

Core 6
0.00-0.50m Organic topsoil grading into dark grey silt clay
> 0.50m Gravels encountered

Core 7
0.00-0.05m Organic topsoil
0.05-0.20m Coarse grey silty clay with iron mottling and abundant herbaceous rootlets
> 0.20m Gravels encountered

Core 8
0.00-0.05m Waterlogged topsoil
0.05-0.48m Grey-brown slightly organic clayey silt with rootlets and occasional sand and gravel. Organic content increasing with depth
> 0.48m Gravels encountered

Core 9
0.00-0.30m Grey-brown silty clay with modern herbaceous rootlets
0.30-1.92m Dark brown well humified peat with abundant herbaceous remains. Wood fragments encountered towards top of organic unit
1.92-2.25m Pale grey sandy silt with herbaceous rootlets
> 2.25m Gravels encountered

Core 10
0.00-0.30m Dark grey clayey silt with modern rootlets
0.30-0.90m Dark brown well humified slightly silty peat with wood fragments and abundant herbaceous remains including *Juncus* (rushes)
0.90-2.10m Dark brown well humified peat with visible moss horizons
2.10-2.65m Pale grey fine sandy silt
>2.65m Gravels encountered

Core 11
0.00-0.20m Dark grey-brown silty clay

0.20-1.65m Dark brown well humified slightly silty peat with fine herbaceous rootlets and visible detrital remains (incl *Menyanthes* Bog Bean)
>1.65m Gravels encountered

Core 12
0.00-0.30m Dark grey clayey silt with modern rootlets
0.30-0.48m Dark grey-brown well humified silty peat
>0.48m Gravels encountered

Core 13
0.00-0.30m Dark grey silty clay with modern rootlets
0.30-0.90m Dark brown well humified silty peat with visible *Menyanthes* (Bog Bean) remains
0.90-1.50m Dark brown well humified silty peat
1.50-1.75m Pale grey organic silts with abundant shell fragments
1.75-2.80m Yellow-brown gyttja
>2.80m Gravels encountered

AREA G
Core 1
0.00-0.30m Dark grey clayey silt with occasional rootlets and iron mottling
0.30-1.00m Dark brown-black well humified peat with abundant herbaceous remains and wood fragments
1.00-1.50m Dark brown herbaceous peat with lower wood content
1.50-1.95m Grey-olive gyttja with fine herbaceous rootlets
1.95-2.00m Pale grey silt with fine black rootlets
2.00-4.80m Pale grey silt
>4.80m Gravels encountered

Core 2
0.00-0.20m Dark grey organic silt with herbaceous rootlets
0.20-1.35m Dark brown-black herbaceous peat with visible *Menyanthes* (Bog Bean) fragments
1.35-1.85m Grey-olive gyttja
1.85-2.00m Dark brown-black well humified peat
2.00-2.25m Grey clayey silt with organic mottling
>2.25m Gravels encountered

Core 3
0.00-0.30m Dark grey silty clay topsoil with rootlets
0.30-1.00m Red-brown very well humified peat with occasional herbaceous remains
1.00-1.70m Grey-olive gyttja with abundant rootlets
1.70-2.00m Pale grey silt with dark fine herbaceous rootlets
>2.00m Gravels encountered

Core 4
0.00-0.30m Dark grey clayey silt with herbaceous rootlets, occasional small pebbles
0.30-1.05m Red-brown very well humified peat with occasional lenses of herbaceous material including twigs, leaves, phragmites stems
1.05-1.15m Grey-olive gyttja
1.15-2.00m Pale grey silt
> 2.00m Gravels encountered

Core 5
0.00-0.30m Dark grey clayey silt with herbaceous rootlets
0.30-1.66m Dark brown-black well humified peat with horizons of herbaceous material
1.66-2.47m Pale grey clay
>2.47m Gravels encountered

Core 6
0.00-0.20m Dark grey clay with fibrous rootlets
0.20-0.80m Dark brown well humified peat with wood fragments

0.80-0.96m Olive-grey gyttja
0.96-1.54m Pale grey silt
1.54-2.40m Dark grey clay with organic mottling
> 2.40m Gravels encountered

Core 7
0.00-0.30m Clay-rich organic topsoil with herbaceous rootlets
0.30-2.00m Dark brown well humified peat with occasional visible herbaceous remains
2.00-2.20m Grey-olive gyttja
2.20-2.85m Dark grey clay with black organic mottling
>2,85m Gravels encountered

Core 8
0.00-0.30m Clay-rich organic topsoil with herbaceous rootlets
0.30-1.50m Dark brown well humified peat with occasional wood and herbaceous remains visible
1.50-3.30m Olive-grey gyttja
3.30-4.00m Grey clay with organic mottling
>4.00m Gravels encountered

Core 9
0.00-0.23m Dark grey clay with herbaceous rootlets
0.23-0.86m Dark brown well humified peat
0.86-0.92m Dark grey organic silt horizon
0.92-0.94m Dark brown well humified peat lens
0.94-1.51m Olive-grey gyttja
1.51-1.85m Pale grey silt with occasional organic mottling
>1.85m Gravel encountered

Core 10
0.00-0.50m Dark brown very well humified peat
0.50-0.80m Pale grey calcareous grey silt with abundant rootlets and occasional fibrous detrital material
>0.80m Gravel encountered

Appendix XX.1.2: Sample Core Stratigraphy

Refer to Table XX.1.1 for summary of sedimentary classification scheme of Troels-Smith (1955)

Area G Core 1

0.00-0.36m

Da	St	El	Dr	UB
2++	0	0	3	-

Ag1, As1, Sh1, Dg1, Dh+, Th+, Dl+
Dark grey-brown organic-rich silts and clays

0.36-0.55m

Da	St	El	Dr	UB
3	0	0+	2+	1

Sh2, Dg1, Ag1, Dl+, Dh+, Th+
Dark brown silt-rich well humified peat

0.55-0.90m

Da	St	El	Dr	UB
3+	0+	1	2	1

Dg2, Dh1, Sh1, Th+, Ptm+, Dl+
Dark brown-black herbaceous peat

0.90-1.10m

Da	St	El	Dr	UB
2	0+	2	2	1

Sh2, Dg2, Dh+, Th+, Ggmin+, Ggmaj+
Light red-brown well humified peat with occasional gravel

1.10-1.38m

Da	St	El	Dr	UB
2	0	1	2	2

Sh3, Dg1, Dh+, Th+, Ptm+
Light brown very well humified peat

1.38-1.94

Da	St	El	Dr	UB
1+	1+	0	2	1

Lc3, Sh1, Th+, Dh+, Dg+, Ag+
Light yellow-grey organic-rich gyttja

1.94-2.08m

Da	St	El	Dr	UB
1+	0+	0	2	1

Lc2, Ag2, As+, Sh+, Ggmin+
Light grey silt-rich gyttja, with occasional gravel

2.08-2.21m

Da	St	El	Dr	UB
1+	0	0	2+	1

Ag3, Lc1, As+, Sh+, Min +
Light grey-brown gyttja-rich silt

2.21-2.23m

Thin yellow-grey gyttja horizon

2.33-2.50m

Da	St	El	Dr	UB
1+	0	0	2+	1

Ag4, Sh+, Lc+, As+, Min+, Maj+
Light grey silt

Area G Core 8

0.00-0.09m

Da	St	El	Dr	UB
2+	0	0	2+	-

Ag2, As1, Sh1, Th+, Dg+, Dh+
Light grey-brown organic clayey silt

0.09-0.38m

Da	St	El	Dr	UB
3	0	1	2+	1

Dg2, Sh2, Ag++, Dh+, Th+
Dark brown well humified peat with occasional sit

0.38-0.90m

Da	St	El	Dr	UB

Dg2, Dh1, Sh1, Dl+, th+
Dark brown-black herbaceous well humified peat

0.90-1.64m

Da	St	El	Dr	UB
3+	0	1	3	1

Dg2, Dh2, Sh+, Dl+, Th+
Dark brown-black herbaceous humified peat

1.64-1.92m

Da	St	El	Dr	UB
3+	1	1	3	1

Dg2, Dh1, Tl1, Th+, Sh+, Dl+
Dark brown-black herbaceous peat with abundant dk fibrous rootlets

1.92-2.29m

Da	St	El	Dr	UB
3	0	1	2+	1

Dg2, Sh2, Dh+, Th+
Medium brown very well humified peat

2.29-2.36m

Da	St	El	Dr	UB
2	1	0+	2+	2

Lc2, Sh1, Dg1, Dh+
Light yellow-grey organic-rich gyttja

2.36-2.63m

Da	St	El	Dr	UB

Sh2, Dg1, Lc++, Dh+, Th+
Medium brown well humified peat with occasional gyttja

2.63-3.10m

Da	St	El	Dr	UB

Sh2, Dg1, Lc1, Th+
Light grey-brown gyttja-rich well humified peat

3.10-3.55

Da	St	El	Dr	UB
2+	0	1	2	2

Sh2, Lc2, Dg+, Th+
Light grey-brown organic gyttja

3.55-4.00

Da	St	El	Dr	UB
1+	0	0	3	1

Ag2, As1, Lc1, Sh+
Light grey gyttja-rich clayey silt

Area K Core 13

0.00-0.16m

Da	St	El	Dr	UB
3	0	1	2+	-

Th1, Dg1, Sh1, Ag1, As+, Dh+
Dark brown rooty silt rich peat

0.16-0.46m

Da	St	El	Dr	UB
2+	0	0	2+	1

Ag2, Sh2, Dg+, Th+, Dh+, As+
Light grey-brown organic-rich silt

0.46-0.78m

Da	St	El	Dr	UB
3+	0	2	2	1

Sh2, Dg1, Dh1, Th+
Dark brown herbaceous well humified peat

0.78-1.00m

Da	St	El	Dr	UB
3+	0	2	2	1

Dh2, Dg1, Sh1, Th+
Dark brown well humified peat

1.00-1.50m

Da	St	El	Dr	UB
3	0	0	3	1

Dg2, Sh1, Ld1, Dl+, Th+
Dark grey-brown organic-rich mud with occasionalwood fragments

1.50-2.11m

Da	St	El	Dr	UB
3+	0	1	1+	1

Dg2, Dh1, Sh1, Dl+, Th+
Dark brown saturated well humified peat

2.11-2.32m

Da	St	El	Dr	UB
2+	2	1	2	1

Lc2, Dg2, Sh+, Dh+, Th+, Ag+
Light yellow-brown organic-rich gyttja

2.32-2.42m

Da	St	El	Dr	UB
2	2	1	2	1

Lc3, Sh1, Dh+, Dg+, Th+
Light grey-brown organic gyttja

2.42-2.58m

Da	St	El	Dr	UB
2+	2	1	2	1

Lc2, Dg2, Sh+, Dh+, Th+, Ag+
Light yellow-brown organic-rich gyttja

2.58-2.91m

Da	St	El	Dr	UB
2	2	1	2	1

Lc3, Sh1, Dh+, Dg+, Th+
Light grey-brown organic gyttja

2.91-3.00m

Da	St	El	Dr	UB
2	0	0	3	2

Ag2, As2, Sh+, Dg+
Light grey brown silty-clay

Part XX.2. Palynological assessments of deposits from areas F and K

Dr Benjamin R. Gearey MIfA and E-J.Hopla MIfA

Summary

Birmingham Archaeo-Environmental carried out a palynological assessment of sediment samples from deposits relating to the marsh edge and buried soil in area F and from the marsh in area K.

Methodology

The samples were collected using monolith tins from an area of wetland (Area K) previously identified as of palaeoenvironmental potential (Gearey *et al*. 2008). A further 0.25m monolith (sample 5039) was taken through the upper peat on the north-western limit of the marsh in Area F. This deposit incorporated a densely packed birch bark layer at a depth of approximately 0.15m. Four pollen subsamples were also taken through a deposit identified as the 'A' horizon of a buried soil north of sample 5039 on the dryland. This report describes the results of the palynological assessment carried out on these samples and makes recommendations for further analytical work where appropriate.

Pollen Assessment

Eighteen sub-samples of approximately 1 cm3 were taken from the monolith tins, fourteen were taken from Samples 1, 2, 3, 4, 5 and 6 (Area K) and a further four samples from sample 5039 (Area F). Four pollen spot samples were taken through the buried soil (samples 5040, 5041, 5042 and 5043). Pollen preparation followed standard techniques including KOH digestion, HF treatment and acetylation (Moore *et al.*, 1991). A total of 125 pollen grains were attempted for each sample, although pollen concentrations were too low in the majority of the samples from Area K and full counts were not obtained. The results of the assessment are provided in Table 1 and for Area F and the Buried Soil as pollen diagrams (Fig XX.2.1 and 2). Pollen nomenclature follows Moore *et al*. (1991) and Bennett *et al*. (1994).

Results and discussion

Area K

Samples 1 (5519), 2 (5520),3 (5521),4 (5522), 5 (5523) and 6 (5524) Pollen concentrations were generally low and preservation poor to medium for the majority of these samples. The taxa that are recorded are mainly herbs, Poaceae (grasses) and Cyperaceae (sedges) with other grains present including *Artemisia*-type (mugwort), *Ranunculus*-type (buttercup) and Pteropsida (fern spores). It is unclear why pollen is poorly preserved in this sequence, but this may be related to conditions during deposit formation, such as a fluctuating watertable, which would have resulted in some oxidation and hence destruction of pollen. Alternatively, the low concentrations may reflect the generally depauperate nature of the vegetation on and around the sampling site, although the higher concentrations of better preserved pollen elsewhere at the site (see below) perhaps mitigates against this explanation.

The low concentrations of pollen prevent detailed comment regarding the palaeoenvironment, but the general impression from the lack of tree or shrub pollen is that the sequence dates to the early Holocene (see below). Previous assessment of a sample from the base of a core sequence (2.10m) from Area K also produced spectra dominated by herbaceous taxa, although a sample from closer to the top of the peat (0.46m) contained high percentages of *Alnus* (alder), *Betula* (birch) and *Corylus* (hazel) suggesting a later Holocene timeframe (Gearey *et al*., 2008). This is probably a reflection of the impact of peat cutting, with differential removal of sediment across the mire.

Area F

Sample - (5039)

A 0.25m monolith was taken through the upper peat on the north-western limit of the marsh incorporating a densely packed bark layer at a depth of approximately 0.15m. The bark layer was dated to 8865±42 BP (8221-7827 Cal BC, KIA-40119) placing it in the Mesolithic period. The two basal samples (0.24m and 0.16m depths) (Fig XX.2.1) are largely dominated by *Corylus* (up to 48%) and Cyperaceae with increased values of *Salix* (willow) at 0.16m depth. *Quercus, Alnus* and *Calluna* (heather) all increase at the expense of *Pinus* and *Betula* above 0.08m depth. Poaceae (wild grasses) and other herbs such as Lactuceae (dandelions), *Ranunculus*-type (buttercups) and Caryophyllaceae (the pink family) also increase towards the top of the sequence although values for herbaceous taxa remain generally low.

This sequence indicates a phase of early Holocene vegetation development, supporting the radiocarbon date on the birch bark layer at 0.15m. The landscape was initially dominated by *Corylus* scrub, with some *Salix* carr, probably on the damper soils around the sampling site. The percentages of Cyperaceae may very well reflect the

presence of sedges on these damper contexts, with the values of Pteropsida suggesting damp, shady habitats where ferns could flourish. The subsequent rise in *Quercus* and *Alnus* indicates the migration of these trees into the region as the climate continued to ameliorate. These trees out-competed *Betula* and *Pinus* on the better soils, a process reflected in the reduction in the latter two taxa towards the top of the diagram.

The low values for Poaceae and other herbs suggests that the woodland was fairly dense, with those taxa which are recorded (Chenopodiaceae, Caryophyllaceae) typical of tall herb communities perhaps also associated with the wetland edge rather than the wider landscape. The increase in *Calluna* at the top of the diagram probably reflects the spread of heather onto drier contexts on the wetland itself. It is highly likely that this sequence has also been truncated by peat cutting with the top of the diagram indicating an early Holocene landscape.

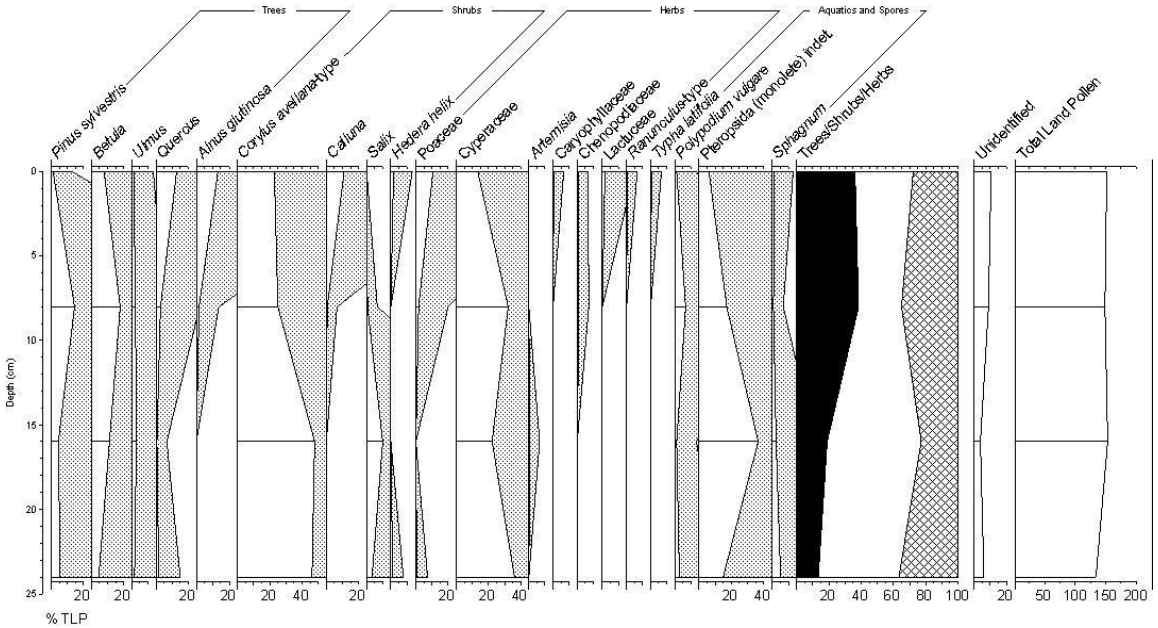


Fig XX.2.1: Area F Monolith pollen diagram (5039).

'Buried Soil'

Sample 5040, 5041, 5042 and 5043

Four subsamples were assessed from a context identified as a thin 'A' horizon of a buried soil, north of sample 5039 on the dryland. This layer contained charcoal which was dated to 3543±31 BP (1963-1768 Cal BC, KIA40120) placing it in the Early Bronze Age. The pollen spectra (Fig XX.2.2) are markedly homogeneous with little pronounced change across the depth of the deposit. The samples are dominated by tree and shrub pollen including *Corylus*, *Alnus*, *Quercus* and *Betula*. Herbaceous taxa include Cyperaceae and Poaceae, with lower values of Caryophyllaceae, *Filipendula* (meadow sweet), *Plantago lanceolata* (ribwort plantain), Rubiaceae (bedstraws) and *Thalictrum* (meadow rue).

The impression is of a generally closed mixed woodland environment with limited evidence for open or disturbed areas in the near vicinity of the sampling site. The relatively high representation of Cyperaceae would again suggest the presence of sedges on the wetland areas near to the sampling site. The homogeneous character of the pollen spectra may support the hypothesis advanced by Gwynedd Archaeological Trust (2009) that this context represents a deliberate dump of sediment. Alternatively, bioturbation within soil profiles can result in a mixing of the vertical biostratigraphy and hence a pollen profile of a homogeneous character. It is also possible that rapid sediment accumulation would result in a pollen profile of this nature. There is no evidence for the effects of human activity in this sequence, although a single record of *P. lanceolata*, a herb typical of pasture land is recorded in sample 5041, but it is difficult to draw any meaningful conclusions from this. If the deposit represents an *in situ* soil horizon and the radiocarbon date is regarded as providing an accurate date for sediment accumulation, then the pollen sequence suggests that the local landscape at least remained wooded into the Bronze Age, with very little evidence for anthropogenic disturbance to the vegetation.

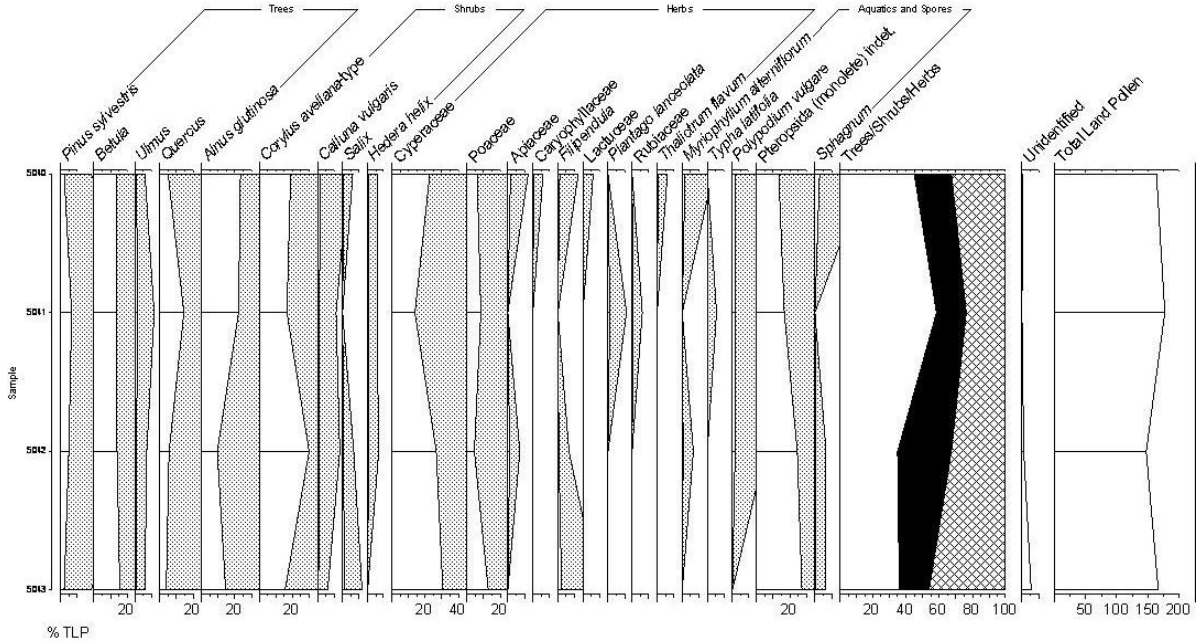


Fig XX.2.2: Buried soil (5040, 5041, 5042 and 5043) pollen diagram.

Evaluation of potential and proposals for further work

Given the poor preservation and low concentrations of pollen in the six samples from Area K, no further analytical work is recommended on this material. Previous palynological assessment (see Gearey *et al*., 2008) of two samples from deposits in Area K indicated that the basal sediments (2.10m depth) dated to the early Holocene, with a sample from 0.46m depth containing *Alnus*, *Betula* and *Pinus sylvestris*, indicative of a later Holocene timeframe. As with the deposits in Area F (see below), it is clear that peat cutting has significantly curtailed the record. Preservation of pollen is clearly somewhat variable in the Area K deposits.

Pollen preservation and concentration are much better in the monolith from Area F (5039). These samples clearly reflect an early Holocene period of landscape development, prior to any significant human impact on the landscape, again supporting previous palaeoenvironmental work which indicates peat cutting has removed much of the mid-later Holocene deposits at the site (Gearey *et al*. 2008).

Further analytical work of the monolith from Area F, supported by radiocarbon dating, has the potential to shed light on early Holocene vegetation change and also to detect any possible small scale Mesolithic impacts on the local vegetation. The pollen assessment of the buried soil has indicated excellent pollen preservation and concentration for this deposit, but that the biostratigraphy has probably been affected by sediment mixing either by anthropogenic or natural processes. Further more detailed analyses of these samples may provide information regarding the early Bronze Age environment at the site. If more material is available, this should be supported by radiocarbon dating.

Archive

All remaining samples and pollen sub-sample residues and paper records pertaining to this work are currently stored at BA-E. These will be retained for a period of 6 months.

References

Bennett, K.D., Whittington, G. & Edwards, K.J. (1994) *Recent plant nomenclature changes and pollen morphology in the British Isles*. Quaternary Newsletter 73, 1-6.

Gearey, B.R. Hill, T. and Tetlow, E. (2008) *Palaeoenvironmental assessment of deposits at Parc Cybi, Ty Mawr, Anglesey*. Unpublished BA-e report to GAT.

Moore, P.D., Webb, J.A. and Collinson, M.E. (1991) *Pollen Analysis*. London: Blackwell

Table XX.2.1: Pollen assessment of the Parc Cybi samples

BAE Pollen Prep Labels	Actual depths from start of Tin 1 (5519)	Main Pollen Species	Concentration	Preservation
Monolith 1 0cm	Sample 1 (5519) 0cm	No pollen	-	-
Monolith 1 12cm	Sample 1 (5519) 12cm	Poaceae (23%), Cyperaceae (38%), Quercus (7%), Ranunculus-type (11%)	125 TLP+ Medium (3)	Medium (3)
Monolith 1 24cm	Sample 1 (5519) 24cm	Very Low count – few Cyperaceae grains	Very Low (1)	Poor (1)
Monolith 1 32cm	Sample 2 (5520) 32cm	Cyperaceae, Poaceae, Ranunculus-type	42 grains counted Low (2)	Good (4)
Monolith 1 40cm	Sample 2 (5520) 40cm	Cyperaceae (43%), Poaceae (25%), Ranunculus-type (11%)	125 TLP+ Medium (3)	Medium (3)
Monolith 1 48cm	Sample 2 (5520) 48cm	Cyperaceae (57%), Poaceae (13%), Ranunculus-type (9%)	125 TLP+ Medium (3)	Medium (3)
Monolith 1 56cm	Sample 3 (5521) 56cm	Very Low Count-Cyperaceae, Poaceae and Spores	Very Low (1)	Poor (1)
Monolith 1 64cm	Sample 3 (5521) 64cm	Very Low-1 Cyperaceae	Very Low (1)	Poor (1)
Monolith 1 72cm	Sample 3 (5521) 72cm	Very Low Count- Cyperaceae and Pteropsida, Caryophllaceae	Very Low (1)	Poor (1)
Monolith 3	Sample 4 (5522)	SAMPLE 4 (5522) was not sampled as it was dried out and disturbed	-	-
Monolith 3 0cm	Sample 5 (5523) 100cm	Cyperaceae (93%)	Good (4)	Medium (3)
Monolith 3 16cm	Sample 5 (5523) 116cm	Very low count	-	-
Monolith 3 32cm	Sample 6 (5523) 132cm	Cyperaceae (57%), Poaceae (35%)	125 TLP+ Excellent (5)	Good (4)
Monolith 3 48cm	Sample 6 (5524) 148cm	Low count Menyanthes, Cyperaceae, Poaceae	Low (2)	Low (2)
Monolith 2 0cm	(5039) 0cm	Corylus (23%), Quercus (13%), Alnus (13%), Calluna (11%), Poaceae (11%), Cyperaceae (13%)	125 TLP+ Excellent (5)	Medium (3) Quite a lot of crumpled grains
Monolith 2 8cm	(5039) 8cm	Corylus (26%) Cyperaceae (33%), Betula (18%) Pinus (15%) Pteropsida	125 TLP+ Excellent (5)	Medium (3)
Monolith 2 16cm	(5039) 16cm	Corylus (48%) Cyperaceae (22%) Betula (11%) Salix (10%),Pteropsida	125 TLP+ Excellent (5)	Medium (3)
Monolith 2 24cm	(5039) 24cm	Corylus (46%), Cyperaceae (36%)	125 TLP+ Good (4)	Medium (3)
Buried Soil Spot Samples				
Sample 5040	Sample 5040	Cyperaceae (23%), Corylus (19%), Alnus (24%), Betula (14%), Poaceae (6%), Quercus (5%)	125 TLP+ Good (4)	Excellent (5)
Sample 5041	Sample 5041	Alnus (23%), Corylus (16%), Quercus (14%), Betula (14%),Cyperaceae (14%),Pteropsida	125 TLP+ Excellent (5)	Excellent (5)
Sample 5042	Sample 5042	Corylus (30%), Cyperaceae (27%), Betula (14%), Alnus (10%), Pteropsida	125 TLP+ Excellent (5)	Excellent (5)
Sample 5043	Sample 5043	Cyperaceae (31%), Corylus (16%), Betula (16%), Alnus (15%), Poaceae (13%), Pteropsida	125 TLP+ Excellent (5)	Excellent (5)

Appendix XX.III: Radiocarbon Certificates

FROM: Darden Hood, Director (mailto:mailto:dhood@radiocarbon.com)
(This is a copy of the letter being mailed. Invoices/receipts follow only by mail.)

November 5, 2007

Mr. Thomas Hill
University of Birmingham
Birmingham Archaeology
Edgbaston
Birmingham B15 2TT, UK

RE: Radiocarbon Dating Results For Samples CASTLE-C26, CASTLEC2-0.2m, CASTLEC2-0.69m, CASTLEC1-0.28m, CASTLEC1-0.67m, NEW-0.30m, NEW-0.99m, NEW-3.71m, DRUM-0.79m, DRUM-2.10m, DRUM-3.40m, KIL3100-TOP, KIL3100-BASE, KIL3142-TOP, KIL3142-BASE, LIS-1.10m, LIS-1.25m, PARC1A-0.55m, PARC1A-1.37m

Dear Dr. Hill:

Enclosed are the radiocarbon dating results for 19 samples recently sent to us. They each provided plenty of carbon for accurate measurements and all the analyses proceeded normally. As usual, the method of analysis is listed on the report with the results and calibration data is provided where applicable.

As always, no students or intern researchers who would necessarily be distracted with other obligations and priorities were used in the analyses. We analyzed them with the combined attention of our entire professional staff.

If you have specific questions about the analyses, please contact us. We are always available to answer your questions.

Our invoices are enclosed. Please, immediately give them to the appropriate officer for prompt payment or send VISA charge authorization. Thank you.

Sincerely,

Mr. Thomas Hill

Report Date: 11/5/2007

University of Birmingham

Material Received: 10/8/2007

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 235613	5520 +/- 40 BP	-27.3 o/oo	5480 +/- 40 BP
SAMPLE : CASTLE-C26			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (peat): acid washes			
2 SIGMA CALIBRATION : Cal BC 4360 to 4310 (Cal BP 6320 to 6260) AND Cal BC 4300 to 4260 (Cal BP 6250 to 6210)			
Beta - 235614	2460 +/- 40 BP	-27.6 o/oo	2420 +/- 40 BP
SAMPLE : CASTLEC2-0.2m			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (peat): acid washes			
2 SIGMA CALIBRATION : Cal BC 750 to 680 (Cal BP 2700 to 2630) AND Cal BC 670 to 610 (Cal BP 2620 to 2560) Cal BC 600 to 400 (Cal BP 2560 to 2350)			
Beta - 235615	3150 +/- 40 BP	-28.1 o/oo	3100 +/- 40 BP
SAMPLE : CASTLEC2-0.69m			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (silty peat): acid washes			
2 SIGMA CALIBRATION : Cal BC 1440 to 1280 (Cal BP 3390 to 3230)			
Beta - 235616	3530 +/- 40 BP	-26.4 o/oo	3510 +/- 40 BP
SAMPLE : CASTLEC1-0.28m			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (silty peat): acid washes			
2 SIGMA CALIBRATION : Cal BC 1940 to 1740 (Cal BP 3890 to 3690)			
Beta - 235617	8610 +/- 40 BP	-26.9 o/oo	8580 +/- 40 BP
SAMPLE : CASTLEC1-0.67m			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (peat): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 7610 to 7570 (Cal BP 9560 to 9520)			

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 235618	5740 +/- 40 BP	-27.3 o/oo	5700 +/- 40 BP
SAMPLE : NEW-0.30m			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (peat): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 4670 to 4640 (Cal BP 6620 to 6590) AND Cal BC 4620 to 4460 (Cal BP 6570 to 6400)			
Beta - 235619	8860 +/- 50 BP	-29.0 o/oo	8790 +/- 50 BP
SAMPLE : NEW-0.99m			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (peat): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 8180 to 8110 (Cal BP 10130 to 10060) AND Cal BC 8090 to 8070 (Cal BP 10040 to 10020) Cal BC 8060 to 8040 (Cal BP 10010 to 9990) AND Cal BC 7990 to 7660 (Cal BP 9940 to 9610)			
Beta - 235620	12600 +/- 70 BP	-10.8 o/oo	12830 +/- 70 BP
SAMPLE : NEW-3.71m			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (peat): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 13480 to 12960 (Cal BP 15430 to 14910)			
Beta - 235621	4090 +/- 40 BP	-25.9 o/oo	4080 +/- 40 BP
SAMPLE : DRUM-0.79m			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (wood): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 2860 to 2800 (Cal BP 4810 to 4760) AND Cal BC 2750 to 2710 (Cal BP 4700 to 4660) Cal BC 2710 to 2550 (Cal BP 4660 to 4500) AND Cal BC 2540 to 2490 (Cal BP 4490 to 4440)			
Beta - 235622	9110 +/- 50 BP	-26.9 o/oo	9080 +/- 50 BP
SAMPLE : DRUM-2.10m			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (peat): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 8330 to 8240 (Cal BP 10280 to 10190)			

Mr. Thomas Hill

Report Date: 11/5/2007

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 235623	9320 +/- 50 BP	-26.4 o/oo	9300 +/- 50 BP
SAMPLE : DRUM-3.40m			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (wood): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 8700 to 8680 (Cal BP 10650 to 10620) AND Cal BC 8650 to 8420 (Cal BP 10600 to 10370) Cal BC 8400 to 8350 (Cal BP 10350 to 10300)			
Beta - 235624	650 +/- 40 BP	-26.2 o/oo	630 +/- 40 BP
SAMPLE : KIL3100-TOP			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (peat): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal AD 1280 to 1410 (Cal BP 670 to 540)			
Beta - 235625	980 +/- 40 BP	-28.5 o/oo	920 +/- 40 BP
SAMPLE : KIL3100-BASE			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (peat): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal AD 1020 to 1210 (Cal BP 930 to 740)			
Beta - 235626	3500 +/- 40 BP	-28.8 o/oo	3440 +/- 40 BP
SAMPLE : KIL3142-TOP			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (peat): acid washes			
2 SIGMA CALIBRATION : Cal BC 1880 to 1650 (Cal BP 3830 to 3600)			
Beta - 235627	3460 +/- 40 BP	-28.0 o/oo	3410 +/- 40 BP
SAMPLE : KIL3142-BASE			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (peat): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 1870 to 1850 (Cal BP 3820 to 3800) AND Cal BC 1780 to 1620 (Cal BP 3730 to 3570)			

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 235628	2970 +/- 40 BP	-27.8 o/oo	2920 +/- 40 BP
SAMPLE : LIS-1.10m			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (peat): acid washes			
2 SIGMA CALIBRATION : Cal BC 1260 to 1000 (Cal BP 3210 to 2950)			
Beta - 235629	6270 +/- 40 BP	-27.0 o/oo	6240 +/- 40 BP
SAMPLE : LIS-1.25m			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (peat): acid washes			
2 SIGMA CALIBRATION : Cal BC 5310 to 5200 (Cal BP 7260 to 7150) AND Cal BC 5170 to 5070 (Cal BP 7120 to 7020)			

University of Birmingham

Material Received: 10/8/2007

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 235630	9010 +/- 60 BP	-28.1 o/oo	8960 +/- 60 BP
SAMPLE : PARC1A-0.55m			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (silty peat): acid washes			
2 SIGMA CALIBRATION : Cal BC 8280 to 7960 (Cal BP 10240 to 9910)			
Beta - 235631	11430 +/- 70 BP	-24.2 o/oo	11440 +/- 70 BP
SAMPLE : PARC1A-1.37m			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (silty peat): acid washes			
2 SIGMA CALIBRATION : Cal BC 11480 to 11210 (Cal BP 13440 to 13160)			

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-24.2:lab. mult=1)

Laboratory number: **Beta-235631**

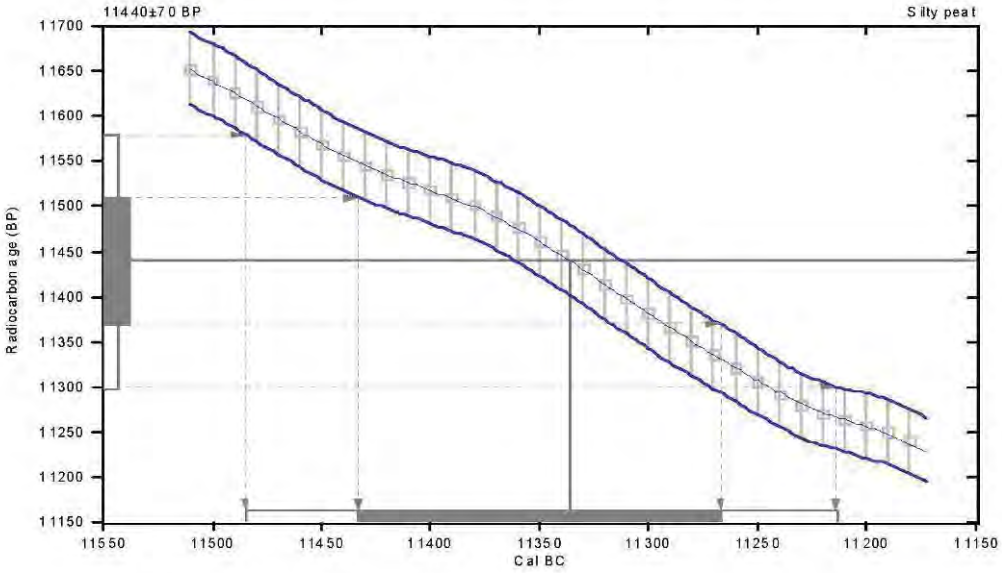
Conventional radiocarbon age: **11440±70 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 11480 to 11210 (Cal BP 13440 to 13160)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 11340 (Cal BP 13290)

1 Sigma calibrated result: (68% probability) Cal BC 11430 to 11270 (Cal BP 13380 to 13220)



References:

Database used

INTCAL04

Calibration Database

INTCAL04 Radiocarbon Age Calibration

IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-27.3:lab. mult=1)

Laboratory number: **Beta-235613**

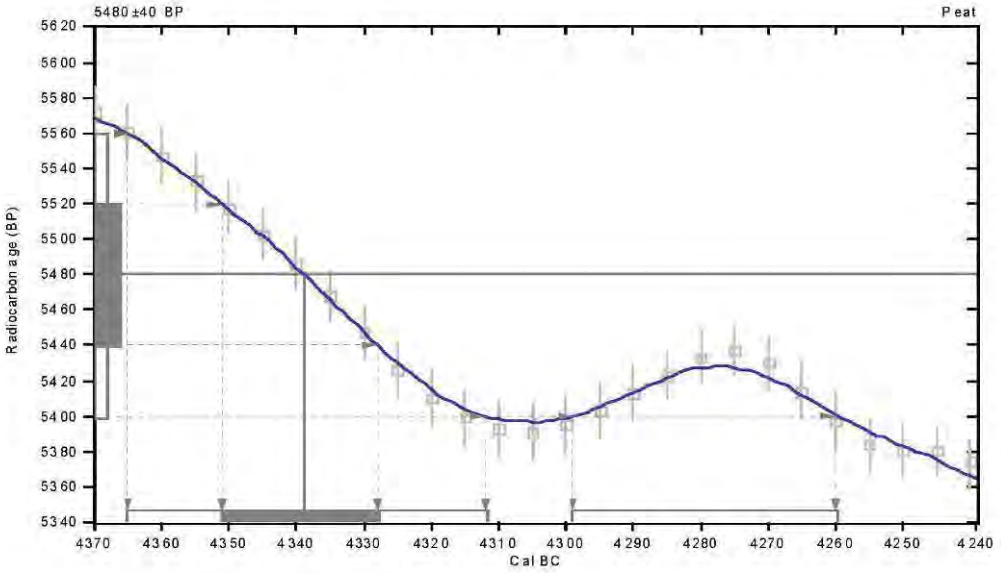
Conventional radiocarbon age: **5480±40 BP**

2 Sigma calibrated results: **Cal BC 4360 to 4310 (Cal BP 6320 to 6260) and**
(95% probability) **Cal BC 4300 to 4260 (Cal BP 6250 to 6210)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 4340 (Cal BP 6290)

1 Sigma calibrated result: (68% probability) Cal BC 4350 to 4330 (Cal BP 6300 to 6280)



References:

Database used

INTCAL04

Calibration Database

INTCAL04 Radiocarbon Age Calibration

IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).

Mathematics

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-27.6:lab. mult=1)

Laboratory number: **Beta-235614**

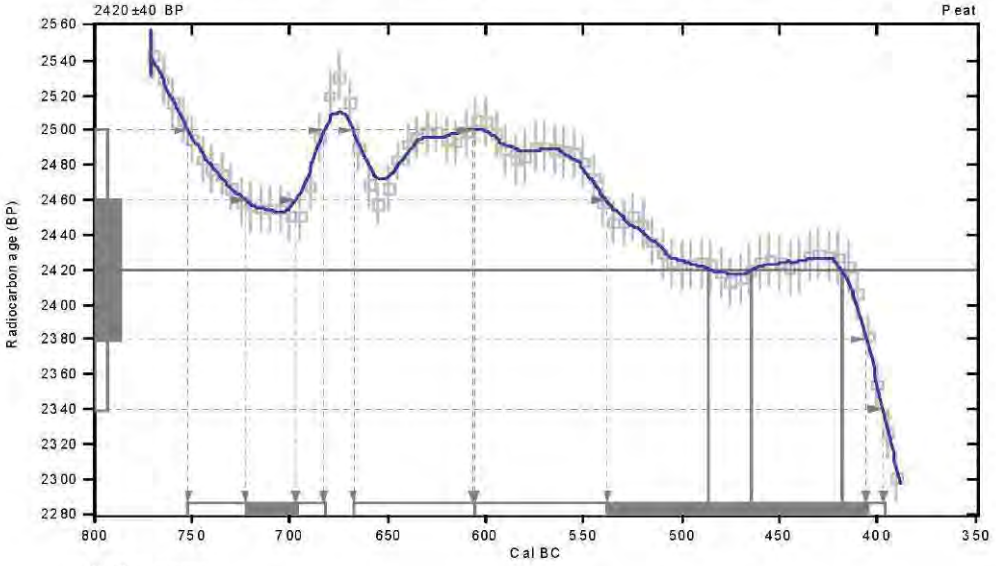
Conventional radiocarbon age: **2420±40 BP**

2 Sigma calibrated results: **Cal BC 750 to 680 (Cal BP 2700 to 2630) and**
(95% probability) **Cal BC 670 to 610 (Cal BP 2620 to 2560) and**
Cal BC 600 to 400 (Cal BP 2560 to 2350)

Intercept data

Intercepts of radiocarbon age with calibration curve: Cal BC 490 (Cal BP 2440) and
Cal BC 460 (Cal BP 2410) and
Cal BC 420 (Cal BP 2370)

1 Sigma calibrated results: Cal BC 720 to 700 (Cal BP 2670 to 2650) and
(68% probability) Cal BC 540 to 410 (Cal BP 2490 to 2360)



References:

Database used

INTCAL04

Calibration Database

INTCAL04 Radiocarbon Age Calibration

IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).

Mathematics

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-28.1:lab. mult=1)

Laboratory number: **Beta-235615**

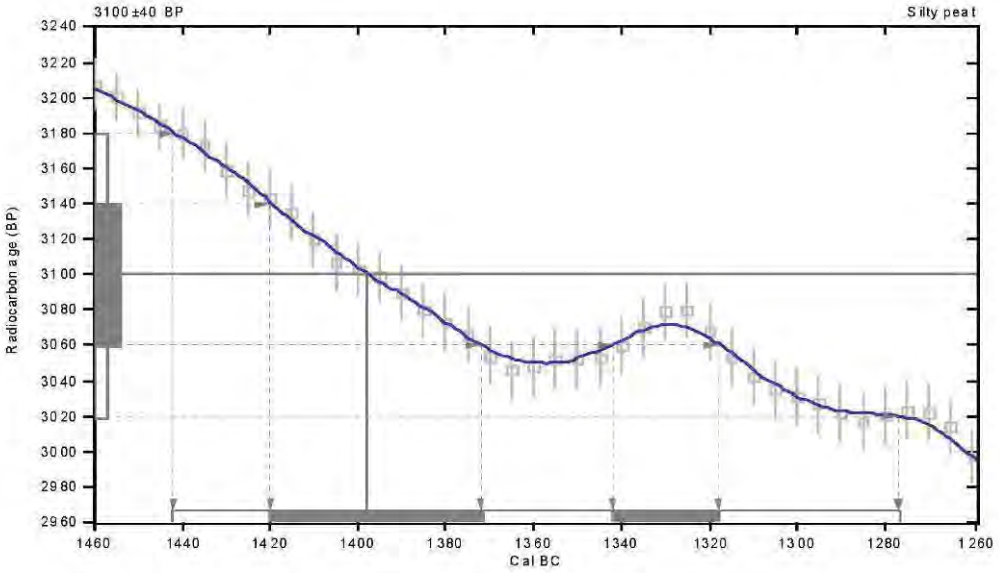
Conventional radiocarbon age: **3100±40 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 1440 to 1280 (Cal BP 3390 to 3230)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1400 (Cal BP 3350)

1 Sigma calibrated results: (68% probability) Cal BC 1420 to 1370 (Cal BP 3370 to 3320) and Cal BC 1340 to 1320 (Cal BP 3290 to 3270)



References:

Database used

INTCAL04

Calibration Database

INTCAL04 Radiocarbon Age Calibration

IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).

Mathematics

A Simplified Approach to Calibrating C14 Dates

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-26.4:lab. mult=1)

Laboratory number: **Beta-235616**

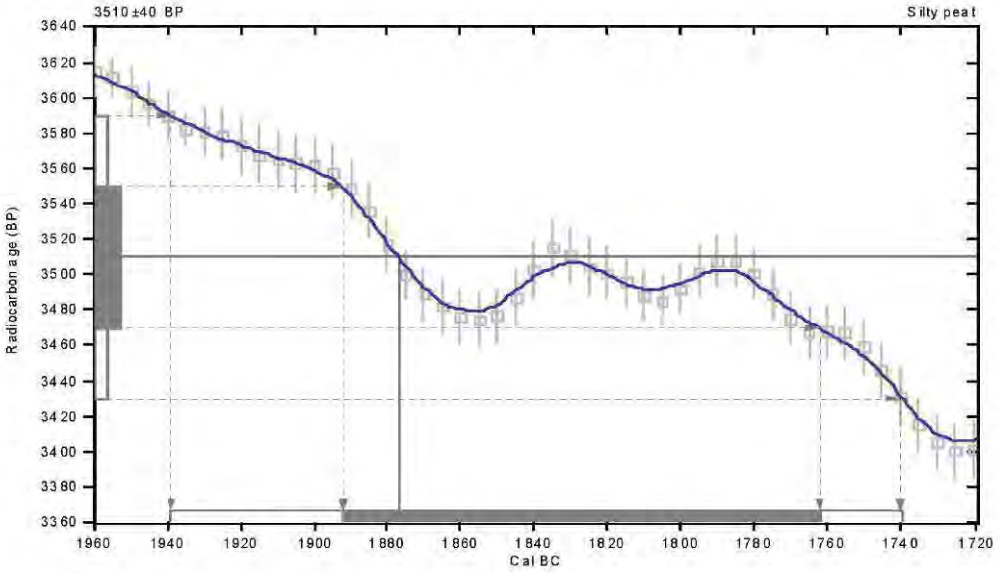
Conventional radiocarbon age: **3510±40 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 1940 to 1740 (Cal BP 3890 to 3690)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1880 (Cal BP 3830)

1 Sigma calibrated result: (68% probability) Cal BC 1890 to 1760 (Cal BP 3840 to 3710)



References:

Database used

INTCAL04

Calibration Database

INTCAL04 Radiocarbon Age Calibration

IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).

Mathematics

A Simplified Approach to Calibrating C14 Dates

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-26.9:lab. mult=1)

Laboratory number: **Beta-235617**

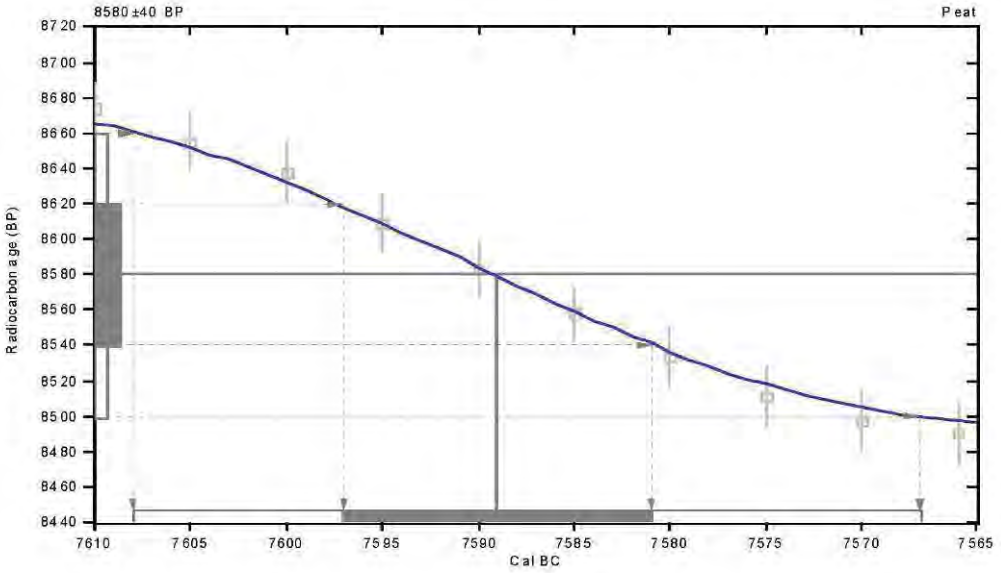
Conventional radiocarbon age: **8580±40 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 7610 to 7570 (Cal BP 9560 to 9520)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 7590 (Cal BP 9540)

1 Sigma calibrated result: (68% probability) Cal BC 7600 to 7580 (Cal BP 9550 to 9530)



References:

Database used

INTCAL04

Calibration Database

INTCAL04 Radiocarbon Age Calibration

IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).

Mathematics

A Simplified Approach to Calibrating C14 Dates

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-27.3:lab. mult=1)

Laboratory number: **Beta-235618**

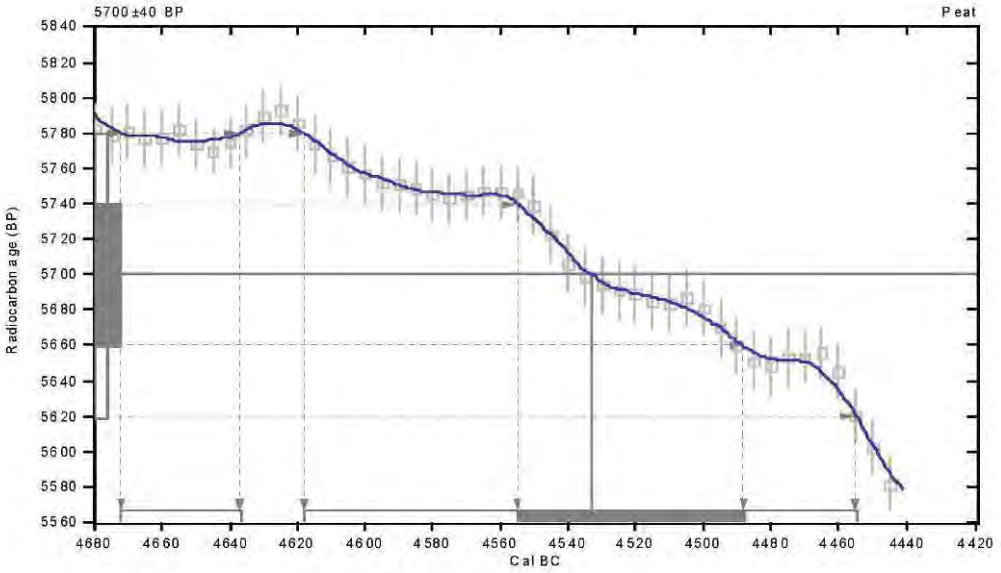
Conventional radiocarbon age: **5700±40 BP**

2 Sigma calibrated results: **Cal BC 4670 to 4640 (Cal BP 6620 to 6590) and**
(95% probability) **Cal BC 4620 to 4460 (Cal BP 6570 to 6400)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 4530 (Cal BP 6480)

1 Sigma calibrated result: (68% probability) Cal BC 4560 to 4490 (Cal BP 6500 to 6440)



References:

Database used

INTCAL04

Calibration Database

INTCAL04 Radiocarbon Age Calibration

IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).

Mathematics

A Simplified Approach to Calibrating C14 Dates

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-29:lab. mult=1)

Laboratory number: **Beta-235619**

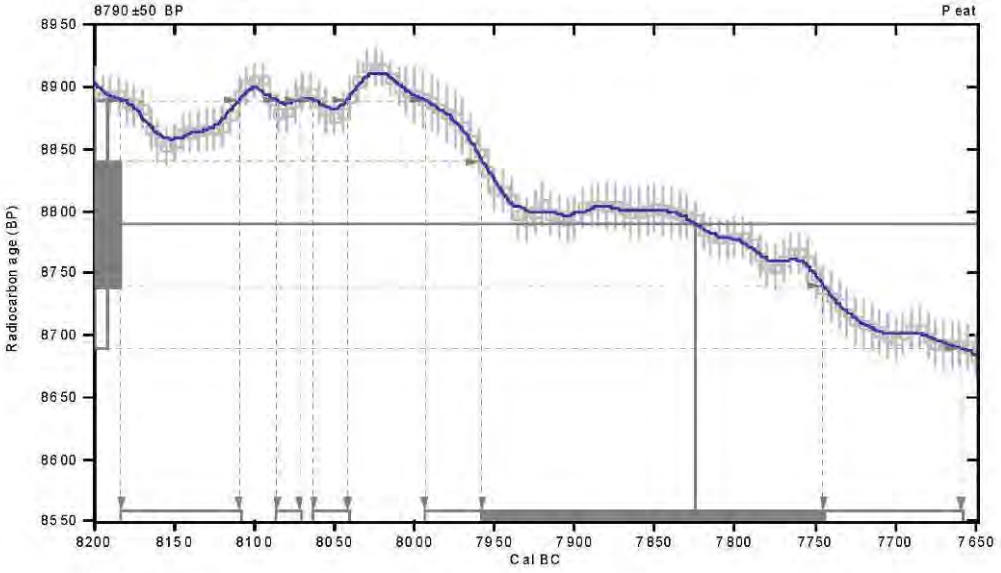
Conventional radiocarbon age: **8790±50 BP**

2 Sigma calibrated results: **Cal BC 8180 to 8110 (Cal BP 10130 to 10060) and**
(95% probability) **Cal BC 8090 to 8070 (Cal BP 10040 to 10020) and**
Cal BC 8060 to 8040 (Cal BP 10010 to 9990) and
Cal BC 7990 to 7660 (Cal BP 9940 to 9610)

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 7820 (Cal BP 9780)

1 Sigma calibrated result: (68% probability) Cal BC 7960 to 7740 (Cal BP 9910 to 9700)



References:

Database used

INTCAL04

Calibration Database

INTCAL04 Radiocarbon Age Calibration

IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.8:lab. mult=1)

Laboratory number: **Beta-235620**

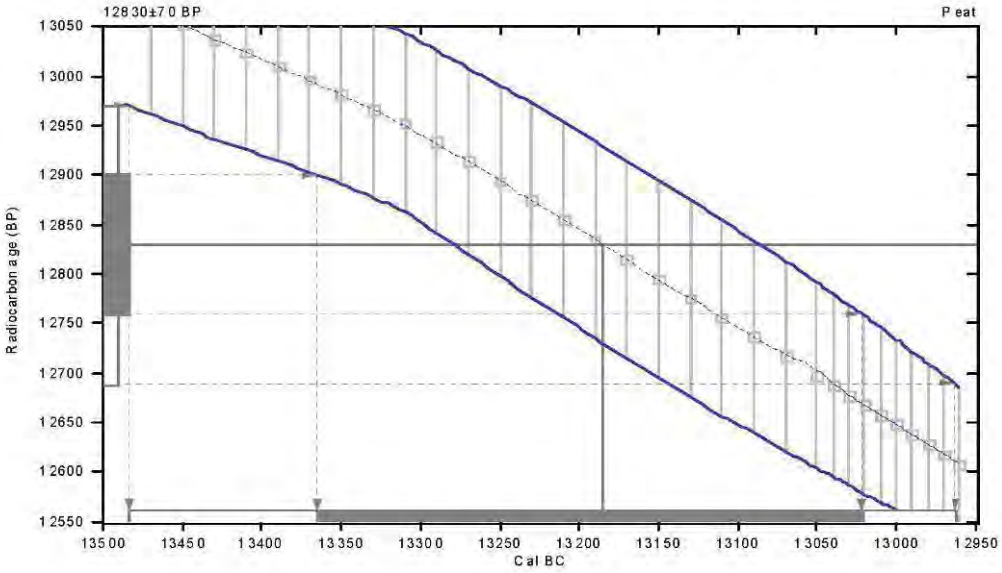
Conventional radiocarbon age: **12830±70 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 13480 to 12960 (Cal BP 15430 to 14910)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 13180 (Cal BP 15140)

1 Sigma calibrated result: (68% probability) Cal BC 13360 to 13020 (Cal BP 15320 to 14970)



References:

Database used

INTCAL04

Calibration Database

INTCAL04 Radiocarbon Age Calibration

IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).

Mathematics

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-25.9:lab. mult=1)

Laboratory number: **Beta-235621**

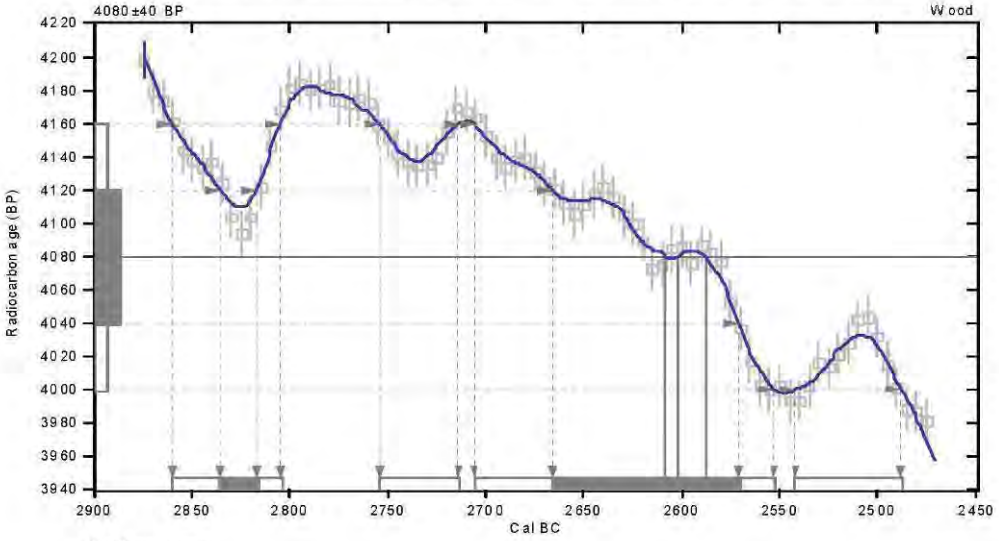
Conventional radiocarbon age: **4080±40 BP**

2 Sigma calibrated results: **Cal BC 2860 to 2800 (Cal BP 4810 to 4760) and**
(95% probability) **Cal BC 2750 to 2710 (Cal BP 4700 to 4660) and**
Cal BC 2710 to 2550 (Cal BP 4660 to 4500) and
Cal BC 2540 to 2490 (Cal BP 4490 to 4440)

Intercept data

Intercepts of radiocarbon age with calibration curve: Cal BC 2610 (Cal BP 4560) and
Cal BC 2600 (Cal BP 4550) and
Cal BC 2590 (Cal BP 4540)

1 Sigma calibrated results: Cal BC 2840 to 2820 (Cal BP 4790 to 4770) and
(68% probability) Cal BC 2670 to 2570 (Cal BP 4620 to 4520)



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Calibration Database
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IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).
Mathematics
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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-26.9:lab. mult=1)

Laboratory number: **Beta-235622**

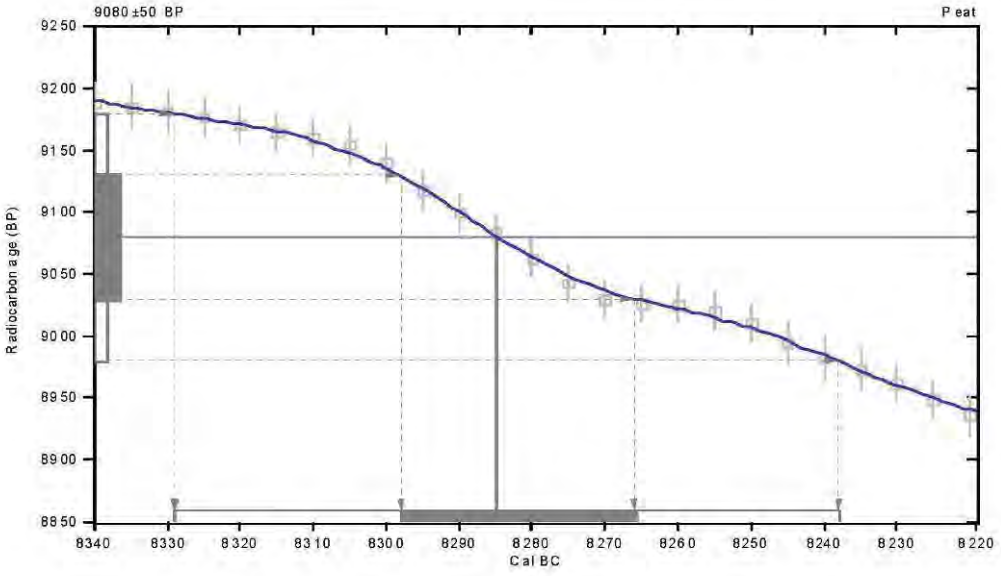
Conventional radiocarbon age: **9080±50 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 8330 to 8240 (Cal BP 10280 to 10190)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 8280 (Cal BP 10240)

1 Sigma calibrated result: (68% probability) Cal BC 8300 to 8270 (Cal BP 10250 to 10220)



References:

Database used

INTCAL04

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IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).

Mathematics

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-26.4:lab. mult=1)

Laboratory number: **Beta-235623**

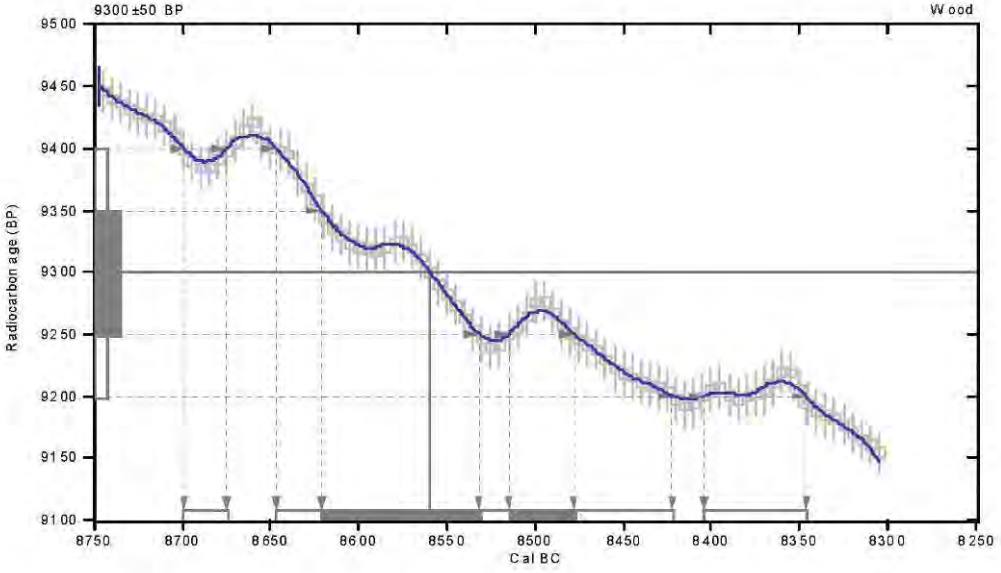
Conventional radiocarbon age: **9300±50 BP**

2 Sigma calibrated results: **Cal BC 8700 to 8680 (Cal BP 10650 to 10620) and**
(95% probability) **Cal BC 8650 to 8420 (Cal BP 10600 to 10370) and**
Cal BC 8400 to 8350 (Cal BP 10350 to 10300)

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 8560 (Cal BP 10510)

1 Sigma calibrated results: Cal BC 8620 to 8530 (Cal BP 10570 to 10480) and
(68% probability) Cal BC 8520 to 8480 (Cal BP 10460 to 10430)



References:

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Mathematics

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-26.2:lab. mult=1)

Laboratory number: **Beta-235624**

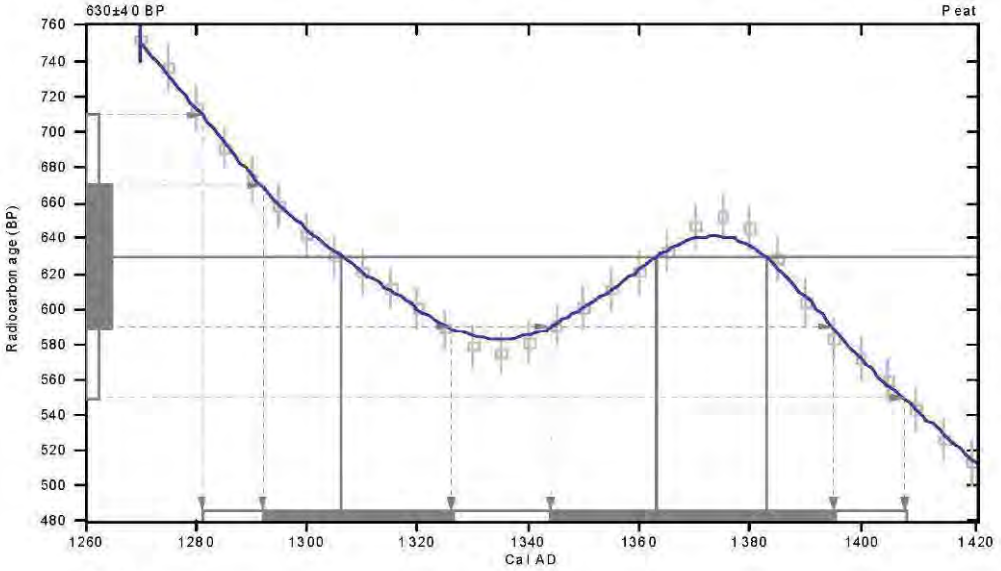
Conventional radiocarbon age: **630±40 BP**

2 Sigma calibrated result: (95% probability) **Cal AD 1280 to 1410 (Cal BP 670 to 540)**

Intercept data

Intercepts of radiocarbon age with calibration curve: Cal AD 1310 (Cal BP 640) and
Cal AD 1360 (Cal BP 590) and
Cal AD 1380 (Cal BP 570)

1 Sigma calibrated results: (68% probability) Cal AD 1290 to 1330 (Cal BP 660 to 620) and
Cal AD 1340 to 1400 (Cal BP 610 to 560)



References:

Database used

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Mathematics

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-28.5:lab. mult=1)

Laboratory number: **Beta-235625**

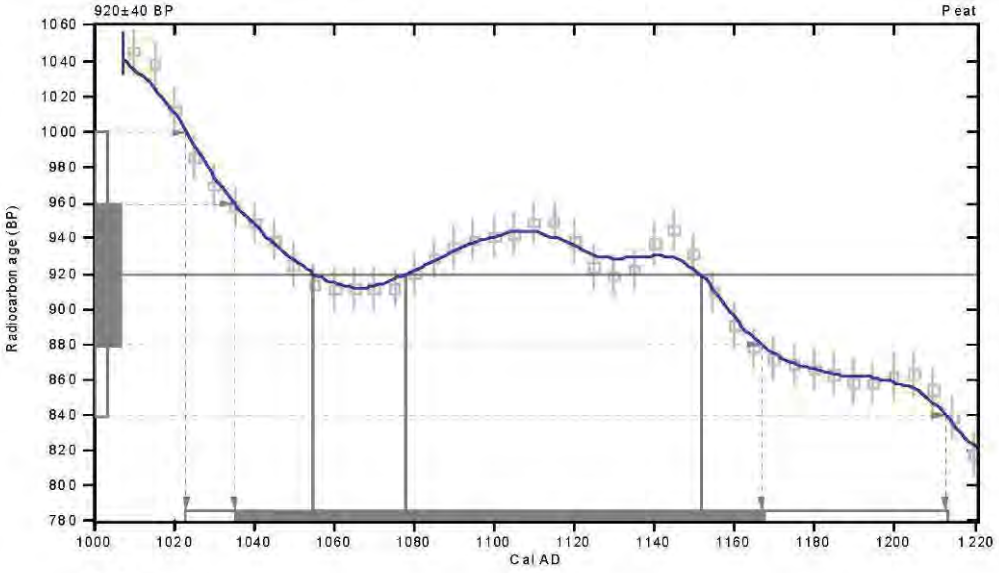
Conventional radiocarbon age: **920±40 BP**

2 Sigma calibrated result: (95% probability) **Cal AD 1020 to 1210 (Cal BP 930 to 740)**

Intercept data

Intercepts of radiocarbon age with calibration curve: Cal AD 1060 (Cal BP 900) and
Cal AD 1080 (Cal BP 870) and
Cal AD 1150 (Cal BP 800)

1 Sigma calibrated result: (68% probability) Cal AD 1040 to 1170 (Cal BP 920 to 780)



References:

Database used

INTCAL04

Calibration Database

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IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).

Mathematics

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-28.8:lab. mult=1)

Laboratory number: **Beta-235626**

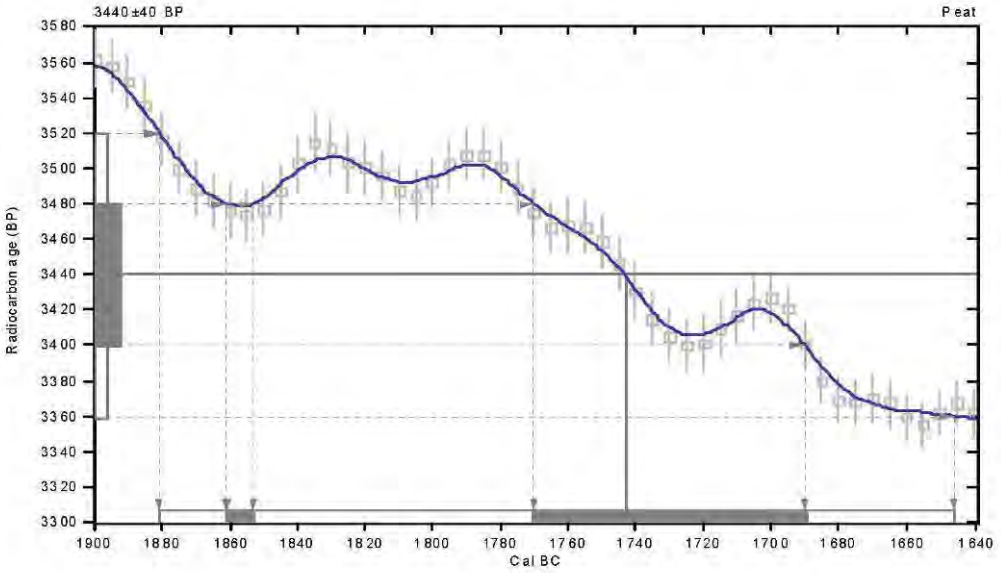
Conventional radiocarbon age: **3440±40 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 1880 to 1650 (Cal BP 3830 to 3600)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1740 (Cal BP 3690)

1 Sigma calibrated results: (68% probability) Cal BC 1860 to 1850 (Cal BP 3810 to 3800) and Cal BC 1770 to 1690 (Cal BP 3720 to 3640)



References:

Database used

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-28:1ab. mult=1)

Laboratory number: **Beta-235627**

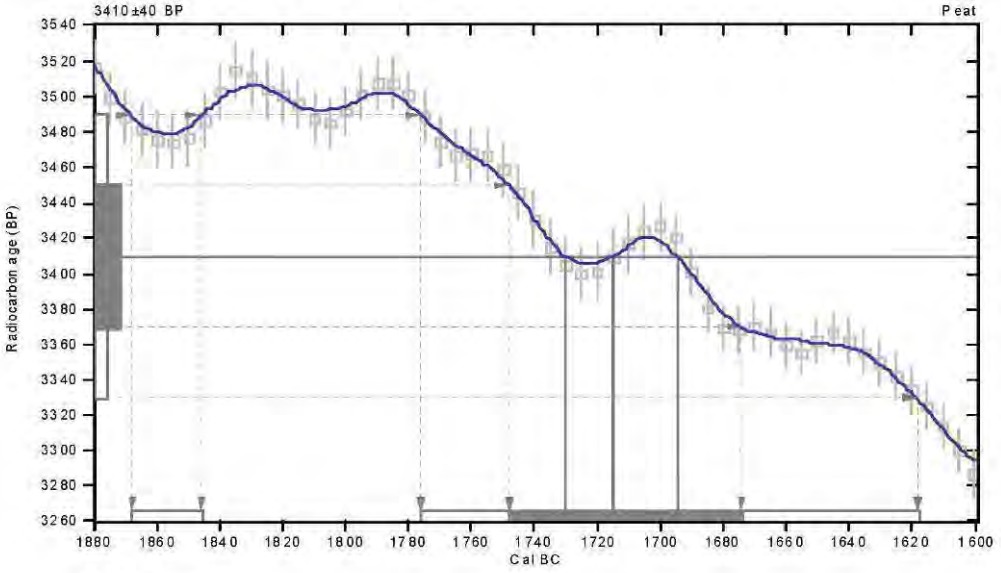
Conventional radiocarbon age: **3410±40 BP**

2 Sigma calibrated results: **Cal BC 1870 to 1850 (Cal BP 3820 to 3800) and**
(95% probability) **Cal BC 1780 to 1620 (Cal BP 3730 to 3570)**

Intercept data

Intercepts of radiocarbon age with calibration curve: Cal BC 1730 (Cal BP 3680) and
Cal BC 1720 (Cal BP 3660) and
Cal BC 1690 (Cal BP 3640)

1 Sigma calibrated result: Cal BC 1750 to 1670 (Cal BP 3700 to 3620)
(68% probability)



References:

Database used

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Mathematics

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-27.8:lab. mult=1)

Laboratory number: **Beta-235628**

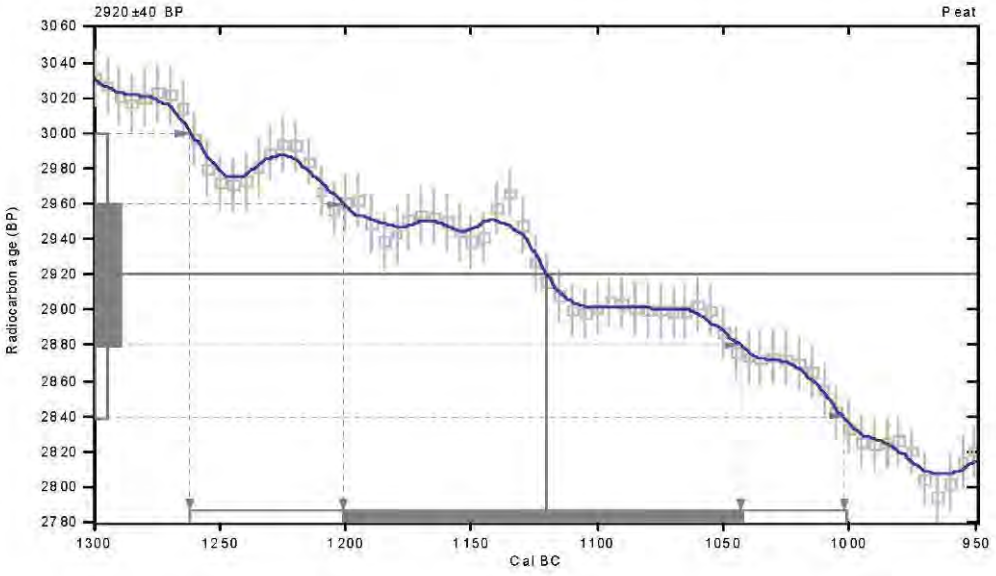
Conventional radiocarbon age: **2920±40 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 1260 to 1000 (Cal BP 3210 to 2950)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1120 (Cal BP 3070)

1 Sigma calibrated result: (68% probability) Cal BC 1200 to 1040 (Cal BP 3150 to 2990)



References:

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-27:lab. mult=1)

Laboratory number: **Beta-235629**

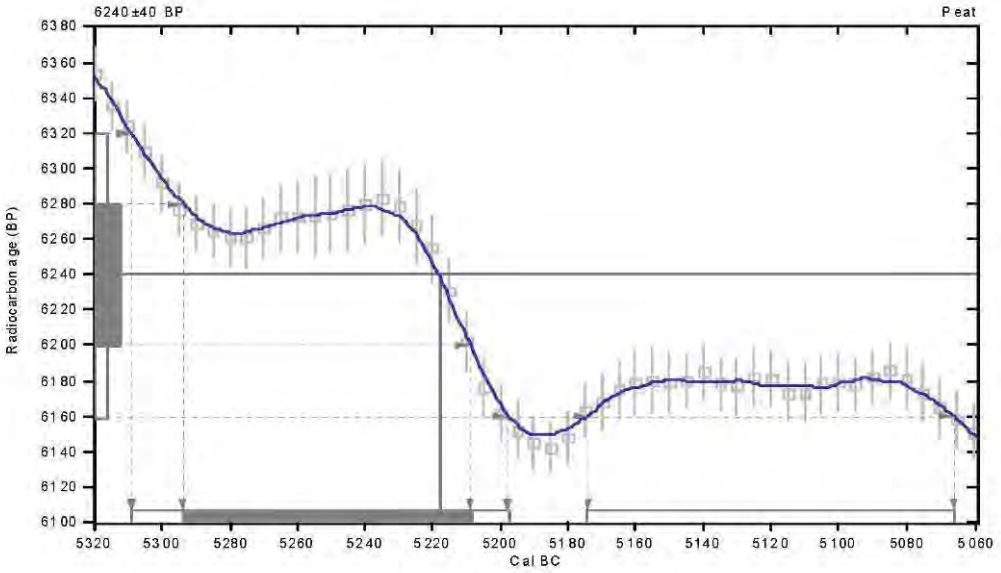
Conventional radiocarbon age: **6240±40 BP**

2 Sigma calibrated results: **Cal BC 5310 to 5200 (Cal BP 7260 to 7150) and**
(95% probability) **Cal BC 5170 to 5070 (Cal BP 7120 to 7020)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 5220 (Cal BP 7170)

1 Sigma calibrated result: (68% probability) Cal BC 5290 to 5210 (Cal BP 7240 to 7160)



References:

Database used

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-28.1:lab. mult=1)

Laboratory number: **Beta-235630**

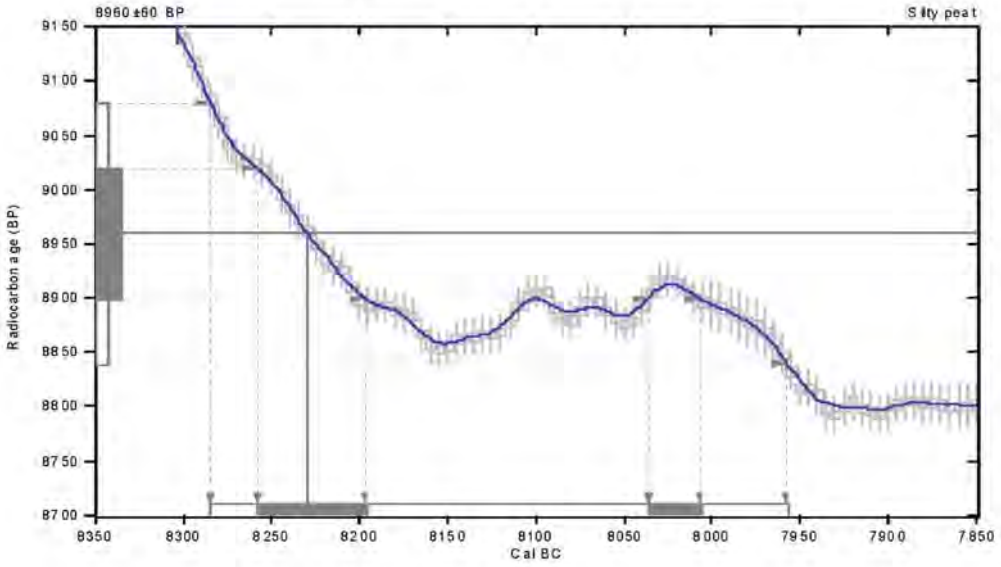
Conventional radiocarbon age: **8960±60 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 8280 to 7960 (Cal BP 10240 to 9910)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 8230 (Cal BP 10180)

1 Sigma calibrated results: (68% probability) Cal BC 8260 to 8200 (Cal BP 10210 to 10150) and Cal BC 8040 to 8010 (Cal BP 9990 to 9960)



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Part XXI: Soil micromorphology

Soil micromorphology of cultural deposits and buried soil at Parc Cybi, Tw Mawr, Holyhead

Dr. Helen Lewis, School of Archaeology, University College Dublin, Belfield, Dublin 4, Ireland

For assessment report see Kenney et al vol 2

Introduction and background

A geoarchaeological assessment together with sampling for soil micromorphology was carried out at the Parc Cybi site in 2007 (Lewis 2011) as part of the overall project remit to establish the character of the archaeological remains, and in particular to investigate the character of features and possible buried soils (after Kenney *et al*. 2011: 10), in relation to exploring function, use of space, and past land use practices from deposits identified as having potential for providing information through soil micromorphological analysis. All areas of the site were visited, with the following forming the focus of this report: Areas B and K. The two visits in 2007 focused mainly on Area B2, the location of a number of Iron Age stone-built roundhouses with intact structural features, including hearths and floor layers, as well as several possible buried soil layers. Soil micromorphology samples were taken through a series of apparently laid floor layers and other deposits.

The land use prior to archaeological investigations was mixed pasture, rough pasture, exposed rock outcrops, and marshland, over Precambrian metamorphic schists (Kenney *et al*. 2011; Jenkins 2011). Previous palaeoenvironmental work suggests a post-Glacial succession from open woodland through to denser climax hardwood forest, with a layer of peat dated on charcoal to the Neolithic period indicating both local bogland drying out, and forest clearance through burning, followed by mixed agricultural land use, and Medieval arable-related soil erosion (Greig 1987; Jenkins 2011).

The site is located on a Tertiary marine platform, with a thin deposit of reworked glacial till including non-local rocks (quartzites, tuffs, dolerites, cherts etc) (Jenkins 2011). During geoarchaeological assessment in 2007, areas of schist outcrop, zones of both coarse and fine gravels, areas of boulder clay, and small areas with peat sediments were exposed. Soils varied primarily in depth, being mainly shallow brown earths, but with some areas of possible colluvial deposition (Lewis 2011). A deposit of loess was found on the western side of the site, with evidence of periglacial freeze-thaw processes. Evidence of Holocene stream and coastal sedimentation, along with agricultural land use was also identified by Jenkins (2011). The local soils were interpreted as being examples of the Gaerwen and Trisant Series of brown earths (free-draining and gleyed, respectively) (Keeley 1987). Keeley (*ibid.*) describes the soils of the locality as 'Rocky Gaerwen Series on Pre-Cambrian schists of the Mona Complex', particularly brown earth '(shallow phase of Gaerwen series) on glacial drift' derived from these same rocks. These descriptions, based on work at the Trefignath tomb, fit well with the soils and sediments seen at Parc Cybi. Jenkins (2011) quotes Grimes (1945) in suggesting these were soils selected for settlement in prehistory.

Soil micromorphology sampling and methodology

The soil micromorphology sampling concentrated on interpreted deposits related to stone structures dating from the Iron Age into the Roman period (1st millennium BC to 3rd century AD, based on excavation dating results), although earlier prehistoric activity was also identified (Kenney *et al*. 2011). Deposits and soils judged to have potential included those that were relatively well-preserved, exposed in section, and which were interpreted as possibly providing additional information for the understanding of the site. These included particular hearth and roundhouse floor deposits, as well as interpreted 'buried' soils. A further factor in soil micromorphology sampling was cost; only deposits judged to have the most potential for enhancing site interpretation were sampled. All areas of the site were visited during the assessment, with the following being considered for sampling: Areas H, IA, B and K.

In general, the sediments were judged to be not ideal for soil micromorphology studies, often being very gravelly, but a number of sequences of clay and earth layers (possible floors) were thought to have some potential for examining use of space of the buildings, especially in comparison to other environmental archaeological and artefactual results (Lewis 2011). The presence of interpreted 'buried' soils was also of interest, providing the potential to explore what was happening at the site before the construction of buildings, in relation to use of space and land use (*ibid*.). The main area of interest for the application of micromorphological investigation was Area B2, the location of a number of stone roundhouses with intact structural features, and all sampling concentrated on this area, with one sample being taken from area K2 (Table XXI.1). All context

numbers represent contexts described macroscopically by the excavation team. In one instance the team had not assigned context numbers at the time of the visit (see below).

Site area B2 was described as a zone of intensive settlement activity including a number of roundhouses and other structures; the roundhouses were provisionally dated to the Iron Age (Kenney *et al*. 2011). Area K2 had an area of archaeological remains which were potentially structural (*ibid.*).

Table XXI.1 Soil micromorphology samples from Parc Cybi

Sample	Area	Context	Field summary description
136	B2	[90448-90441]	Hearth
137	B2	[90450]	'Buried' soil under hearth [90448-90441]
138	B2	[90030]	Possible 'buried' soil
139	B2	[90477]	Roundhouse A, possible 'buried' soil
412	B2	[91005-91004-91003]	Roundhouse A, gravel & earth floors
413	B2	[91002, 90947]	Roundhouse A, gravel & earth floors, charcoal
414	B2	[91515, 91512]	Eastern Area, Section 90465, possible clay floors
415	B2	[90882, 91634]	Roundhouse B, gravel & earth floors
416	B2	[90882, 91635]	Roundhouse B, gravel floor & burnt layer (lens)
417	B2	[90990, 90992]	Roundhouse B, earth & gravel floors
418	B2	[90992]	Roundhouse B, under floors/over stones
419	B2	[91540, 91706]	Roundhouse E, hearth rake-out on clay floor
420	B2	[91155, 91470]	Roundhouse C, gravel & earth floors
No number	K2	no context	'Buried' soil

Soil 'mammoth' thin sections were made by Julie Boreham at Earthslides, broadly following the methodology outlined by Murphy (1986). They were analysed by the author at University College Dublin School of Archaeology using a Nikon Eclipse LV100 POL microscope, following the international guidelines presented by Bullock *et al.* (1985), in plane polarised (PPL) and cross polarised (XPL) light. Munsell numbers refer to the macroscopic description of thin section colours under ambient room lighting. All field descriptions and excavation-based interpretations are based on the site context record created by the excavation teams or on the author's field notes, except where explicitly cited. All percentages are visual estimates of area.

Thin section descriptions and interpretations

A note on mineral components

Because the samples show essentially the same mineral components, these will be described here and only variations noted will be described for the individual contexts. Most of the sand components in the samples are quartz, and there are also frequent quartzite rock fragments found in all of the samples, plus unidentified sandstones with frequent chlorite components (possibly schistose), and mudstones. Regarding silts, there is also a major component of muscovite. All samples also have occasional feldspar grains, and many show significant iron inclusions, either/both through iron-rich rock fragments and/or precipitated iron oxide in various aspects. Occasional fragments of limestone were seen, possibly related to the glacial origin of the gravels. In general, the mineral components fit well with Jenkins' (2011) descriptions of the area, particularly regarding chlorite, muscovite, quartzites and schistose grits, along with iron/manganese panning features.

Regarding gravel components, most of the contexts show mixed types of stones, but some samples are almost purely quartzite gravels and quartz sand grains (e.g. some of the buried soils). This suggests some variation in origin of the materials. The distribution of gravel types on the site was not noted during the field visit, and the parent materials on site were not sampled. The patterning seen thus cannot lead to any particular conclusion, except to say that there are variable parent materials for the deposits. It is possible that all of the gravels used for floor creation originated from areas on or near the site.

Roundhouse A gravel and earth floors, charcoal

For section drawing see Fig XXI.21

A series of apparently laid floor layers in an alternating sequence of gravel and earth layers were sampled from Roundhouse A:

[91005] Red gravel layer	Sample 412
[91004] Grey-brown sandy loam	Sample 412

[91003] Red gravel layer	Sample 412
[91002] Grey-brown sandy loam	Unsampled
[91001] Red gravel layer	Sample 413
[90947] Grey-brown loam, frequent charcoal	Sample 413

The lower 2cm of red gravel layer [91005] are seen in sample 412, with a sharp boundary over the 2-3cm thick grey brown sandy loam [91004], overlying a boundary zone of gravels (up to 3cm, rounded and angular, black and white clasts) and soil aggregates, with a sharp boundary with the underlying red gravel layer [91003]. In the lower sample (413), 3.5 cm of lower [91001] red gravel layer overlies 2-3cm of [90947] soil layer, with a sharp boundary marked by colour and a separating planar void (Fig XXI.1).

Context [91005] is a gravel layer with soil inclusions, interpreted as an Iron Age floor layer. In some cases the gravel and coarse sand grains are embedded in soil fabric, suggesting that the soil may have entered the context as part of the gravel deposition, but in most cases the soil is seen as pellets and probably bioturbated into the gravel layer. There is little evidence of 'living' on this 'floor'; unlike others (discussed below) which have frequent cultural inclusions and/or trampling indicators. The very low organic matter content seen is echoed in the flotation results (Grinter 2011: 177). The gravel components plus orange clay coatings are responsible for the red colour of the layer, which shows no evidence of any type of heating.

Context [91004] is a layer of soil material described as grey brown sandy loam in the field. It is brown (10YR 4/3) in thin section macroscopically, with one subangular blocky aggregate of 2-3cm size and a similar sized zone composed of <1 cm sized subangular and rounded aggregates, in addition to a zone of gravels 1-3 cm in size. These comprise quartzite, a type of green schist/chlorite, and iron-rich shale. Because these gravels are off to one side in the thin section, it is possible that they are intrusive from above or below.

This soil layer appears to have originally been part of a lower topsoil horizon (A), with no surface horizon features. There is a lot of evidence for rooting: channels with coatings and related iron oxide features at their edges. In terms of the organic components, this soil layer resembles some of the identified 'floors' in other samples (below). Based on the characteristics of the underlying gravel layer [91003], which suggest that the overlying layer was disturbed (see below), [91004] appears to be a deposit of topsoil, and not to have grown *in situ*. The soil was presumably brought into the roundhouse as an earthen floor, and subsequently bioturbated by roots. It has seen additions of cultural remains (charcoal), and clearly served as part of a floor deposit, but was not the surface of the floor, as there are no surface or trampling indicators – it may be the lower part of an earthen floor which was subsequently truncated before the overlying gravel layer was deposited. Trampling indicators survive well in other samples from the site (see below), so their absence here is significant. The lack of surface crusting (textural separation) features suggests that either this earthen floor was not exposed to rainwater, or that truncation removed at least the upper 2-3 cm of the floor layer before the overlying gravel layer was deposited. Truncation of this type would clearly tie into a ritual of replacing the floor within the house; this was already suggested in the field by the repeated sequence of soil-gravel-soil-gravel seen in the profile. Despite the charcoal seen here, nothing was reported from the flotation (Grinter 2011: 177). This context contained a fragment of probably fired clay (Young & Kearns 2011: 116).

Context [91003] was seen as a 2-3 cm thick gravel layer, with gravels as described above, but with fewer red-coloured stones, mixed with soil aggregates of [91004] material. With depth the layer becomes finer, with <1 cm-sized subangular gravels and fine sediments. The reddish colour of this layer (7.5 YR 5/4 - brown) derives mainly from orange-red clay in the fine sediments.

At the base of the layer a dense pan of near-cemented gravels is seen. This panning layer is discrete; the underlying context [91002] was not sampled, but iron and clay panning is not seen in the lower layers (see below). This suggests that [91003] (and possibly [91002]) marks a boundary for iron translocation in the profile. The soil that has moved into this layer most likely comes from overlying [91004], and suggests strong disruption of that layer. Some of the soil is seen as aggregates in pore spaces, associated with bioturbation, while the rest is found as coatings. Since all of the deposits in this sample are redeposited, the development of 'dusty' clay, soil and iron coatings is not surprising.

There are no clear indicators of use of this gravel layer as a floor per se. The low organic component proportion is also reflected in the flotation results (Grinter 2011: 177). Possibly this was a foundation layer for the earthen floor layer found overlying. Although the sequence as listed above suggests that gravel layers overlie 'soil' layers, the lack of 'floor' indicators in the gravels, and the frequent and relatively large inclusions of charred

plant remains in the 'soil' layers suggests that the floors as used were earthen, with gravel foundations/levelling deposits, in a repeated sequence of construction/use of floors.

Please note that thin section sample 413 has [91002] written on it, but that layer was not sampled and this is a labelling error. The upper 2-3 cm of the thin section comprises [91001] 'red gravel layer'. Similarly to [91003], larger gravels (3-4cm) overlie finer gravels with 'soil'. The latter is apedal and brown (7.5YR 5/3); the reddish nature of this deposit (compared to the greyer brown soil materials e.g. in [90947]) is related to orange and red clays and a more oxidized fabric.

Unlike the other gravel layers, [91001] includes more frequent charred plant remains, similar to the 'earthen floor' layers described above (and below). Flotation did not find these fine inclusions (Grinter 2011: 177). Frequent translocated clay and 'soil' material, including clean clay coatings suggest phases of leaching relating to both disturbed and undisturbed periods of time. The fabric pedofeatures of clean clay seen suggest that some of the material for this 'floor' deposit come from a location with pure clay deposits (e.g. a clay deposit proper, or a lower Bt/C horizon elsewhere). While some of the included charcoal remains may be related to the underlying [90947] deposit, the clean clay does not relate to that layer, nor does that underlying layer show much in the way of coatings or other textural pedofeatures of the types seen here. As such, it seems that many of these features may relate to the original location from which the gravel deposit, as well as reflecting some translocation to this level of clay and soil from the overlying profile.

The upper 2-3 cm of layer [90947] is seen at the base of sample 413. This is a brown (10YR 4/3) earthen floor layer with frequent charcoal visible macroscopically. This soil layer shows some features of horizon development typical of an A horizon: its structure, light organic staining, groundmass, and almost absence of clay coatings suggests it is well-mixed and has seen rooting. The relative lack of gravels (which are only found at the base of the sample) suggests earthworm sorting. The lack of clay features underlying a clay -rich overlying layer reinforces the impression that the clay features in the layer above either came in with the gravel floor material, or represent the base of strongly illuvial layers further up the profile.

The horizontal orientation of interpedal cracks suggests some compaction of [90947], and frequent charcoal inclusions give it a nature similar to the 'floors' seen elsewhere on the site. A charcoal rich soil inclusion suggest some mixing of the deposit. The layer appears to be an earthen floor that saw some soil profile development after its use, or, alternately, hearth rake-out into a topsoil horizon (e.g. for amendment in agriculture) that subsequently saw compaction as the lower part of a later floor. There are no indicators of upper topsoil horizons, suggesting that this layer was either truncated/tilled or redeposited here and then saw soil formation processes. Although it is hard to decide whether this deposit is more 'floor' or more 'disturbed soil', or what the exact sequence of processes was, to me this looks like an *in situ* soil layer that grew here for a short time, and was then tilled (with additions of charcoal) or disturbed (used as a floor?), and then was subsequently compacted by use of the overlying floor. In particular, the evidence for earthworm sorting suggests that there was a substantial phase when this was a soil horizon proper, and not simply an earthen floor layer. Despite the frequent organic components found in the thin section, nothing was reported from flotation of this context (Grinter 2011: 179).

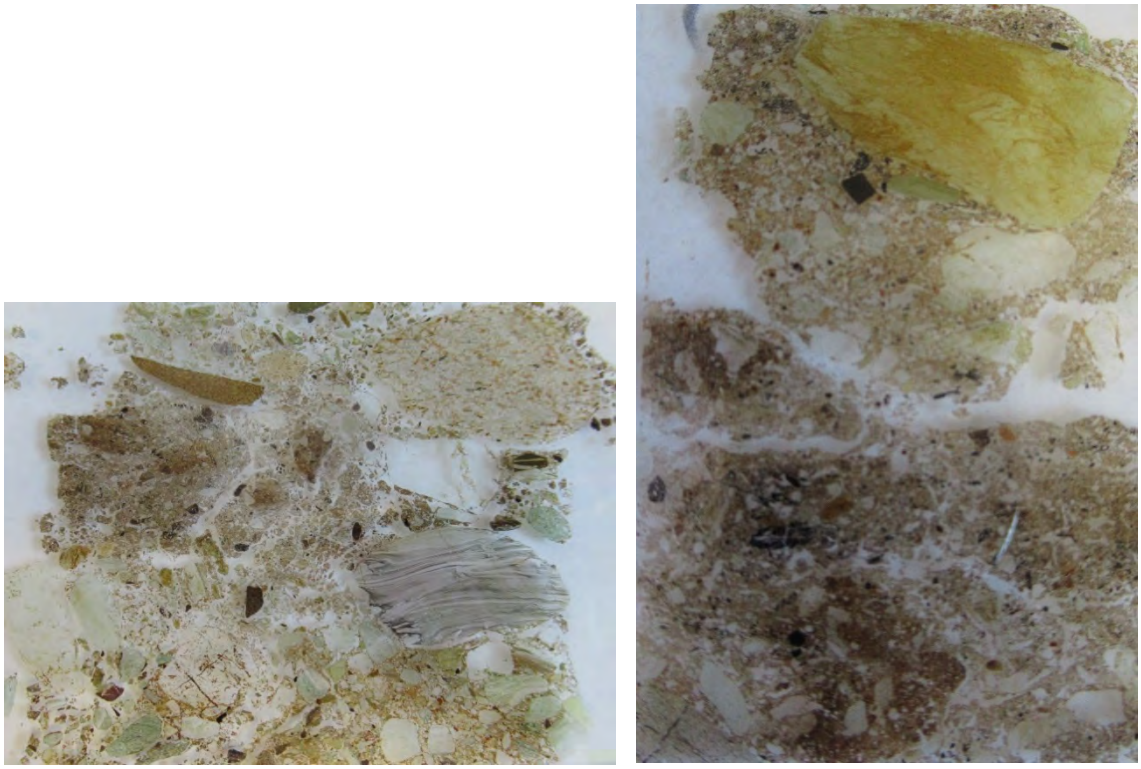

Fig XXI.1: [91005] over [91004] over [91003] left) and [91001] over [90947] (right). Original sizes: 6x4 (left) and 5x9 (right).

[91005]

Structure: single grain (pellicular) and bridged grain, with intergrain microaggregate (angular blocky <2000μm). Porosity 40-50%: packing pores. Mineral components: poorly sorted, gravels are 70% of visible area, of which 40% is 1-3.5cm (rounded, subangular and angular), and 30% 2000-10,000 μm; mostly sandstones (mostly quartzite), mudstones/shales and limestone). Frequent iron inclusions and occasional iron-rich rock fragments. Sand and silt grains are mainly subangular to angular quartz, sand-sized rock components, and elongated silt grains (probably muscovite/biotite). C:f ratio: 80:20 (very coarse sand 30%, coarse sand 40%, fine sand 10%, very fine sand 5%, silt 5%, clay 10%). Sand. Very fine sand and silt components are only found matrix-supported in the fine fraction, not loose in the clast-supported gravel context. Groundmass: granostriated overall; stipple speckled in soil aggregates. 80% of rock fragments and soil aggregates are coated with or have pendants (10-40 μm thick) of light brown (PPL)/orange (XPL) clay, slightly 'dusty' clay, non-laminated, with punctuations. Where stipple speckled the groundmass is reddish brown (PPL), very dark reddish brown (XPL). Organic components: <5%, 'punctuations' and small black angular fragments (possibly charcoal) up to 100 μm. There are occasional recent fine root remains. Amorphous iron and possibly some manganese formations are seen associated with rock fragments and rarely within the soil aggregates. Although widely dispersed in packing pore space, some of the microaggregates appear to be mite excrements.

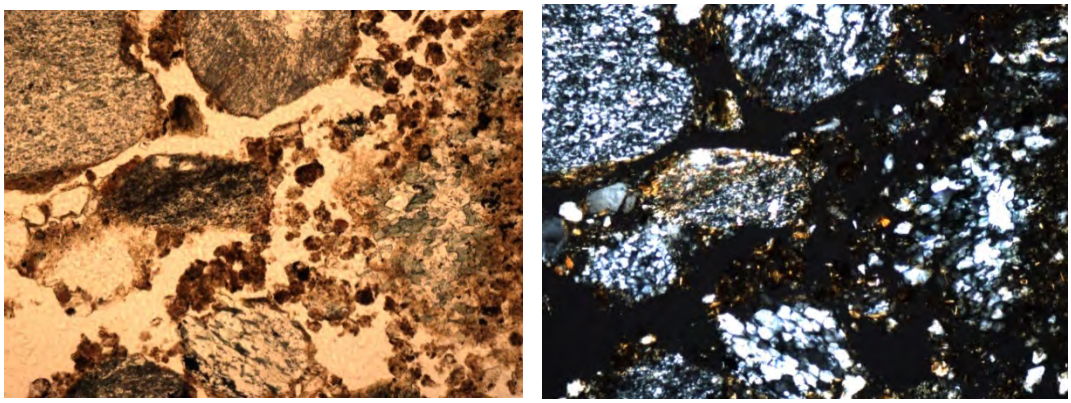

Fig XXI.2 Typical fabric of [91005] in PPL (left) and XPL (right), showing gravels and sands and intergrain microaggregates. Frame width = 2000 μm

[91004]

Structure: subangular blocky; dense intrapedally (<10% porosity): occasional vughs and possible channels (200-1000 μm). Mineral components: sand-sized grains of the rock fragments and grains noted above. Clay is not separated into coatings as in the overlying layer; coatings are only seen here on a few rock fragments in the zone of gravel. C:f ratio: 25:75 (very coarse sand 5%, coarse sand <5%, medium sand 15%, fine sand 5%, very fine sand 25%, silt 30%, clay 20%). Sandy loam to sandy clay loam. Groundmass: stipple speckled, reddish brown and greyish brown (PPL), dark reddish brown and greyish brown (XPL). Organic components are much higher here than in the overlying layer: 10-15%: frequent charcoal and charred plant fragments showing cellular structure (100-2000μm), plus uncharred plant tissues. One lunular amorphous iron 'coating' (200 x 500μm) is seen in a pore space, echoed by a crescent-shaped fragment of dense soil of the main fabric; this pedofeature is similar to features seen related to earthworm channel edges. There are occasional 'dusty' clay coatings on gravels, peds and pore sides, some of which are iron oxide stained. Some microaggregates appear to be mite excrements.

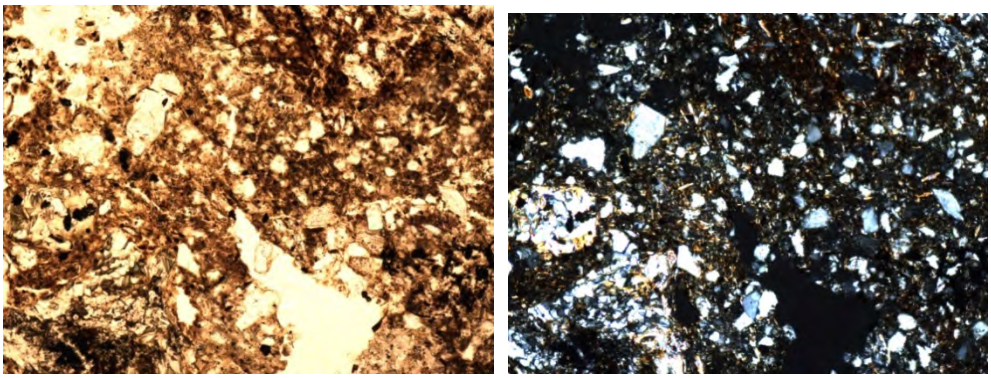

Fig XXI.3: Typical fabric of [91004] in PPL (left) and XPL (right). Frame width = 2000 μm

[91003]

Structure: apedal (granular but with illuviated soils, clay and iron binding the grains together). Porosity of 15-30%, packing pores. Mineral components: as in [91005]. C:f ratio: 70:30 (vcs 30%, cs & ms 30%, fs 10%, vfs <5%, s 10%, c 20%). Sandy clay loam. Groundmass: granostriated with frequent coatings; soil aggregates are stipple-speckled, orange-brown (PPL), dark orange brown to amorphous (XPL). Organic components: 5%, 'punctuations' and <150 μm angular black fragments; the latter are mostly found associated with soil coatings of the gravels. Frequent iron oxide coatings, general iron staining of fine materials, frequent soil coatings, frequent clay coatings with orange-red (PPL & XPL) clay (clean to slightly 'dusty').Compared to the overlying layers, this layer shows more clay coating on gravels (thicker coatings creating a strongly pellicular structure of gravels and sand grains bound together), and the development of iron panning features overlying and integrating with these clay coatings.

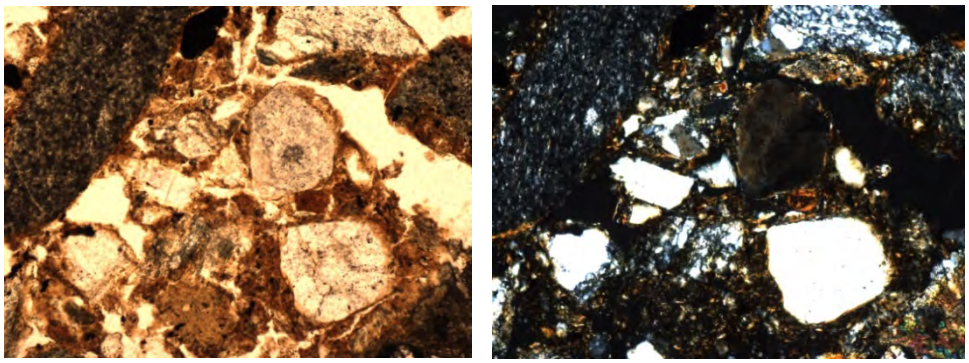

Fig XXI.4: Typical fabric of [91003] in PPL (left) and XPL (right), showing gravels plus sand grains coated with soil and clay, including some relatively 'clean' clay (orange in XPL). Frame width = 2000 μm

[91001]

Structure: apedal with 30% porosity (packing pores and some channels). Mineral components as above, except for some clean clay aggregates as pedofeatures. C:f ratio: 40:60 (vcs 10%, cs 10%, ms 10%, fs 10% , vfs 10%, s 25%, c 25%). Sandy clay loam. Close porphyric related distribution. Groundmass: stipple speckled and

granostriated, brown (PPL & XPL) and orange (XPL). Organic components: 10%, charred (brown and black) and red organic fragments: 'punctuations', small angular black aggregates, charcoal and other fragments with cellular structure, and root remains (the latter three 500-1500+ μm). Occasional aggregates of pure clay with clean clay coatings (350x500 μm), some of these aggregates are old laminated infillings. All are clearly physically moved to this deposit and did not form here. Frequent 'dusty', 'clean' and 'silty' clay coatings, as well as coatings of soil (as in gravel layer above). Despite its oxidized nature, this layer does not have iron coatings as in the overlying.

[90947]

Structure: subangular blocky (1-2cm) to apedal channel, with zones of crumb (up to 1cm). Porosity: 20-30%, packing pores between loose aggregates, interpedal cracks and channels (1mm x 1-3cm, curved and straight, often horizontal), and short intrapedal channels (500 μm diameter x 1200 μm long, smooth and rounded). Interpedal channels run horizontally, giving a slightly 'flattened' look to the subangular blocky peds. Mineral components: as previously described. There are very few gravel-sized components in this layer. C:f ratio: 30:70 (vcs 10% cs 5%, ms 5%, fs 10%, vfs 15%, s 35%, c 20%). Clay loam. Close porphyric related distribution. Groundmass: stipple speckled (dark brown PPL; dark reddish brown XPL) with zones of granostriation; clays is brown (PPL), orange (XPL). Organic components: 35-40%, mostly charcoal (200-1000 μm often broken up), angular fragments 50-200 μm), root fragments (up to 2000 μm long), 'punctuations' and small angular black fragments (<50-150 μm). Some rounded aggregates (fabric pedofeatures) of material similar to the 'soil' in the overlying layer (<2000 μm), and one 1.3cm sized round dark reddish brown aggregate which is extremely rich in charred plant remains (*c*. 70% of its visible area), suggest some physical process (possibly bioturbation, or cultural e.g. sweeping? tilling?) introducing other materials into the layer. Very rare 'dusty' clay coatings on some voids, mostly seen at depth. Very rare fragments of iron oxide coatings (root pseudomorphs) in some voids.

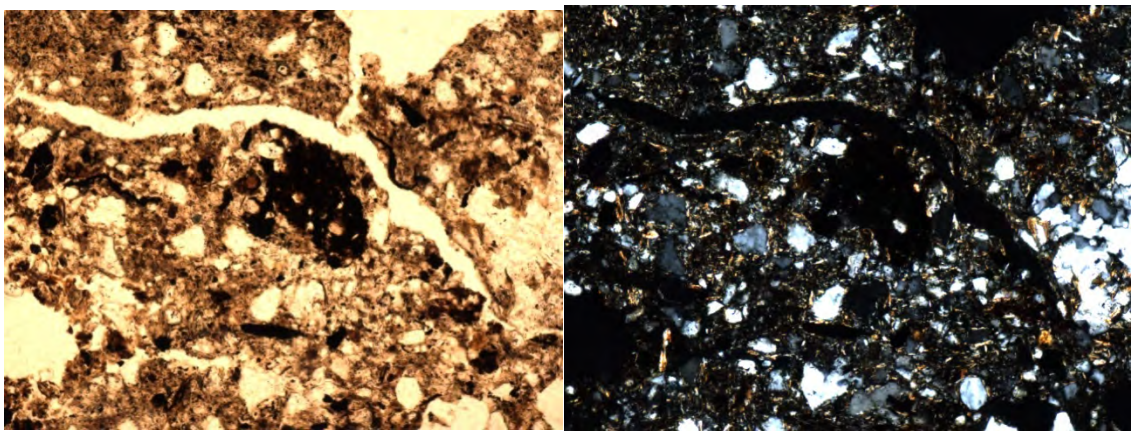

Fig XXI.5: Typical fabric of [90947] in PPL (left) and XPL (right), showing aggregates separated by channels. The dark zones in PPL are mostly organic components (mostly charcoal). Frame width = 2000 μm

Roundhouse A, possible 'buried' soil
For section drawing see Fig XXI.22

139	B2	[90477]	Roundhouse A, possible 'buried' soil

The thin section has one horizon of yellowish brown (10YR 5/4) soil, with common iron oxide mottles <2 mm in size (Fig XXI.6).

The buried soil is very clayey, and appears to be a lower A horizon, with frequent fine mottling which may relate to fine roots. There was a suggestion that this area had seen a possible build-up of flood silts (Kenney *et al*. 2011: 63) but this was not noted in this buried soil, although it could have grown on top of an alluvial deposit, given its clay-rich nature and the striated aspects of its groundmass. There is a lot of very broken up charcoal, and some textural pedofeatures indicating disturbance, but nothing more specific regarding land use.

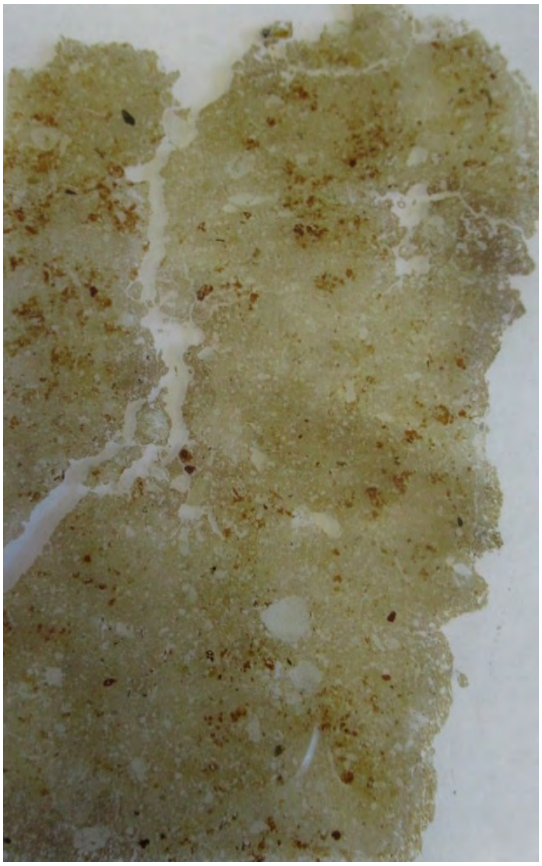

Fig XXI.6: [90477]. Original size: 6x10cm

[90477]

Structure: apedal channel, with some angular blocky (0.5 cm). 10% porosity (channels 250-700, rarely up to 10,000 μm wide and 3,000-50,000 μm long; most are seen in cross section only, and are root channels). Mineral components: >90% quartz or quartzite, rest as previously described. C:f ratio: 25:75 (vcs <2%, cs 10%, ms 5%, fs 10%, vfs: 25%, s 25%, c 25%). Clay loam. Open and close porphyric related distribution. Organic components: 5-10%, mostly black angular, and charred fragments (<300 μm), 'punctuations', occasional root remains in pores. Groundmass: granostriated, occasional linear (parallel) striation. Fabric pedofeatures of aggregates similar to the main groundmass but redder with iron-oxide staining. Dusty clay coatings on many void sides; in some cases successive episodes of deposition can be seen. Amorphous iron mottles and root pseudomorphs, coatings in certain zones

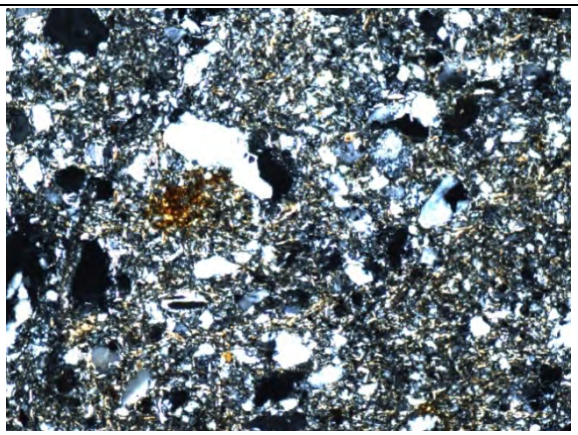

Fig XXI.7: This view of [90947] typical fabric shows classic buried soil features for the site: loamy with frequent clay (yellow zones); mostly quartz sand grains, some iron oxide-rich aggregates. Frame width = 2000 μm.

Area K2 possible buried soil
For section drawing see Fig XXI.23

No number	K2	[22051]	(marked as 'no context' on sample)	'Buried' soil

At the time of sampling, no context numbers had been assigned to this area, but the sampled layer was later allocated context number 22051. This thin section has 1-2cm of soil over a sedimentary deposit of very fine soil that appears to be laminated macroscopically; the entire layer is 2-3cm thick; this overlies 2-4cm of buried soil which appears similar to the overlying macroscopically re structure and gravel inclusions. The two upper layers are brown (10YR 4/3); the lower layer is dark yellowish brown (10YR 4/4) (Fig XXI.8).

The upper soil layer has evidence of disturbance (mechanical), including bioturbation by roots and possibly soil fauna. The underlying sedimentary deposit is nearly perfectly sorted with very few pore spaces. It is oriented on a diagonal, suggesting it is in a feature. There are frequent diatoms (algae); these are pennate, resembling achnanthes, and some show horizontal orientation.

On site the deposit sampled was recorded as a thin layer under disturbed, possibly dumped, deposits (Jane Kenney, 2019 pers.comm.; Kenney *et al*. 2011: 102, 121), and the presence of frequent diatoms may be related to waterlain deposition of the deposit. No other deposit sampled from the site has these characteristics, although one further context had diatoms (see below). The site was not sampled for diatoms, so it is unclear what their survival potential over the long term is. Diatoms have been found on other round house sites in the broader region. For instance, at Glastonbury, diatoms in an early floor deposit suggested that the clay involved was moved from a lake edge or similar environment to the floor; that site also had on-site peat deposits with diatoms (Hill *et al*. 2019). Finding diatoms in such settings is usually related to peat or burned deposits (e.g. glass layers, often fused with phytoliths – Courty *et al*. 1989). One of the Scottish house floors studied by Tams (2003) was diatom-rich, and comprising a peaty turf fire residue. However the Parc Cybi samples were not related to the roundhouse settlement and were not from peaty or particularly clayey areas, and the layer containing the diatoms was very distinct. It is interpreted as a fine, sorted waterlain deposit. There is no evidence of peat in the sample, nor do the diatoms appear fused. In order to clearly relate these diatoms to a slow-moving, presumably fresh water gully deposit, the diatoms would need to be identified, which would require examination by an expert in diatom analysis.

The buried soil is a lower A horizon. It is imperfectly sorted and shows disturbance indicators. The overlying deposit is a gully fill; over that is the base of a soil horizon with similar characteristics to the 'buried' soil.

Fig XXI.8: Area K 'buried soil', showing upper soil layer over a fine sedimentary deposit, over a second soil layer. Original size: 5x9cm.

Upper soil layer

Structure: apedal; 5% porosity, mostly vughs (<300 μm), packing pores (up to 1000 μm); rare channels (<500 x 2000 μm). Mineral components: 15% rock fragments including sandstones and mudstones; all components are as previously described. C:f ratio: 35:65 (vcs 10%, cs 5%, ms 5%, fs 10%, vfs 15%, s 30%, c 20%). Clay loam. Groundmass: stipple speckled, light brown (PPL), very dark brown with light orange clay (XPL), where not organic stained. Organic components: 5%, black and very dark brown angular fragments (<200 μm), and frequent 'punctuations' in the groundmass; the larger components appear to be highly fragmented charred remains. Occasional root fragments in pores. Frequent well-integrated 'dusty' clay coatings on grains and pore edges (<150 μm thick, brown (PPL), orange but often organic stained (XPL)). Occasional zones of amorphous iron oxidation (mottles), up to 1500 μm. Small zones (<1000 μm) of main groundmass depleted in clay – possible root or soil faunal channels.

Sedimentary deposit

Structure: apedal channel; 5% porosity, mostly vughs and circular channels (200-500 μm diameter), rare root channels passing through this layer and that below (up to 7cm long, 1-2mm wide, zigzag, accommodated). Mineral components: <1% rock fragments (those present appear to be intrusive and associated with a root channel). All components are as previously described. Occasional to frequent diatoms (see below). C:f ratio: 20:80 (vcs & cs 5%, ms 5%, fs 10%, vfs 15%, s 35%, c 30%). Clay. Open porphyric related distribution. Groundmass: stipple speckled; in some places grano- and poro-striated; greyish brown (PPL), very dark brown and dark orange-brown (XPL); organic stained. Organic components: 5-10%; as above. Some of the larger fragments are charcoal. Textural pedofeatures: layers (<1000 μm thick) of 90% very fine and fine sand; there are also small zones of this in other layers (patches <500 μm in diameter), and appear to represent size sorting related to water sorting. There are also very small linear zones of clay and very fine silt (<100 μm thick, up to 800 μm long) found within the groundmass. These are brown (PPL), orange (XPL) where clay is visible; frequently with intermittent organic staining producing a very dark brown (XPL) to amorphous appearance. Two thicker layers of this fine material are seen, one in the middle of the deposit and one at the base (boundary with underlying soil). These are 1-2mm thick and up to 4cm long. Other pedofeatures (textural) are as above.

'Buried' soil

Structure: apedal channel; 10% porosity, vughs and channels, (300-750 μm diameter, smooth edges, circular to irregular); rare root channel entering from above (up to 7cm long, 1-2mm wide, zigzag, accommodated). Mineral components: 10% rock fragments; all as previously described, but very rare diatoms. There is one 'rock fragment' of pure clay, which does not appear to be neoformed or have a pottery/brick etc morphology. It is orange-yellow (PPL), yellow to green (XPL), with laminated or 'banded' clay layers arranged in subangular zones (<500 μm), all in a cement of the same clay. The fragment is cracked along 'grain' edge zones. This type

of grain was not noted elsewhere. C:f ratio: 30:70 (vcs 5%, cs 5%, ms 5%, fs 15%, vfs 30%, s 20%, c 20%). Sandy clay loam. Open porphyric related distribution. Groundmass: stipple speckled and granostriated, greyish brown (PPL), very dark brown (XPL) organic stained; clays are yellow where visible. Organic components: 5-10% black and dark brown angular fragments, some clearly charcoal, up to 350 μm, and 'punctuations'; occasional root remains in pores. Dusty clay coatings as described above on pore edges and grains, up to 100 μm thick. A few zones show rows of sand grains (see above re size sorting), but these are not clearly arranged into layers or channel infillings.

Area B2, Structure F: Hearth over buried soil
For section drawing see volume 2, figure 79.3

136	B2	[90448-90441]	Hearth
137	B2	[90450]	'Buried' soil under hearth [90448-90441]

Thin sections 136 and 137 were taken through a hearth over possible buried soil in Area B.

Thin section 136 includes layers [90448] over [90441] (hearth). Macroscopically it is unclear exactly how these contexts work in the samples, as the thin sections show a repeated sequence of thin layers. However, the upper 3cm [90448] differs from the lower 5cm [90441] by having very few gravel inclusions visible. In this description the contexts will be described by natural stratigraphy as 4 layers, with the latter 3 more gravelly layers equating to [90441]: 3cm of greyish brown (10YR 5/2) context [90448] over 1.5cm of a brown (10YR 4/3) context, over 1.5cm of a greyish brown (10YR 5/2) context, over a further 2cm of a brown (10YR 4/3) context (all [90441]). The two darker contexts have reddish brown inclusions and iron oxide features visible macroscopically.

Thin section 137 was taken from context [90450] buried soil. The upper half of the thin section comprises 2cm of brown (10YR 5/3) deposit with zone of iron oxide mottling, over a 2cm layer of the same but rich with iron oxide features, over 4-5cm of light brownish grey (10YR 6/2), gravelly soil [90450]. The thin section is described here as two horizons: an upper horizon and lower horizon, separated by a thick transitional zone with sharp boundaries.

Context 90448 is a soil layer which may be redeposited. It includes some clean(ish) clay pore coatings, suggesting local stable vegetation at some point post-dating its deposition, and has small fragments of B horizon material mixed into it. The lack of a B horizon in the profiles, but occasional finds of clay-rich B (probably Bt) type fragments suggests substantial disturbance to the site well before the Iron Age roundhouses were constructed.

Context 90441 appears to have been affected by substantial post-depositional (but probably ancient) disturbance. The fabric appears to be a 'whole soil coating', which means that its original aggregates have become surrounded by redeposited fine soil material, to create an apedal, dense layer. This is typical of some tilled A horizons. The layer has frequent highly fragmented charcoal.

The lower layer of the thin section appears to be the main hearth layer; while it is not particularly burnt or structured, there is some microscopic layering of charcoal seen (horizontal orientation in layers), suggesting *in situ* deposition of fine charcoal fragments. However, the layer is very disturbed, possibly even tilled. The lower layer is essentially the same as 90448, but with more organic components. Presumably the hearth is related to the iron oxidation features seen: oxidized soil is usually seen underlying and at the base of hearth features. The upper layers of this sequence (the hearth and above) have very few clay pedofeatures.

Context 90450 is buried soil with a zone of clay accumulation and iron precipitation, like an incipient iron panning layer. There is more gravel (0.5-1.0 cm) and very coarse sand with depth, possibly reflecting earthworm sorting. Rare planar zones (up to c. 1500 μm long, 300 wide) near the boundary which are depleted in clay and iron (medium to fine sand-dominated) could relate to any size sorting factor (earthworms, tillage, puddling). The buried soil (lower part) has laminated clean and 'dusty' clay infillings (the latter are sometimes overlying, i.e. later), suggesting a once stable land surface, possibly under forest, was later disturbed. Other indicators of cultural activity are the charcoal fragments found throughout. There are no definite indicators of tilling, although the combination of disturbance plus imperfect sorting (despite earthworm sorting evident) suggest there could be disturbance of this type, amongst other types. Compared to the buried soil in Area K, this is very leached out – there the soil is more organic stained.

[90448]

Structure: angular to subangular blocky (2cm), apedal channel interiorly. 15% porosity, channels (250-2000 μm wide, up to 1200 μm long, smooth and rough). The upper layer has cracked post-sampling into peds as noted above. Mineral components: as previously described; 5 % rock fragments. C:f ratio: 30:70 (vcs & cs 10%, ms 10%, fs 10%, vfs 25%, s 35%, c 20%). Sandy clay loam. Close porphyric related distribution. Groundmass: granostriated, very light greyish brown (PPL); orange clay (XPL). Organic components: 5%: charcoal (<500 μm), angular black fragments; 'punctuations'. Rare aggregates (<1000 μm) of clay (cross-striated, orange (PPL & XPL)) with fine sand grains; these aggregates are well integrated with the main groundmass, and are similar to that except without silt and other sand grain sizes. These aggregates may come from a B horizon. They do not appear to be pottery. Some clean to slightly dusty clay infillings in pores, orange (PPL and XPL), laminated. Also 'dusty' coatings seen in other pores (as previously described).

[90441]

Structure: apedal channel; 10-15% porosity (channels 250-700 μm in diameter). Mineral components: as above; about 20% is rock fragments. C:f ratio: 40:60 (vcs 10-15%, cs <5%, ms 5%, fs 10%, vfs 20%, s 20, c 20). Sandy clay loam. Close and open porphyric related distribution. Groundmass: granostriated to stipple speckled; greyish brown (PPL); as above XPL. Organic components: 10%: frequent very fine charcoal and very frequent 'punctuations'. The whole fabric is 'dusty' to 'dirty'; all grains are coated with 'dusty' clay (within the main fabric), and there are more frequent slightly dusty orange clay infillings and coatings. There are some zones of sorted sand without clay. Also here: rare clay aggregates as noted above, but well integrated.

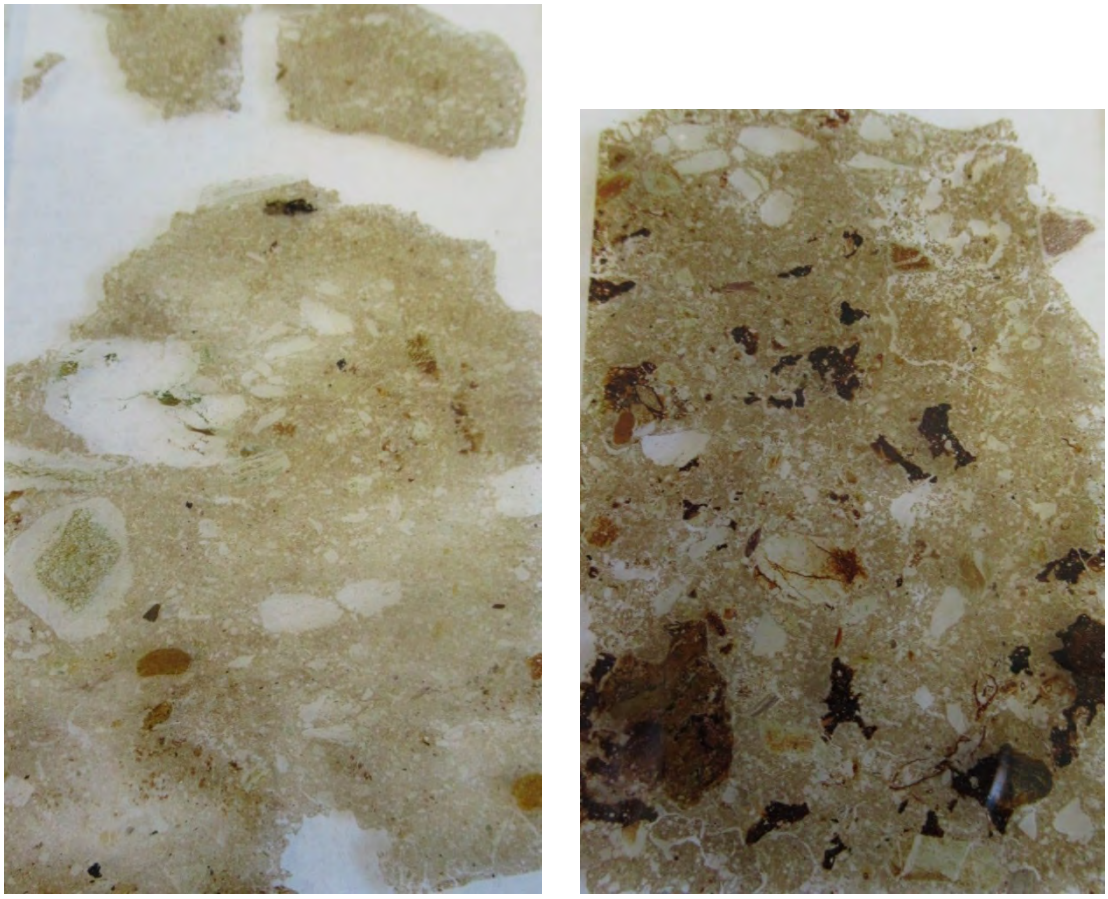

Fig XXI.9: [90448] over [90441] (left); [90030] (right). Original size: 5 cm width

[90450]

Structure: Upper: apedal, with microscopic poorly developed subangular blocky (up to 0.5cm); 10% porosity (mostly channels 500-750 μm, some connected to form interpedal channels up to 1000-2000 μm long). Boundary layer: apedal; 5-10% porosity (occasional channels 200-500 μm diameter). Lower: apedal; 10%

porosity, channels and packing pores. Mineral components: all as above. Rock fragments make up 5% of the upper layer, 20% of the lower layer. Gravel sizes decrease with depth, being 0.5-1.0 cm in the lower layers, but 0.2-0.5cm in the upper. The fine fraction (sands) also shows a fining upwards sequence. C:f ratio: Upper: 35:65 (vcs 5%, cs 5%, ms 5%, fs 20%, vfs 15%, s 30%, c 20%). Sandy clay loam. Boundary layer: 45:55 (vcs 15%, cs 5%, ms 5%, fs 20%, vfs 10%, s 30%, c 15%). Sandy loam. Lower: 50:50 (vcs: 20%, cs 5%, ms 10%, fs 10%, vfs 10%, s 25%, c 15%). Sandy loam. All layers: close porphyric related distribution. Groundmass: all layers: mixed stipple specked, grano- and poro-striated groundmass types; in the boundary layer where there are frequent oxidised iron features there are also zones of amorphous groundmass. Upper: very light greyish brown (PPL), grey and yellow (XPL); becoming reddish brown (PPL), grey and orange to reddish brown (XPL) at base and in the boundary layer. Lower: very light greyish brown (PPL), grey and yellow (XPL). Macroscopically the upper layers are much more reddish brown; this is due both to iron oxide features and to presence of organic staining on the upper layer. Organic components: all layers: 5%, mostly black 50-500 (rarely up to 1000) μm size angular and subrounded fragments, some with clear plant cellular structure: charcoal. Also frequent 'punctuations'. Pedofeatures: All layers (but especially boundary): zones of amorphous iron oxide impregnation, including in 'mottles' up to 1 cm in size. At the boundary zone, this impregnation is widespread in 1-3 mm zones, both as aggregates (sometimes associated with clay in the upper layer, creating fabric pedofeatures), and around pore spaces. In upper layers there are occasional 'dusty' coatings and infillings up to 50 μm thick, but most pores are clean. Rare 'clean' clay (limpid) in pores (up to 300 μm infillings). Lower: laminated clean and 'dusty' orange (PPL & XPL) clay infillings 50-250 μm thick in some pores.

Area B2, buried soil
For section drawing see Fig XXI.24

138	B2	[90030]	Possible 'buried' soil

Thin section 138 contains context [90030], possible 'buried' soil.

90030 is dark yellowish brown (10YR 4/3) soil showing profile leaching (illuviation), some disturbance, mite pellets, charcoal, modern rooting, and included B horizon clay aggregates as noted above. This is a gravelly soil that appears to have been altered by the overlying cultural activity.

[90030]

Structure: apedal with occasional cracks/channels macroscopically. Microstructure is apedal channel to very poorly developed subangular blocky. Porosity is 10-15%, channels 200-1000 μm. Mineral components: unlike many of the others, in addition to the usual gravels, this context has highly weathered red rock fragments (0.5-1cm), and iron mottles of similar sizes. Gravels of all types make up about 20% of the visible area. C:f ratio: 35:65 (vcs <5%, cs 10%, ms 10%, fs 15% vfs 20%, s 30%, c 15%). Sandy loam. Close porphyric related distribution. Groundmass: stipple speckled to granostriated; light brown (PPL), orange to dark reddish brown (XPL). Organic components: 5-10%, mostly roots; occasional charcoal, angular black fragments and 'punctuations'. Frequent coatings and infillings of 'dusty' reddish-orange (XPL) clay, and rare more 'clean' clay. Occasional mite pellets.

Roundhouse B gravel and earth floors, burnt layer
For section drawing see volume 2, figure 72

A series of interpreted laid floors over a layer of 'build-up', over a layer of possibly laid stones was sampled:

[90882] Orange gravel layer with soil lenses	Sample 415
[91634] Lens of grey-brown loam within [90882]	Sample 415
[90882] As above, lower part	Samples 415 & 416
[91635] Charcoal-rich lens; possible hearth material	Sample 416
[90990] Grey-brown sandy loam, possible floor	Sample 417
[90992/90956] Build-up under floor/over laid stone layer	Samples 417 & 418

Samples 415 and 416 show a sequence of layers found over interpreted laid stones. 415 includes the lower 2cm of [90882] upper, a dense layer with fine gravels (<1 cm sized) and dark yellowish brown (10YR 3/4) fine sediment. There is a clear boundary with the underlying 6 cm of [91634] and [90882] lower; in these, the fine sediment is indistinguishable and it will be described together. It is yellowish brown (10YR 5/4) with grey gravels (</= 1cm, subrounded and subangular) The main change seen is that the upper 3 cm includes a distinct layer of larger grey and yellow gravels 1-3cm in size, both rounded and angular.

In sample 416, underlying this layer of larger gravels is a very sharp boundary over a thin layer (0.5 cm thick) of charcoal [91635]. This overlies context [90990], which is a dense fine layer of dark yellowish brown (10YR 3/6) sediment with frequent charcoal inclusions. The lower part of [90990] is seen in sample 417, where it shows a horizontal orientation in planar void spaces, and a sharp but graded boundary with underlying layer. This final layer was labelled as [90992] in the field but post-excavation analysis showed that the wrong context number had been used and it should be [90956]. This layer is dark yellowish brown (10YR 4/4) and shows some variation over depth into sample 418, with charcoal inclusions decreasing with depth, and aggregate size increasing. In the lower part of [90992/90956] there are iron mottles visible to the naked eye (0.5-1 cm in size).

Context 90882 was described as a yellowish brown gravelly clay, a 'new floor level' covering most of the building, related to a particular Iron Age wall construction phase; it was associated with a central hearth (Kenney *et al*. 2011: 71), and finds included an iron nail (Chapman 2011: 75), tooth fragments (Bermingham 2011: 146), and charcoal (Grinter 2011: 159). In thin section [90882] upper appears to be an earthen floor deposit typical of the site (see above), but with gravel inclusions. It has frequent charred plant remains, and some vugh pores suggest some compaction. This is underlain by context [91634], which is a gravel layer. Similarly to the floors discussed above, this gravel layer has almost no indicators of being surface floors. In particular (and especially in the context of the overlying and underlying earthen floor layers, this has low organic content. It appears to be a levelling or footing layer for the overlying earthen floor.

Context [90882] lower is another phase of earthen floor deposit with gravel inclusions as in the upper earthen floor. Unlike other gravel-rich layers, however, it has quite a lot of charcoal. Clay aggregates included as fabric pedofeatures sometimes have the nature of alluvial C material. This appears to be a gravel layer which has become 'cemented' or infilled; plus a lot of charcoal and inmixed materials. The increased density seen is probably a factor of post-depositional leaching, but accumulation at this location could be related to some compaction.

In thin section, the charcoal layer [91635] is clearly at the surface of the underlying layer [90990], and not in the overlying. It seems to be the surface of a floor deposit; it has frequent iron and clay accumulation, and is essentially marking a density boundary between the overlying gravels and underlying charcoal rich layer. This very strongly expressed boundary, along with the accumulation of charcoal in a layer at this location, suggests that [90990] is certainly a house floor.

Context [90990] is a gravel and earthen floor layer with frequent charcoal inclusions, and compaction (trampling) indicators seen in orientation of planar voids and aggregates with depth, and flattening of aggregates. The overlying charcoal and panning layer appears to be the surface of this floor, which also has a gravel micro-layer near the surface. This was described in the field as an 'orangey brown gravel' (Kenney *et al*. 2011: 64), and included a possible furnace lining (fired clay), a bird bone, and charcoal (Young & Kearns 2011: 116; Bermingham 2011: 141-142; Grinter 2011: 159, 178).

The lower boundary with [90992] is sharp and horizontal, marked by horizontal orientation of charcoal, colour change, and a discrete zone (2mm thick) of the main fabric with increased proportion of coarse and very coarse sand grains; this zone is slightly lighter in colour (probably from the white/grey colour of the mainly quartzite sands), and there is a zone of pore spaces which are sometimes interconnected; these appear to be channels (or perhaps one partly infilled channel) and not planar voids. Context [90992] is a clay rich layer, possibly part of a lower A/upper B horizon, which would make it the only B horizon seen on site. It has an alluvial nature in the upper part, but with depth the groundmass becomes more stipple speckled and lower topsoil-like. Its nature was mixed and its interpretation is uncertain: a soil influenced by a alluvial phase of deposition, or a lower horizon.

[90882] upper

Structure: a dense apedal layer, but with a hint of very poorly developed subangular blocky, or possibly rounded, aggregates. Porosity is 10%, mostly vughs (up to 1000 μm) and packing pores, with occasional channels and chambers of the same size. Mineral components: 15% of the context is gravels as previously described (mostly quartzite); almost all sand and silt grains are quartz, mostly rounded and subrounded. Where visible, clay is yellow (PPL & XPL), but it is strongly organic stained so rarely visible. C:f ratio: 20-25: 75-80 (vcs <5%, cs 5%, ms 5%, fs 10%, vfs 25%, s 30-35%, c 20%). Sandy (clay) loam. Close porphyric related distribution. Groundmass: stipple speckled, reddish brown (PPL), very dark reddish brown (XPL), and there is strong organic staining on most of the groundmass. Organic components: 25-30%, mostly charcoal (from 'punctuations' up to 2000 μm in size), often with internal structures visible, also uncharred fragments of unidentified material, and root remains. The lower boundary with [91634] is marked by a zone of iron coating

(panning); this is part of the underlying layer. There are small circular zones of depletion or absence of organic staining; these are probably related to soil fauna passages. Some chambers have mite excrement internally.

[91634]

Structure: dense and apedal; no pore spaces are visible, except a large crack underneath the larger gravel layer; this crack is a feature of sample drying. Microscopically porosity is 10-20%, all packing pores between gravel inclusions. Mineral components: gravels >2mm in size make up about 50% of the context; this includes zones of *c*. 1 cm gravels above and below a layer of 1-3+ cm gravels; these larger gravels are primarily sedimentary: sandstones (often quartzite), siltstones and mudstones. All else as previously described. C:f ratio: 70:30 (vcs 50%, cs 10%, ms 5%, fs 5%, vfs 5%, s 10%, c 15%). Loamy sand. Close porphyric related distribution. Groundmass: stipple speckled, orange-brown (PPL), dark orange to dark brown (XPL). There are 'dusty' clay coatings surrounding many grains; these are iron-rich, and form the basis of the incipient panning seen in this layer, and thus comprise a characteristic of the main groundmass, which was originally a gravel layer (clast-supported) but has become a clay layer with gravels (matrix-supported). Organic components: 5%, mostly small angular black fragments (<200 μm) and 'punctuations'. At the upper boundary there are some charcoal inclusions intruding on this layer from the overlying, but the main layer has very few and very small organic components. The larger gravels in have coatings and pendants of clean clay (up to 300 μm thick); these pedofeatures are also seen in some pore spaces. These are separate from the 'dusty' clay seen in the groundmass.

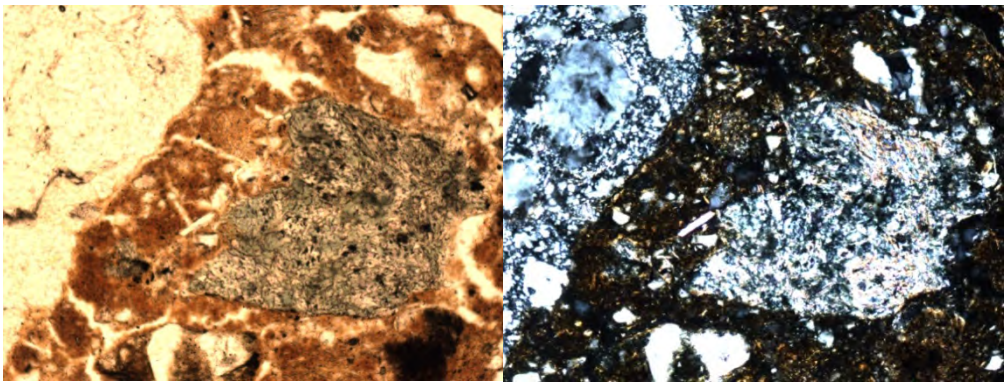

Fig XXI.10: [91634]=[90882] lower boundary zone, showing dense, iron-rich fabric (PPL & XPL). Frame width = 2000 μm

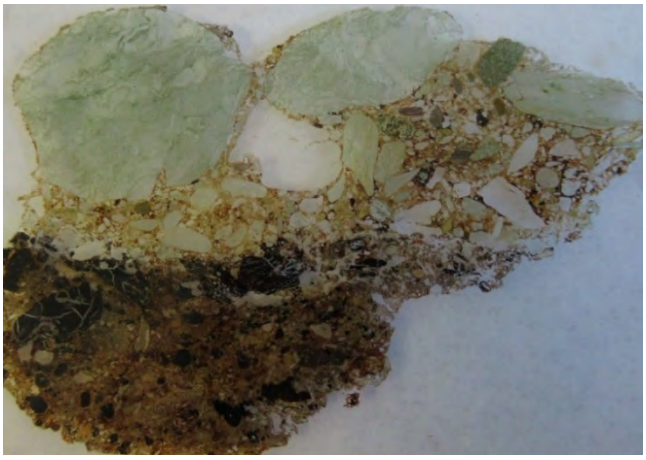

Fig XXI.11: Upper: [90882] upper-[91634]; lower: [90882]-[91635]-[90990]. Image width c. 6cm

[90882] lower

Structure: dense and apedal, with zones of loose crumb aggregates (100 μm in size; mite created). 10-15% packing pores and channels (200 x 1500 μm, straight and curved) in [90882]. Channels are often collapsed or include modern root remains. Mineral components: gravels make up about 20%. Clays are orange red (PPL & XPL) All other components are as in 90882 upper. C:f ratio: 45:55 (vcs 20%, cs 5%, ms 10%, fs 10%, vfs 10%, s 25%, c 20%). Sandy clay loam. Close porphyric related distribution. Groundmass: stipple speckled; dark brown (PPL); very dark reddish brown, black and orange in zones (XPL). Organic components: 10%, mostly charcoal (up to 700 μm) and fine angular and rounded black fragments (<100 μm); some root fragments in pores. The lower part of this has quite a lot of charcoal, up to 15%. Occasional aggregate of clay-rich fabric (up to 1000 μm size, subangular). These are reddish brown (PPL), orange (XPL), with stipple speckled to granostriated, occasionally striated groundmass, and inclusions of silt (20%) and very fine sand (10%). Frequent clay coatings (up to 100 μm thick, 'dusty') and iron with clay coatings (up to 300 μm thick) on grains

[91635]

Structure: this layer of charcoal has the equivalent of a granular structure (but with plant remains) and a porosity of 10%, mainly packing pores and pore spaces within charcoal fragments. Mineral components: the charcoal is mixed with soil as below (see [90990]). Organic components: the layer is 90% charcoal, up to 1 cm in size. Iron panning features, which link the lowermost gravels from the overlying deposit, the charcoal fragments, and the underlying sediment and included sands and gravels. There are also clay coatings.

[90990]

Structure: apedal, with rare horizontally-oriented planar voids in the upper 1-2cm. In the lower 1-2cm there is a horizontal organisation, with flattened poorly developed blocky peds, 0.5-0.8 cm wide x 1.5cm long. Porosity is 10%, a mixture of packing pores, channels and vughs (<1000 μm). Mineral components are as previously described; gravels make up about 10% of the upper part of the deposit (above the horizontally oriented lower part). C:f ratio: 35:65 (vcs 15%, cs 5%, ms 5%, fs 10%, vfs 10%, s 30%, c 25%). Clay loam. Groundmass: stipple speckled, brown to reddish brown (PPL), very dark reddish brown (XPL). Organic components: 30-40%, charcoal up to 10,000 μm, frequent black angular fragments 50-150 μm, 'punctuations'. With depth charcoal becomes increasingly fragmented, and there are occasional uncharred root fragments in voids. There are several inclusions of light brown (PPL) yellow (XPL) fine sandy clay loam with stipple speckled groundmass and <5% organic matter. These are subangular blocky and 1000-3000 μm in size. Associated with iron oxide coatings are occasional clay coatings and infillings (amorphous, iron coated), and there are frequent very fine (<150 μm) amorphous coatings on many grains and aggregate edges in the lower part of the layer. Amorphous iron staining and iron coatings (in patches 2000-4000 μm in size), associated with charred plant remains; occasionally associated with rootholes.

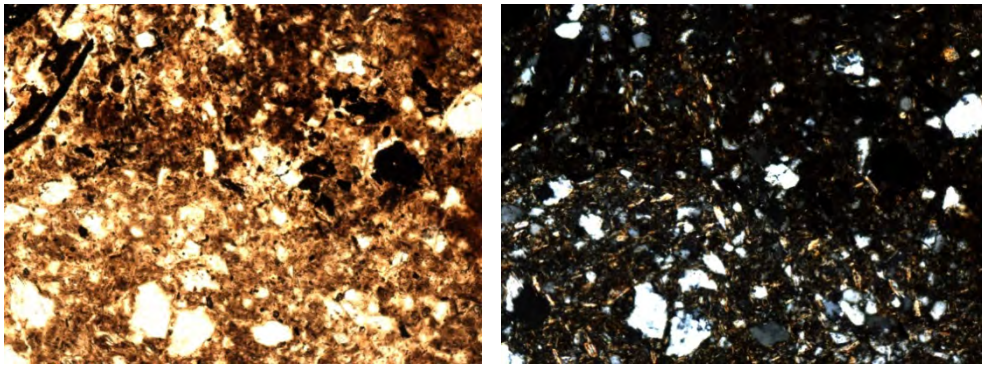

Fig XXI.12: [90990] in PPL (left) and XPL (right), showing typical main charcoal-rich fabric (upper part) and part of a 'yellow' (more clay) fabric pedofeature (i.e. inclusion; lower part). Frame width = 2000 μm

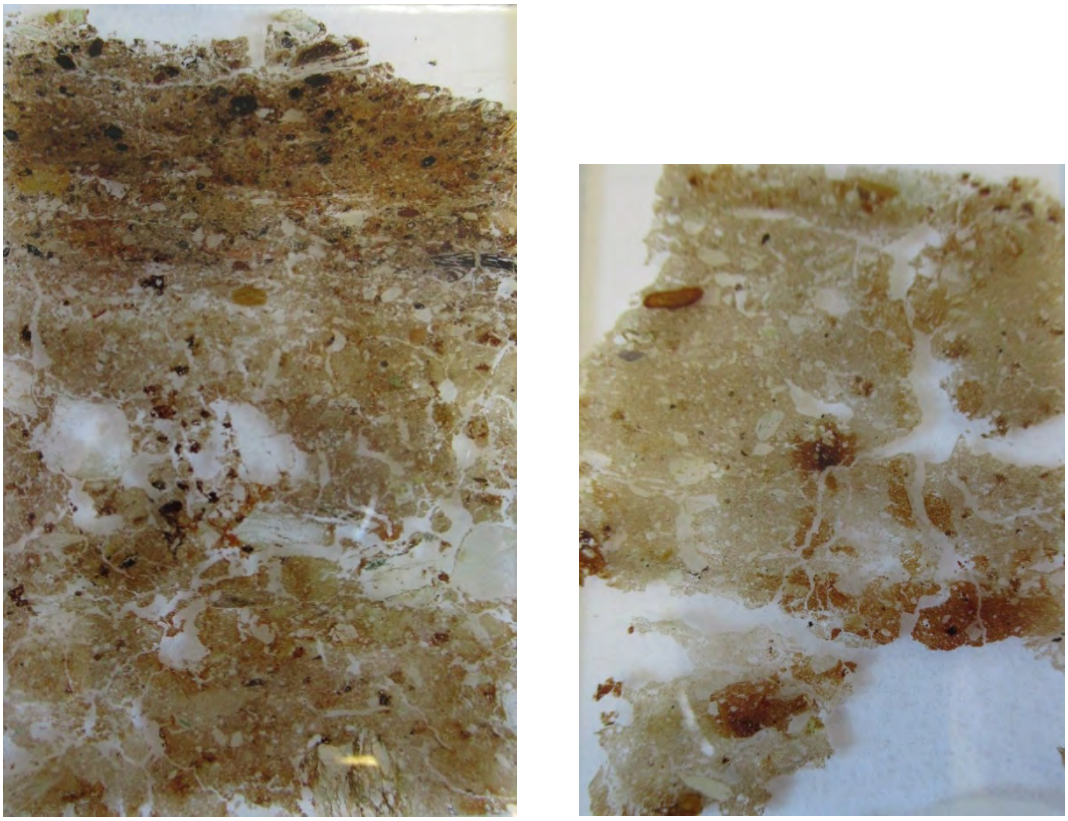

Fig XXI.13: [90990] over [90992] (left); [90992] lower (right). Original size 5 cm width.

[90992/90956]

Structure: the upper part of this horizon has a mixed crumb and subangular blocky structure (up to 1cm size), with frequent rootholes, and a porosity of 15% (irregular channels 500-1000 x up to 30,000 long). With depth the structure changes to angular blocky (2-3cm). Overall porosity is 10%: intrapedal is <5% (mostly channels <1000 μm diameter); interpedal is channels and cracks (200-3000 μm wide, up to 30,000 μm long). Mineral components are as described previously; occasional 'claystones'; gravel makes up <2% of this layer. C:f ratio: 15:85 (vcs <2%, cs & ms 5%, fs 10%, vfs 15%, s 35%, c 35%). Clay. Open porphyric related distribution. Groundmass is grano- and porostriated, with patches being stipple speckled, yellowish brown (PPL), grey and yellow (XPL). Organic components: 5-10%, charcoal up to 1000 μm, but mostly small angular fragments <200 μm. Rare rounded aggregates of pure clay (<500 μm) of the type seen in the groundmass, and subrounded aggregates of clay with fine silt (<700 μm) are seen with depth. 'Dusty' light yellow to grey (PPL), yellow (XPL) 100 μm thick clay coatings on some voids. With depth some coatings are cleaner, orange (PPL) and red (XPL) and laminated, up to 150 μm. Iron mottles c. 1000 μm occasionally seen, rarely up to 10,000 μm; also iron root pseudomorphs associated with some voids, and amorphous iron coatings.

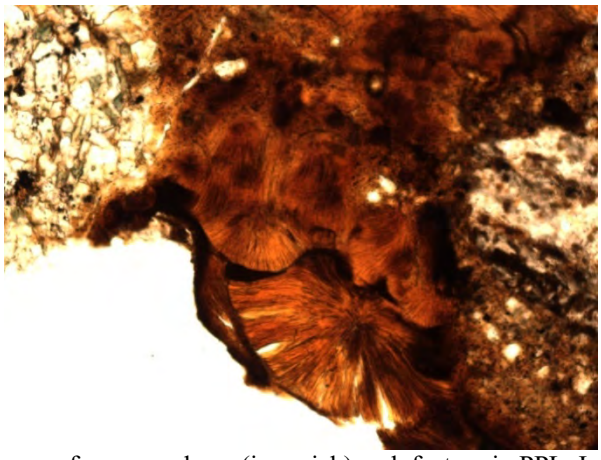

Fig XXI.14: [90992] close up of an amorphous (iron-rich) pedofeature in PPL. In XPL the entire feature is black.

Frame width = 2000 μm

Roundhouse C floor layers
For section drawing see volume 2, figure 77.1

Samples were taken from alternating orange gravel and grey-brown sandy loam layers, apparently laid floors:

[91155/91516] Orange gravel	Sample 420
[91470] Grey-brown sandy loam	Sample 420
[91471] Orange gravel	Unsampled

Layer [91155/91516] makes up 5-7cm of the thin section, overlying 3-5cm of [91470]. The difference is marked by colour, with [91155] including zones of oxidized iron features (5YR 4/4 and 4/6, reddish brown to yellowish red), while [91470] is less red (10YR 4/6 yellowish brown), with zones of black material. Both layers appear very mixed, and there is a transition zone of about 1-2cm with 1.5cm sized subangular gravel inclusions which I was not able to clearly assign to either layer.

In [91155/91516] some clean clay coatings are often found in zones with iron coatings, associated with root channels, and attest to little disturbance of this particular location on the site in more recent times. These coatings are not found in the underlying layer (see below). This layer has a lot of clay in it, both translocated from above (alluvial) and in the groundmass, and this is different from the underlying layer (see below). This appears to be a layer of clay-rich sand brought in from an alluvial setting. It may also have developed some of its characteristics through long periods of trampling plus wetting and drying, which could suggest it was frequently wet. This does not necessarily imply that the area was unroofed, as the region is fairly wet and this could represent overland flow. Since the layer is very clayey, it may simply be more strongly affected by wetting plus trampling than some of the other floor layers examined.

The transition zone identified between the two layers is generally similar to underlying [91470] but with frequent iron coatings of grains, and a broken up structure with frequent microaggregates resembling mite pellets. Along with the presence of the gravel inclusions at this location in the profile, these features are most likely related to this being a boundary created not by post-depositional factors but possibly by the deposition of layer [91155] on top of [91470]. Physical deposition of sediment on a 'surface' or on a 'cut' is related to the creation of zone of loosened fine aggregates at the base of the deposited material, along with features such as an increase in textural and/or iron panning pedofeatures. Iron panning in [91155] was noted elsewhere (Young & Kearns 2011: 117). There was very little charcoal seen here, which agrees with the flotation results (Grinter 2011: 172, 173). In general, this context seems to have been a laid floor deposit; trampling indicators suggest that it was used, but it had little other evidence of type of use. A lot of clean clay pedofeatures (in addition to dusty) suggest a period of stable soil formation, probably after the house was abandoned (these are in pore spaces). The iron oxide features could also have formed during this phase, as they are also linked with root features.

Context 91470 has some features of floors as noted here (in this case: charcoal inclusions, textural pedofeatures), but they are not as well preserved and/or as typical as certain other samples in this set of samples. No definite packing or trampling indicators are seen. The impact of rooting and mite activity is clear in the thin sections, and it is possible that bioturbation is responsible for the less 'laid' nature of this interpreted laid floor. This was described as an occupation layer in the flotation reports, but nothing was found through that analysis (Grinter 2011: 175, 179).

Fig XXI.15: [91155] over [91470]. Original size: 5x10cm.

[91155]

Structure: apedal crack and channel with zones of angular blocky (1-2cm). Porosity: 10-15%, mostly channels, often associated with root remains or iron-oxide features (200-500 x up to 20,000 maximum length, curved and crooked). Mineral components – mixed gravels, as previously described. C:f ratio: 35:65 (vcs 10%, cs 5%, ms 10%, fs 10%, vfs 20%, s 25%, c 20%). Sandy clay loam. Close porphyric related distribution. Groundmass: granostriated, with zones of stipple speckled, light reddish brown to red (PPL), dark reddish brown (XPL). The layer is lightly stained with amorphous iron oxide staining. Organic components: 5%, mostly charcoal and angular black fragments <200 μm. Frequent clean and 'dusty' clay coatings occasionally in pores; these are orange (PPL), red (XPL) and occasionally laminated, 50-250 μm thick. Amorphous phosphatic infilling features associated with iron oxide coatings and a clean laminated clay coating. Frequent amorphous iron oxide features, some up to 2.5cm in size in zones cementing the main groundmass, but mainly c. 1000 μm mottles.

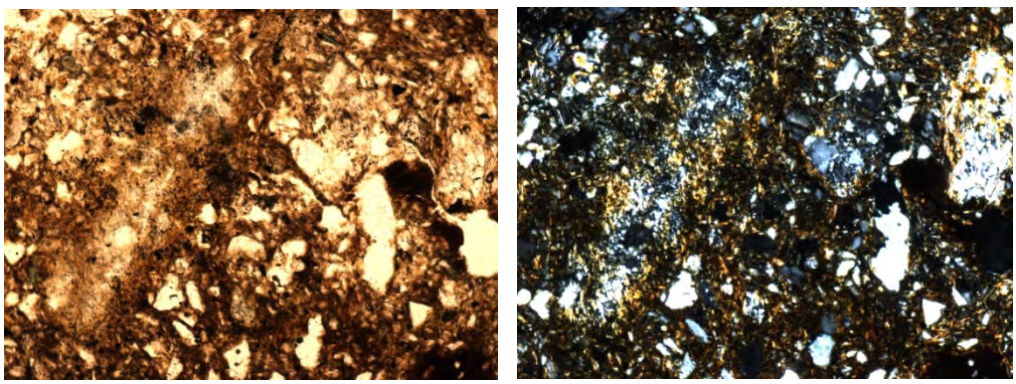

Fig XXI.16: [91155] Typical fabric in PPL (left) and XPL (right). Frame width = 2000 μm

[91470]

Structure: as above, but mostly apedal channel. Porosity 10%, mostly channels (curved, 500 μm wide, up to 10,000 μm long, often with root remains), occasional chambers (700 x 3000 μm). Mineral components: as previously described. At the base of the thin section is a zone with frequent 2000-3000 μm sized gravels, possibly related to underlying [91471]; these are of the same types noted elsewhere. C:f ratio: 40:60 (vcs 10%, cs 10%, ms 10%, fs 10%, vfs 20%, s 25%, c 15%). Sandy loam. Close porphyric related distribution. Groundmass: stipple speckled to amorphous; light iron oxide staining on the groundmass, light reddish brown (PPL), dark reddish brown (XPL). Organic components: 5-10%, mostly black angular fragments 50-500 μm in size, some with cellular structure but most without; most of the larger fragments are charcoal; occasional recent root remains in pores. Occasional fabric pedofeatures of non-iron stained fabric; this is similar to the main groundmass but shows granostriation with yellow (PPL & XPL) clay, in angular aggregates 2000-3000 μm in size. Occasional infillings and pore coatings of 'dusty' clay, red (PPL), very dark reddish brown to amorphous (XPL), 50-150 μm thick; occasional amorphous iron oxide features, 0.5cm in size; in areas there are also probably manganese mottles (50 μm); mite excrements in some chambers.

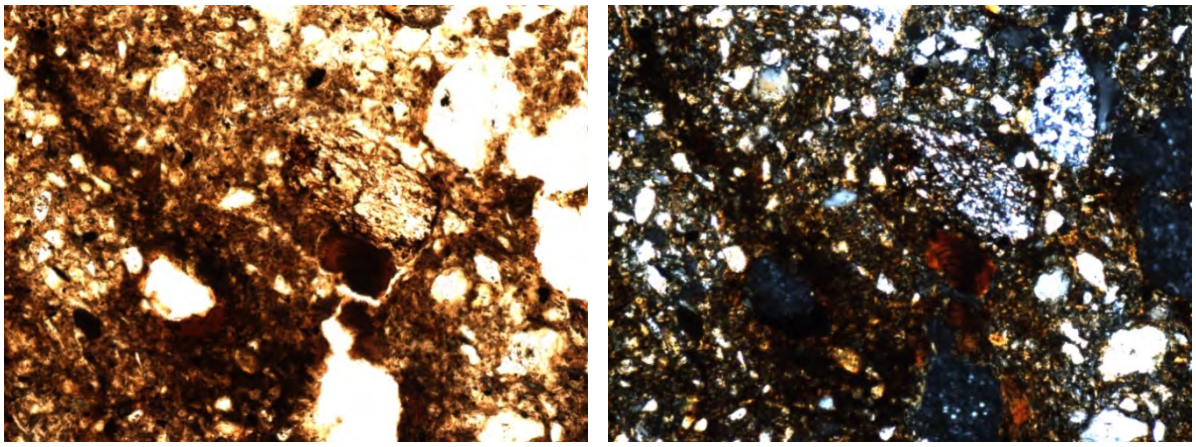

Fig XXI.17: [91470] fabric (PPL & XPL); red laminated clay infillings can be seen in the lower central right. Frame width = 2000 μm

Roundhouse E hearth rake-out and possible floor

For section drawing see volume 2, figure 69.1

Deposits adjacent to a hearth pit, apparently fine rake-out of charcoal over a clay floor or other structural element.

[91540] Hearth rake-out deposit	Sample 419
[91706] Clay floor/structural element	Sample 419

The hearth rake-out deposits [91540] comprise a dark reddish brown (5YR 2.5/2) layer in the upper 3-4 cm of sample 419, with a sharp, wavy boundary with the underlying clay deposits. Macroscopically, these deposits are clearly layered, with horizontally and diagonally oriented charcoal layers visible (<1mm thick). The clay deposits [91706] show two sets of alternating deposits, light grey (2.5Y 7/1) and pale brown to yellow (2.5Y 7/4 to 7/6) layers alternate as follows: 1cm of light grey over 1-2cm of pale brown to yellow, over 1-2cm light grey over2-2.5cm pale brown to yellow.

Context [91540] is a very organic layer (a topsoil), with very frequent charcoal inclusions. It shows horizontally oriented charcoal components, combined with rounded aggregates, and a dense matrix suggest trampling of this 'rake out' deposit (e.g. see Banerjea *et al*. 2015). This is also suggested by the transition zone (boundary) between the layers. While this is sharp to the naked eye, under the microscope a 2000-3000 μm thick zone shows mixing of aggregates of [91540] with aggregates of underlying [91706], separated by packing pores. This type of mixing, along with the density and orientation seen, is typical of trampling indicators in thin section from all types of floor contexts (e.g. Karkanas & Goldberg 2008; Stahlschmidt *et al*. 2017; Rentzel *et al*. 2017). The fact that these indicators are seen both at the base and within the deposits suggests repeated trampling occurred.

Floor context [91706] light grey layers are very dense and almost wholly mineral; they almost look like a rock. The yellow layers are even denser, including more clay plus some iron oxidation features, with fewer gravels. In general, these are typical trampled floor layers: compacted, horizontally oriented and bedded. The grey layers in

particular show internal features related to trampling and leaching, and have more charcoal than the clay-rich layers**.**

The boundaries between the grey and yellow layers are sharp and clear both macroscopically and microscopically. At the boundaries are elongated empty planar voids, which are typically found between deposited contexts, and planar voids infilled with grey (PPL)/yellow (XPL) horizontally laminated clay, associated with horizontally bedded lenses of black (PPL) amorphous infillings in planar voids (50-200 μm thick, up to 1500 μm long, straight). The latter appear to be extremely fine charcoal (sooting), although it is possible that they are some form of amorphous pedofeature (e.g. manganese). There are rare amorphous iron oxide microfeatures, but most oxidised zones are associated with linear infillings of orange-red (PPL & XPL) clay. These are found rarely within the yellow layers, attesting to the impact of dumping layers on top of one another, plus mechanical stresses (creating horizontal planar voids) and leaching (creating clay infillings).

Fig XXI.18: [91540] over [91706]. Original size 5x10cm.

[91540]

Structure: apedal channel with zones of rounded aggregates (<1cm); porosity: 10-15% packing pores (<300 μm), occasional channels (1000 μm diameter, some discontinuous 200 x 2000 μm, smooth, often with root fragments). Associated with the rounded aggregates are interpedal planar voids 1000-2000 μm wide, often with root fragments. Mineral components: >90% quartz and quartz sandstones; occasional feldspar grains; occasional limestone rock fragments; others as previously described. C:f ratio: 30:70 (vcs 5%, cs 5%, ms 5%, fs 15%, vfs 25%, s 25%, c 20%). Sandy clay loam. Groundmass: amorphous to stipple speckled. Most fine groundmass is strongly organic stained, very dark reddish brown to strong brown to black (PPL); very dark reddish brown to black (XPL). Organic components: 30-40%, mostly black, brown or very dark reddish brown (PPL), amorphous (XPL), often very fragmented, charred or charcoal (100-1500 μm), angular to subangular; occasional light brown (PPL) uncharred cellular elements and root fragments in pore spaces. In general everything is well integrated with the groundmass. Rare clay fabric inclusions. Very rare very dusty coatings.

[91706]

Grey layers

Structure: apedal to apedal crack and channel; porosity: 10-15%, mostly cracks and channels, packing pores. Mineral components: about 30% rock fragments; others as above, except fine yellow clay zones visible. C:f ratio: 40:60 (vcs 15%, cs 5%, ms 5%, fs 15%, vfs 25%, s 20 , c 15). Sandy loam. Groundmass: granostriated and stipple speckled, occasional areas of linear striated. Light grey-brown (PPL); grey to yellow (PPL). Organic

components: 5-10% 'punctuations' and small angular black fragments (<150 μm). Clean and 'dusty' clay coatings on grains and pores (very thin, <50 μm), some complex coatings (up to 300 μm).

Pale brown to yellow layers
Structure: apedal; porosity: 5%, rare cracks, packing pores. There are zones with channels and vughs (<1000 μm). Mineral components as above, except about 15% rock fragments; occasional iron oxide zones (pedofeatures). C:f ratio: 20:80 (vcs and cs <5%, ms 5%, fs 15%, vfs 35% , s 20-25%, c 25%). Sandy clay loam. Groundmass: granostriated; there is also a parallel striated effect partly in the clay and partly in the orientation of needle-like grains of frequent very fine sand (50-150 μm long) throughout the groundmass. Organic components: 5%, 'punctuations'. Textural pedofeatures at boundaries (see below). Also coatings and infills as in the grey layers. The yellow layers have more pore coatings. They also have strongly iron oxide stained clay coatings in some pores, and amorphous iron oxide staining around occasional pores (encircling the pores, staining on the groundmass). These are clearly related to root holes.

The boundaries between the grey and yellow layers are sharp and clear. At the boundaries are elongated empty planar voids, and planar voids infilled with grey (PPL)/yellow (XPL) horizontally laminated clay, associated with horizontally bedded lenses of black (PPL) amorphous infillings in planar voids (50-200 μm thick, up to 1500 μm long, straight). The latter appear to be extremely fine charcoal (sooting) or an amorphous pedofeature (e.g. manganese). There are rare amorphous iron oxide microfeatures, but most oxidised zones are associated with linear infillings of orange-red (PPL & XPL) clay.. These are found rarely within the yellow layers.

Eastern Area, Section 90465, possible flooding
For section drawing see Fig XXI.25

Samples were taken from the lower part of a series of clay layers (possible floors or other structural layers), and an underlying brown silty clay layer (possible alluvial/buried soil layer) (Fig XXI.20):

[91513] Grey clay layer over brown clay layer	Unsampled
[91514] Yellow-orange clay layer	Unsampled
[91515] Orange clay layer over grey clay layer	Sample 414
[91512/91421] Brown silty clay	Sample 414

The thin section does not show a clear boundary between [91515] and [91512/91421]. Macroscopically it appears to be one deposit of brown (10YR 5/3) fine soil with very rare gravel inclusions (1cm angular), increasing very fine charcoal with depth (<2mm), and angular blocky to prismatic structure (1cm and 1x2cm peds) defined by root holes. There is no macroscopic difference between the layers, except that there is a gravel layer at the base (lower 1cm). However, the upper 1cm is a clay-rich layer microscopically [91515]. The remainder will be described at [91512].

Context [91515] is a very disturbed soil, as opposed to a floor. It is well-integrated texturally through leaching and faunal activity. It does not appear to have been compacted physically or trampled, and there are no horizontally oriented materials (as in other 'floors'). The fabric has the look of a 'whole-soil coating'; this is typically a type of near-surface feature related to dispersion through disturbance and leaching (e.g. an 'agric' horizon), and this layer reflects that type of process – physical disturbance and disruption. While it is relatively clay-rich, its other features are suggestive of an agricultural or otherwise strongly disturbed soil (e.g. a lower A horizon). However, the occasional diatoms, found only in small patches (see images below for one such zone), could reflect the alluvial conditions noted in the field, but they are mixed into a soil horizon. These appear to be similar to those seen in the gully in K2 (discussed above). Since diatoms are not seen in the underlying context, it is possible that they have come down into this soil from above. The generally clay-rich nature of both of the contexts seen here could reflect an alluvial parent material, but they are not alluvial deposits themselves.

The underlying context was labelled [91512] in the field but the correct number for this layer is [91421]. This layer shows classic soil features (its structure, plus earthworm sorting of gravels and sands and sand-sized organic particles to base of layer). Evidence of earthworm sorting is also seen in the pedofeatures. In general, the profile shows a once-disturbed soil which has become altered and integrated through leaching and earthworm sorting. The disturbance seen could relate to use as an earthen floor, but no clear 'floor' indicators are seen; possibly the upper part, as seen elsewhere, was truncated (removed) before the overlying floor sequence was deposited.

[91515]

Structure: angular blocky (1cm). Porosity: 10% channels (c 400-500 μm diameter) and vughs; interpedal cracks and channels (3000 x 10,000 μm, straight, accommodated). A chamber (1cm, partially infilled with soil aggregates/collapsed) is visible at the boundary between [91515] and [91512]. Mineral components; Gravel 5% of area; others as previously described. This sample has a few zones with diatoms in them. C:f ratio: 25:75 (vcs 10%, cs 5%, ms 5%, fs 5%, vfs 10%, s 35%, c 30%). Clay loam. Close and open porphyric related distribution. Groundmass: granostriated; light yellow-orange brown (PPL), orange (XPL). Organic components: 5%, angular and rounded black fragments, some charcoal. Also root remains and occasional spores. Occasional clay coatings ('dusty') on pores, but most pores are empty. However, the entire groundmass shows a 'whole-soil' coating nature on old aggregates and all grains.

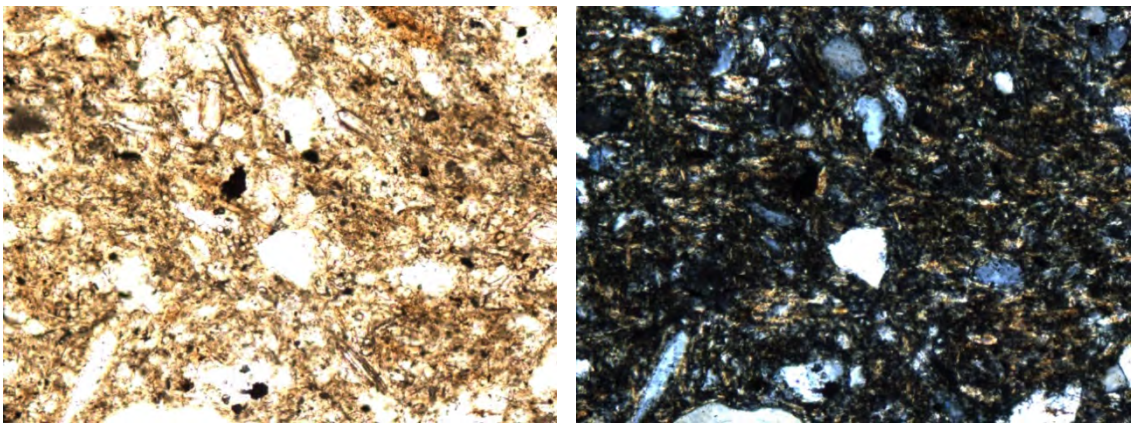

Fig XXI.19: [91515] atypical zone with diatoms (PPL upper left and lower; XPL upper right). Frame widths = 2000 μm. The diatoms are elongated and appear outlined in black in the upper image (left); they are about 200 μm long.

[91512/91231]

Structure: angular blocky to columnar (2x3 cm), becoming crumb at base (with gravels). Porosity: 10-15% channels (200-700 μm diameter intrapedal channels; 1000-1200 x 10,000-30,000 μm interpedal, straight, partially accommodated). 20% at base; packing pores and channels between crumb aggregates and gravels. Mineral components: the upper part of this context has no gravel; macroscopically it is perfectly sorted. The lower part is 40% gravels. This is a classic characteristic of earthworm sorted soil horizons. All mineral components are as previously described. C:f ratio: main: 20:80 (vcs <5%, cs 5%, ms 5%, fs 5%, vfs 15%, s 35%, c 30%). Clay loam. Open porphyric related distribution. Base (with gravels): 40:60 (vcs 10%, cs 10%, ms 10%, fs 10%, vfs 25%, s 20%, c 15%). Sandy loam. Groundmass: stipple speckled, with some granostriation; brown (PPL), very dark brown and orange (XPL). Organic components: 5-10%, as above, plus some larger charcoal found in the gravel at base (up to 1000 μm) and root remains in some pores. Rounded zones of sand with fine fraction coatings appear to be earthworm sorted zones. As with the overlying layer, there are very few coatings in the current structure, but the main groundmass shows coating of grains and smaller aggregates, forming a dense apedal structure intrapedally.

Fig XXI.20: [91515] over [91512]. Original 5x10cm

Discussion

Floor deposits

The surface floor deposits studied included gravel, clay and earth layers. They share some similarities, including having frequent included charcoal and trampling indicators. With some variation, a typical way of creating a house floor was identified as being to deposit a thin layer of gravel and then immediately create an earthen floor. In these instances, floors appear to have been 'replaced' through clearing or truncation of the upper part of the 'old' earthen floor, and then deposition of a new gravel layer and new earthen floor layer. In two instances - the [91635-90990] sequence and the [91540-91706] sequence – the surface levels of the floors were preserved. [91540-91706] shows a different type of construction, but still shows a ritual of repetition (sand over clay), again suggesting that floors in the houses were usually replaced, which would suggest some longevity to the houses.

The gravel floor layers have very little evidence of direct use: little charcoal or other plant remains, few 'trampling' or compaction (compression) indicators, although some have become texturally compacted by deposition of leached clay from overlying deposits, and iron oxide precipitation and panning processes. The earthen floor layers overlying them often contain frequent charcoal and other plant remains, horizontally oriented voids and plant remains, and occasionally compressed aggregates. These features are typical of earthen floors used in domestic or some types of industrial settings. Where a repeated sequence of deposition is seen, it appears that the upper part of the original earthen floor was removed (truncated).

Perhaps the macroscopic characteristics of [91635] and [90990] are the best preserved floor deposits seen in the samples, and are perhaps typical of what some of the floors truncated in prehistory may have been like. These include a charcoal layer at the surface and horizontally oriented planar voids (the latter related to trampling). Microscopically, [90882] upper also has features that probably relate to trampling and floor surface creation, including its compactness and frequent organic remains; the inclusion of a layer of 2-3cm sized gravels in a line just under this context is very suggestive of deliberate laying of a gravel floor surface; microscopically it is clear that this was a pure gravel layer which has subsequently become cemented with translocated clays (dusty and, later, clean) and iron, forming a panning feature in which the gravels are embedded.

Regarding use of space, while the floors varied in some of their core aspects, all of the floors would be consistent with use as domestic space. There was nothing in the micromorphology samples to indicate any other specific use of space.

Buried soils

The buried soil horizons appear to mainly be A horizons (often probably lower A), with only one possible upper B horizon identified. They often show strong disturbance; while some of this likely relates to house construction and use, some of the disturbance types seen are typical of agricultural soils. In some cases there is also evidence of earthworm sorting (in one case of near-perfect sorting), which suggests that before some of the house floors were constructed the underlying area was probably untilled for some time (possibly a stable grassland or scrub) after an earlier phase of tilling. Since these soils are relatively acidic, it could be suggested that manuring might have been carried out, which would make the soils more amenable to earthworms, but no microscopic evidence of manuring was found in the profiles, so this is uncertain.

In some cases the soils showed a more clay-rich nature suggesting a parent material of alluvial material; it was unclear to me whether this was modern (e.g. overbank flooding) or related to the surficial geology in some cases. But in two cases diatoms were also found in the profiles; one instance of these appears to relate to a gully fill, but the other is in the upper part of a buried soil horizon/base of floor deposits, which suggests there is or was some Holocene water-lain deposition. In the case of the buried soil with diatoms, this was a very disturbed soil which was also the one showing subsequent strong earthworm sorting of gravels. In this case there appears to be an argument for a sequence of disturbance (e.g. tilling) followed by stabilisation (allowing earthworm sorting), followed by floor construction, with an episode of waterlain deposition either before or after floor construction indicated by diatoms in the basal floor layer.

The soils studied here were not similar to the sediments found in Area F1 ('degraded peaty deposit over boulder clay' with little trace of human activity; Kenney *et al*. 2011: 125). These soils appear to be disturbed, possibly tilled, brown earths with moderate to frequent charcoal inclusions (possibly amendment). They show evidence for earlier stable woodland in some instances (clean clay aggregate inclusions), and a late stable grassland (earthworm sorted topsoil) and/or possibly woodland (clean clay infillings and coatings). The only highly organic soil described here is one that is full of charcoal (not peat). These soils are uniformly disturbed, and sometimes extremely disturbed, including those pre-dating the Iron Age house settlement. This suggests to me substantial and long-term human interaction with the soil in the area, from at least the earlier Iron Age, and possibly back through into the Neolithic (see below).

Ancient soil profiles and land use

It is important to recognise that despite indicators of stable woodland also being seen in the soils, these are very few, and have been very mixed into the 'buried' soils which pre-date the structures. With one exception of a possibly alluvially influenced lower A/upper B, none of the 'buried' soil layers sampled included evidence for the lower soil horizons (B and/or E) that would be expected in a non-disturbed woodland soil profile over the local clay-rich parent material (boulder clay – Kenney *et al*. 2011: 56). They were thin and well mixed topsoil and lower topsoil horizons, as is typical of eroded and disturbed agricultural soils dating from the Neolithic through the Iron Age. It is possible that there were undisturbed areas of woodland around, as represented in the pollen findings (Kenney *et al.* 2011: 126), but these were not in existence at the locations on which the roundhouses sampled here were constructed. The roundhouse sites were very disturbed for at least some time before the houses were built, based on the erosion seen to the soil profiles.

Other early soil profiles described are also suggestive of Neolithic-Bronze Age disruption of soil profiles. One area related to Neolithic activity ([02093]) was described as a layer of grey brown sandy silt with small stones and charcoal, frequent Neolithic potsherds and lithics, and it stratigraphically underlay a Neolithic building and was near to a few combustion features (Kenney *et al*. 2011:14). The description of the Neolithic soil as comprising only one (A) horizon (vs. at least two) despite the clay-rich and leaching environment, and the many macro-inclusions noted in the Neolithic soil support the interpretation that early land use practices of clearance and probably tilling had a role in creating the Iron Age buried soil profiles seen. Evidence for a Neolithic soil being undisturbed in this setting would include characteristics such as an intact well-developed 'mature' profile (e.g. with E and/or B horizons). The buried soils examined – and that described – do not exhibit those characteristics, but do show that such 'mature' soils did exist in earlier times (i.e. in the Mesolithic). The loss of deeper soil profiles has long been noted as an aspect of the impact of Neolithic and later arable farming, grazing and clearance on previously forested earlier Holocene soil profiles (e.g. Catt 1978; Bullock and Murphy 1979; Fisher 1982; Macphail 1986), and the Parc Cybi buried soils fit this model very well.

The Iron Age buried soil is described as a 'firm grey or grey brown silty clay with occasional small stones…between 0.05-0.20m in depth' and as containing frequent charcoal in places, along with artefacts and bones/teeth; the inclusions are interpreted as being bioturbated and/or trampled into the soil from above (Kenney *et al*. 2011: 57). This is possible, and even likely where overlying structures were found. But the buried soil horizon as described is clearly only an A to lower A. The thin sections show that all examples of the buried soil examined were disturbed or highly disturbed. The small fragments of 'undisturbed' B horizon material seen occasionally in only a few examples do probably relate to the pre-Neolithic Holocene phases represented in the pollen of scrub and/or woodland growth, but the rarity of these microfeatures show that the buried soils were highly altered well before the Iron Age structures were built, and had by then already completely lost their lower horizons to mechanical disturbance of a type typical for ancient tillage or land clearance.

Conclusions

Studying floor levels and buried soils in soil conditions such as those at Parc Cybi is challenging, because preservation is highly variable and greatly affected by post-depositional processes. However, it has been possible to distinguish a typical Iron Age floor construction 'ritual', and to elucidate some aspects of the history of the site based on its buried soils. In particular, the micromorphology shows a great deal more pre-Iron Age disruption of the buried soil profile than was evident in the field. The finding of diatoms was surprising, and suggests that in future it might be interesting to add diatom analysis to the suite of methods used to interpret these sites.

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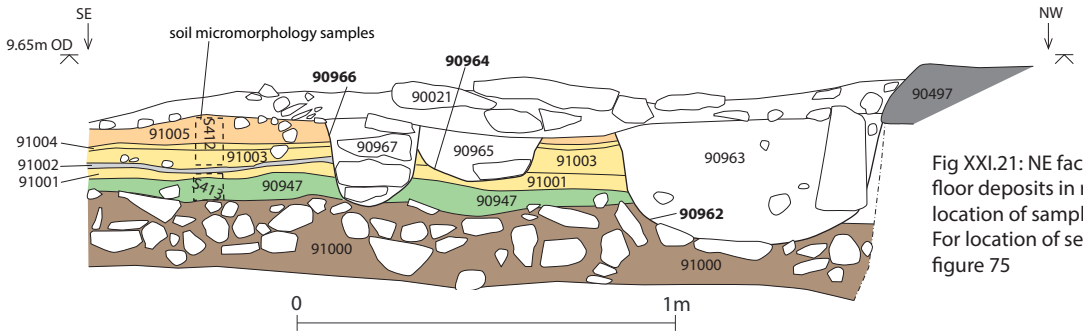


Fig XXI.21: NE facing section through floor deposits in roundhouse A showing location of samples 412 and 413
For location of section see volume 2, figure 75

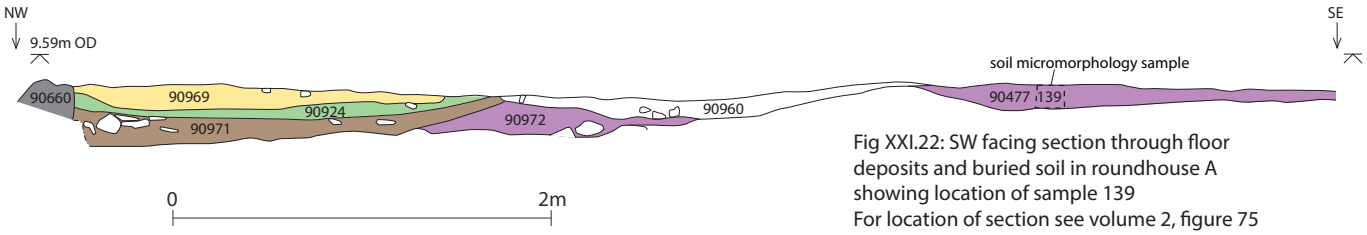


Fig XXI.22: SW facing section through floor deposits and buried soil in roundhouse A showing location of sample 139
For location of section see volume 2, figure 75

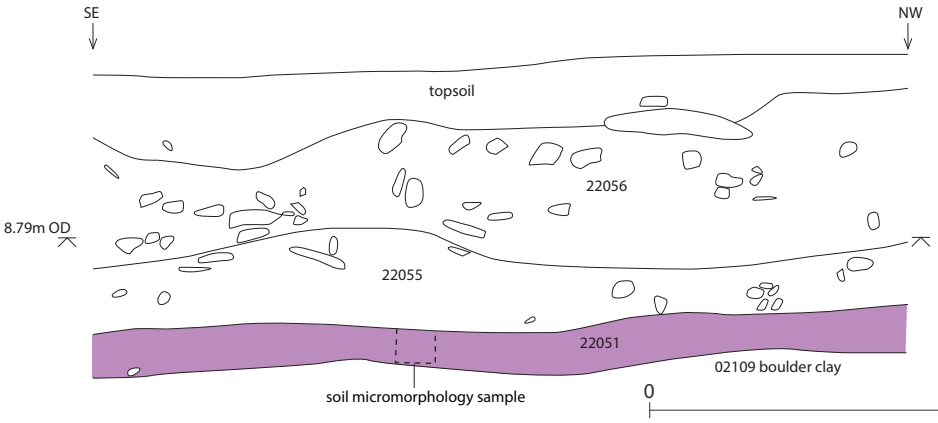


Fig XXI.23: NE facing section through deposits in Area K2; 22056 may be dumped material from the construction of the A55. Shows location of micromorphology sample.
For location of section see volume 2, figure 89

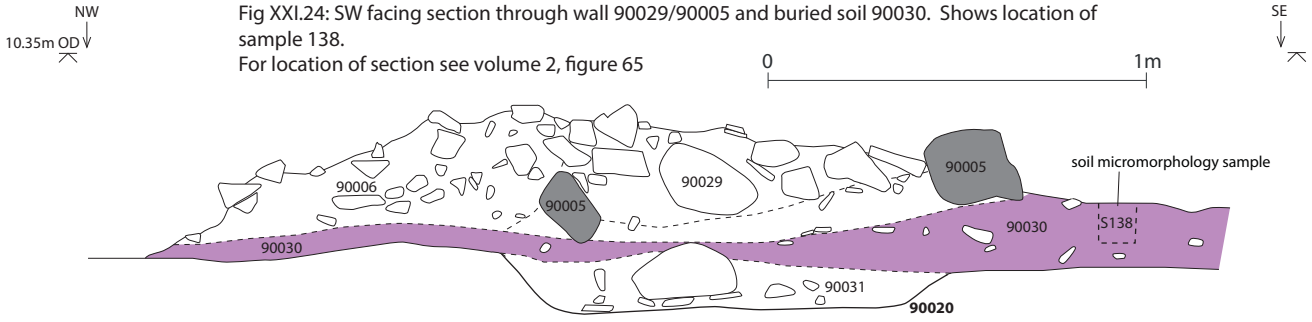
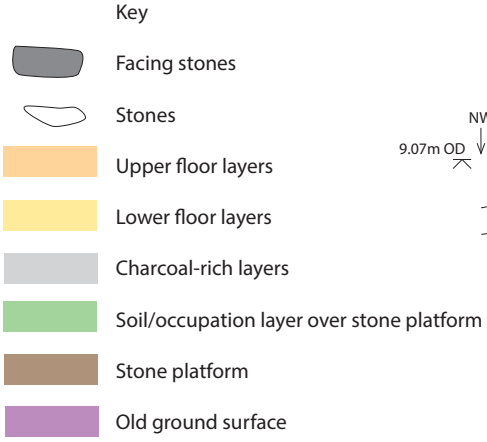


Fig XXI.24: SW facing section through wall 90029/90005 and buried soil 90030. Shows location of sample 138.
For location of section see volume 2, figure 65



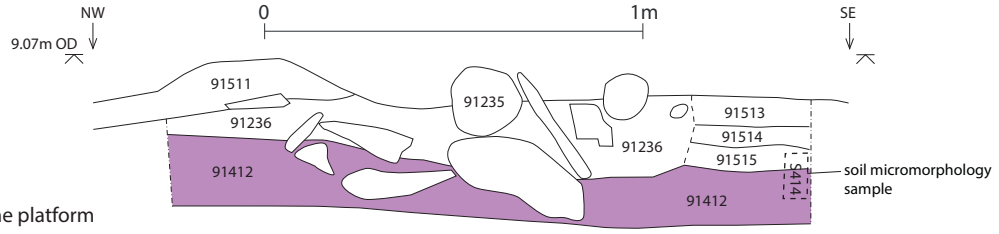


Fig XXI.25: SW facing section stone dump 91235 and possible flooding deposits. Shows location of sample 138.
For location of section see volume 2, figure 73

Part XXII: Potential quarrying

Various features on site use large slabs of local schist, which were presumably quarried close to where they were used. Some possible sources on site were inspected and examined for quarrying.

On 7th February Dr Margaret Wood visited the site and inspected the slabs from the Bronze Age cists and the closest obvious rock out crop. Dr Wood concluded that the cist slabs were of weathered chlorite-rich, blue-green schistose rocks of similar composition to the sporadic outcrops in the area identified as South Stack Formation (Late Precambrian) c. 522 million years old schists. These are the local rock type, which underlie the site. The actual rock is composed of slightly metamorphosed mud-rich sediments, which have undergone moderate pressure metamorphism with minor heating. More strongly metamorphosed rock would be more mica rich in content and would have finer layering as in a true schist. This rock is therefore better described as schistose rather than schist.

One possible source for the rock is to be found immediately south of Tyddyn Pïoden in area D5, where an ice-eroded outcrop occurs, which has been scraped by the ice from a north-easterly direction and takes the usual roche moutonée form. A roche moutonée forms where local outcrops have been eroded by the passage of ice giving a smooth surface on the rock face where the ice travels over it and a plucked uneven jagged surface on the leaward end to the outcrop. In this case the plucked surface, which faces uphill towards the road is hidden beneath a clay-rich soil and vegetation. Such bosses of rock are common in this area and any number of them could have provided useful, easily removed slabs for constructing the cists. The schistose layering would enable slabs to be levered out of the plucked face of such rock bosses very easily as well as leaving some layers of rock which could be lifted off the ice-worn surface. No sites where this had occurred were identified but this rock outcrop had not been stripped and was largely obscured by vegetation.

Towards the southern end of the site the Trefignath chambered tomb must have used slabs quarried from the vicinity. It is probable that much of the rock came from the outcrop on which the tomb stood and some evidence for quarrying was revealed during the excavation of the tomb (Smith 1987, 21, plate XI). However it was possible that the outcrop to the west, close to the early Neolithic building, was also used. This was stripped of vegetation by machine and potential areas of quarrying were cleaned by hand and recorded by photograph. After cleaning the area was inspected by David Jenkins, who reported as following: -

The specific question was posed as to whether a rock exposure to the south end of the site showed any evidence of prehistoric quarrying. The exposure, a low (2-3m) domed outcrop some 25m square, was seen to be the typical quartz-veined green mica schist showing strong schistosity dipping at *ca*. 5º NNW (Fig XXII.1). It is traversed by near vertical joints trending north-south (*ca*. 350º) with a weaker set east-west (*ca*. 80º) and occasional others at oblique angles.

It is possible that slabs could have been obtained by quarrying which were determined by the schistosity and delimited by the joints, but these would have been small, of poor planarity and irregular shape. Inspection of the outcrop for possible quarried sites revealed several small (<0.5m high) scarp faces, but these were mostly south-facing (Fig XXII.3) and likely to represent the natural product of plucking by ice as it moved south-west from the Irish Sea over the outcrop. A few scarps facing north-west (*i.e.* perpendicular to the direction of ice movement) were seen but the fractures looked fresh (Fig XXII.2) and could well have been produced by recent industrial mechanical activity, although it is possible that this may have been superimposed on prehistoric activity. It is therefore concluded that there is no convincing evidence for prehistoric quarrying at this site.

Fig XXII.1: General view of schist outcrop from the North, showing the irregular schistose surface dipping northwards

Fig XXII.2: North-west facing scarp with fresh (recent?) fractures

Fig XXII.3: South-west facing scarp – glacially plucked?

Part XXIII: Archaeomagnetic Dating

Archaeomagnetic Dating Of Three Possible Hearth Structures From Excavations At Parc Cybi, Tw Mawr, Holyhead, North Wales.

S.J. Clelland and C. M. Batt

Summary

This report describes the archaeomagnetic investigation of three features, identified as areas of burning related to domestic structures. These were encountered during excavations associated with development work undertaken at Parc Cybi, TwMawr near Holyhead during September 2007. At total of sixty samples were taken from three contexts showing evidence of heating associated with roundhouse B (context 91972), roundhouse E (context 92141) and an area to the east of the roundhouses (context 91579). Only eighteen samples from roundhouse E recorded a consistent, stable magnetisation, but the strength of the magnetisation was extremely weak preventing further analysis with the equipment held in our laboratory. The samples from roundhouse B and the eastern area were also weakly magnetised but displayed much more scatter in the recorded magnetic direction. These results may indicate that the material has not been fired *in situ* to a sufficient temperature or that the mineralogy of the material does not retain the magnetic signal. Given the archaeological evidence, the most likely explanation is that the material does not contain appropriate magnetic minerals, making the features undateable by archaeomagnetic dating.

An introduction to archaeomagnetic dating and an explanation of the technical terms used in this report can be found in Appendix XXIII.1. A sample inventory can be found in Appendix XXIII.2, with detailed magnetic measurements provided in Appendix XXIII.3.

Methodology

Oriented archaeomagnetic samples were taken from deposits showing evidence for heating encountered during excavations of a possible Iron Age site at Parc Cybi, TwMawr. The objectives were:

• to determine whether the material had been heated *in situ* to a high enough temperature to record the geomagnetic field

• to provide a date of last use of the features

Sarah-Jane Clelland, carried out the sampling and measurement programme, as consultancy for Gwynedd Archaeological Trust. The results of all the laboratory work are presented as a series of appendices. A total of three areas of burning were sampled, these were uncovered in close proximity to each other; but displayed differing degrees of preservation. Two areas of burning were revealed within the domestic structures, roundhouses B (sample number 655, context 91972) and E (sample number 656, context 92141). About 15 metres east from the roundhouses there was an additional area of burning (sample number 657, context 91579). As the roundhouse area was to be fully excavated it was possible to completely sample the features. However as not all the features had been fully recorded at the time of sampling only twenty samples were taken from the exposed surfaces of each context. These are described in turn below.

Results

Roundhouse B (RHB): context 91972, sample 655

In RHB the area of burning was central to the structure and appeared to be associated with the first phase of occupation. There were two other earlier "hearths" over context 91972 but these had already been removed. The material sampled appeared to be cemented clay and was pale yellow with infrequent patches of white and dark orange. This suggested that the material might not have enough magnetic minerals present to record the Earth's magnetic signal during cooling or that it has not been heated to a sufficient temperature to cause magnetic changes. However, the burnt area was covered by a large fire cracked stone so this suggested that heating had taken place. As the context was free from inclusions, had a high clay context and appear to be *in situ* it was deemed suitable for sampling.

Fig XXIII.1: Roundhouse B (RHB): context 91972, sample 655, viewed from west. Top image shows the context before sampling, bottom image shows the location of specimens. (Photo: author)

Roundhouse E (RHE): context 92141, sample 656

Within RHE, the area of burning was not central but off set to the north-western area of the roundhouse and appeared to be focused around a "hearth-stone". Successive layers of burnt material butted up to a substantial rectangular stone that stood approximately a metre high. This context was predominately orange clay with some mottling and extremely cemented. There were some angular inclusions around the extremities, particularly to the west of the feature so these areas would be avoided during sampling.

Fig XXIII.2: Roundhouse E: context 92141, sample 656 viewed from southwest. Top image shows the context before sampling, bottom image shows the location of specimens. (Photo: author)

Eastern Area (EA): context 91579, sample 657
This was an isolated patch of reddened material that appeared to have been subjected to heating. This context was reddish brown silty clay with orange patches towards the edges. Along the eastern edge of the deposit there was evidence for root activity so this area was avoided during sampling. Although this context was compacted *in* situ it was extremely friable, unlike the material associated with the roundhouses, as the clay context was lower. At the time of sampling it was unclear if this context was associated with some potential Neolithic earthworks (ditches and post holes), post medieval activity (a stone spread and midden pits) or with the roundhouses.

Fig XXIII.3: Eastern Area: context 91579, sample 657 viewed from south. Top image shows the context before sampling, bottom image shows the location of specimens. (Photo: author)

Sampling
Samples were taken from cleaned horizontal surfaces within the deposits, using the button method (see Appendix XXIII.1), as the materials were hard and firm.

Roundhouse B (RHB): context 91972, sample 655
Twenty samples were taken from the exposed half of the feature. Samples 1-9 were from pale yellow material south of the central stone; samples 10-13 and 18-20 were taken from orange material and samples 14-17 were taken from material underneath the central stone, see Fig XXIII.2.

Roundhouse E (RHE): context 92141, sample 656
Sampling was focused on the south-east section of this context as this showed neither mottling nor charcoal inclusions. Eighteen samples were successfully collected from uppermost portion of the context, as the section had not been recorded yet and this would provide a date for the last time this feature was heated, i.e. used. Two specimens, 10 and 13, proved difficult to level, and then failed to adhere see Fig XXIII.3.

Eastern Area (EA): context 91579, sample 657
During preparation of the context for sampling, a fragment of prehistoric pot was recovered. A total of twenty samples were collected from the reddest areas of the context, avoiding the patch of root activity and the edges as these showed signs of mottling, see Fig XXIII.4.

Details of the exact sampling locations are given in the field notebooks and photographic record (Clelland, pers. comm.) and an overview is provided by Figs XXIII.2-4. Samples were oriented using a magnetic compass, as there appeared to be no local disturbances to the geomagnetic field caused by the feature itself or other factors. It was not possible to use a sun compass due to inclement weather conditions. In the laboratory, the exposed surface of the samples was cleaned and recorded. Even samples that failed to adhere were analysed, as long as some material as trapped within the adhesive and there had been no problems levelling the button.

Measurement
The direction of remanent magnetisation of all samples was measured using a Molspin fluxgate spinner magnetometer.

Results
Of all the samples collected on site only two specimens from sample 657 were not analysed, as there were problems levelling the button during the sampling procedure. The remaining 58 samples were processed to determine the natural remanence magnetisation (NRM). The intensity of natural remanent magnetisation was reasonably consistent, averaging around $0.1x10^{-6}$ Am^2kg^{-1}. The highest intensities were from sample 657, averaging around $0.2x10^{-6}$ Am^2kg^{-1} and there were no systematic differences observed between the intensities of the materials either from the different features or within each feature. These intensity values are extremely low for fired clay; values typically range between 10 and $200x10^{-6}$ Am^2kg^{-1} for domestic hearths. This could potentially indicate that all three features contained the same material, which contains low concentrations of remanence-carrying minerals.

The archaeomagnetic vectors of the samples at this stage were very scattered and it was difficult to identify which may be outliers and which represent the recorded magnetic direction of archaeological interest. The initial measurement of remanence (NRM1) for all three samples produced large $\pm_{95}$ values, see Fig XXIII.5, which are outside the limit of 5° defined as being appropriate for dating (Clark *et al.* 1988: 606). In an attempt to yield more reliable measurements the samples were placed in a field-free environment for six weeks, and then remeasured. When the direction of remanent magnetisation was measured again (NRM2) a longer spin time was employed to increase the instrument sensitivity.

Sample	**Mean Inclination**	**Mean Declination**	$\pm_{95}$	**Mean Intensity**
Roundhouse B, sample 655				
NRM 1	41.69	-3.97	35.38	0.121
NRM 2	-11.94	9.88	28.49	0.091
Roundhouse E, sample 656				
NRM 1	34.12	24.21	21.69	0.194
NRM 2	17.31	16.56	20.78	0.153
Eastern Area, sample 657				
NRM 1	-12.77	49.67	64.52	2.895
NRM 2	-26.93	53.90	53.75	2.684

Fig XXIII.5: Table summarising the results from the direction of remanent magnetisation. NRM 1 = the initial measurement of natural remanent magnetisation; NRM 2 = the measurement of natural remanent magnetisation after field-free storage.

The specimens from sample 657 (EA) showed little change, the intensities were still low and the vectors displayed a similar, scattered pattern. Those from sample 655 (RHB) still produced low intensities but displayed a different vector pattern suggesting that their signal was not only scattered but unstable. The specimens from sample 656 did exhibit more cohesion and potentially could have provided a stable direction to enable a date to

be produced. Unfortunately as the intensity of the remanent magnetisation was so low, investigating the stability of the magnetisation by the stepwise demagnetisation of pilot samples was unfeasible. Without this study of pilot sample behaviour it was not possible to determine the type of magnetic components recording the signal or the field strength necessary to provide the optimum removal of the less stable components (Tarling & Symons 1967), to leave the magnetisation of archaeological interest. See appendix XXIII.3 for the results.

These results indicate that all the material sampled did not retain a measurable record of the magnetic field from the last time the feature cooled. Without a stable magnetic signal there is no benefit in comparing the magnetic direction recorded by the material to the calibration curve, as it will not provide a realistic or reliable date. Further magnetic analysis could identify the magnetic mineralogy of the samples but they would remain undatable. There are two possible explanations for the weak magnetisation: that the material had not been heated in situ to sufficient temperatures or that there were insufficient magnetic minerals present. Given that there was no evidence for any redeposition or disturbance since the last heating event and the hardness of the material suggests that it had been heated to sufficient temperature to reset the magnetisation associated with its geological origin, the most likely explanation is that the material did not contain sufficient magnetic minerals. (Appendix XXIII.1).

Evaluation of potential

The archaeological evidence suggests that all the samples taken from TwMawr had been heated and remained in situ since the last firing event. Although there was evidence of colour change in the material, the directions were not closely grouped. This suggests that the features were unable to archive the magnetic field to enable it to be recovered through measurements of the archaeomagnetic signal. Due to the weakness of the recorded signal it was not possible to determine the magnetic direction for any of the features with any confidence therefore any dates produced from these data would not be credible.

Appendix XXIII.1: an introduction to archaeomagnetic dating

Principles

Archaeomagnetic dating is based on a comparison of the ancient geomagnetic field, as recorded by archaeological materials, with a dated record of changes in the Earth's field over time in a particular geographical area, The geomagnetic field changes both in direction (declination and inclination) and in strength (intensity) and archaeomagnetic dating can be based on either changes in direction or intensity or a combination of the two. Dating by direction requires the exact position of the archaeological material in relation to the present geomagnetic field to be recorded, and so the material must be undisturbed and sampled *in situ*. Dating by intensity does not require *in situ* samples but is less precise and experimentally more difficult. The laboratory at Bradford used archaeomagnetic dating by direction.

Suitable materials for dating

For an archaeological material to be suitable for dating using magnetic direction, it must contain sufficient magnetised particles and an event must have caused these particles to record the Earth's magnetic field. Many geologically derived materials e.g. soils, sediments, clays, contain sufficient magnetic minerals. There are primarily two types of archaeological events which may result in the Earth's magnetic at a particular moment being recorded by archaeological material: heating and deposition in air or water.

If materials have been heated to a sufficiently high temperature (>600°C) they may retain a thermoremament magnetisation (TRM), which reflects the Earth's magnetic field at the time of last cooling. Suitable archaeological features would include hearths, kilns and other fired structures.

Sediments may acquire a datable detrial remanent magnetisation (DRM) from the alignment of their magnetic grains by the ambient field during deposition. Such an effect allows deposits in wells, ditches and streams to be dated. However, this aspect of archaeomagnetic dating is still under development, as factors such as bioturbation and diagenesis, can cause post-depositional disturbance of the magnetisation.

Archaeomagnetic dating can be applied to features expected to date from 1000BC to the present day, as this is the period covered by the calibration curve. However, as discussed below the precision of the date obtained will vary according to the period being dating.

Sampling

Samples of robust fired materials are taken by attaching a 25mm flanged plastic reference button to a cleaned stable area of the feature using a fast setting epoxy resin (Clark *et al.* 1988). The button is levelled, using a spirit

level, and held in place with a small bead of plastecine while the resin sets. The direction of north is them marked on using a magnetic compass, sun compass or gyrotheodolite and the button removed with a small part of the feature attached to it. Samples are trimmed and consolidated in the laboratory with a solution of 10% polyvinylacetate in acetone. Sediments and friable fired materials are sampled by insertion of a 2 cm diameter plastic cylinder, onto which the direction of north is marked. Magnetometers used are sufficiently sensitive for only small samples (c. 1cm^3) to be required; approximately 15 samples are needed from each feature and it may be possible to select sampling location to minimise the visual impact if the feature is to be preserved.

Laboratory measurements

In the laboratory a spinner magnetometer is used to measure the remanent magnetisation of each sample (Molyneux 1971). The measurement indicates the relative strength and direction of the magnetic field of the sample. The stability of this magnetisation is then examined by placing the sample in alternating magnetic fields of increasing strength and removing the magnetisaiton step-by-step. The demagnetisation measurements allow removal of any less stable magnetisations acquired after the firing or depositional event, leaving the magnetisation of archaeological interest. It can also be used to indicate the magnetic mineralogy of the samples using information relating to the field required to reduce the intensity to half its original value, known as the median destructive field (MDF); higher values are indicative of harder magnetic minerals such as haematite (Sternberg *et al.* 1999: 422). The results of measurements of the direction of magnetisation of a group of samples are represented on a stenographic plot, which shows declination as an angle measured clockwise from north and inclination as a distance from the perimeter.

Statistical analysis

The magnetic directions from a number of samples expected to have the same date are combined to five a mean direction, the precision of which is defined using Fisherian statistics (Fisher 1953). The alpha-95 ($\pm_{95}$) represents a 95% probability that the true direction lies with that cone of confidence around the observed mean direction, and would be expected to be less than 5° for dating purposes. A value larger than this indicates that the magnetic directions of the samples are scattered and therefore do not all record the same magnetic field.

Samples thought to be very different from the mean directional value are assessed using statistical tests defined by Beck (1983) and McElhinny and McFadden (2000: 92). The Beck '2-delta' test defines the samples that are located 2 angular standard deviations from the mean value. These samples are then tested using McElhinny and McFaddens equations of $\mathrm{Cos}_{,\,95}$, if the values failed this test they could statistically be classified as lying significantly from the mean and therefore be removed from the analysis.

The stability of magnetisation of an individual samples on demagnetisation is quantified using the Stability Index (Tarling & Symons 1967). For a stable magnetisation this value would be expected to be greater than 5, a value less than this would indicate that he recorded magnetisation was not reliable for dating purposes.

Calibration of dates

Once a stable, mean magnetic direction has been obtained this is dated by comparing it with a calibration curve showing changes in the Earth's field over time. The calibration curve is compiled from direct measurements of the field which extend back to AD1576 in Britain, and from archaeomagnetic measurements from features dated by other methods. As the geomagnetic field changes spatially, data for the calibration curve can only be drawn from within an area approximately 100kn across and all magnetic directions must be corrected mathematically to a central location (Noel & Batt 1990). There is a single calibration curve for England, Scotland and Wales and directions are corrected to Meriden (52.43°N, 1.62°W). Convential British archaeological dates are calibrated by visual comparison to the calibration curve produced by Clark *et al*. (1988). However, this method takes no account of the errors in the calibration curve itself and an alternative method is also used (Zananiri *et al* 2006). The latter method gives a larger error margin on the dates but is a better reflection of the actual error.

Precision of dates

There are a number of factors that will influence the error margins of the dates obtained:

- Differential recording of the field by different parts of the feature
- Disturbance of the material after firing/deposition
- Uncertainties in sampling and laboratory measurements
- Error margins in the calibration curve itself
- Uncertainties in the comparison of the magnetic direction with the calibration curve
- Spatial variation of the geomagnetic field

The precision of the calibration curve varies according to the archaeological period and so the precision of the date obtained will depend on the archaeological dates. As the geomagnetic field has occasionally had the same direction at two different times, it is also possible to have two or more alternative dates for a single feature. In most case the archaeological evidence can be used to select the most likely of these.

Given the number of different factors it is not possible to five a general feature for the precision of archaeomagnetic dates but there will be an error margin of at least ±25 years. It is important to note that since the methods relies on the reliability of previously dated sites the calibration curve can be improved as more measurements become available. Features that can not be dated or give broad age ranges now, may be datable in the future.

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Appendix XXIII.2: sample inventory

Sample 655, our reference TMB Specimen reference	Munsell reference	Description
TMB1	2.5Y 7/4	Pale yellow, hard, no inclusions
TMB2	2.5Y 8/4	Pale yellow, hard, no inclusions
TMB3	10YR 6/6	Brownish yellow, hard, no inclusions
TMB4	2.5Y 7/6	Yellow, hard, no inclusions
TMB5	2.5Y 7.2	Light grey, hard, no inclusions
TMB6	2.5Y 7/4	Pale yellow, hard, no inclusions
TMB7	2.5Y 6/4	Light yellowish brown, hard, no inclusions
TMB8	10YR 7/6	Yellow, hard, no inclusions
TMB9	2.5Y 8/2	Pale yellow, hard, no inclusions
TMB10	2.5Y 7/3	Pale yellow, hard, no inclusions
TMB11	2.5Y 7/4	Pale yellow, hard, no

		inclusions
TMB12	2.5Y 7/4	Pale yellow, hard, no inclusions
TMB13	10YR 7/6	Bellow, hard, no inclusions
TMB14	10YR 6/4	Light yellowish brown, hard, no inclusions
TMB15	10YR 6/4	Light yellowish brown, hard, no inclusions
TMB16	10YR 6/6	Brownish yellow, hard, no inclusions
TMB17	10YR 6/6	Brownish yellow, hard, no inclusions
TMB18	2.5Y 7/4	Pale yellow, hard, no inclusions
TMB19	5Y 7/3	Pale yellow, hard, no inclusions
TMB20	2.5Y 7/4	Pale yellow, hard, no inclusions

Appendix XXIII.3: detailed measurements

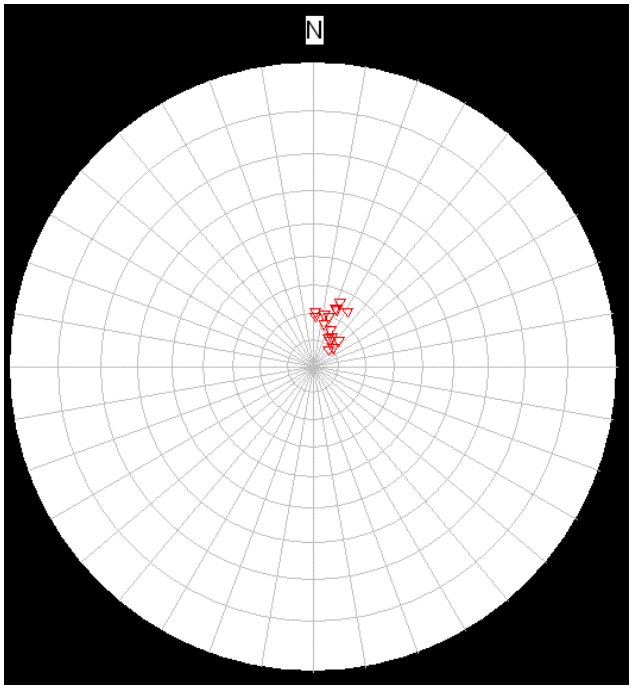
Incorporating:
- Site information
- Magnetic measurements
- Scatter plots for NRM

SITE INFORMATION
Site name: TwMawr
Latitude (+ve N): 53.294
Longitude (+ve E): -4.6186
Magnetic variation on dates sampled: -4.8
Date sampled: 24-25th September 2007

Sample 655
Context number: 91972
Feature: a hearth located centrally within a roundhouse.

Sample 656
Context number: 92141
Feature: a series of layers of heated material located to the NW of a roundhouse associated with a large rectangular stone.

Sample 657
Context number: 91579
Feature: an area of burning, the relationship to the surrounding archaeology was unclear at time of sample retrieval

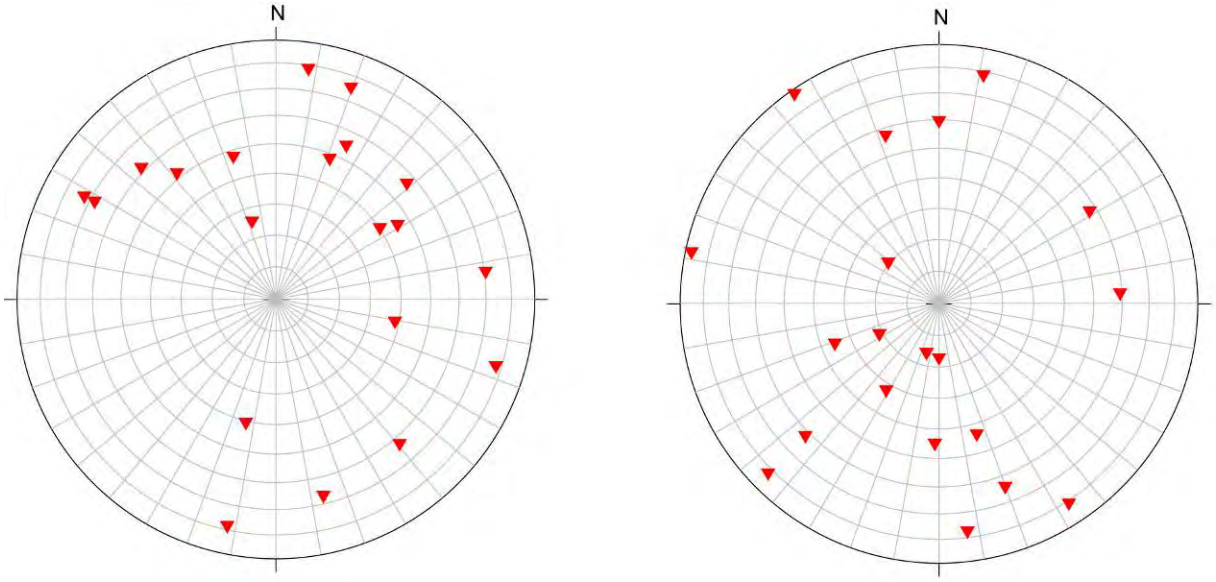


Stereoplots provide a visual representation of the directional vectors recorded by each of the specimens in the sample. This plot is displaying data from a site in North Yorkshire that was datable by archaeomagnetic dating. It is included to enable comparison with the data from TwMawr, note how all the data points cluster together in a group; this represents a stable remanent magnetic signal.

ROUNDHOUSE B, SAMPLE 655

NRM1 NRM2 Sample no.	NRM	Sample no.	NRM				
D	I	Int	D	I	Int		
degs.	*degs.*	*arb*	*degs.*	*degs.*	*arb*		
n=TMB1	346.4	-22.4	0.074	N=B1	344.1	-45.9	0.1091
N=TMB2	107.3	11.9	0.1316	N=B2	0	-72.5	0.026
N=TMB3	229	-33.3	0.0735	N=B3	61.7	-68.8	0.1064
N=TMB4	59.2	44.5	0.1381	N=B4	342.3	33	0.1437
N=TMB5	139.7	26.9	0.0979	N=B5	340.2	-25.2	0.0766
N=TMB6	342.5	64.9	0.0946	N=B6	307.9	69.8	0.0862
N=TMB7	8.1	12	0.1603	N=B7	45	-27.9	0.0585
N=TMB8	82.9	19.5	0.1207	N=B8	101.3	-2.8	0.0266
N=TMB9	313.9	28.6	0.1623	N=B9	87.3	30.6	0.1305
N=TMB10	192.1	10.9	0.0588	N=B10	31	-57.5	0.085
N=TMB11	24.8	35.6	0.071	N=B11	45	-7.3	0.1637
N=TMB12	19.7	15.1	0.1552	N=B12	352.9	-11.9	0.1075
N=TMB13	281.3	-51.2	0.0983	N=B13	1.6	-44.6	0.1283
N=TMB14	193.6	49	0.1042	N=B14	0	30.8	0.079
N=TMB15	343.3	42.7	0.2006	N=B15	248.2	54.3	0.1205
N=TMB16	56.3	50	0.1697	N=B16	11.1	12	0.1251
N=TMB1	21.2	42.1	0.1428	N=B17	59	32.7	0.0362

7							
N=TMB18	297.8	17.4	0.1314	N=B18	327.1	-8.4	0.0534
N=TMB19	321.5	38.5	0.1118	N=B19	14	-73.6	0.0381
N=TMB20	297.9	21.9	0.1672	N=B20	325.2	2.6	0.1145

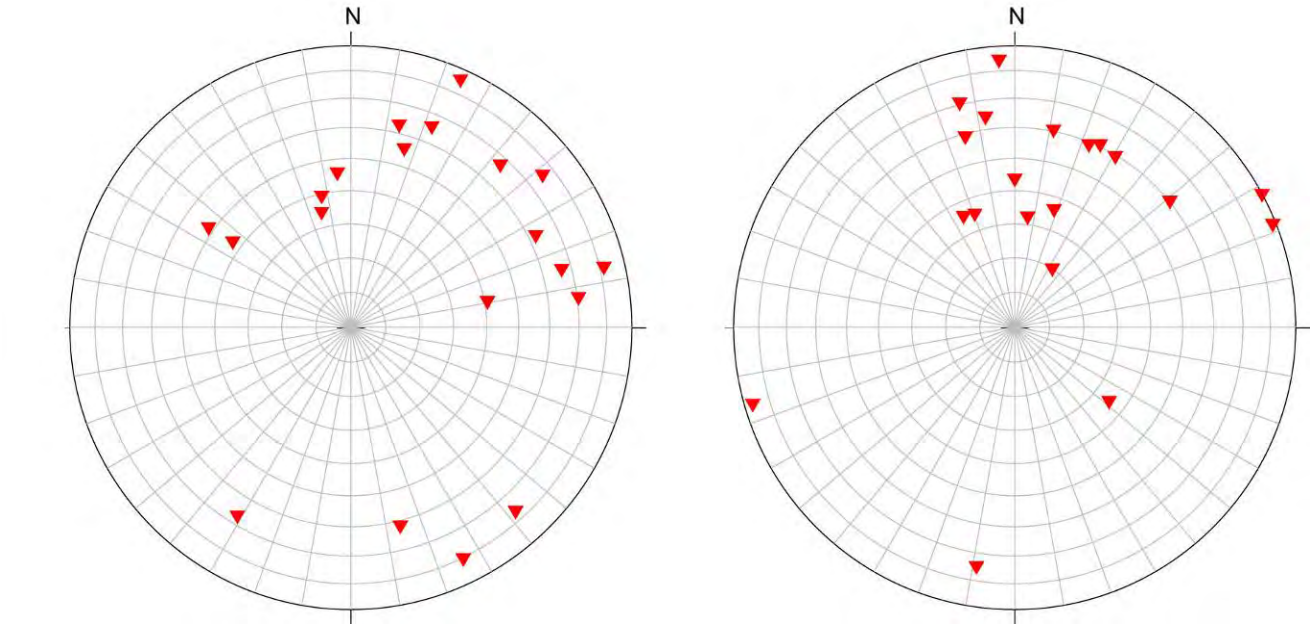


Stereoplots provide a visual representation of the directional vectors recorded by each of the specimens in the sample. The results for sample 656; left shows the results of NRM1 and right shows the results of NRM2. Note how the pattern changes suggesting that the signal is not stable.

ROUNDHOUSE E, SAMPLE 656

NRM1 NRM2 Sample no.	NRM		Sample no.	NRM			
D	I	Int	D	I	Int		
degs.	*degs.*	*arb*	*degs.*	*degs.*	*arb*		
n=TME1	345.4	55.8	0.3656	N=E1	340.2	55.4	0.2437
N=TME2	52	14.5	0.1863	N=E2	9	-14.6	0.1035
N=TME3	22.2	24.8	0.3014	N=E3	346	19.7	0.2738
N=TME4	13.5	27.6	0.312	N=E4	352	26.3	0.2084
N=TME5	347.2	51	0.3159	N=E5	18.7	54.2	0.2776
N=TME6	334.2	-9.1	0.0901	N=E6	308.7	-54.6	0.0288
N=TME7	43.1	23.1	0.1809	N=E7	356.6	6.3	0.1312
N=TME8	354.9	44.7	0.2884	N=E8	345.3	31.4	0.1924
N=TME9	211	22.5	0.0979	N=N9	154.8	-54.7	0.0846
N=TME10	304.5	38.6	0.1926	N=N10	0	46.9	0.1373
N=TME11	77	8.5	0.1743	N=E11	73.4	-3	0.1007
N=TME1	346	-27.7	0.0361	N=E12	213.7	-70.2	0.1384

2							
N=TME13	305.4	47.3	0.2899	N=E13	6.7	58.1	0.1687
N=TME16	16.9	34.7	0.1839	N=E16	51.3	30.1	0.135
N=TME17	138.3	12.8	0.1633	N=E17	68.6	1.7	0.1287
N=TME18	64	27.7	0.1332	N=E18	22.4	31.1	0.1514
N=TME19	80	49.2	0.0683	N=E19	62.1	0.5	0.1503
N=TME20	24.1	5.1	0.1591	N=E20	11.3	30	0.138

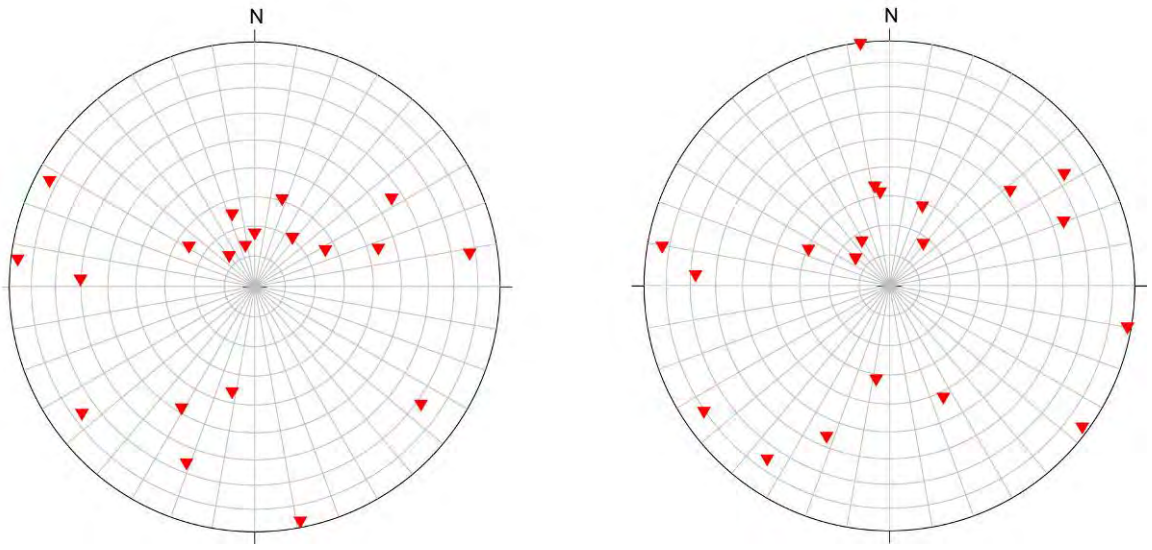


Stereoplots provide a visual representation of the directional vectors recorded by each of the specimens in the sample. The results for sample 656; left shows the results of NRM1 and right shows the results of NRM2. Note how the pattern is similar; suggesting the signal is stable. Furthermore after storage in a field free space the directions are showing better grouping but due to the low intensity values they are still insufficient for dating requirements.

EASTERN AREA, SAMPLE 657

NRM1 NRM2 Sample no.	NRM	Sample no.	NRM				
D	I	Int	D	I	Int		
degs.	*degs.*	*arb*	*degs.*	*degs.*	*arb*		
N=TMA1	166.7	-76.5	0.8174	N=A1	147.3	-73	0.798
N=TMA2	192	53.2	3.4109	N=A2	188	57.8	3.3356
N=TMA3	349.1	-2	3.4756	N=A3	353.1	1.3	3.236
N=TMA4	117	-6.8	0.4237	N=A4	99.4	-6.8	0.4847
N=TMA5	237.6	-34.2	1.0795	N=A5	232.1	-37.7	1.0622
N=TMA6	96.3	-3.2	0.0469	N=A6	334.5	-47.6	0.0901
N=TMA7	342.4	65.2	0.6334	N=A7	354.2	59	0.7019

N=TMA8	125.6	17.8	0.5038	N=A8	126.6	2.4	0.491
N=TMA9	218.2	-69.8	0.1335	N=A9	171.6	-56.7	0.1296
N=TMA10	73.4	46.4	0.5122	N=A10	70.2	25.6	0.3751
N=TMA11	0	72.8	0.3057	N=A11	39.8	72.4	0.2696
N=TMA12	139.4	-77.1	2.5758	N=A12	127.4	-75.9	2.5746
N=TMA13	92	-29.6	0.4997	N=A13	92.8	-22	0.5748
N=TMA14	21	-23.3	0.0784	N=A14	34.9	-14	0.1081
N=TMA15	197.7	-59.7	2.5287	N=A15	203	-61.8	2.4589
N=TMA16	300.5	64.5	39.8753	N=A16	293.3	60.5	36.0355
N=TMA17	53.3	-13.2	0.6752	N=A17	55.5	-9.1	0.6348
N=TMA18	261.5	-12.4	0.198	N=A18	237.7	-16.9	0.1839
N=TMA19	30.7	-41.2	0.1078	N=A19	22.4	-33.1	0.0573
N=TMA20	63.4	63.6	0.013	N=A20	100.3	1.7	0.0876



Stereoplots provide a visual representation of the directional vectors recorded by each of the specimens in the sample. The results for sample 657; left shows the results of NRM1 and right shows the results of NRM2. Note how the patterns from both measurements show a high degree of scatter making the data unsuitable for dating purposes

Part XXIV: Radiocarbon Dating

Dr. Derek Hamilton (SUERC)

A total of 118 radiocarbon dates are now available on an equal number of samples submitted from a range of archaeological sites. All the samples were single entities (Ashmore 1999) with 110 samples of charcoal or charred plant remains pre-treated at the Scottish Universities Environmental Research Centre (SUERC) following the methods described in Dunbar et al (2016). Graphite targets were prepared and measured following Naismith et al. (2010). SUERC maintains rigorous internal quality assurance procedures and participation in international inter-comparisons (Scott 2003; Scott et al. 2003; 2007; 2010) indicates no laboratory offsets; thus, validating the measurement precision quoted for the radiocarbon ages. Two additional samples of wood charcoal and bark were submitted to the radiocarbon laboratory at Kiel, Germany.

Conventional radiocarbon ages (Stuiver and Polach 1977) are presented in Table XXIV.1. Calibrated date ranges were calculated using the terrestrial calibration curve (IntCal13) of Reimer et al. (2013) and OxCal v4.3. The probabilities shown in the figures were calculated using the probability method of Stuiver and Reimer (1993).

The samples and models

A Bayesian approach has been applied to the interpretation of some sets of radiocarbon dates from Parc Cybi (Buck et al. 1996). The chronology of the activity can be estimated not only by using the absolute dating derived from the radiocarbon measurements, but also by modelling the relationships between samples and their archaeological contexts. The modelling technique used is a form of Markov Chain Monte Carlo sampling and has been applied using the program OxCal v4.3 (http://c14.arch.ox.ac.uk/). Details of the algorithms employed by this program are available in Bronk Ramsey (1995; 1998; 2001; 2009) or from the online manual. The algorithm used in the models can be derived from the OxCal keywords and bracket structure shown in figures for the chronological models.

Of the 118 results, 55 are replicate measurements from the same feature, though not always the exact same fill. Of the 27 replicates, nine fail the Ward and Wilson (1978) statistical test for consistency. However, nearly all of those are from features that one might expect to have some longevity to sample deposition.

The discussion of the radiocarbon dates is ordered below by the various questions that were drawn up during the post-excavation assessment:

Question 1

There are nine radiocarbon dates available from house structure and hearth features associated with an Early Neolithic building excavated in Area H. The samples all consisted of short-lived charcoal and charred hazelnut shells or cereal grain. A simple Bayesian model was constructed that placed all the dated material into a single phase of activity with no direct stratigraphic relationships being defined between samples. This model has good agreement (Amodel=139) and estimates the activity associated with the structure began in *3725–3655 cal BC* (*95% probability*; Fig. XXIV.1; *s Q1*), and probably in *3710–3665 cal BC* (*68% probability*). The activity occurred for *10–110 years* (*95% probability*; Fig. XXIV.2; *span Q1*), and probably for *30–75 years* (*68% probability*). The activity ended in *3655–3610 cal BC* (*95% probability*; Fig. XXIV.1; *e Q1*), and probably in *3645–3625 cal BC* (*68% probability*).

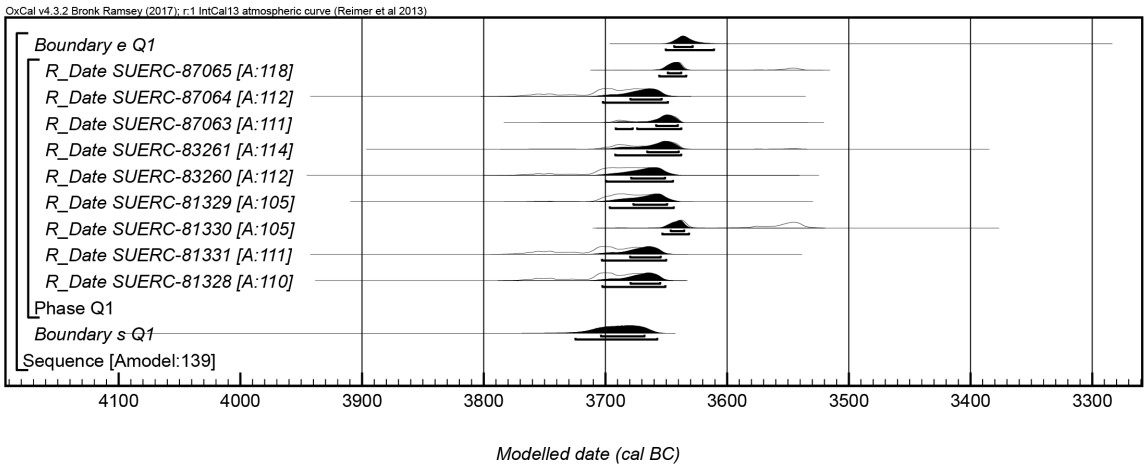


Fig. XXIV.1: Chronological model for the Early Neolithic building in Area H at Parc Cybi (Question 1). Each distribution represents the relative probability that an event occurred at some particular time. For each of the radiocarbon measurements two distributions have been plotted, one in outline, which is the result of simple radiocarbon calibration, and a solid one, which is based on the chronological model used. The other distributions correspond to aspects of the model. For example, '*s Q1*' is the estimated date for the start of this activity. The large square 'brackets' along with the OxCal keywords define the overall model exactly

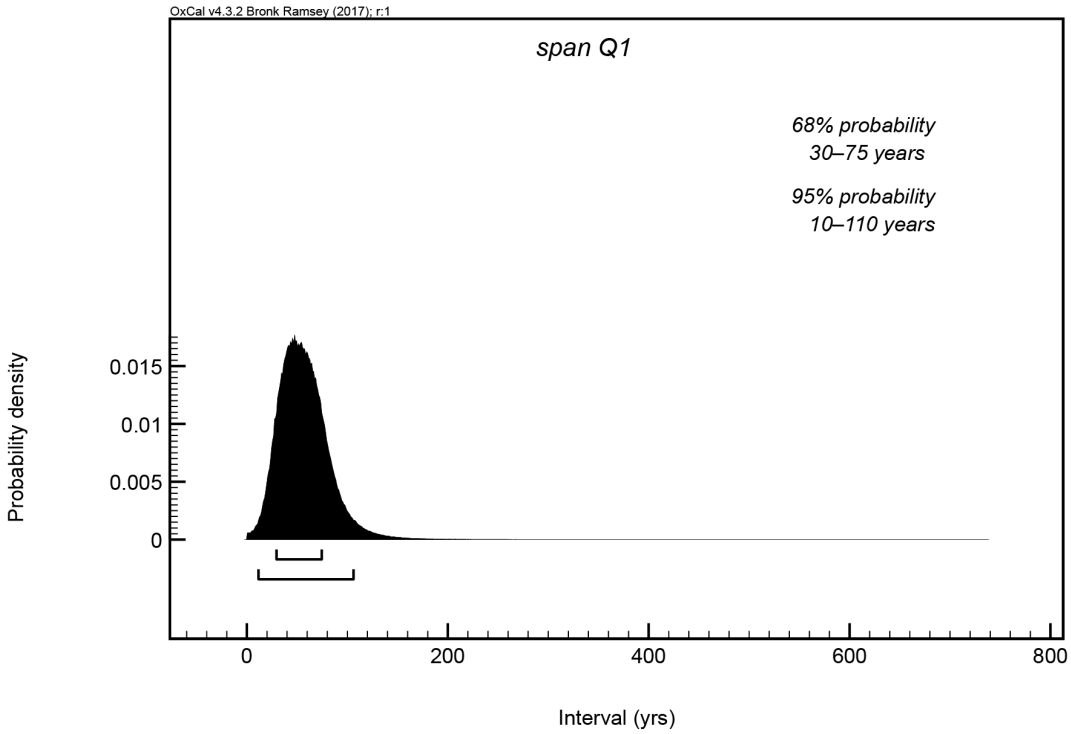


Fig. XXIV.2: Probability for the overall span of the Early Neolithic building, derived from the model shown in Fig. XXIV.1

Question 2

Two radiocarbon dates were made on material recovered from a pit/posthole [50010] in Area H, just north of the structure in Question 1 that contained a canal coal bead. The two results (SUERC-81332, -83265) are not statistically consistent (T'=11.8; ½=1; T (5%)=3.8) and suggest the material is of mixed ages. The more recent result (SUERC-81332) provides the best estimated date for the formation of the deposit of either 3660–3630 cal BC (59% probability; Fig. XXIV.3) or 3580–3530 cal BC (36% probability). The distribution is bi-modal, and if

the sample dates to the earlier peak then it is most likely temporally associated with the activity in and around the structure in Area H. However, if it dates to the later peak then it likely post-dates this activity.

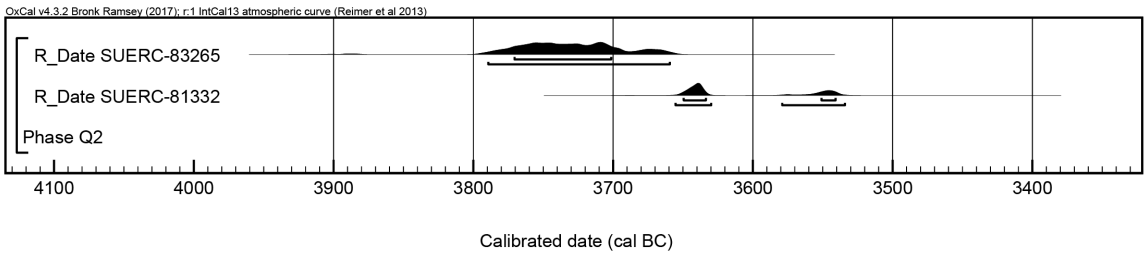


Fig. XXIV.3: Calibrated radiocarbon dates from pit/posthole [50010] in Area H

Question 3

In Area J there are six dated pits and postholes that form part of four different feature groups (Fig. XXIV.4). Each pit has two radiocarbon measurements from within its fills, and with the exception of pit [70529] these are from the same fill.

Two pits were dated in Group II, and both pits contained Grooved Ware. The two results (SUERC-81333 & -83266) from pit [70529] are statistically consistent (T =2.8; ½=1; T (5%)=3.8), and so these samples from two different contexts could be the same actual age. Similarly, the two results (SUERC-81337 & -83267) from context (70502) of pit [70503] are statistically consistent (T =0.0; ½=1; T (5%)=3.8) and could be the same age. In both cases, the later date provides the best estimate for the infilling of the pit, and therefore the date of deposition for the Grooved Ware pottery. The best estimate for pit [70529] is SUERC-81333 (2880–2580 cal BC; 95% probability), and for pit [70503] it is SUERC-83267 (2890–2630 cal BC; 95% probability).

There two pits/postholes also dated in Group V. Pit [70202] contained Fengate style pottery, while pit [70054] contained Bronze Age pottery. In both cases the paired radiocarbon measurements for each feature are not statistically consistent, which suggests the deposits contain reworked or intrusive material. The two measurements (SUERC-81338 & -83268) are significantly different (T =56.3; ½=1; T (5%)=3.8), and while the more recent date (SUERC-83268) is often taken to provide the best date for a feature (3970–3790 cal BC; 95% probability), even this range is likely considerably earlier than the generally accepted range for Fengate pottery in Wales (see *Modelling of Neolithic pottery in Wales* below) and may indicate that this sample is also residual. The paired measurements in pit [70054] were also significantly different (T =4.6; ½=1; T (5%)=3.8), but here the two results are much closer in date, with the more recent result (SUERC-83269) providing a best estimate of 1400–1210 cal BC (95% probability) for the date of the feature and the deposition of the pottery recovered from within the fills.

The two results (SUERC-81340 & -83270) from pit [70452] are significantly different (T =4.9; ½=1; T'(5%)=3.8). While the two calibrated dates overlap at 95% probability, the later date (SUERC-81340) provides the best date for the infilling of the pit in 1890–1690 cal BC (95% probability).

The two results (SUERC-86066 & -87067) from pit [70061] are significantly different (T =4684.6; ½=1; T'(5%)=3.8), with the calibrated dates being separated by over 2000 years. The later date (SUERC-87066) is the best estimate for the infilling of the feature in 4350–4250 cal BC (95% probability), though it is highly likely that both samples were residual and this result is probably best considered to provide a *terminus post quem* (*tpq*) for the formation of the deposit.

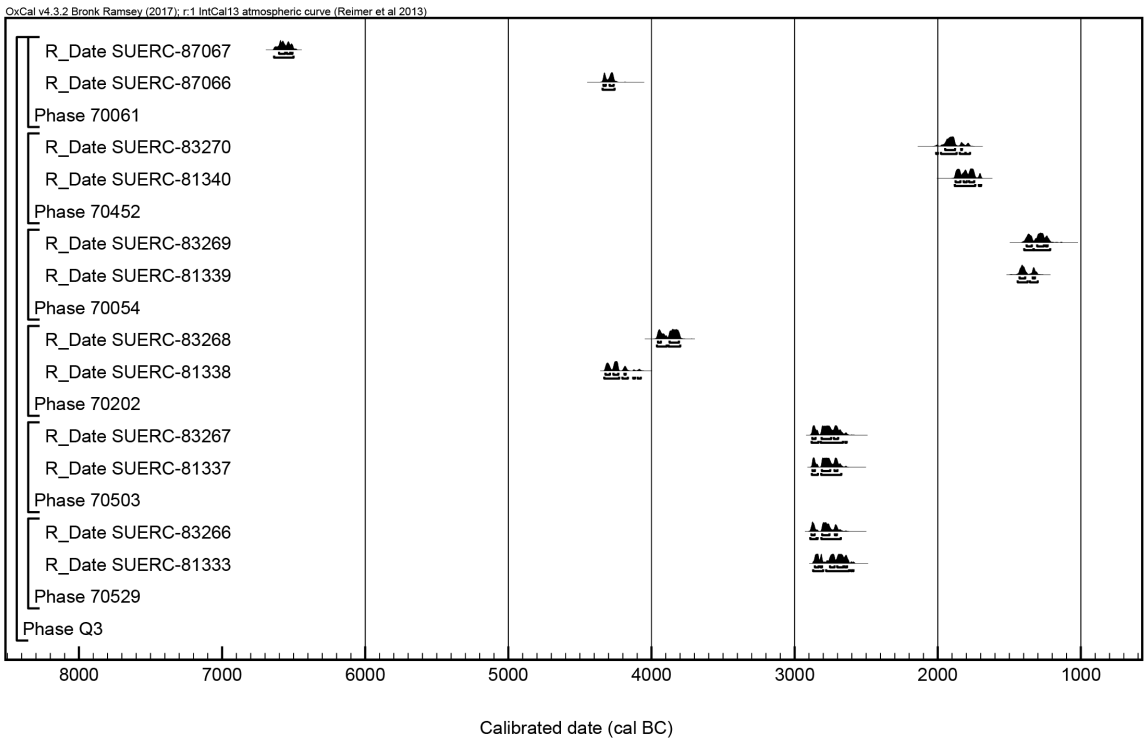


Fig. XXIV.4: Calibrated radiocarbon results from pits and postholes in Area J

Question 4

There are seven radiocarbon dates from five pits associated with two pit groups in Area I. There are two dates (SUERC-81341 & -83271) from pits in Pit group 19073. The two results are not statistically consistent (T'=4.0; ½=1; T (5%)=3.8). The calibrated dates overlap significantly and suggest that there is likely some longevity to the activity associated with this pit group activity sometime in the 4th–3rd centuries cal BC.

Three pits were dated in Pit group Ia, with two having pairs of radiocarbon dates. There is statistical consistency between the paired measurements from pit [21221] (T =0.7; ½=1; T (5%)=3.8) and those from pit [21215] (T =0.0; ½=1; T (5%)=3.8). All five dates were used in a basic chronological model to provide an estimate for the start, end, and duration of the associated activity. The model has good agreement (Amodel=176) and estimates that the pit activity began in *3205–3025 cal BC* (*94% probability*; Fig. XXIV.5; *s Q4*), and probably *3110–3045 cal BC* (*68% probability*). The activity ended in *3095–2910 cal BC* (*95% probability*; Fig. XXIV.5; *e Q4*), and probably in *3060–3000 cal BC* (*68% probability*). The overall duration of activity is estimated to have occurred for *1–260 years* (*95% probability*; Fig. XXIV.6; *span Q4*), and probably for *1–75 years* (*68% probability*). This pit group is associated with Fengate style pottery with the dating suggesting it falls in the latter period of Fengate use in Wales (see *Modelling of Neolithic pottery in Wales* below).

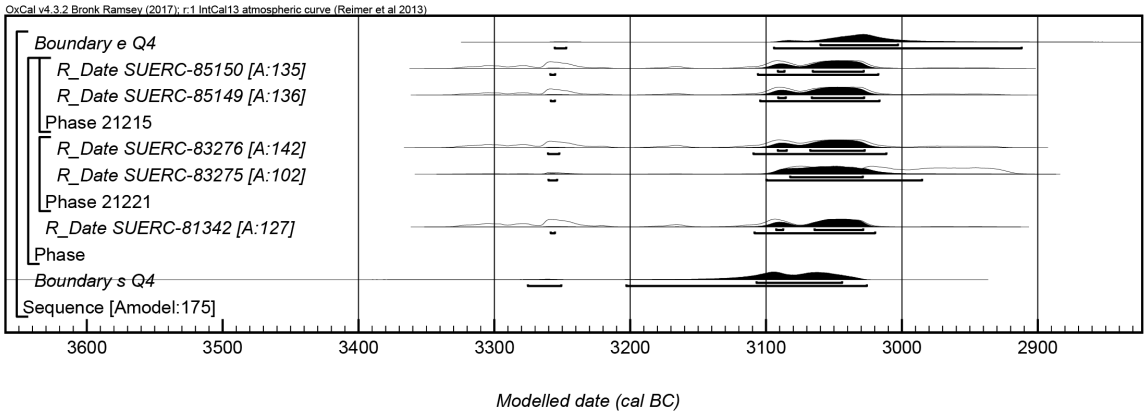


Fig. XXIV.5: Chronological model for the pit groups in Area I. The model is as described in Fig. XXIV.1

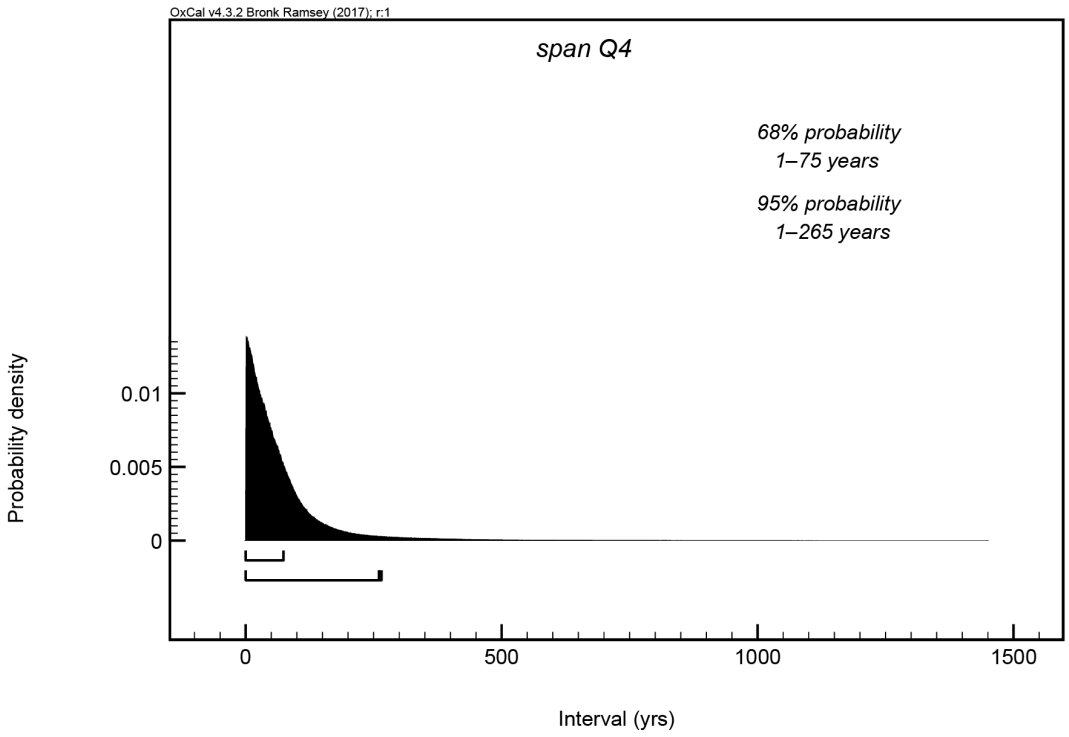


Fig. XXIV.6: Span of the dated activity associated with the pit group, as derived from the model in Fig. XXIV.5

Question 5

There are radiocarbon dates from five Neolithic features – three pits, a posthole, and a hollow – in Area E (Fig. XXIV.7). The dates (SUERC-81343, -81347, -81348, -83277, and -83278) are all indicative of general activity in the area throughout much of the Neolithic period. SUERC-81347 and -81348, from pits [31595] and posthole [31631] show good concordance with the dating of the Neolithic structure in Area H (Question 1) and could likely be the result of contemporaneous activity.

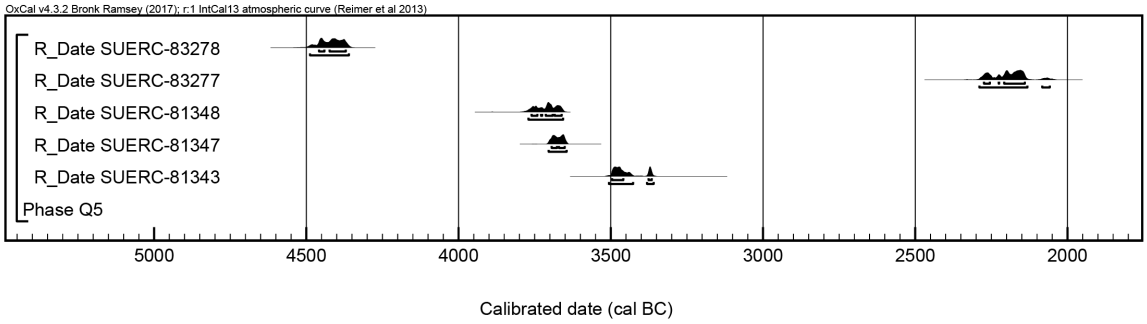


Fig. XXIV.7: Calibrated radiocarbon dates from five Neolithic features in Area E

Question 6

There are four radiocarbon results from three cuts of a large well/pit associated with the large burnt mound in Area E. The general chronology is coherent in the results, with the lower pit/cut [31593] earlier than the two results from the middle pit/cut [31415], which are both earlier than the upper pit/cut [31414]. The two results (SUERC-81350 & -81351) from the middle pit/cut [31415] came from samples with stratigraphic constraints, however the results are reversed from expectation with the lower result (SUERC-81350) being more recent than the upper result (SUERC-81351). While the individual pits are chronologically coherent, this does present to possibility for some fills to be secondary deposition of material from the period when that pit was in use.

Allowing for chronological ambiguity between the two fills within the middle pit, a chronological model was constructed that placed the radiocarbon dates in order based solely on the pit from which the samples were recovered. This model has good agreement (Amodel=103) and estimates that the burnt mound activity began in *2955–2215 cal BC* (*95% probability*; Fig. XXIV.8; *s Q6*), and probably in *2525–2245 cal BC* (*68% probability*). The activity ended in *2025–1290 cal BC* (*95% probability*; Fig. XXIV.8; *e Q6*), and probably in *2005–1765 cal BC* (*68% probability*). Activity in the area around the burnt mound appears to have occurred over a span of *245–1480 years* (*95% probability*; Fig. XXIV.9; *span Q6*), and probably *330–770 years* (*68% probability*).

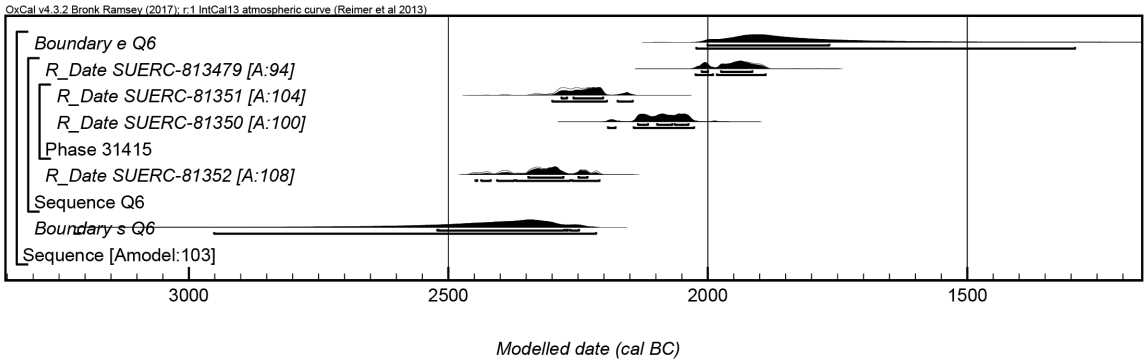


Fig. XXIV.8: Chronological model for the large burnt mound activity in Area E. The model is as described in Fig. XXIV.1

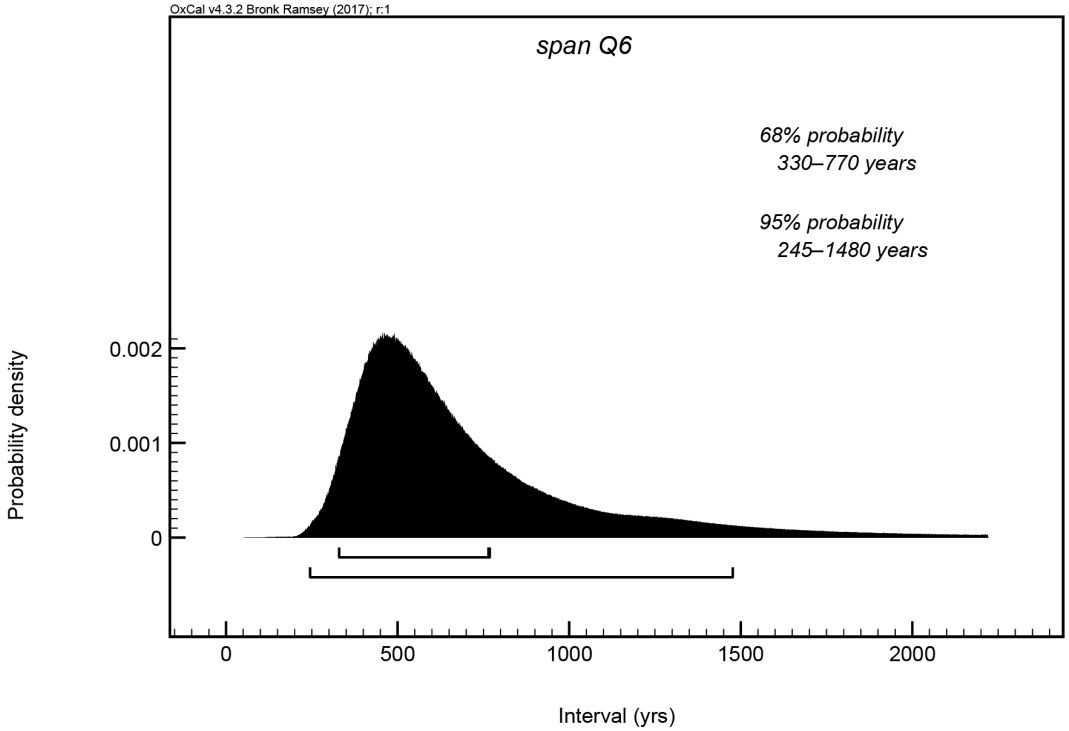


Fig. XXIV.9: Span of the dated activity associated with the large burnt mound, as derived from the model in Fig. XXIV.8

Question 7

There is a pair of results from the fill (31002) of the small burnt mound in Area E (Fig. XXIV.10). The two results are statistically consistent (T =2.5; ½=1; T (5%)=3.8) and could be the same age. The more recent result (SUERC-81353) provides the best estimate for the activity at this location (2870–2580 cal BC; 95% probability).

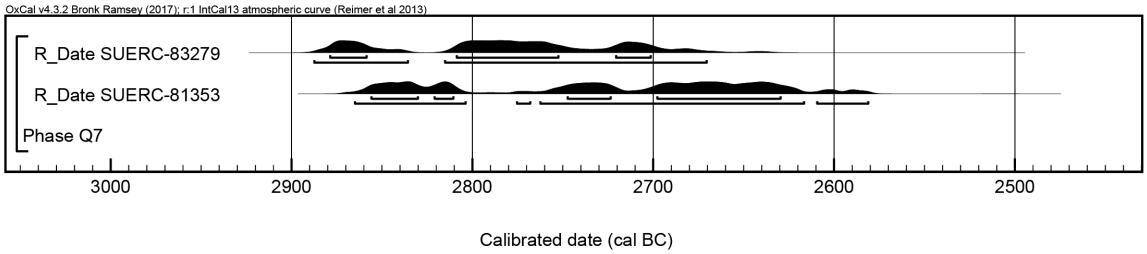


Fig. XXIV.10: Calibrated radiocarbon results from the small burnt mound in Area E

Question 8

Three pits within pit group 25046 (Fig. XXIV.11), which lies in Area B1, have been radiocarbon dated (SUERC-83280, -83281, & -83285). None of the pairs of measurements are statistically consistent, which suggests the dated activity is of a protracted length. Given the calibrations of the three dates barely overlap at their 95% probability ranges, it is only possible that two measurements could date from the same period (either the earlier or later two of the group). Therefore, the results suggest at least two periods of activity, but potentially three.

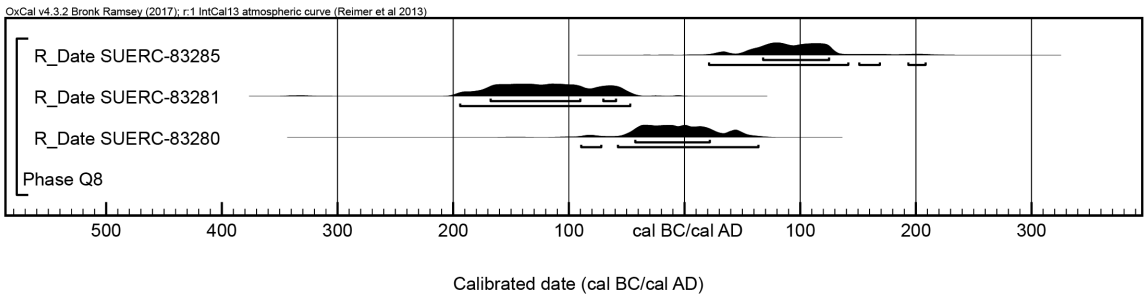


Fig. XXIV.11: Calibrated radiocarbon results from pit group 25046

Question 9

The two radiocarbon dates (SUERC-87071 & -87072) from Structure 22171 in Area L3 are considerably different (Fig. XXIV.12). SUERC-87071 dates to the post-medieval–early modern period and is likely either an intrusive cereal grain or some other modern contamination. The late prehistoric result from the occupation layer places this activity in the middle of the range of dating from pit group 25046 (Question 8) in Area B1, which is quite close.

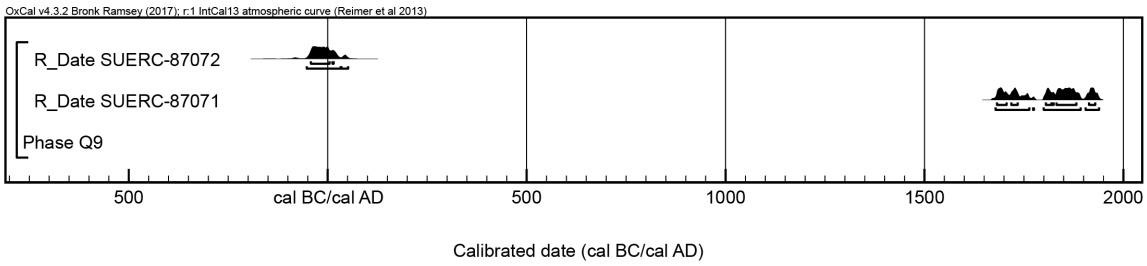


Fig. XXIV.12: Calibrated radiocarbon results from Structure 22171 in Area L3

Question 11

There are two features in the pit and gully group of Area D3 that have radiocarbon results. The pits also contained Grooved Ware pottery. The results have been placed into a basic chronological model that assumes the features and dated samples are the result of a period of relatively continuous and uniform activity in this area. The model has good agreement between the dates and the archaeological assumptions (Amodel=97) and

estimates that this activity began in either *3340–3290 cal BC* (*2% probability*; Fig. XXIV.13; *s Q11*) or *3155–2580 cal BC* (*93% probability*), and probably in either *2865–2820 cal BC* (*6% probability*) or *2785–2585 cal BC* (*62% probability*). The activity lasted for up to *955 years* (*95% probability*; Fig. XXIV.14; *span Q11*), and probably for up to *350 years* (*68% probability*). Dated activity ceased in either *2830–2810 cal BC* (*1% probability*; Fig. XXIV.13; *e Q11*), *2655–2145 cal BC* (*92% probability*), or *2075–2020 cal BC* (*2% probability*), and probably in *2625–2440 cal BC* (*68% probability*). The dating from these two pits is in general concordance with the dating of Grooved Ware pottery in Wales (see *Modelling of Neolithic pottery in Wales* below), falling into the earlier portion of the modelled use period.

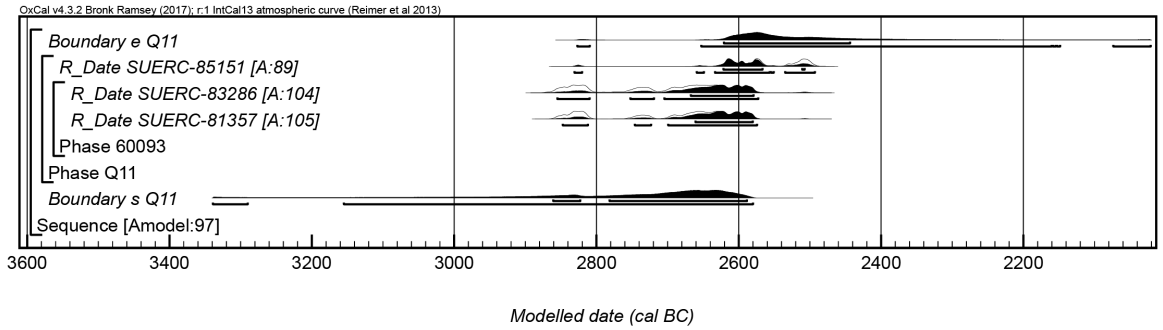


Fig. XXIV.13: Chronological model for the pit and gully group in Area D3. The model is as described in Fig. XXIV.1

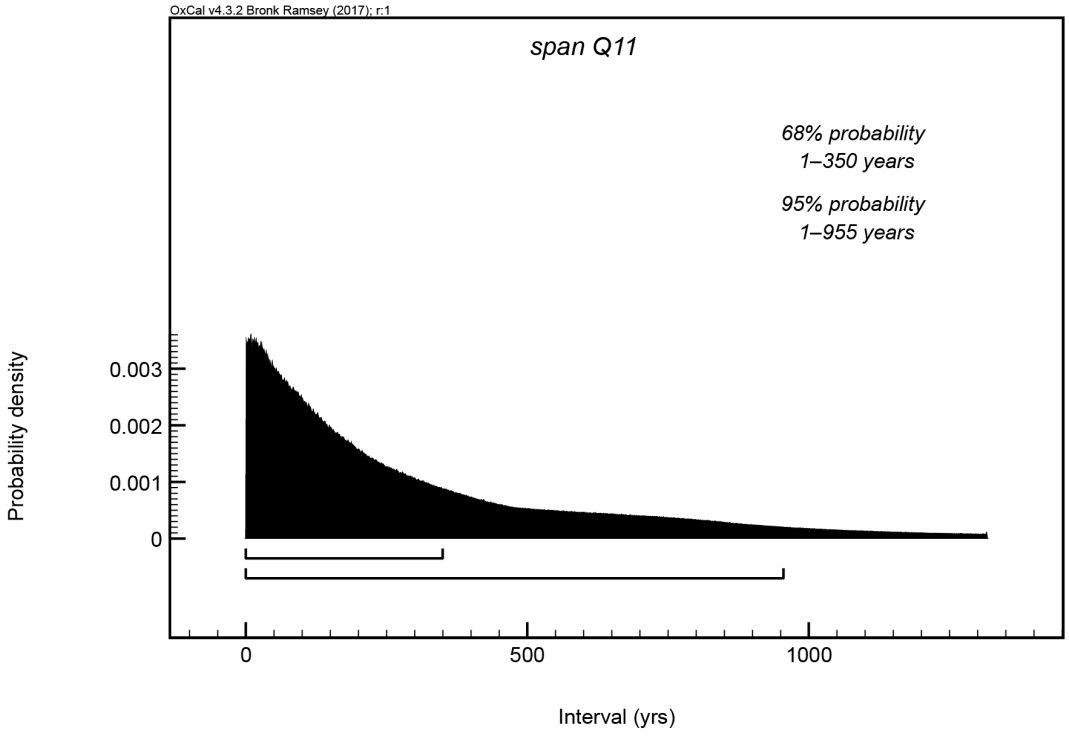


Fig. XXIV.14: Span of the dated activity associated with the pit and gully group in Area D3, as derived from the model in Fig. XXIV.13

Question 12

There are three radiocarbon dates from two pits that form part of the pit group in Area K9. The pits are associated with Mortlake style pottery and have been placed into a basic chronological model as described above for Question 11.

The model has good agreement between the dates and the archaeological assumptions (Amodel=103) and estimates that this activity began in *3755–3105 cal BC* (*95% probability*; Fig. XXIV.15; *s Q12*), and probably in *3390–3165 cal BC* (*68% probability*). The activity ended in *3335–2665 cal BC* (*95% probability*; Fig. XXIV.15; *e Q12*), and probably in either *3285–3255 cal BC* (*4% probability*) or *3240–3035 cal BC* (*64% probability*). The total dated period of activity was up to *970 years* (*95% probability*; Fig. XXIV.16; *span Q12*), and probably up to *265 years* (*68% probability*). The chronology of the pits, when compared to the overall chronology of Mortlake style pottery in Wales, suggests this activity is relatively early in the overall dated use of this pottery style.

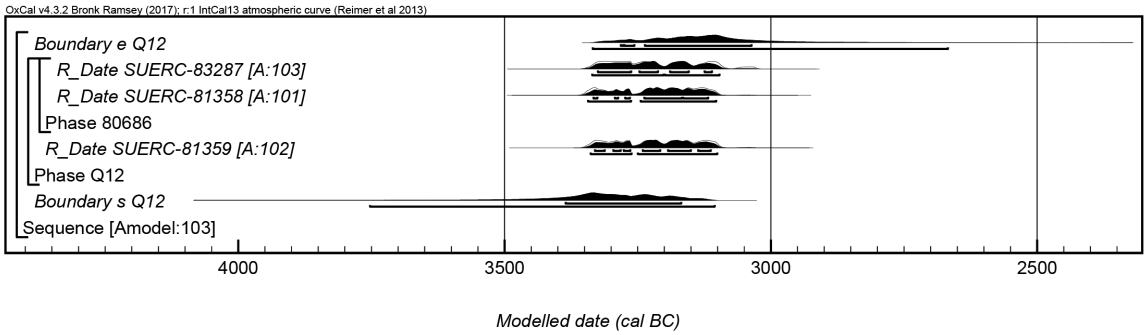


Fig. XXIV.15: Chronological model for the activity associated with the pit group in Area K9. The model is as described in Fig. XXIV.1

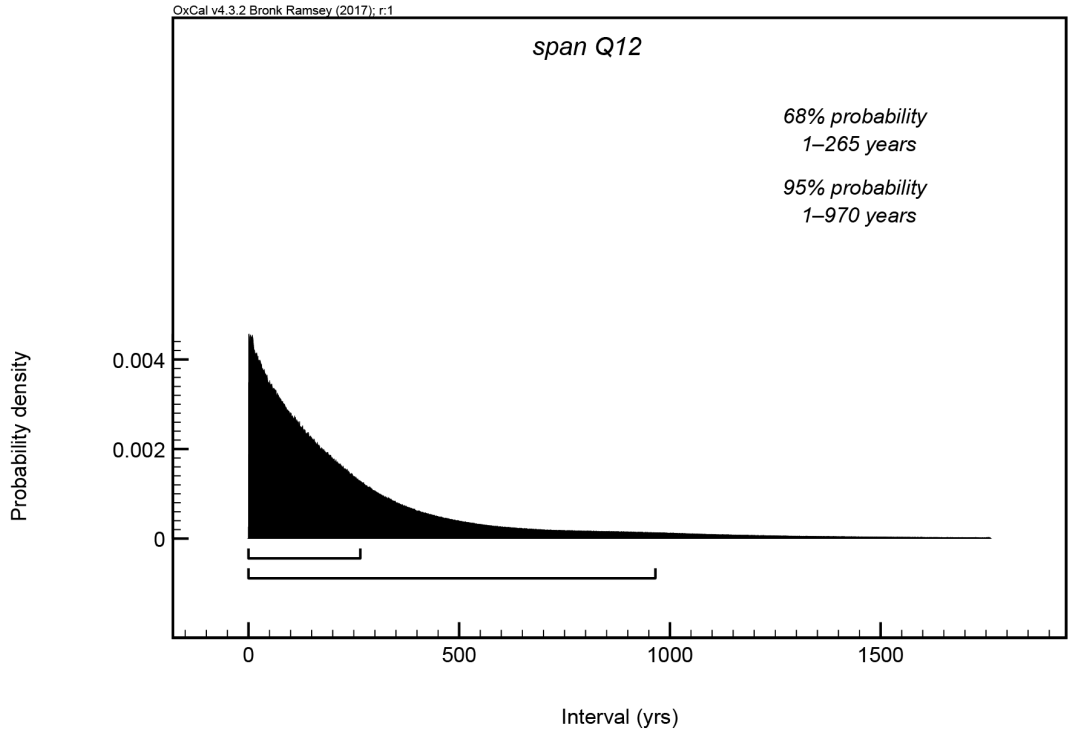


Fig. XXIV.16: Span of the dated activity associated with the pit group in Area K9, as derived from the model in Fig. XXIV.15

Question 16

There are four radiocarbon results from samples recovered in three pits from Area K9 that form part of a group of pits, postholes, and fire pits (Fig. XXIV.17). The result (SUERC-83289) from pit [80560] is 4th–3rd century cal BC, while the remaining three results date to the 1st–early 3rd century cal AD. The Roman period activity is considerably earlier than the nearby early medieval activity investigated as part of Question 17.

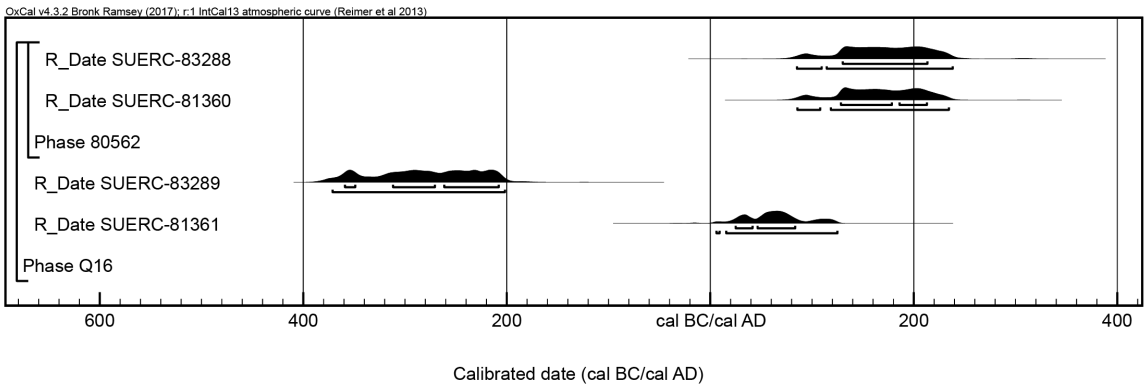


Fig. XXIV.17: Calibrated radiocarbon results from pits in Area K9

Question 17

There are paired dates from two corn driers ([80835] & [80924]) excavated in Area K9 (Fig. XXIV.18). The two results from corn drier [80835] are clearly from two different episodes of activity that are separated by over one-half millennium. However, the two results from corn drier [80924] are statistically consistent (T =1.3; ½=1; T'(5%)=3.8) and could be the same age. The dating suggests these two features date to the 5th to early 7th century AD. The results are explored more fully in relation to the dating of corn driers in Question 20 (below).

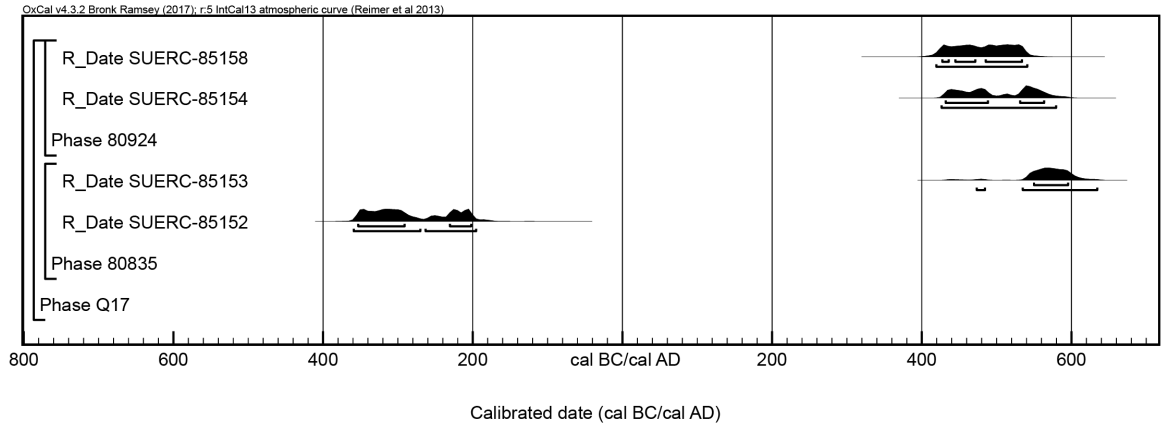


Fig. XXIV.18: Calibrated radiocarbon results from two corn driers in Area K9

Question 19

There three pairs of radiocarbon results from features associated with metal-working debris (Fig. XXIV.19). The two results (SUERC-87440 & -87441) from pit [90037] are more than 50,000 radiocarbon years BP old. The samples were identified as oak charcoal, but it was noted during pre-treatment that the two samples appeared to be highly mineralised and so it would appear likely that the dated samples were coal that was either misidentified as charcoal or the mineralisation was such that the organic element of the charcoal was wholly replaced by mineral with a "dead" carbon content. The two results are excluded from further discussion.

Pit [80044] that lies to the west of the cemetery in Area K7 has two results (SUERC-81362 & -81363) are statistically consistent (T =1.7; ½=1; T (5%)=3.8) and could be the same actual age. The more recent result (SUERC-81362) provides the best date estimate for this activity in cal AD 330–530 (95% probability).

There are two dated samples (SUERC-87442 & -87443) from pit [31152] that are statistically consistent (T'=0.6; ½=1; T (5%)=3.8) and could be the same actual age. The more recent result (SUERC-87443) provides the best date estimate for this activity in cal AD 1020–1190 (95% probability).

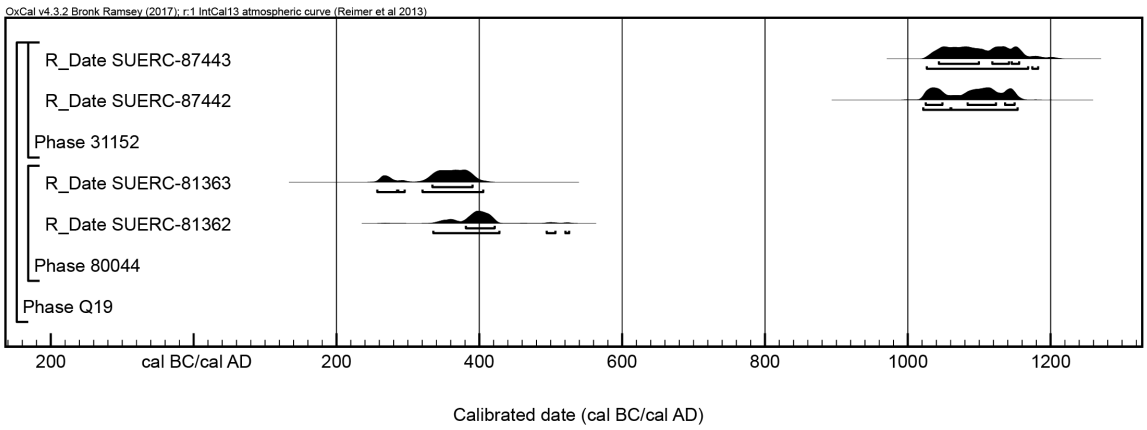


Fig. XXIV.19: Calibrated radiocarbon results from features associated with metal-working debris

Question 20

A total of six corn driers have been radiocarbon dated from across the Parc Cybi excavations. Two samples were dated from each of four corn driers, in addition to the measurements discussed in Question 17 (above). All 12 measurements have been placed into a simple chronological model that assumes the material forms part of a single phase of relatively uniform activity with no direct stratigraphic relationships between samples. The later Iron Age result (SUERC-85152) from corn drier [80835] has been excluded. The model has good agreement (Amodel=90) and estimates that the corn drying activity at Parc Cybi began in *cal AD 410–545* (*95% probability*; Fig. XXIV.20; *s Q20*), and probably in either *cal AD 425–485* (*55% probability*) or *cal AD 525–540* (*13% probability*). The corn drying activity lasted up to *170 years* (*95% probability*; Fig. XXIV.21; *span Q20*), and probably either *1–75 years* (*65% probability*) or *115–130 years* (*3% probability*). The activity ended in either *cal AD 435–515* (*38% probability*; Fig. XXIV.20; *e Q20*) or *cal AD 535–610* (*57% probability*), and probably in either *cal AD 475–495* (*21% probability*) or *cal AD 535–585* (*47% probability*).

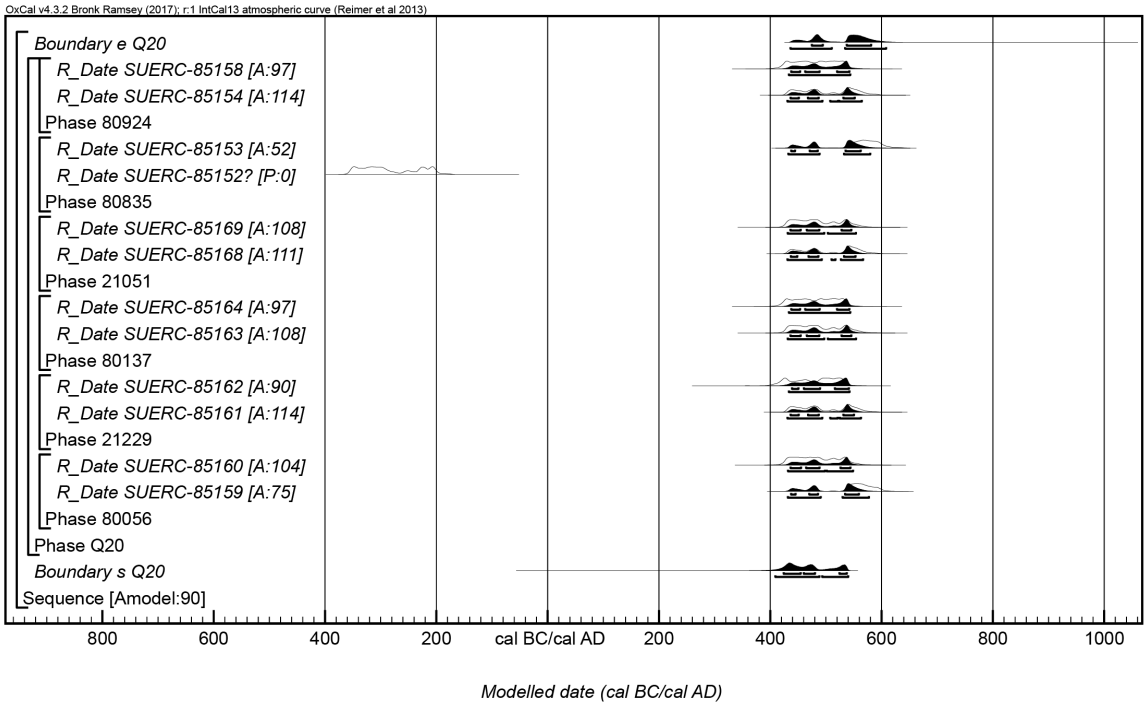


Fig. XXIV.20: Chronological model for the corn driers from across the Parc Cybi excavations. The model is as described in Fig. XXIV.1

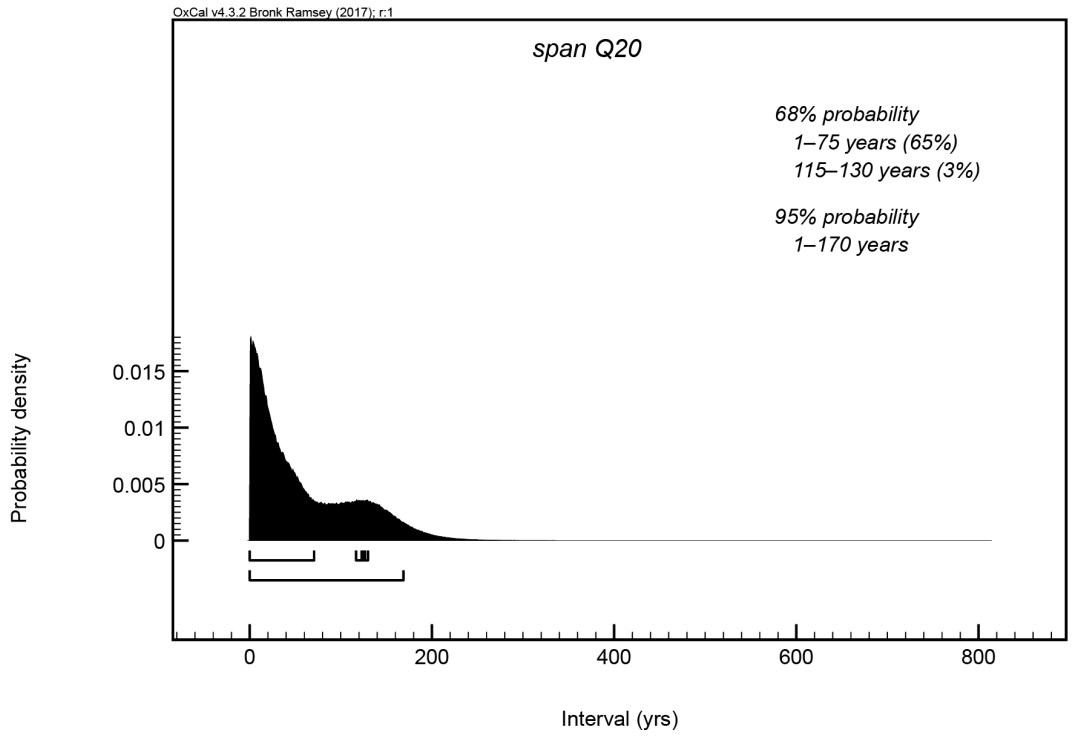


Fig. XXIV.21: Span of the activity associated with the corn driers from across the Parc Cybi excavations, as derived from the model in Fig. XXIV.20

Question 21

There are two radiocarbon results from fill (22108) in ditch [22111] (Fig. XXIV.22). The two results are statistically consistent (T =1.7; ½=1; T (5%)=3.8) and could be the same age. The later date (SUERC-84056) provides the best estimate for the date of the context formation in 1195–1010 cal BC (95% probability).

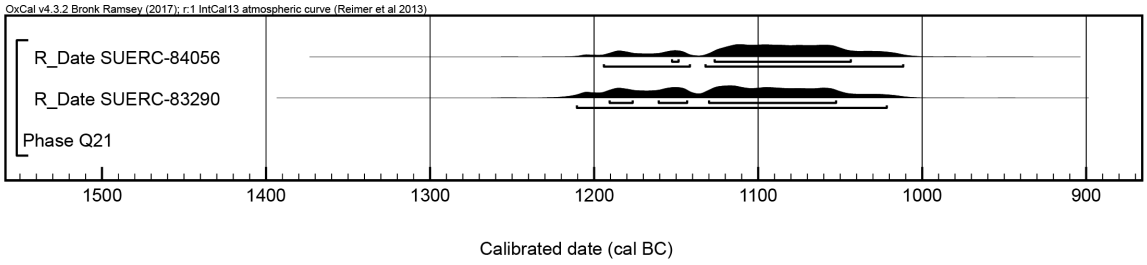


Fig. XXIV.22: Calibrated radiocarbon dates from fill (22108) in ditch [22111]

Question 23

Four samples were dated from two features associated with a Bronze Age roundhouse in Area K1 (Fig. XXIV.23). The results from the two dated hazel nutshells in the presumed fire pit [18124] are separated by a few hundred years. The two results from charred cereal grains in fire pit [20081] are statistically consistent (T =2.3; ½=1; T (5%)=3.8) and could be the same age. The later result (SUERC-83295) provides the best date for pit [20081] of 1610–1430 cal BC (95% probability). Given pit [20081] is Bronze Age in date, it would stand to reason that the earlier result (SUERC-83291) from pit [18124], which is Bronze Age, is the best estimate for the date of that feature of 1380–1120 cal BC (95% probability). However, it should be noted that these two results are separated by a minimum of 50 years, so accepting them both would likely indicate some longevity to the use-life of the structure.

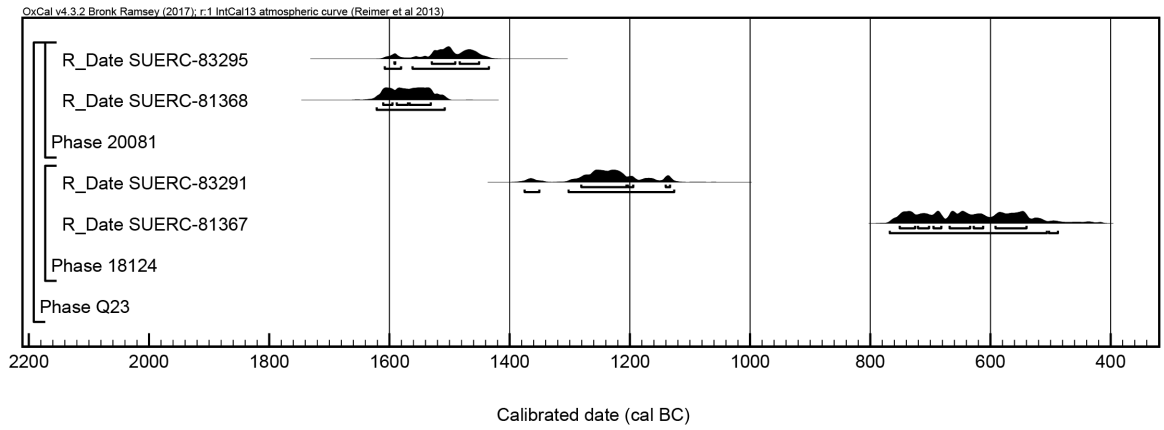


Fig. XXIV.23: Calibrated radiocarbon results from the Bronze Age roundhouse in Area K1

Question 25

There are eight radiocarbon results from seven contexts in clay-walled roundhouses in Area K7. While one sample (SUERC-81372) on a charred cereal grain produced a measurement that was beyond background, the remaining samples were broadly 6th–2nd century cal BC. The background result has been excluded, and the other result has been placed in a simple chronological model to estimate the timing of the occupation of the structure.

The model has good agreement (Amodel=100) and estimates that activity within the roundhouses began in *535–395 cal BC* (*95% probability*; Fig. XXIV.24; *s Q25*), and probably in *450–400 cal BC* (*68% probability*). The activity persisted for *55–365 years* (*95% probability*; Fig. XXIV.25; *span Q25*), and probably for *65–195 years* (*68% probability*). It ended in *355–135 cal BC* (*95% probability*; Fig. XXIV.24; *e Q25*), and probably in *350–255 cal BC* (*68% probability*).

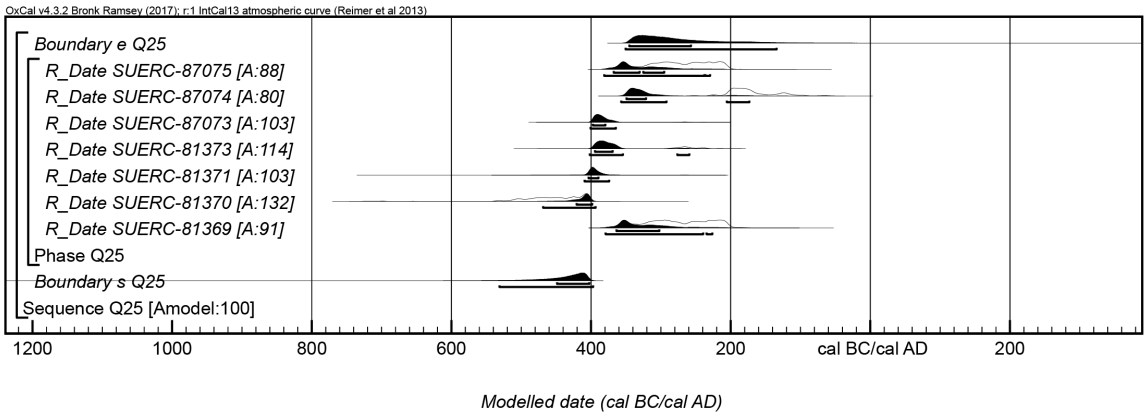


Fig. XXIV.24: Chronological model for the clay-walled roundhouses in Area K7. The model is as described in Fig. XXIV.1

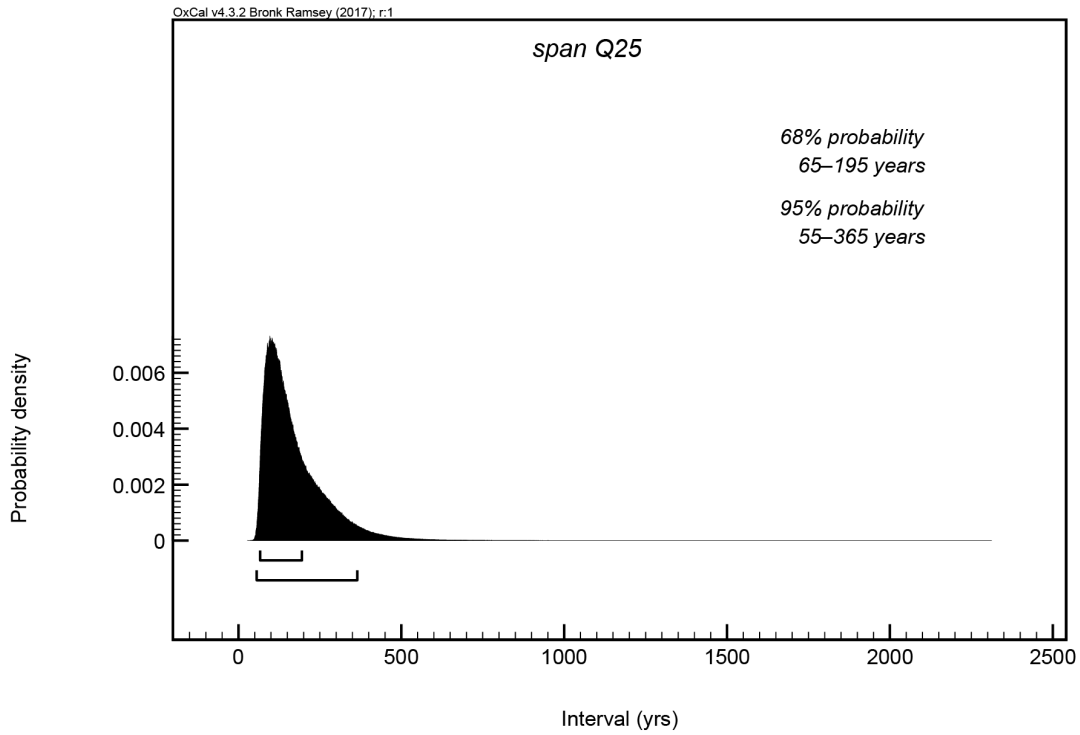


Fig. XXIV.25: Span of the activity associated with the clay-walled roundhouses, as derived from the model in Fig. XXIV.24

Question 26

There were a number of stone-walled roundhouses from which there is complex stratigraphic relationships and archaeological phasing, supported by 25 radiocarbon dates from Areas B2 and F1. The stratigraphic relationships are represented by the matrix shown in Fig XXIV.26. A model was constructed that took into account the direct stratigraphic relationships between samples and aimed to provide robust date estimates for the start and end of the identified phases of activity. Phase I includes contexts that pre-date the settlement, and has been separated into Phases Ia (Late Neolithic/Beaker activity under RHA) and Ib (Iron Age platform and occupation). The occupation of RHA.1, RHB.1, RHE, and RHI form the Phase II settlement, while Phase III occupation includes RHA.2, RHB.2, RHC.1, RHH, and Structure F. The final phase, Phase IV, is marked by the use of RHC.2 in the Roman Iron Age.

There are three instances where the radiocarbon dates are not in agreement with the order in which the samples were deposited in their respective contexts. There are two results from the deposits associated with RHA.1 that would appear to be either residual or not associated with the feature group with which they have been placed. A fragment of willow/poplar charcoal from pit [91660] in RHA dates to the opening centuries of the first millennium cal BC, which is about one-half millennium earlier than the material in the structure's hearth or the features associated with the earlier RHE. A hazelnut shell from drain [90570] in RHA produced a date (SUERC-83299) in the 5th millennium cal BC.

Finally, from the hearth of RHC.1, there is a 5th–4th century cal BC result (SUERC-83300) that is considerably earlier than other dated samples in Phase III deposits. Either this fragment of hazel charcoal is residual, or the construction and occupation of RHC.1 has been miscategorised and belongs in the earlier Phase II. In either way it is excluded from the modelling presented below.

For phase Ib samples were obtained from both the burning on the stone platform and from the occupation layer over the platform. These layers were distinct and their relationships were clear but the dates returned did not fit the stratigraphy perfectly with some sets of dates being reversed from expected. All the dates were quite similar and no other samples elsewhere in the settlement produced similar dates so this does represent a genuine phase of activity but it was not clear whether specific items dated had been mixed between these two layers, perhaps by bioturbation. All samples from this phase are therefore treated as dating the general activity and there has been no ordering within this phase in the model.

The model has good agreement between the stratigraphy, phasing, and radiocarbon results (Amodel=67). While the dating for Phase 1a is not robust enough to provide refined estimates for the Late Neolithic activity, the dates do suggest this activity took place in the 25th or 24th century cal BC. The Early Iron Age activity began in *1310–920 cal BC* (*95% probability*; Fig XXIV.27; *start: Phase Ib*), and probably in *1080–945 cal BC* (*68% probability*). This activity ended in *800–505 cal BC* (*95% probability*; Fig XXIV.27; *end: Phase Ib*), and probably in *790–690 cal BC* (*68% probability*). Based on the dating, the Early Iron Age activity lasted for *145–700 years* (*95% probability*; Fig XXIV.28; *span: Phase Ib*), and probably for *180–400 years* (*68% probability*).

The dating would suggest there was a break in activity between the Early Iron Age platform activity and the Middle Iron Age roundhouse of Phase II. These occupation deposits began in *450–245 cal BC* (*95% probability*; Fig XXIV.27; *start: Phase II*), and probably in either *420–355 cal BC* (*57% probability*) or *315–285 cal BC* (*11% probability*). The transition between Phases II and III took place in *355–215 cal BC* (*95% probability*; Fig XXIV.27; *transition: Phase II/III*), and probably in *310–230 cal BC* (*68% probability*). Phase III ended in *295–140 cal BC* (*95% probability*; Fig XXIV.27; *end: Phase III*), and probably in *240–170 cal BC* (*68% probability*).

The overall duration of the two main phases of occupation is rather similar. Phase II occupation lasted for up to *185 years* (*95% probability*; Fig XXIV.28; *span: Phase II*), and probably for *5–120 years* (*68% probability*), while Phase III lasted for up to *160 years* (*95% probability*; Fig. RC-27; *span: Phase III*), and probably for *1–90 years* (*68% probability*).

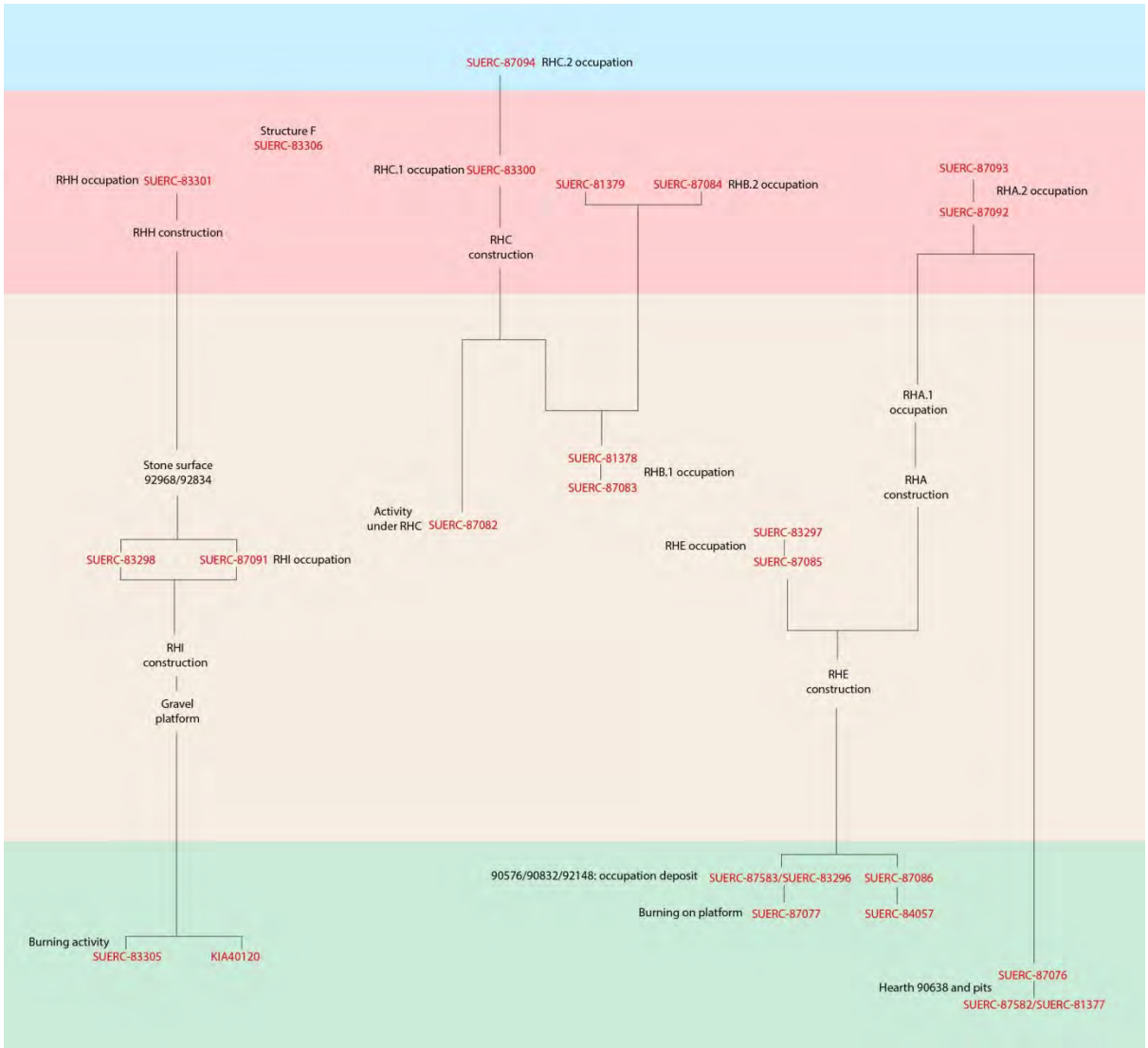


Fig. XXIV.26: Simplified matrix showing relationship of dated samples from the roundhouse settlement

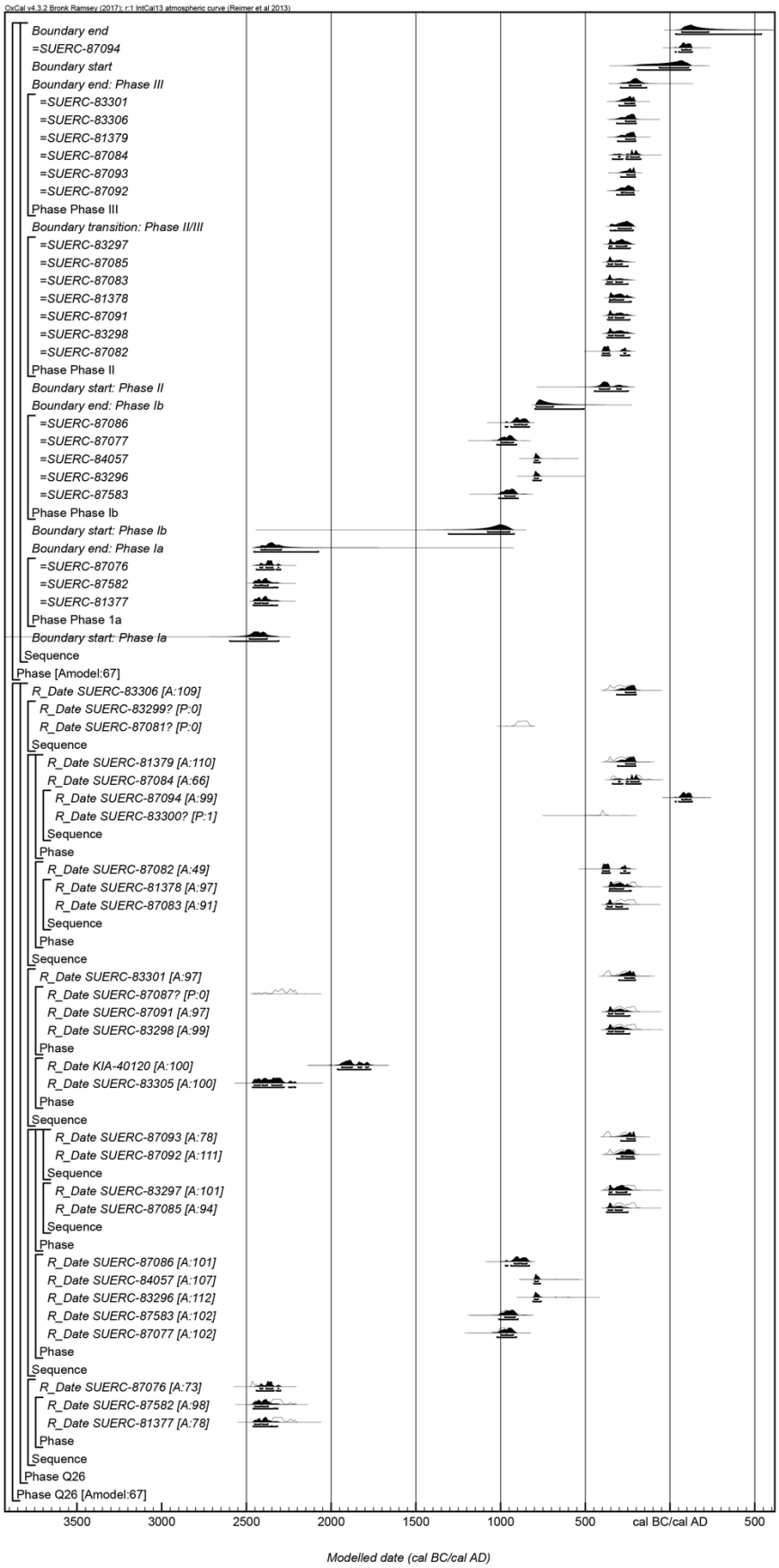

OxCal v4.3.2 Bronk Ramsey (2017); r:1 IntCal13 atmospheric curve (Reimer et al 2013)
Boundary end
=SUERC-87094
Boundary start
Boundary end: Phase III
=SUERC-83301
=SUERC-83306
=SUERC-81379
=SUERC-87084
=SUERC-87093
=SUERC-87092
Phase Phase III
Boundary transition: Phase II/III
=SUERC-83297
=SUERC-87085
=SUERC-87083
=SUERC-81378
=SUERC-87091
=SUERC-83298
=SUERC-87082
Phase Phase II
Boundary start: Phase II
Boundary end: Phase Ib
=SUERC-87086
=SUERC-87077
=SUERC-84057
=SUERC-83296
=SUERC-87583
Phase Phase Ib
Boundary start: Phase Ib
Boundary end: Phase Ia
=SUERC-87076
=SUERC-87582
=SUERC-81377
Phase Phase 1a
Boundary start: Phase Ia
Sequence
Phase [Amodel:67]
R_Date SUERC-83306 [A:109]
R_Date SUERC-83299? [P:0]
R_Date SUERC-87081? [P:0]
Sequence
R_Date SUERC-81379 [A:110]
R_Date SUERC-87084 [A:66]
R_Date SUERC-87094 [A:99]
R_Date SUERC-83300? [P:1]
Sequence
Phase
R_Date SUERC-87082 [A:49]
R_Date SUERC-81378 [A:97]
R_Date SUERC-87083 [A:91]
Sequence
Phase
Sequence
R_Date SUERC-83301 [A:97]
R_Date SUERC-87087? [P:0]
R_Date SUERC-87091 [A:97]
R_Date SUERC-83298 [A:99]
Phase
R_Date KIA-40120 [A:100]
R_Date SUERC-83305 [A:100]
Phase
Sequence
R_Date SUERC-87093 [A:78]
R_Date SUERC-87092 [A:111]
Sequence
R_Date SUERC-83297 [A:101]
R_Date SUERC-87085 [A:94]
Sequence
Phase
R_Date SUERC-87086 [A:101]
R_Date SUERC-84057 [A:107]
R_Date SUERC-83296 [A:112]
R_Date SUERC-87583 [A:102]
R_Date SUERC-87077 [A:102]
Phase
Sequence
R_Date SUERC-87076 [A:73]
R_Date SUERC-87582 [A:98]
R_Date SUERC-81377 [A:78]
Phase
Sequence
Phase Q26
Phase Q26 [Amodel:67]
3500
3000
2500
2000
1500
1000
500
cal BC/cal AD
500
Modelled date (cal BC/cal AD)

Fig. XXIV.27: Chronological model for the stone-walled roundhouses. The model is as described in Fig. XXIV.1

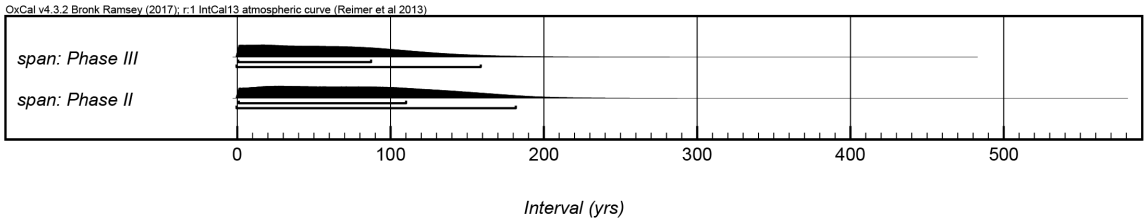


Fig. XXIV.28: Span of the activity associated with the stone-walled roundhouses, as derived from the model in Fig. XXIV.27

Question 28

There are two dates (SUERC-83306 & -83307) from posthole [90741] in Structure F, which is a round structure to the north of the main roundhouse settlement. One result dates from the Bronze Age (SUERC-83307), while the other dates from the later Iron Age (SUERC-83306). While the Bronze Age date is most likely residual, the fact that the structure also contained Roman pottery and a fragment of shale bangle, which is likely also Roman in date, would suggest the later Iron Age sample is also residual. At present, the house should either be regarded as Roman in date or Iron Age with Roman material having been deposited on top of its remains.

Modelling of Neolithic pottery in Wales

A set of radiocarbon results from contexts across Wales that are associated with Peterborough ware and Grooved Ware pottery are provided in Table XXIV.2. These dates have been modelled in OxCal following the simple bounded phase model described in Hamilton and Kenney (2015), with independent groups formed from dates on Ebbsfleet style pottery, Mortlake style pottery, Fengate style pottery, and Grooved Ware pottery. Similarly, there were independent models created for the groups of Mortlake and Fengate style pottery, as well as the Grooved Ware from Parc Cybi. It was not time permitting to thoroughly critique all of the dates from the other sites in Wales, so the models for these results employed the General Outlier model, with a prior probability of 0.05 that any measurement was an outlier. The Outlier model results indicate Birm-1236, Birm-1238, CAR-447, CAR-481, and SUERC-42306 are outliers and those dates are down-weighted in the final model.

The model results are provided in Fig. XXIV.29. By using the Order function in OxCal it is possible to directly compare the probabilities for the start and end boundaries of the different pottery styles. Within Wales, there is an 87% probability that the *start: Ebbsfleet style* predates the *start: Mortlake style*, a 98% probability that it predates the *start: Fengate style*, and a 99% probability that it predates the *start: Grooved Ware*. Similarly, there is over a 99% probability that *start: Mortlake style* predates both *start: Fengate style* and *start: Grooved Ware*, with a 98% probability that *start: Fengate style* predates *start: Grooved Ware*.

These probabilities are in accordance with accepted understanding the introduction of these pottery styles more broadly across Britain. Of particular interest is how the dating of these types at Parc Cybi compares with the wider Welsh chronology. At Parc Cybi Mortlake style pottery began to be used in *3750–3105 cal BC* (*95% probability*; Fig. XXIV.29; *start: Mortlake style (Parc Cybi)*), and probably in *3390–3165 cal BC* (*68% probability*). Mortlake fell out of use in *3335–2670 cal BC* (*95% probability*; Fig. XXIV.29; *end: Mortlake style (Parc Cybi)*), and probably in *3285–3035 cal BC* (*68% probability*). Fengate was first used at Parc Cybi in either *3850–3807 cal BC* (1*% probability*; Fig. XXIV.29; *start: Fengate style (Parc Cybi)*) or *3635–3020 cal BC* (*94% probability*), and probably in either *3270–3255 cal BC* (*1% probability*) or *3195–3030 cal BC* (*67% probability*). Fengate ceased to be used in either *3260–3230 cal BC* (*1% probability*; Fig. XXIV.29; *end: Fengate style (Parc Cybi)*) or *3100–2570 cal BC* (*93% probability*) or *2445–2400 cal BC* (*1% probability*), and probably in *3085–2930 cal BC* (*68% probability*). Grooved Ware began being used at Parc Cybi in *3005–2695 cal BC* (*95% probability*; Fig. XXIV.29; *start: Grooved Ware (Parc Cybi)*), and probably in *2905–2765 cal BC* (*68% probability*). Grooved Ware went out of use in *2830–2410 cal BC* (*95% probability*; Fig. XXIV.29; *end: Grooved Ware (Parc Cybi)*), and probably in *2640–2480 cal BC* (*68% probability*).

There is only a 13% probability that *start: Mortlake (Parc Cybi)* occurred prior to *start: Mortlake style*, but a 93% probability that *end: Mortlake (Parc Cybi)* occurred prior to *end: Mortlake style*. This would suggest that

the use of Mortlake style pottery at Parc Cybi was placed late in the overall Welsh chronology, but not at the very end. While there is a 23% probability that *start: Fengate (Parc Cybi)* happened prior to *start: Fengate style*, there is only a 10% probability that *end: Fengate (Parc Cybi)* occurred prior to *end: Fengate style*. Fengate use at Parc Cybi appears to have begun shortly after it began being used in Wales, but continue on beyond the use at others sites. Grooved Ware appears to have a similar chronological pattern as Mortlake style pottery, with *start: Grooved Ware (Parc Cybi)* having a 4% probability of occurring prior to *start: Grooved Ware* and *end: Grooved Ware (Parc Cybi)* having a near 100% probability of occurring prior to *end: Grooved Ware*.

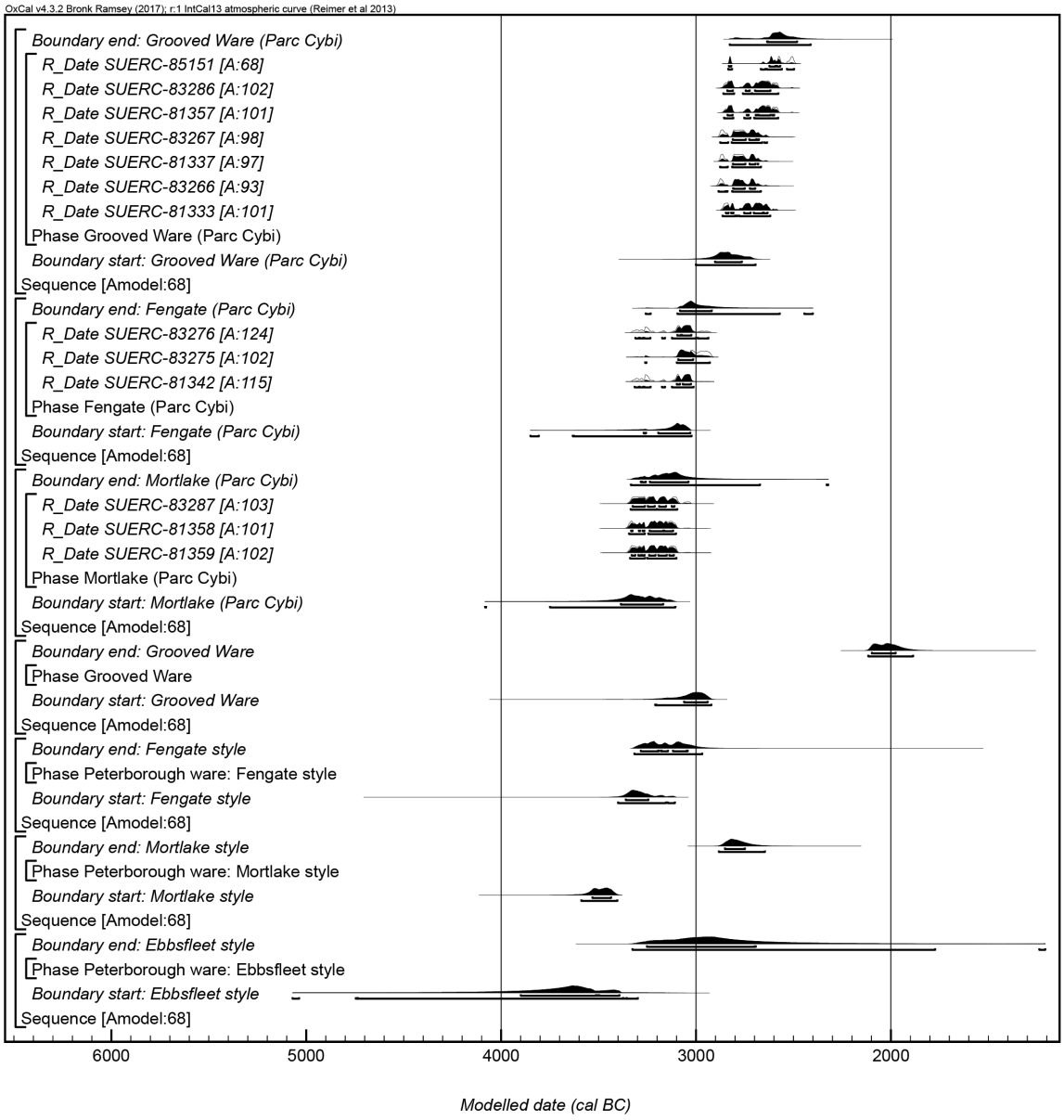


Fig. XXIV.29: Chronological models for Peterborough Ware pottery styles and Grooved Ware in Wales and at Parc Cybi. The model is as described in Fig. XXIV.1, but the individual radiocarbon dates for the wider modelling of these pottery types in Wales have been omitted from the figure, with just the start and end boundaries remaining for comparison with the Parc Cybi dates

The dating from Parc Cybi has been integrated into the models with the other dates, and the final models used to produce updated date estimates for the use of this style across Wales. The model estimates:
Ebbsfleet in Wales began in *4775–3295 cal BC* (*95% probability*; Fig. XXIV.30; *start: Ebbsfleet style (Wales)*), and probably in *3910–3390 cal BC* (*68% probability*).
Ebbsfleet fell out of use in *3325–1750 cal BC* (*95% probability*; Fig. XXIV.30; *end: Ebbsfleet style (Wales)*), and probably in *3250–2680 cal BC* (*68% probability*).

Mortlake style pottery began to be used in *3565–3400 cal BC* (*95% probability*; Fig. XXIV.30; *start: Mortlake style (Wales)*), and probably in *3525–3425 cal BC* (*68% probability*).
Mortlake fell out of use in *2890–2675 cal BC* (*95% probability*; Fig. XXIV.30; *end: Mortlake style (Wales)*), and probably in *2860–2765 cal BC* (*68% probability*).
Fengate was first used in Wales in *3375–3100 cal BC* (*95% probability*; Fig. XXIV.30; *start: Fengate style (Wales)*), and probably in either *3350–3245 cal BC* (*57% probability*) or *3145–3110 cal BC* (*11% probability*).
Fengate ceased to be used in either *3305–3180 cal BC* (*29% probability*; Fig. XXIV.30; *end: Fengate style (Wales)*) or *3110–2910 cal BC* (*66% probability*), and probably in either *3260–3220 cal BC* (*18% probability*) or *3095–2995 cal BC* (*50% probability*).
Grooved Ware began being used in Wales in *3125–2910 cal BC* (*95% probability*; Fig. XXIV.30; *start: Grooved Ware (Wales)*), and probably in *3025–2930 cal BC* (*68% probability*).
Grooved Ware went out of use in either *2480–2370 cal BC* (*11% probability*; Fig. XXIV.30; *end: Grooved Ware (Wales)*) or *2130–1895 cal BC* (*84% probability*), and probably in *2110–1985 cal BC* (*68% probability*).

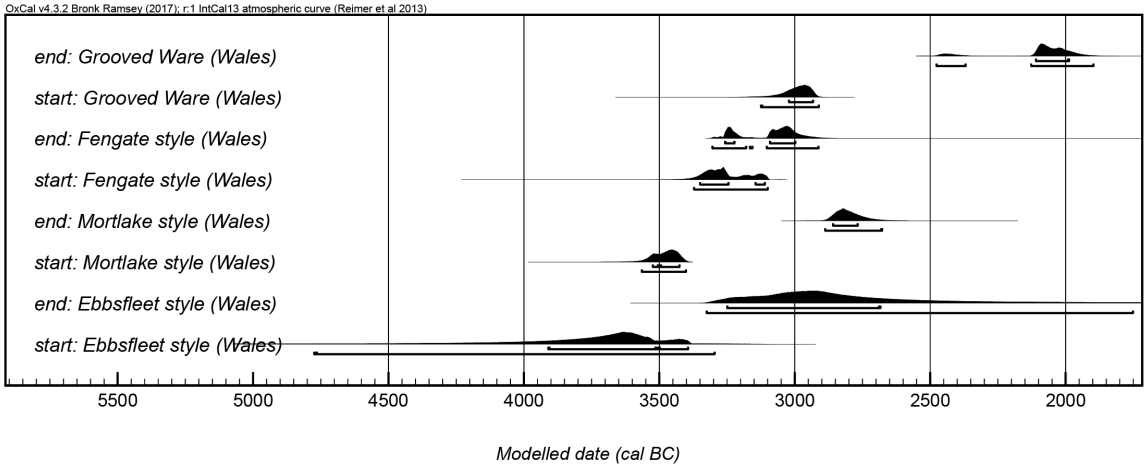


Fig. XXIV.30: Probabilities for the beginning and end of use of the various styles of Peterborough Ware and Grooved Ware pottery across Wales

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Table XXIV.1: Radiocarbon dates from Parc Cybi

Lab ID	Context	Cut	Feature type	Sample	Material	´ ^{13}C (‰)	Radiocarbon age (BP)	Calibrated date (95.4% probability)
Question 1 – Area H: Early Neolithic building (PRN 31570)								
SUERC-81328	50115	50116	hearth	1128	charcoal: hazel	−27.1	4929 ±22	3770–3650 cal BC
SUERC-81331	50161	50145	hearth	1170	charred cereal grain	−25.2	4931 ±24	3770–3650 cal BC
SUERC-81330	50189	50179	posthole	1188	charred hazelnut shell	−22.9	4817 ±23	3660–3530 cal BC
SUERC-81329	50235	50232	beam slot	1245	charred cereal grain	−26.3	4902 ±24	3710–3640 cal BC
SUERC-83260	50132	50133	hearth	1155	charred hazelnut shell	−25.6	4914 ±29	3770–3640 cal BC
SUERC-83261	50168	50167	posthole	1269	charred hazelnut shell	−25.4	4873 ±29	3710–3630 cal BC
SUERC-87063	50060	50059	pit	1088	charcoal: hazel	−27.1	4868 ±22	3700–3630 cal BC
SUERC-87064	50148	50179	gully	1193	charred cereal grain	−24.4	4926 ±25	3770–3650 cal BC
SUERC-87065	50183	50182	posthole	1186	charred cereal grain	−22.0	4836 ±21	3660–3530 cal BC
Question 2 – Area H: Feature with cannel coal bead (PRN 74830)								
SUERC-81332	50011	50010	posthole	1060	charred cereal grain	−24.3	4831 ±23	3660–3530 cal BC
SUERC-83265	50011	50010	posthole	1060	charred hazelnut shell	−23.7	4958 ±29	3790–3660 cal BC
Question 3 – Area J: prehistoric pits and postholes								
SUERC-81333	70528	70529	pit – Group II (PRN 74832)	5815	charred hazelnut shell	−23.0	4133 ±23	2880–2600 cal BC
SUERC-83266	70536	70529	pit – Group II (PRN 74832)	5822	charred hazelnut shell	−25.3	4195 ±29	2900–2670 cal BC
SUERC-81337	70502	70503	pit – Group II (PRN 74832)	5809	charcoal: hazel	−24.4	4175 ±23	2890–2670 cal BC
SUERC-83267	70502	70503	pit – Group II (PRN 74832)	5809	charred hazelnut shell	−24.8	4172 ±29	2890–2630 cal BC
SUERC-81338	70201	70202	conjoined postholes – Group V (PRN 31580)	1271	charred hazelnut shell	−26.7	5377 ±25	4330–4070 cal BC
SUERC-83268	70201	70202	conjoined postholes – Group V (PRN 31580)	1271	charcoal: hazel	−26.5	5089 ±29	3970–3800 cal BC
SUERC-81339	70055	70054	pit – Group V (PRN 31580)	1210	charred cereal grain	−26.6	3120 ±24	1450–1300 cal BC
SUERC-83269	70055	70054	pit – Group V (PRN 31580)	1210	charcoal: alder/hazel	−27.6	3039 ±29	1400–1210 cal BC
SUERC-81340	70451	70452	posthole – Group VI (PRN 31581)	5807	charred hazelnut shell	−25.5	3471 ±25	1890–1690 cal BC
SUERC-83270	70451	70452	posthole – Group VI (PRN 31581)	5807	charcoal: willow/poplar	−26.4	3556 ±29	2020–1770 cal BC
SUERC-87066	70061	70062	posthole – Group III (PRN 31578)	1214	charcoal: hazel	−28.6	5439 ±23	4350–4250 cal BC
SUERC-87067	70061	70062	posthole – Group III (PRN 31578)	1214	charcoal: hazel	−27.5	7739 ±24	6640–6500 cal BC

Lab ID	Context	Cut	Feature type	Sample	Material	´ ^{13}C (‰)	Radiocarbon age (BP)	Calibrated date (95.4% probability)
Question 4 – Area I: pit groups								
SUERC-81341	18079	18078	pit – group 19073 (PRN 31598)	1008	charcoal: willow/poplar	−27.4	2236 ±24	390–200 cal BC
SUERC-83271	21041	21039	oven – group 19073 (PRN 31598)	1010	charcoal: young oak	−25.7	2311 ±29	420–230 cal BC
SUERC-81342	18064	18063	pit – PRN 31572	88	charred hazelnut shell	−26.3	4447 ±22	3330–3010 cal BC
SUERC-83275	21222	21221	pit – PRN 31572	1115	charred hazelnut shell	−28.0	4402 ±29	3270–2920 cal BC
SUERC-83276	21222	21221	pit – PRN 31572	1115	charred hazelnut shell	−26.7	4437 ±29	3330–2930 cal BC
SUERC-85149	21216	21215	pit – PRN 31572	1103	charred hazelnut shell	−23.8	4437 ±24	3330–2930 cal BC
SUERC-85150	21216	21215	pit – PRN 31572	1103	charred hazelnut shell	−25.4	4441 ±24	3330–2940 cal BC
Question 5 – Area E: Neolithic activity (PRN 18406)								
SUERC-81343	31024	31082	hollow	860	charred hazelnut shell	−25.0	4635 ±23	3510–3350 cal BC
SUERC-81347	31596	31595	pit	961	charred cereal grain	−23.5	4897 ±22	3710–3640 cal BC
SUERC-81348	31632	31631	posthole	1559	charred cereal grain	−23.9	4941 ±24	3780–3650 cal BC
SUERC-83277	31510	31509	pit	924	charred hazelnut shell	−29.2	3772 ±29	2300–2050 cal BC
SUERC-83278	31609	31608	pit	968	charred hazelnut shell	−27.6	5601 ±29	4490–4360 cal BC
Question 6 – Area E: large burnt mound (PRN 31582)								
SUERC-81349	31372	31414	pit	940	charcoal: alder/hazel	−27.3	3586 ±24	2020–1880 cal BC
SUERC-81350	31370	31415	large pit/well	917	charcoal: alder/hazel	−25.2	3699 ±22	2200–2020 cal BC
SUERC-81351	31561	31415	large pit/well	947	charcoal: willow/poplar	−24.8	3812 ±24	2340–2140 cal BC
SUERC-81352	31594	31593	large pit/well	960	charcoal: alder/hazel	−27.3	3850 ±22	2460–2200 cal BC
Question 7 – Area E: small burnt mound (PRN 31583)								
SUERC-81353	31002		burnt mound	1450	charcoal: hazel	−25.5	4126 ±24	2870–2580 cal BC
SUERC-83279	31002		burnt mound	1450	charcoal: hazel	−25.6	4185 ±29	2890–2670 cal BC
Question 8 – Area B1: pit group 25046 (PRN 31592)								
SUERC-83280	10002	10001	pit	17	charcoal: willow/poplar	−25.4	2009 ±29	60 cal BC–cal AD 70
SUERC-83281	10013	10012	pit	30	charcoal: willow/poplar	−26.1	2098 ±29	200–40 cal BC
SUERC-83285	11021	11019	pit	66	charcoal: hazel	−25.5	1910 ±29	cal AD 20–210
Question 9 – Area L3: structure 22171 (PRN 31593)								
SUERC-87071	22168		hearth	1131	charred cereal grain	−25.1	127 ±24	cal AD 1680–1940
SUERC-87072	22144		occupation layer	1136	charred cereal grain	−25.0*	2014 ±21	60 cal BC–cal AD 60
Question 10 – Area D3: hearth and pit group (PRN 31574)								
SUERC-81357	60100	60093	pit	1181	charred hazelnut shell	−24.2	4105 ±24	2860–2570 cal BC
SUERC-83286	60092	60093	pit	1180	charred hazelnut shell	−23.6	4110 ±29	2870–2570 cal BC
SUERC-85151	60163	60162	pit	1190	charred hazelnut shell	−27.0	4050 ±20	2840–2480 cal BC

Lab ID	Context	Cut	Feature type	Sample	Material	´ ^{13}C (‰)	Radiocarbon age (BP)	Calibrated date (95.4% probability)
Question 12 – Area K9: pit group (PRN 31573)								
SUERC-81359	80638	80594	pit	5146	charred hazelnut shell	−23.2	4500 ±24	3350–3090 cal BC
SUERC-81358	80684	80686	pit	5159	charred hazelnut shell	−26.5	4510 ±24	3350–3100 cal BC
SUERC-83287	80685	80686	pit	5160	charred hazelnut shell	−24.7	4485 ±29	3350–3030 cal BC
Question 16 – Area K9: postholes, pits and fire-pits (PRN 31596)								
SUERC-81361	80555	80556	pit	5132	charcoal: willow/poplar	−27.0	1939 ±24	cal AD 10–130
SUERC-83289	80559	80560	pit	5133	charcoal: willow/poplar	−26.4	2217 ±29	380–200 cal BC
SUERC-81360	80561	80562	pit	5134	charred cereal grain	−22.5	1849 ±24	cal AD 80–240
SUERC-83288	80561	80562	pit	5134	charcoal: oak twig	−26.6	1844 ±29	cal AD 80–240
Question 17 – Area K9: corn dryers [80924] and [80835] (PRN 76100 and 76101)								
SUERC-85152	80837	80835	corn dryer	5602	charred wheat grain	−22.2	2193 ±21	360–190 cal BC
SUERC-85153	80885	80835	corn dryer	5609	charred barley grain	−22.2	1498 ±24	cal AD 470–640
SUERC-85154	81034	80924	corn dryer	5682	charred wheat grain	−25.0	1538 ±24	cal AD 420–580
SUERC-85158	81072	80924	corn dryer	5685	charred oat grain	−23.1	1577 ±24	cal AD 420–550
Question 19 – Area K7: metal-working pit within cemetery (PRN 31600)								
SUERC-81362	80013	80044	pit		charcoal: young oak	−24.6	1650 ±24	cal AD 330–530
SUERC-81363	80013	80044	pit		charcoal: young oak	−25.4	1694 ±24	cal AD 250–410
Question 20 – Corn dryers (PRN 31601, 31602, 31603 and 31604)								
SUERC-85159	80127	80056	corn dryer	789	charred wheat grain	−23.7	1513 ±24	cal AD 430–610
SUERC-85160	80127	80056	corn dryer	789	charred barley grain	−22.4	1563 ±24	cal AD 420–550
SUERC-85161	21231	21229	corn dryer	1123	charred wheat grain	−22.7	1541 ±21	cal AD 420–580
SUERC-85162	21231	21229	corn dryer	1123	charred barley grain	−21.9	1591 ±24	cal AD 410–540
SUERC-85163	80139	80137	corn dryer	1403	charred wheat grain	−23.9	1555 ±24	cal AD 420–560
SUERC-85164	80139	80137	corn dryer	1403	charred oat grain	−25.0	1577 ±24	cal AD 420–550
SUERC-85168	21052	21051	corn dryer	1026	charred barley grain	−24.2	1535 ±20	cal AD 420–590
SUERC-85169	21052	21051	corn dryer	1026	charred oat grain	−24.7	1555 ±24	cal AD 420–560
Question 21 – Areas M2 and M4: Bronze Age monuments (PRN 31591)								
SUERC-83290	22108	22111	ditch	1070	charcoal: hazel	−26.3	2921 ±29	1220–1020 cal BC
SUERC-84056	22108	22111	ditch	1070	charcoal: hazel	−25.7	2907 ±24	1200–1010 cal BC
Question 23 – Area K1: pits near possible Bronze Age roundhouse (PRN 31588)								
SUERC-81367	18125	18124	?fire pit	1010	charred hazelnut shell	−25.7	2474 ±24	770–480 cal BC
SUERC-83291	18125	18124	?fire pit	1020	charred hazelnut shell	−23.8	3000 ±29	1380–1120 cal BC
SUERC-81368	19110	20081	fire pit	1004	charred ?barley grain	−24.9	3291 ±24	1630–1500 cal BC
SUERC-83295	19110	20081	fire pit	1004	charred cereal grain	−22.8	3234 ±29	1610–1430 cal BC
Question 25 – Area K7: clay-walled roundhouses (PRN 31595)								

Lab ID	Context	Cut	Feature type	Sample	Material	´ ^{13}C (‰)	Radiocarbon age (BP)	Calibrated date (95.4% probability)
SUERC-81369	80408	80409	posthole – RH 80248	1525	charred cereal grain	−22.2	2210 ±24	370–200 cal BC
SUERC-81370	80370	80259	drain – RH 80248	1520	charred cereal grain	−22.8	2385 ±24	540–390 cal BC
SUERC-81371	80358		roof collapse? – RH 80248	1485	charcoal: young oak	−25.6	2330 ±22	420–370 cal BC
SUERC-81372	80203	80186	posthole – RH 80249	1429	charred cereal grain	−22.3	>50,000	
SUERC-81373	80219	80218	stakehole – RH 80249	1436	charcoal: alder/hazel	−25.0*	2286 ±24	410–230 cal BC
SUERC-87073	80228		hearth deposit – RH 80249	1443	charred cereal grain	−21.1	2300 ±20	410–360 cal BC
SUERC-87074	80334		roof collapse? – RH 80248	1478	charred wheat spikelet forks, glume bases, and chaff culms	−24.2	2148 ±24	360–100 cal BC
SUERC-87075	80334		roof collapse? – RH 80248	1535	charred wheat spikelet forks, glume bases, and chaff culms	−24.5	2215 ±24	370–200 cal BC
Question 26 – Area B2: stone-walled roundhouses (PRN 14599)								
Phase Ia (late Neolithic/Beaker)								
SUERC-81377	90638	90509	?hearth – under RHA	163	charcoal: alder/hazel	−27.4	3854 ±24	2460–2200 cal BC
SUERC-87582	90638	90509	?hearth – under RHA	164	charcoal: hazel	−25.0*	3867 ±24	2470–2230 cal BC
SUERC-87076	90824		hearth – under RHA	205	charcoal: hazel	−25.4	3926 ±20	2480–2340 cal BC
Phase Ib (Early Iron Age)								
SUERC-87583	90576		occupation deposit - platform	236	charcoal: willow/poplar	−26.2	2802 ±24	1020–890 cal BC
SUERC-83296	90832		?occupation deposit - platform	204	charcoal: willow/poplar	−26.3	2580 ±29	820–590 cal BC
SUERC-84057	91906		deposit – platform under RHE	495	charcoal: hazel	−27.4	2575 ±24	810–590 cal BC
SUERC-87077	90833		deposit – platform under RHA	207	charcoal: hazel	−26.0	2824 ±24	1050–910 cal BC
SUERC-87086	92148		?occupation deposit – RHE	684	charred cereal grain/chaff	−27.3	2754 ±24	980–830 cal BC
Phase II (mid Iron Age)								
SUERC-87081	92169	91660	pit – RHA	526	charcoal: willow/poplar	−26.6	2735 ±21	920–820 cal BC
SUERC-81378	91620	91619	hearth – RHB	393	charcoal: willow/poplar	−26.9	2196 ±22	370–190 cal BC
SUERC-87083	91664		floor – RHB	398	charred cereal grain	−22.9	2217 ±24	370–190 cal BC
SUERC-87082	92040		burnt deposit – under RHC	492	charcoal: willow/poplar	−26.5	2306 ±24	410–260 cal BC
SUERC-83297	92141		hearth – RHE	682	charred cereal grain	−22.5	2223 ±29	380–200 cal BC
SUERC-87085	92147		hearth – RHE	683	charcoal: willow/poplar	−25.6	2206 ±24	370–200 cal BC
SUERC-87087	92961		burnt stone layer – RHI	806	charcoal: oak twig	−25.9	3839 ±21	2460–2200 cal BC

Lab ID	Context	Cut	Feature type	Sample	Material	´ ^{13}C (‰)	Radiocarbon age (BP)	Calibrated date (95.4% probability)
SUERC-87091	93430	93428	pit – RHI	5069	charred cereal grain	−22.4	2209 ±24	370–200 cal BC
SUERC-83298	93598		burnt stone layer – RHI	5098	charred cereal grain	−25.0*	2209 ±29	370–190 cal BC
Phase III (mid Iron Age)								
SUERC-83299	90571	90570	drain – RHA	145	charred hazelnut shell	−26.4	5741 ±29	4690–4500 cal BC
SUERC-87092	90632		hearth – RHA	178	charred cereal grain/chaff	−22.5	2219 ±24	370–200 cal BC
SUERC-87093	90863	90864	stakehole – RHA	212	charcoal: oak twig	−25.0*	2252 ±24	400–200 cal BC
SUERC-87084	90806		hearth – RHB	407	charcoal: Rosaceae	−26.1	2156 ±20	360–110 cal BC
SUERC-81379	91015	91014	burnt patch – RHB	286	charred ?wheat grain	−25.0*	2217 ±22	370–200 cal BC
SUERC-87094	91434		hearth – RHC	372	charred cereal grain	−25.0*	1909 ±21	cal AD 50–140
SUERC-83300	91624		hearth – RHC	428	charcoal: hazel	−27.4	2333 ±29	490–360 cal BC
SUERC-83301	92822		occupation layer – RHH	727	charred cereal grain	−25.0*	2247 ±29	400–200 cal BC
Question 27 – Area F1: burnt soil horizon and marsh edge								
SUERC-83305	93466		old ground surface	5085	charcoal: hazel	−28.1	3868 ±29	2470–2210 cal BC
KIA-40120	93466		old ground surface	5056	charcoal: unidentified wood	−24.98	3543 ±31	1970–1760 cal BC
KIA-40119	93358		bark deposit	5037	bark: ?birch	−27.17	8865 ±42	8230–7820 cal BC
Question 28 – Area B2: structure F (PRN 14599)								
SUERC-83306	90711	90741	posthole	200	charred cereal grain	−22.6	2213 ±29	370–200 cal BC
SUERC-83307	90711	90741	posthole	200	charred cereal grain	−28.2	3015 ±29	1390–1130 cal BC
Smithing activity								
SUERC-87440	90036	90037	pit	123	charcoal: oak	−23.5	> 50,000	
SUERC-87441	90036	90037	pit	123	charcoal: oak	−23.5	> 50,000	
SUERC-87442	31153	31152	Pit (PRN 18403)	878	charcoal: oak twig	−25.4	956 ±30	cal AD 1020–1160
SUERC-87443	31153	31152	Pit (PRN 18403)	878	charcoal: oak twig	−24.9	922 ±30	cal AD 1020–1190

* assumed value

Table XXIV.2: Table of dates from features with mid and late Neolithic pottery in Wales

* Dates recalibrated using Oxcal v4.3 (Bronk Ramsey 2009)

Site	Material	Date BP	Calibrated date 95% confidence cal BC	Lab No.	Reference
Undifferentiated Peterborough ware					
Betws yn Rhos, Conwy	Charcoal (?alder)	4540 ± 40	3370-3090	Beta-241248	Grant 2007
Pen y banc (site 23.07), Manordeilo and Salem, Carmarthenshire	Hazelnut shell Hazelnut shell	4515 ± 29 4580 ± 40	3360-3090 3500-3100	SUERC-54700 Beta-257720	Hart 2013, 6
Peterborough ware: Ebbsfleet style					
Borras Quarry, Wrexham	Charcoal (hazel)	4755 ± 27	3640-3380	SUERC- 42306	Jones and Grant forthcoming
Four Crosses, site 5, Llandysilio, Powys	Charcoal	4440 ± 70	3360-2900	CAR-670	Warrilow *et al* 1986, 64
Gwernvale, Powys	Charcoal Charcoal	4590 ± 75 4390 ± 70	3630-3040 3340-2880	CAR-116 CAR-114	Britnell and Savory 1984, 152
Peterborough ware: Mortlake style					
Bolton Hill Quarry, Pembrokeshire	Hazelnut shell Hazelnut shell Hazelnut shell Hazelnut shell	4575 ± 40 4560 ± 40 4555 ± 40 4440 ± 40	3500-3100 3490-3100 3490-3090 3340-2920	SUERC-30132 SUERC-30118 SUERC-30117 SUERC-30113	Johnson and Tinsley 2010, 17
Borras Quarry, Wrexham	Charcoal (hazel) Hazelnut shell	4600 ± 40 4420 ± 30	3520-3110 3330-2920	Beta-256752 SUERC-31350	Jones and Grant forthcoming
Carrog, Llanbadrig, Anglesey	Charcoal (hazel)	4480 ± 30	3340-3080	SUERC-33074	Smith *et al* 2014
Dyffryn Lane, Powys	Hazelnut shell Hazelnut shell Hazelnut shell Hazelnut shell Hazelnut shell Hazelnut shell	4480 ± 40 4490 ± 40 4530 ± 40 4330 ± 50 4280 ± 40 4480 ± 40	3340-3020 3340-3020 3360-3090 3100-2880 3080-2860 3340-3020	Beta-231247 Beta-231248R Beta-236462 Beta-231250 Beta-231250R Beta-231251R	Gibson 2010, 230, 232, 236-238
Great Carn, Cefn Bryn, Gower	Hazelnut shell Charcoal Charcoal Charcoal	3990 ± 100 4340 ± 100 3960 ± 100 4230 ± 95	2880-2200 3350-2690 2870-2140 3090-2500	Birm-1238 Birm-1237 Birm-1236 Birm-1235	Ward 1987, 40
Ogmore-by-Sea,	Hazelnut shell	4320 ± 80	3310-2700	HAR-1140	Hamilton and Aldhouse-Green 1998

Glamorgan	Charcoal	4659 ± 52	3630-3340	BM-1112	
Parc Bryn Cegin, Llandygai, Gwynedd	Hazelnut shell Hazelnut shell	4504 ± 30 4437 ± 30	3360-3090 3330-2920	NZA-26671 NZA-26672	Kenney 2008b, 124
Sarn y Bryn Caled site 2, Powys	Charcoal (oak, sapwood) Charcoal (oak, sapwood)	4200 ± 40 4400 ± 45	2900-2630* 3330-2900*	BM-2819 BM-2820	Gibson 1994, 161
Ty'n Coed, Clynnog, Gwynedd	Charcoal, branchwood Charcoal, branchwood Charcoal, branchwood Charcoal, branchwood	4693 ± 20 4728 ± 20 4700 ± 20 4677 ± 20	3625-3370 3635-3375 3630-3370 3620-3370	NZA-34259 NZA-34260 NZA-34261 NZA-34262	Roberts forthcoming
Upper Ninepence, Hindwell, Powys	Charcoal Charcoal (mixed short-lived) Charcoal (hazel)	4470 ± 80 4400 ± 50 4590 ± 60	3360-2920 3310-2910 3520-3090	SWAN-23 BM-2967 BM-3071	Gibson 1999, 38, 81-82
Peterborough ware: Fengate style					
Borras Quarry, Wrexham	Hazelnut shell	4500±30	3350-3090	SUERC-31357	Jones and Grant forthcoming
Brynderwen, Llandyssil, Powys	Hazelnut shell Residue on pot	4550 ± 50 4440 ± 70	3500-3090 3360-2900	OxA-5317 OxA-4409	Gibson 1993; 1995, 49
Cae Glas, Holyhead, Anglesey	Hazelnut shell	4483 ± 28	3350-3020	SUERC-57569	Wessex Archaeology 2015, 17
Upper Ninepence, Hindwell, Powys	Charcoal (hazel/poplar) Charcoal (Pomoideae)	4410 ± 35 4490 ± 60	3300-2920 3360-2930	BM-2966 BM-3070	Gibson 1999, 38, 81-82
Parc Bryn Cegin, Llandygai, Gwynedd	Residue on sherd Hazelnut shell Hazelnut shell	4479 ± 30 4467 ± 30 4517 ± 30	3350-3020 3340-3020 3360-3090	NZA-26679 NZA-26687 NZA-26688	Kenney 2008b, 124-125
Grooved Ware					
Bolton Hill Quarry, Pembrokeshire	Hazelnut shell Hazelnut shell	3810 ± 40 3715 ± 40	2460-2130 2280-1970	SUERC-30139 SUERC-30138	Johnson and Tinsley 2010, 23
Capel Eithin, Gaerwen, Anglesey	Charcoal Charcoal Charcoal	3950 ± 75 3580 ± 70 4740 ± 80	2840-2200* 2140-1740* 3660-3360*	CAR-446 CAR-447 CAR-481	White and Smith 1999, 34-38
Cilsan (site 21.02)	Charcoal (alder) Charcoal (hazel) Hazelnut shell Hazelnut shell Hazelnut shell Hazelnut shell	4224 ± 40 4289 ± 40 4158 ± 29 4160 ± 29 4143 ± 29 4136 ± 29	2910-2670 3020-2770 2880-2630 2880-2630 2880-2620 2880-2610	SUERC-56040 SUERC-56039 SUERC-54690 SUERC-54689 SUERC-54688 SUERC-54684	Hart *et al* 2013, 6, 7, 20, 23
Cleifiog Uchaf, Valley, Anglesey	Charcoal	3670 ± 40	2200-1930	Beta-127204	Davidson 1999, 70-71

Hendre, Flintshire	Charcoal (alder)	3870 ± 70	2570-2130	CAR-1279	Brassil and Gibson 1999, 91, 96
Mynydd Mwyn Farm, Penmynydd, Anglesey	Hazel charcoal Hazel charcoal	4380 ± 40 4390 ± 40	3100-2900 3260-2910	Beta-280900 Beta-280901	Davidson *et al* 2010, 14-15
Parc Bryn Cegin, Llandygai, Gwynedd	Hazelnut shell Hazelnut shell Hazelnut shell	3976 ± 30 4201 ± 30 4192 ± 30	2580-2460 2900-2670 2890-2670	NZA-26681 NZA-26693 NZA-26694	Kenney 2008b, 124-125
St Athan, Vale of Glamorgan	Hazelnut shell	4172 ± 30	2883-2636	SUERC-82556	Stephen Thompson, Headland Archaeology (pers. comm.), date used with kind permission
Steynton (site 513)	Charcoal (hazel) Charcoal (hazel) Charcoal (hazel) Hazelnut shell	4120 ± 29 4138 ± 29 3966 ± 29 4185 ± 29	2870-2570 2880-2610 2580-2340 2890-2660	SUERC-54660 SUERC-54659 SUERC-54662 SUERC-54661	Hart, Barber and Leonard 2014, 9, 76
Trelystan, Powys	Charcoal (hazel etc) Charcoal (hazel etc) Hazelnut shells	4260 ± 70 4135 ± 65 3985 ± 70	3090-2620* 2890-2500* 2860-2280*	CAR-272 CAR-273 CAR-274	Britnell 1982, 191
Ty'n Coed, Clynnog, Gwynedd	Hazel charcoal Hazel charcoal	3956 ± 15 3665 ± 15	2550-2460 2565-2460	NZA-34257 NZA-34256	Roberts forthcoming
Upper Ninepence, Powys	Charcoal Charcoal (hazel) Charcoal (mixed short-lived) Charcoal (mixed short-lived)	4240 ± 70 4060 ± 40 4050 ± 35 4160 ± 35	3040-2610 2870-2490 2870-2490 2890-2610	SWAN-24 BM-3069 BM-2969 BM-2968	Gibson 1999, 43, 82-83

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