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ARO58: Prehistoric Activity and an early medieval smelting workshop at Coultorsay, Islay

By Maureen C. Kilpatrick

With contributions by Torben Ballin, Beverley Ballin Smith, Fraser Hunter, Susan Ramsay, Christine Rennie and Catherine Smith

Archaeology Reports Online, 52 Elderpark Workspace, 100 Elderpark Street, Glasgow, G51 3TR
0141 445 8800 | editor@archaeologyreportsonline.co.uk | archaeologyreportsonline.com

ARO58: Prehistoric Activity and an early medieval smelting workshop at Coultorsay, Islay

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Summary

Archaeological excavations at Coultorsay on Islay by GUARD Archaeology Ltd revealed the presence of several prehistoric features including two small timber structures and an early medieval metalworking workshop located within a figure-of-eight building with nearby domestic features. The prehistoric features were found in three discrete locations - Sites, 1, 2, 3 and 4. Sites 1 and 2 were located on a hillside terrace and comprised small temporary domestic structures from the small groups of pits and postholes present. The few artefacts included flint and several sherds of pottery indicative of activity within the Mesolithic and Neolithic periods. Site 3 indicated more settled occupation with the presence of a late Bronze Age D-shaped domestic structure built of wooden posts. Site 4 was located nearby and comprised two relatively shallow pits close to a rock outcrop.

Site 5 was an early medieval metalworking workshop within a figure-of-eight shaped building outlined by several interlinking curvilinear shallow gullies. The building is dated to between the sixth and ninth centuries AD. Metalworking waste, an upper stone of a rotary quern unit, a bone needle and shale bracelet fragments were recovered from several of the features, not only within the structure but from related pits, postholes and gullies surrounding it. Several phases of activity were recognised. The most significant was the change in function of the building from one of domestic use to that with an industrial focus. This took place after the domestic building had fallen into a state of disrepair.

Very few features dating to the early medieval period have been excavated on Islay with most known sites being ecclesiastical in origin. This makes the figure-of-eight building particularly important and provides information on the life of those living on the island out-with ecclesiastical sites. Its similarity to cellular Pictish buildings suggests that this form of building was more widespread across Scotland than initially envisaged.

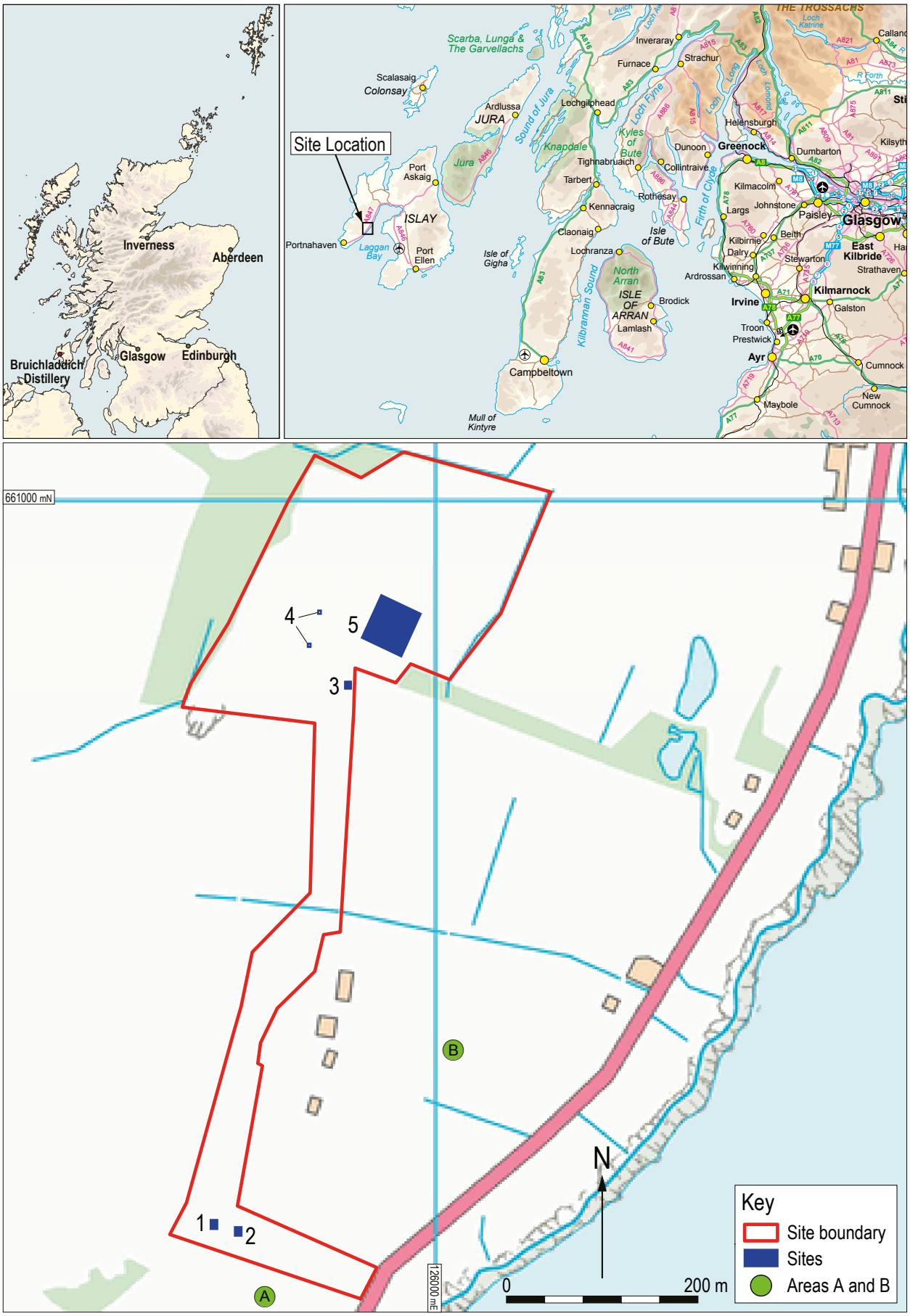

Figure 1: Location of the project and the sites excavated.

Introduction

An archaeological evaluation in advance of warehouse development followed by a monitored topsoil strip and excavation was undertaken by GUARD Archaeology Ltd in 2015 at Coultorsay. The work was undertaken on behalf of Blyth and Blyth, acting for Bruichladdich Distillery. The area lies south-west of the village of Bruichladdich, on the west side of Loch Indaal on the western coast of the island of Islay, which is in Argyll and Bute Council at NGR: NR 2590 6070 (Figure 1). The archaeological evaluation revealed the presence of significant archaeological features at four discrete sites within the development area, which was a large field with an associated access road that ran through neighbouring fields, all of which were used as either rough grazing or pasture. Towards the east of the site were waterlogged peat deposits and a small wooded area. The total development area was 9.8 hectares at elevations between 22 m and 31 m OD. The land slopes downwards towards Loch Indaal with most of the archaeological features located on a relatively flat terrace (Figure 1). The bedrock geology comprises Octofad sandstone formation with bedrock outcrops noted across the site, while raised marine and till deposits form the drift geology (BGS 2024 Geology Viewer).

Archaeological and historical background

The only archaeological and historical features noted within the development area prior to the works commencing, was a collection of over 100 flint artefacts including blades and cores, which were recovered from the plough soil in the southern part of it (NHRE: CANMORE 37431 - Site A and CANMORE 37429 - Site B). On the higher ground above 130 m OD in the surrounding hinterland that overlooks Loch Indaal, there are numerous recorded archaeological sites that include hut circles/platforms and roundhouses, duns, possible rock shelters, standing stones and burial structures. Many of these sites are likely to be prehistoric in date, although later features on the hillside have also been recorded and include shieling huts and stone dykes, indicating later agricultural practices including seasonal transhumance.

Sites on the island dating to the early medieval period (400-1100 AD) have been identified (Figure 2), and to a lesser degree recorded, despite Argyll and its surrounding Islands containing “some of the most important early Historic sites in Scotland” (ScARF n.d. Early Medieval Argyll and Norse/Viking Argyll). During this period the western seaboard of Scotland and a small section of Northern Ireland were incorporated into the Kingdom of Dál Riata. These include the royal inauguration site and fort of Dunadd located to the north of Lochgilphead on the mainland, and the Early Christian monastery on the Isle of Iona just off the coast of the island of Mull, to the north of Islay.

Very few secular sites are recorded from Argyll but early medieval sites on Islay are mainly ecclesiastical in origin and include chapel and burial grounds, several with fragments of early cross slabs. Following the demise of the Kingdom of Dál Riata in the late ninth century, Islay came under Norse control and by the twelfth century AD was at the centre of the Lordship of the Isles, with its seat of power at Finlaggan in the north of Islay.

Results of the fieldwork

Prehistoric activity

Prehistoric activity was identified from residual finds in Site 5, but also in Sites 1, 2 and 3 during the work programme. Sites 1 and 2 were located on flat terraced areas dominated by rock outcrops.

Site 1 (Figures 1, 3 and 4) was a small structure comprising mainly postholes situated within a 4.2 m by 4.6 m sub-circular depression within the subsoil, with most of the postholes situated on its eastern side. A few finds were recovered from this structure including flint fragments from postholes (1051 and 1019), and prehistoric pottery, suggesting activity from the Mesolithic and Neolithic periods (see Lithics below). Identification of charcoal from posthole (1019), hearth (1036) and the charcoal-rich occupation deposit (1037) included species such as willow, birch, hazel, heather and cherry type, and cereals including emmer wheat, barley and oats (see Archaeobotany below) attesting to a probable domestic function. Radiocarbon dating of 38

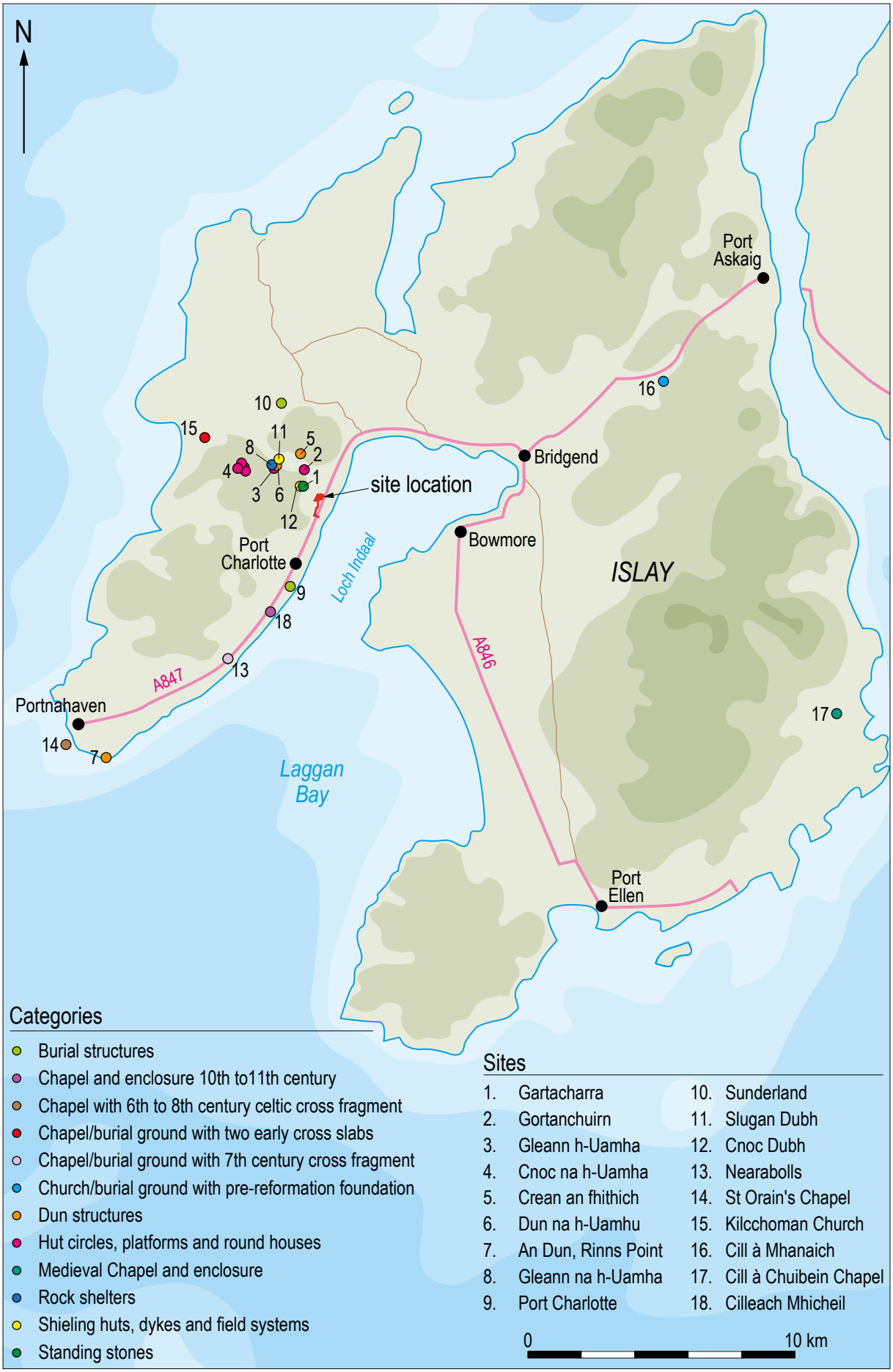

Figure 2: Sites on Islay dated to c. 400-1100 AD.

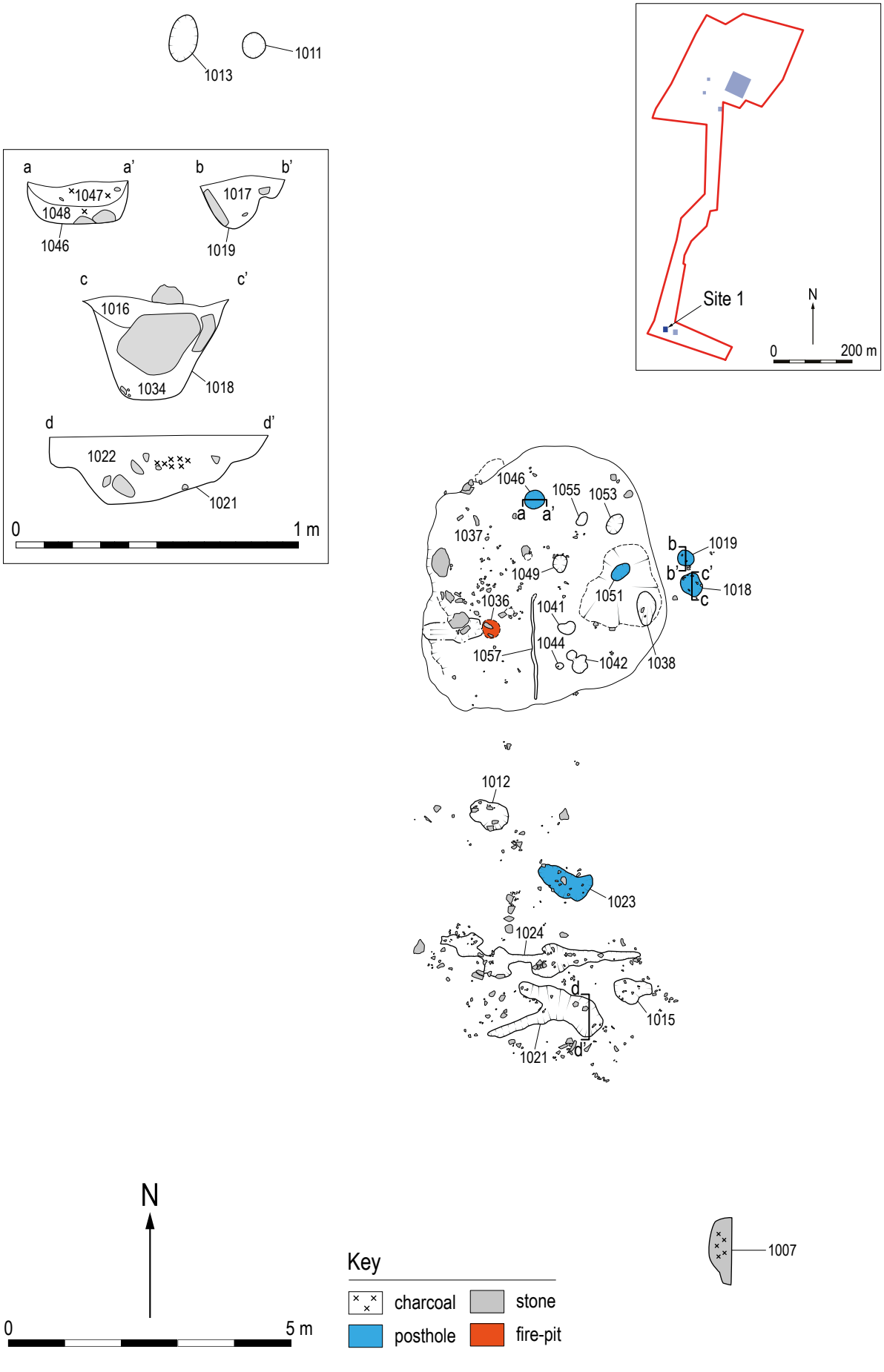

Figure 3: Site 1 plan and sections.

cal BC to cal AD 120 (SUERC-97115, 1972 ± 24 BP) suggests the material is middle Iron Age (Table 1). This date range was also observed in a further small group of features to the south although one posthole (1023) produced a date within the Neolithic period of 3523–3373 cal BC (SUERC-97113, 4658 ± 21 BP) confirming early activity in the area.

Site 2 (Figure 1) was located downslope and south from Site 1 and was again situated on a small terraced area. It comprised a small linear feature possibly a stone drain (1014) orientated across the slope. A thick deposit (1001) overlay much of the subsoil in this area and it contained several undiagnostic pottery sherds and lithic fragments.

Site 3 was located to the south-west of site 5 (Figures 1, 5 and 6) and comprised a D-shaped timber roundhouse of 14 postholes with two (3033 and 3037) outlying to the north. It measured 6.5 m by 5 m, enclosed an internal space of 33.18 m². The straight edge of the 'D' shape was oriented to the south-east adjacent to a large rock outcrop which probably impeded its construction in this area. No artefacts were recovered from any of its posthole fills, which generally comprised sandy silt or clay sand with occasional flecks of charcoal.

A mixed botanical assemblage included species such as alder, hazel and hazel nutshells, oak and willow, and was suggestive of scattered hearth waste. Radiocarbon dating of alder charcoal from posthole (3038) provided a date within the late Bronze/early Iron Age transition of between 902 – 808 cal BC (SUERC-97117, 2702 ± 25 BP).

The structure contained a group of four small internal postholes and a small remnant of occupation deposit, with a similar charcoal assemblage to the postholes (above), but also with added cereal grains including barley and emmer wheat suggestive of domestic hearth waste and food preparation. Radiocarbon dating of one of the postholes (3048) provided a similar date range of 906 – 813 cal BC (SUERC-97118, 2724 ± 25 BP). Possible fire-pits (3025 and 3036) were located at the north and south perimeter of the structure, with pit (3036) containing a charcoal-rich fill reminiscent of hearth waste.

Site 4

A further two outlying features were found at Site 4 (Figure 1), deposit (4002) and pit (4003) (not illustrated), which contained very charcoal-rich assemblages. The deposit (4002) contained willow roundwood fragments suggesting a burnt object or structure.

Figure 4: Site 1 during excavation.

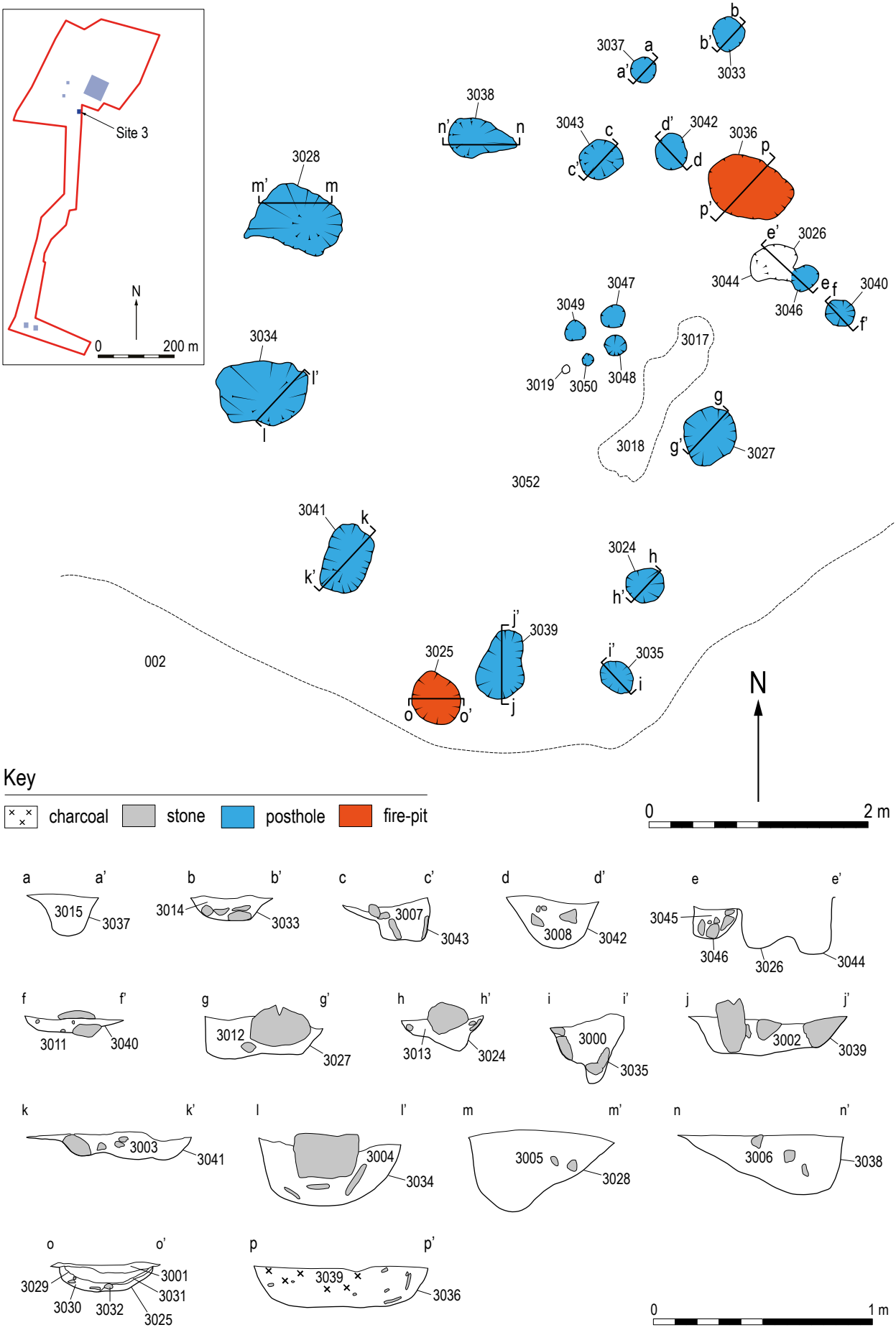

Figure 5: Site 3 plan and sections.

Figure 6: Site 3 during excavation.

Early medieval activity

Site 5

This site (Figures 1 and 7) was located on relatively flat ground and was dominated by a figure-of-eight-shaped (or jelly-baby) structure (Figure 8) which comprised several overlapping curvilinear shallow gullies (5311, 5224 and 5384). The smaller curvilinear gully (5311) to the north-west (the head end) was semi-circular with a large opening to the east. It measured between 0.4 m and 0.64 m in width and it was between 20 and 160 mm in depth. The feature measured 6.8 m by 6.3 m and it enclosed an area of 36.32 m².

The larger enclosed area (the body) was demarked by two curvilinear gullies (5224 and 5384) enclosing a space of 70.89 m² (9.5 m by 9 m). The curvilinear gullies were c. 10.5 m in length, 0.52 m-0.74 m in width and were only 0.15 m deep (Figures 9 and 10). They were filled with dark sandy silt. An opening between the gullies of the larger enclosed area was positioned in the east. Where the smaller area enclosed by gully (5311) opened up into the larger enclosed area, their gullies overlapped at either side but did not join. The junctions between them formed two narrow gaps to the north and south.

Charcoal recovered from the fills of all three gullies revealed botanical assemblages reminiscent of domestic hearth waste, which included not only tree species such as oak, willow and hazel but also traces of barley, hazel nuts and heather. A fragment of birch charcoal from the fill of gully (5224) produced a radiocarbon date of cal AD 597 – 656 (SUERC-97147, 1425 ± 24 BP) suggesting activity within the early medieval period. Artefacts including two medieval flat stone discs (SF 184 and SF 207) and sherds of Iron Age pottery (SF 182, SF 183 and sherd SF 211 indicating a barrel shaped cooking pot, see Prehistoric coarseware, below) were recovered from gullies (5224 and 5384). The Iron Age pottery is residual indicating that occupation probably commenced much earlier on the site.

The interlinking enclosed areas contained numerous pits and postholes (Figure 9). Two adjoining pits (5315 and 5323) dominated the central area of the large area, with the larger (5315) measuring 1.45 m by 1.1 m by 0.25 m. It contained two fills of dark sandy silt; the lower fill (5351) containing numerous sub-rounded stones at its base, several of which appeared heat-fused. Fragments of hammerscale, a by-product of metal smithing was recovered, and suggests the feature could have been the remnants of a bowl furnace. Its upper fill (5024) contained numerous slag prill fragments and fused stone SF 198, as well as further samples of industrial waste which were part of smelting processes (see Industrial waste, below).

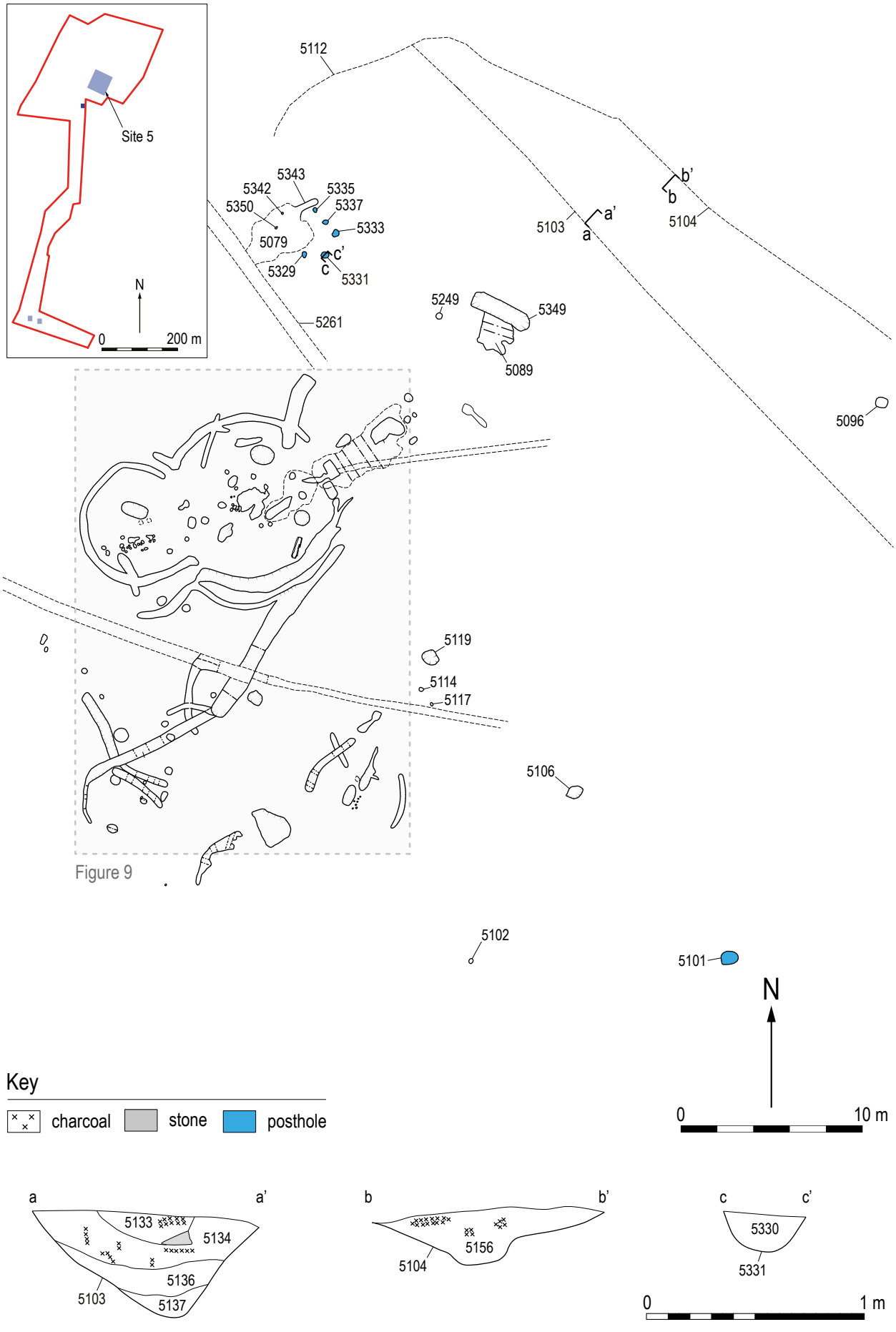

Figure 7: Overall plan of Site 5 features.

Figure 8: Site 5 during excavation.

The smaller pit (5323) to the immediate south of the larger, measured 1.34 m by 0.58 m, but was shallow with a depth of only 0.12 m. It contained both hammerscale and slag prill fragments and several small fragments of fired clay which might be remnants of a clay superstructure used to cover a furnace or form a hearth during the metalworking process. Both pits contained a mixed botanical assemblage comprising of birch, hazel and willow, with oak also recovered from the upper fill of pit (5315). No evidence of specific wood selection for fuel was evident (see Archaeobotany, below). Radiocarbon dating of charcoal retrieved from the fill of the smaller pit produced dates from both the early medieval cal AD 656 – 774 (SUERC-97149) and medieval cal AD 1051 – 1227 (SUERC-97153, 870 ± 24 BP) periods. The latter date is probably an intrusive element.

To the north of both pits was a small arc of postholes (5370, 5266, 5335, 5317, 5369 and 5353) whose posts could have been used to support the roof. They measured between 0.22 m - 0.33 m across with depths between 0.1 m - 0.23 m and were all filled with dark sandy silt except posthole (5335) whose fill was silty clay. Scattered hearth waste was found in all of them and samples obtained from birch charcoal from posthole (5370) provided overlapping radiocarbon date ranges to other postholes within the internal area of the structure of cal AD 708 – 723 and cal AD 772 – 886 (SUERC-97156, 1212 ± 23 BP). This posthole also contained a fragment of re-worked shale bracelet SF 308 within its fill. A further shale bracelet fragment SF 216 was recovered on site although was not associated with any particular feature.

In an arc to the west of the central large pits (5315 and 5323) were a number of features possibly related to the activities in the centre of building: a small pit (5372) with a small posthole (5352) was situated to the north. To their south were small pits and stakeholes (5375, 5362, 5372, 5319 and another posthole (5355). Further to the south-west were a posthole (5391) near the junction of the two halves of the structure, and a larger pit (5234). Two larger pits (5307 and 5228) of unknown function and possibly later intrusive elements were located in the north of the building.

Lying between the junction of the small and large enclosed areas were postholes 5381 and 5393, mirrored by postholes (5325 and 5356) situated between the arms of the gullies at the eastern extent of the larger enclosed area. Radiocarbon dating of one posthole from each entranceway revealed a similar date of use within the early medieval period. Posthole (5393) in the north produced a date range of cal AD 676 – 876 (SUERC-97123, 1248 ± 24 BP) and a date range of cal AD 683 – 880 (SUERC-97154, 1237 ± 24 BP) came from posthole (5325) in the south. The charcoal assemblage recovered from these postholes was also reminiscent of scattered hearth waste and included species such as birch and willow with traces of hazel nutshells. This

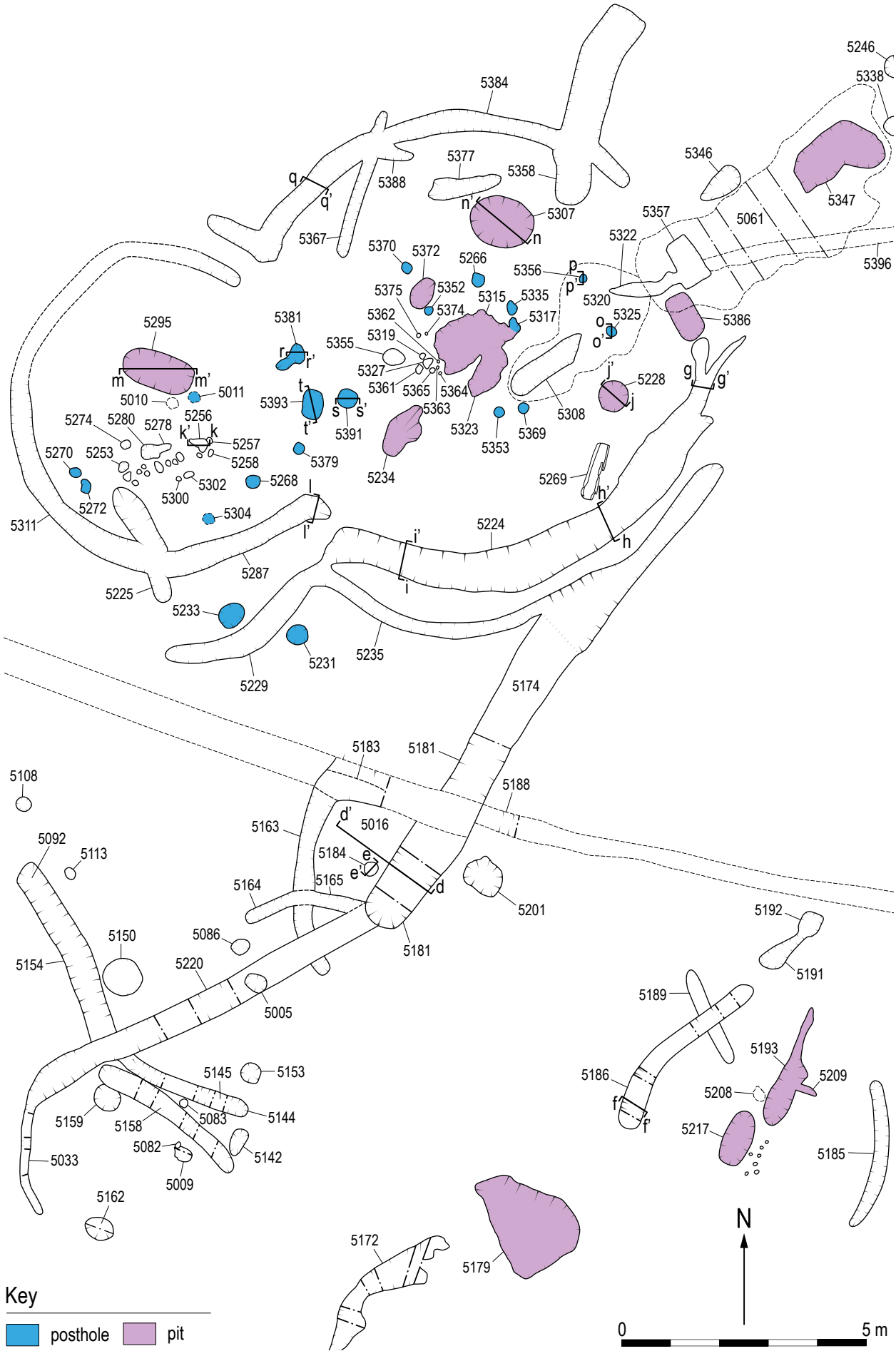

Figure 9: Site 5 detailed plan of the figure-of-eight structure.

waste was probably accidently incorporated into the posts either during the lifetime of the structure, during floor cleaning, or washed in post-abandonment.

A further alignment of postholes was found in the smaller enclosure (5268, 5304, 5311 and 5379) alongside a small cluster of postholes (including 5270, 5272) and pit (5280) and a larger pit (5295), which was also dated to the early medieval period cal AD 671 – 826 (SUERC-97148, 1262 ± 24 BP). The small posthole cluster might have been related to either an earlier structure that was then replace by the figure-of-eight building or was a small structure within the internal area. The larger pit (5295) was near to the central area of the small enclosure although contained only a small charcoal assemblage within its fill which might have become accidently incorporated (see Archaeobotany, below) and could suggest that this feature was also earlier in date.

Lying outside and within the possible eastern entranceway of the large enclosed area was a charcoal-rich dark silty clay deposit (5061) that contained a large amount of alder and lesser amounts of hazel, oak and willow species alongside hazel nutshells. It was found stratigraphically above pits (5347, 5386, 5886 and 5356) and small linear feature (5308), which hinted at changes of layout and activity within and without the structure during its lifetime.

Three relatively small linear features were also identified within the large enclosed area (5269, 5308 and 5377). The former two contained stones lining their sides and bases and the latter had a stone surface. These could represent the very truncated remains of later activities such as field drainage.

South and south-west of the figure of eight structure was a series of intercutting gullies (5033, 5154, 5144, 5158, 5163, 5164 and 5172), one of these (5229) appeared to be continuous with the figure-of-eight curvilinear gully (5224) while (5235) was parallel to it. Both of these could represent a repair or reinforcement to the structure at this side. Most of the curvilinear gullies measured between 3 - 4 m in length, with widths of 0.35 - 0.46 m, and with generally shallow depths of 0.12 - 0.25 m. A prehistoric flint flake scaled knife (see Lithics, below) was recovered from gully (5144) and is probably a residual find accidently incorporated into the gully fill at a later date.

Many of the features on the site contained charcoal assemblages reminiscent of hearth waste and provided similar radiocarbon dates

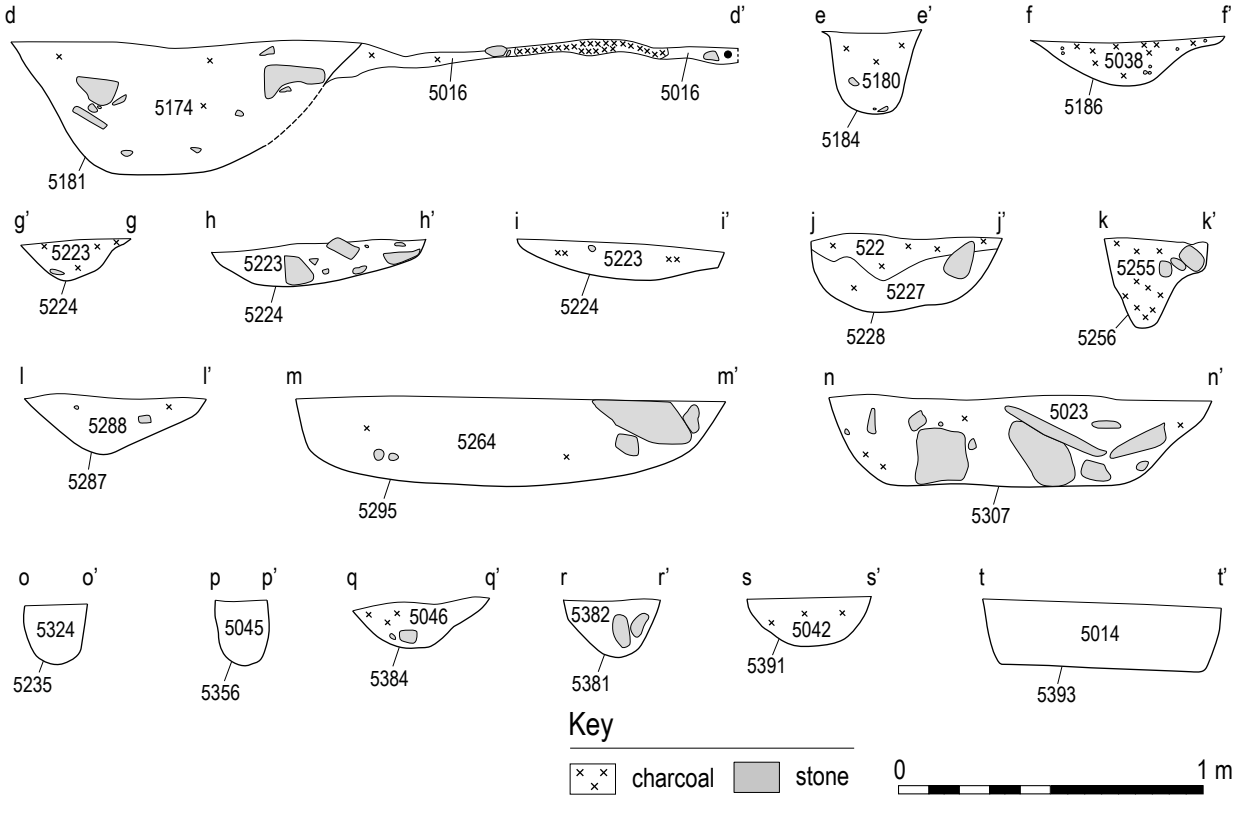

Figure 10: Site 5 sections through features.

between seventh and ninth centuries AD (Table 1 below). A large ditch (5181/5174) truncated several of these features including linear feature (5220), and its fill providing a radiocarbon date of cal AD 1023 – 1157 (SUERC-97145, 970 ± 24 BP), several centuries later than many of the dates obtained from this area. The ditch also contained a stone roundel SF 181 that represents probable later activity on site.

To the south-east of the figure-of-eight structure were two small curvilinear gullies (5185 and 5186) measuring 3.7 - 4 m in length with depths averaging 0.18 m. They were located opposite each other and seemed to enclose a small space measuring 18.09 m², with an opened end to the south-west and north-east. Within the space between them were two centrally placed pits (5193 and 5217): the former contained four charcoal-rich silty fills with lenses of orange burnt silt and, its upper fill (5040) contained a fragment of flint SF 166. The botanical assemblages in both pits comprised hazel, oak, birch, willow, gorse, heather and cereals, including barley, suggesting that these features were domestic hearths. Seven small stakeholes to the immediate south of pit (5217) might have held stakes or rods to possibly support cooking vessels. Some 3 m to its south-west was a dump of hearth waste within a shallow hollow (5179) that radiocarbon dating revealed to have been in use between cal AD 665 – 775 (SUERC-97126, 1282 ± 24 BP).

Towards the north-east of the figure-of-eight structure was a large occupation deposit (5079) that contained fragments of burnt bone and charcoal flecks identified as traces of birch, hazel, willow, oak with hazel nutshells and fucoid seaweed that might have been used in industrial processes (see Archaeobotany, below). Radiocarbon dates from a birch fragment produced dates between cal AD 561 – 644 (SUERC-97129, 1475 ± 24 BP). The deposit also produced lithic fragments SF 95-97, 200, 202-204, three short-end scrapers SF 216, 217 and 255 and numerous flint flakes SF 249-254, 256 attesting to the sites earlier activity. Fragments of animal bone from unidentified large mammals including large ungulate possible cattle/red deer SF 97 and sheep/goat were also recovered along with fragments of pig bone SF 201 and one bone artefact SF 201. On removal of the deposit two stakeholes (5350 and 5342) and a linear feature (543) were revealed.

A possible timber structure comprising five postholes was located to the south-east of the deposit in a rough arc. The fills of the postholes contained a botanical assemblage reminiscent of hearth waste including alder, birch, heather and willow. Birch charcoal from posthole (5333) produced a radiocarbon date between cal AD 666 – 774 (SUERC-97155, 1290 ± 24 BP).

Located to the south-east and away from the main structure was a circular pit (5101), with a flat base, which measured 0.92 m by 0.77 m with a depth of 0.18 m. It contained three fills with the upper fill containing a very worn and broken upper stone from a rotary quern, SF 112 (Figure 11). Large amounts of birch and willow charcoal were recovered from the charcoal assemblage found in the pit, along with traces of alder, oak, hazel and heather-type species. These were reminiscent of hearth waste. A series of radiocarbon dates obtained from the pit lay within the seventh to ninth centuries AD, contemporary with the main site to the west (Table 1).

Figure 11: Rotary quern in pit 5101.

Across the site eleven stone roundels (see Coarse stone, below) were recovered, four from the subsoil surface (SF 58, 79, 80 and 131), four from a silty clay hill wash deposit (5016), which covered many of the features in the western half of the site and included SF 78, 174, 175 and a stone pounder SF 178 along with lithic and bone fragments. A further two roundels SF 207 and SF 84 were found in gullies (5354 and 5224), while linear ditch (5349) contained roundel SF 119 and roundel SF 181 was found in boundary ditch (5180). A small bone needle was also recovered, although unstratified.

Specialists analyses

The radiocarbon dates

A total of 33 radiocarbon dates were obtained from features across Areas 1, 3 and 5. They were submitted to the Scottish Universities Environmental Research Centre (SUERC) for AMS radiocarbon dating (Table 1). All features were interpreted using dates at the 95% probability (2-sigma range) due to its greater accuracy. They revealed that activity on site was not continuous and that areas fell in and out of use during the prehistoric period. There then appears to be a gap in activity following the Iron Age with activity reconvening on site during the early medieval period in area 5 where evidence of domestic and craft activity was uncovered.

Sample No.	Lab Code	$\delta^{13}C$	Area	Context	Species	Radiocarbon Age BP	95.4% probability
15	SUERC-97109 (GU57081)	−29.8‰	1	1007 fill of fire-pit	Betula	2078 ± 2	167 – 39 cal BC 11 cal BC – cal AD 2
4	SUERC-97113 (GU57082)	−27.4‰	1	1010 fill of shallow pit	Alnus cf glutinosa	4658 ± 21	3523 – 3487 cal BC 3470 – 3373 cal BC
8	SUERC-97114 (GU57083)	−25.9‰	1	1017 fill of posthole	Alnus cf glutinosa	2038 ± 24	146 – 141 cal BC 106 cal BC – cal AD 30 cal AD 42 – 60
19	SUERC-97115 (GU57084)	−26.3‰	1	1036 material in hearth 1035	Salix sp	1972 ± 24	38 – 13 cal BC cal AD 3 – 120
22	SUERC-97116 (GU57085)	−25‰ assumed	1	1037 occupation deposits	Corylus cf avellana	2116 ± 20	197 – 51 cal BC
63	SUERC-97117 (GU57086)	−25.9‰	3	3006 fill of posthole 3038	Alnus cf glutinosa	2702 ± 25	902 – 808 cal BC
76	SUERC-97118 (GU57087)	−27.6‰	3	3023 fill of posthole 3048	Corylus cf avellana	2724 ± 25	916 – 813 cal BC
SF 46	SUERC-97119 (GU57088)	−26.0‰	5	2	Betula sp rw 5 rings	1255 ± 24	cal AD 673 – 779 cal AD 787 – 829 cal AD 857 – 871
201	SUERC-97123 (GU57089)	−26.4‰	5	5014 fill of posthole 5393	Alnus cf glutinosa	1248 ± 24	cal AD 676 – 750 cal AD 757 – 779 cal AD 786 – 835 cal AD 849 – 876
151	SUERC-97124 (GU57090	−25.9‰	5	5016 deposit	Salix sp	1294 ± 24	cal AD 664 – 774
SF 99	SUERC-97125 (GU57091)	−25.4‰	5	5019 curved feature	Betula sp	1312 ± 24	cal AD 657 – 708 cal AD 726 – 775
SF 105	SUERC-97126 (GU57092)	−26.1‰	5	5021 a fill of the pit 5179	Betula sp rw <10 rings	1282 ± 24	cal AD 665 – 775
206	SUERC-97127 (GU57093)	−27.0‰	5	5036 fill of gully 5229	Alnus cf glutinosa	1239 ± 24	cal AD 681 – 745 cal AD 761 – 880
180	SUERC-97128 (GU57094)	−25.4‰	5	5041 upper layer of hearth?	Betula sp	1367 ± 24	cal AD 609 – 620 cal AD 639 – 681 cal AD 748 – 759
294	SUERC-97129 (GU57095)	−26.6‰	5	5079 burnt deposit	Betula sp	1475 ± 24	cal AD 561 – 644
101	SUERC-97133 (GU57096)	−26.9‰	5	5095 upper fill of pit 5101	Betula sp	1235 ± 24	cal AD 685 – 744 cal AD 772 – 880

Table 1: The radiocarbon dates.

Sample No.	Lab Code	$\delta^{13}C$	Area	Context	Species	Radiocarbon Age BP	95.4% probability
102	SUERC-97134 (GU57097)	−25.5‰	5	5100 middle fill of pit 5101	Betula sp	1210 ± 21	cal AD 710 – 712 cal AD 772 – 886
117	SUERC-97135 (GU57098)	−26.6‰	5	5105 Quad A lower fill of pit 5101	Salix sp	1315 ± 24	cal AD 656 – 708 cal AD 727 – 775
117	SUERC-97136 (GU57099)	−25.4‰	5	5105 Quad B lower fill of pit 5101	Salix sp	1271 ± 24	cal AD 668 – 777 cal AD 792 – 802 cal AD 810 – 820
117	SUERC-97137 (GU57100)	−27.0‰	5	5105 Quad C lower fill of pit 5101	Betula sp	1218 ± 24	cal AD 706 – 737 cal AD 772 – 885
117	SUERC-97138 (GU57101)	−26.2‰	5	5105 Quad D lower fill of pit 5101	Salix sp	1208 ± 24	cal AD 709 – 721 cal AD 772 – 888
127	SUERC-97139 (GU57102)	−26.6‰	5	5145 fill of linear feature 5144	Betula sp	1292 ± 24	cal AD 665 – 774
128	SUERC-97143 (GU57103	−27.2‰	5	5146 fill of posthole	Betula sp	1320 ± 24	cal AD 654 – 707 cal AD 736 – 775
130	SUERC-97144 (GU57104)	−25.4‰	5	5155 fill of pit 5159	Betula sp	1300 ± 24	cal AD 661 – 775
316	SUERC-97145 (GU57105)	−26.6‰	5	5174 fill of ditch 5181	Betula sp	970 ± 24	cal AD 1023 – 1054 cal AD 1064 – 1068 cal AD 1073 – 1157
191	SUERC-97146 (GU57106)	−25.2‰	5	5218 fill above hearth stones 5216 in fire pit 5217	Betula sp	1434 ± 24	cal AD 590 – 655
196	SUERC-97147 (GU57107)	−27.0‰	5	5223 fill of curvilinear gully 5224	Betula sp	1425 ± 24	cal AD 597 – 656
254	SUERC-97148 (GU57108)	−25.0‰	5	5279 fill of linear feature 5280	Betula sp	1262 ± 24	cal AD 671 – 778 cal AD 788 – 826
244	SUERC-97149 (GU57109)	−27.4‰	5	5306 fill of pit 5323	Betula sp	1322 ± 19	cal AD 656 – 704 cal AD 740 – 774
244	SUERC-97153 (GU57110)	−26.5‰	5	5306 fill of pit 5323	Corylus cf avellana	870 ± 24	cal AD 1051 – 1079 cal AD 1154 – 1227
261	SUERC-97154 (GU57111)	−26.7‰	5	5324 fill of posthole 5325	Betula sp	1237 ± 24	cal AD 683 – 744 cal AD 771 – 880
269	SUERC-97155 (GU57112)	−26.2‰	5	5332 fill of posthole 5333	Betula sp	1290 ± 24	cal AD 666 – 774
308	SUERC-97156 (GU57113)	−26.2‰	5	5371 fill of posthole 5370	Betula sp	1212 ± 23	cal AD 708 – 723 cal AD 772 – 886

Table 1 (continued): The radiocarbon dates.

Archaeobotany

By Susan Ramsay

Introduction

This report details the processing, analysis and interpretation of carbonised botanical remains recovered from samples taken during the excavations. In total, 132 bulk samples were analysed for the presence of botanical remains, along with 8 spot finds of charcoal.[1] [2]

Results

The results are discussed by in the same order as presented in the Data Structure Report (Kilpatrick, 2016) i.e. by Site and then by feature groupings within each site. The full results are presented in the tables which form part of the project archive.

Site 1

Site 1 was located on a flat terrace on the hillside and comprised two groups of pits and postholes; a southern group and a northern group.

Southern group

The southern group of features included a linear feature, a few pits and postholes and a hearth. The linear feature (1024) contained three fills (1020, 1025 and 1031) that produced small amounts of mixed charcoal, a few carbonised barley grains and evidence of burnt soil. This suggests that the remains of hearth waste had been dumped into it. There is a suggestion that it may have been a structural feature but the charcoal assemblage does appear to contain carbonised structural remains. The wide range of charcoal types present, together with barley, would be in keeping with the suggested Bronze Age date for this group of features.

Pit (1012/1009) was located to the north of linear feature (1024) and produced fragments of possible prehistoric pottery but no identifiable carbonised remains. A further pit (1021/1022) was located just to the south of linear feature 1024 but produced only traces of willow charcoal, whilst a posthole (1023/1027), produced only a trace of birch charcoal.

A deposit of hearth material (1007) was located on a flat stone, and produced a mixed charcoal assemblage of birch, hazel, heather type and willow, together with a few carbonised grains of barley, dated between 167 cal BC to cal AD 2 (SUERC-97109, 2078 ± 2 BP). This assemblage is similar to that seen deposited in the linear feature (1024).

Northern group

A larger number of features were located very slightly to the north of the southern group. The majority of these features were postholes (1042, 1046 and 1053), but their fills produced only small amounts of mixed charcoal that was probably the remains of scattered hearth waste rather than evidence for the original structural posts.

Within the central area of this northern group of features was an occupation deposit (1037), which produced a significant amount of charcoal. Willow, birch, hazel, heather type and cherry type charcoal were all present, together with carbonised barley, possibly emmer wheat and a single grain of oats. The oat grain may be from weeds within a barley or wheat crop rather than being evidence of a crop in their own right This material had a date range of 197 to 51 cal BC (SUERC-97116, 2116 ± 20 BP). Above this occupation deposit was a layer of stones (1035) that may be a hearth base, with a small deposit of hearth material (1036) immediately to the west of the stones. This hearth material was

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1 The bulk samples were processed by flotation, using standard methods and sieves of mesh diameter 1mm and 500µm for flots and 2mm and 4 mm for retents from flotation.

2 Dried flots and sorted retents were examined using a binocular microscope at variable magnifications of x4 - x45. For each sample, estimation of the total volume of carbonised material >4mm was made and all charcoal >4mm was identified unless this proved impractical in which case a known percentage of the charcoal was identified and this percentage is noted in the results tables. All carbonised cereals, seeds and other plant macrofossil remains were also removed and identified.

The testa characteristics of small seeds and the internal anatomical features of problematic charcoal fragments were further identified at x200 magnification using the reflected light of a metallurgical microscope. Reference was made to Schweingruber (1990) and Cappers *et al.* (2006) to aid identifications. Vascular plant nomenclature follows Stace (1997) except for cereals, which conform to the genetic classification of Zohary and Hopf (2000).

dominated by willow charcoal, with a smaller amount of birch also present. No carbonised cereal grains were recovered from the hearth material, but a sample of willow produced a date range of 38 cal BC to 120 cal (SUERC-97115, 1972 ± 24 BP).

Immediately to the east of occupation deposits (1037) were two postholes (1018 and 1019). The fill (1017) of posthole (1019) produced a small amount of mixed charcoal, similar to that recovered from the postholes discussed above. The charcoal produced a date range of between 146 cal BC to cal AD 60 (SUERC-97114, 2038 ± 24 BP).

To the north-west of the main concentration of features was a pit (1013) that produced lithic fragments and a sherd of prehistoric pottery. Its fill (1010) contained significant amounts of alder charcoal, with smaller amounts of birch and hazel, together with numerous fragments of hazel nutshell. This assemblage appears quite different to the carbonised material recovered from the concentration of features discussed above and so may represent a separate period of occupation. The numerous hazel nutshell fragments also suggest an earlier prehistoric date for this feature, as was confirmed by a radiocarbon date of between 3523 to 3373 cal BC (SUERC-97113, 4658 ± 21 BP).

A few other features were also located within this site. Two hill-wash deposits (1001 and 1006) produced small amounts of birch and oak charcoal, with traces of barley and wheat also recorded. The fill (004) of feature (003) contained small amounts of alder and oak charcoal, but nothing to suggest a date for it.

Site 3

Excavations here located eleven postholes that formed a D-shaped structure, with the largest postholes located on the western side of the structure. The fills of postholes (3025/3001, 3034/3004, 3038/3006 and 3027/3012) produced mixed carbonised assemblages, with charcoal of alder, birch, hazel, oak and willow all represented, together with a single fragment of hazel nutshell in fill (3001). This suggests the remains of scattered hearth waste that has trickled down into the posthole fills. However, posthole 3027 also contained a large amount of oak charcoal, which suggests that it may additionally contain the remains of an original oak post. The fill of posthole (3038) produced a radiocarbon date range of 902 – 808 cal BC (SUERC-97117, 2702 ± 25 BP).

A smaller group of postholes, including (3033 and 3042), was located at the north-east side of the D-shaped structure. Their fills (3014 and 3008) again contained mixed charcoal assemblages, but in this case fill (3008) additionally contained very large amounts of alder charcoal. As with the main structural postholes, it appears that these postholes contain scattered hearth waste but that posthole (3042) may also contain the remains of an original alder post. A pit (3036) was also located to the north-east of the main structure. Its fill (3609) produced a mixed charcoal assemblage of alder, birch, hazel and oak charcoal, suggesting the remains of hearth waste.

Within the D-shaped structure were four small postholes (3047, 3048, 3049 and 3050) and a stakehole (3019). Their fills (3022, 3023, 3021, 3020 and 3019) produced mixed charcoal assemblages (alder, birch, hazel, oak and willow) with fragments of hazel nutshell and a few grains of carbonised barley and emmer wheat. This is consistent with the remains of domestic hearth waste with evidence for preparation of foodstuffs. The fill of posthole (3048) produced a date range of 916 – 813 cal BC (SUERC-97118, 2724 ± 25 BP).

Two occupation deposits (3017 and 3018) were also located within the interior of the D-shaped structure. These also produced mixed charcoal assemblages with a few carbonised barley grains and a fragment of hazel nutshell. This carbonised material is similar to that seen within the interior posthole fills and may have the same origin.

Site 4

The site comprised two features: pit (4003) and a charcoal rich deposit (4002). The fill (4004) of pit (4003) produced very significant amounts of charcoal, with willow the commonest type identified, but with birch, hazel and oak also present. In addition, 657 carbonised cereal grains also were recovered but over 60% of these grains were too poorly preserved to be further identifiable. Just over 30% of the cereals were

either barley or cf barley and just over 5% were identifiable as oats. A few carbonised seeds of sedges and rush suggest burning of vegetation that was growing on damp ground rather than weeds of a cereal crop.

The charcoal-rich deposit (4004) contained a very different carbonised assemblage. It produced very large quantities of charcoal, including obvious roundwood fragments, all of which were identifiable as willow. This may be a hearth deposit, as suggested in the DSR, but the large amounts of willow roundwood might be more indicative of some form of willow structure or object having been burned.

Site 5

Site 5 was located in the south-eastern area of the northern field, on flat ground that was slightly raised from the surroundings. The site consisted of a number of curvilinear gullies with postholes and pits. Possible Iron Age pottery and industrial waste may suggest a date for these features.

The central area

A large figure-of-eight structure was located within the central part of this site, which comprised two inter-connected sub-circular gullied features. The smaller part was formed by gullies (5311 and 5287). Its fills (5312 and 5288) produced small amounts of birch and willow charcoal and so do not provide evidence for what structural elements may have been contained within them.

The larger gully of the figure-of-eight structure was formed by gullies (5224 and 5384). Their fills (5223 and 5046) produced very similar carbonised assemblages of birch, hazel, heather type, oak and willow, together with traces of cereal grain (both barley and oats) and a few fragments of hazel nutshell. These assemblages are consistent with domestic hearth waste that was dumped or trickled down into the gullies. A sample of the fill of gully (5224) was radiocarbon dated to cal AD 597 – 656 (SUERC-97147, 1425 ± 24 BP).

Within the figure-of-eight structure was a number of pits and postholes. The smaller part of the structure contained a pit (5295/5264) but this produced only small amounts of mixed charcoal that were probably accidentally incorporated into the pit fill from general background scatter rather than deliberately deposited. At the southern side of this structure were seven postholes, but the fills examined (5244, 5271, 5273 and 5299) produced only small amounts of mixed charcoal, probably from general domestic scatter.

A number of other features were also located within this area, although only two, (5257 and 5280) were investigated further. The fill (5262) of pit (5257) produced only traces of birch and willow charcoal, whilst the fill (5279) of pit (5280) contained slightly larger amounts of birch, hazel and willow charcoal. The latter was radiocarbon dated to cal AD 671 – 826 (SUERC-97148, 1262 ± 24 BP).

At the junction between the large and small enclosed spaces were a further group of five postholes. Three of these (5268, 5381, 5391 and 5393) were investigated further. Their fills (5267, 5382, 5042 and 5014) produced small amounts of mixed charcoal, a few carbonised cereal grains and fragments of hazel nutshell, suggesting scattered domestic hearth waste.

Within the larger part of the structure were further pits, postholes and linear features. Three slots (5269, 5308 and 5377) were located in the eastern half of the structure and may have held partitions. Their fills (5248, 5043 and 5376) all contained small amounts of birch and willow charcoal, with traces of hazel also recovered from (5376). Although willow and hazel could be used for making wattle panels, the small amounts of charcoal present do not suggest the remains of partitions had been burnt *in situ*.

To the east of the entranceway into the structure were postholes (5325 and 5356). Only the fill (5324) from (5325) was examined. It produced small amounts of birch and willow charcoal together with traces of barley and hazel nutshell. This is the remains of scattered hearth waste rather than evidence of the original post. A sample of betula charcoal was dated to cal AD 683 – 880 (SUERC-97154, 1237 ± 24BP).

Pits (5228 and 5307) were also located at this entranceway. Their fills (5227 and 5023) produced small amounts of mixed charcoal with traces of cereal grain in (5227). These assemblages are consistent with the carbonised hearth waste recovered from the adjacent posthole (5325).

The central area of the large internal space contained two pits (5315 and 5323). The lower fill (5351) of pit (5315) did not contain any charcoal but the upper fill (5024) produced small amounts of birch, hazel, oak and willow. Fragments of industrial waste were also recovered from (5024) but there is no evidence for the selection of fuel that would often be associated with an industrial hearth. The fill (5306) of pit (5323) also produced a mixed assemblage of birch, hazel and willow charcoal with significant amounts of industrial waste, and was radiocarbon dated from cal AD 656 – 774 (SUERC-97149, 1322 ± 19) to as late as cal AD 1051 – 1227 (SUERC-97153, 870 ± 24 BP).

The above pits were surrounded by postholes, of which (5355, 5335, 5317, 5369 and 5370) were investigated for the presence of carbonised remains. The fills (5049, 5334, 5316, 5368 and 5371) produced only small amounts of mixed charcoal that probably represents scattered hearth waste. There is no evidence for posts having been burnt *in situ*. The fill of posthole (5370) produced a date range of cal AD 708 – 886 (SUERC-97156, 1212 ± 23 BP).

Leading from the north-east entrance of the larger enclosure was a large charcoal-rich deposit (5061), dominated by birch charcoal but with alder, hazel, oak and willow also present, with fragments of hazel nutshell. This is further evidence for the presence of hearth waste. A pit (5346) was located immediately to the north of deposit (5061). Its fill (5345) contained a significant amount of oak charcoal, with smaller amounts of birch and willow also present. The dominance of oak could suggest fuel waste from an industrial hearth. A small group of postholes was located at the eastern end of deposit (5061). The fill (5236) of posthole (5246) produced a very similar carbonised assemblage to that identified from deposit (5061) and so they may have a common origin.

A curvilinear gully (5235) followed the outer edge of the large gully (5224) to the structure but its fill (5037) produced only traces of mixed charcoal. A further curvilinear gully (5229) was located at the west end of gully (5235). Its upper fill (5036) only contained small amounts of mixed charcoal, probably from background hearth scatter. It was dated between cal AD 681 – 880 (SUERC-97127, 1239 ± 24 BP). At the side of this gully was a posthole (5231/5230), with further evidence of hearth waste but with the addition a few cereals (including barley) and hazel nutshell, suggesting domestic rather than industrial origins.

A number of spot finds of charcoal were made from the subsoil surface during excavation. These fragments included birch and larch charcoal. Birch would have grown locally but larch is not native in the UK and so is evidence of the use of driftwood, rather than local wood. These charcoal fragments may not be contemporaneous with the rest of the features in this area.

The south-west area

Excavations in the southwest part of Site 5 revealed four inter-cutting curvilinear gullies, pits and stakeholes. The fill (5087) of gully (5158) contained a small amount of mixed charcoal, with a single grain of barley. The fill (5145) of gully (5144) produced only small amounts of alder charcoal and a fragment of hazel nutshell. It was dated to cal AD 665 – 774 (SUERC-97139, 1292 ± 24 BP). Gully (5158) was truncated at its western end by pit (5159), with fill (5155) that also contained small amounts of mixed charcoal and fragments of hazel nutshell. These were dated between cal AD 654 – 775 (SUERC-97143, 1320 ± 24 BP). Posthole (5153) was also located at the western end of groove (5158). Its fill (5146) produced only traces of birch and heather type charcoal with a single barley grain, dated to cal AD 661 – 775 (SUERC-97144, 1300 ± 24 BP). These assemblages probably represent scattered hearth waste rather than providing evidence of the original structural materials.

To the north of the above features was a further cluster of gullies and postholes. The fills (5016 and 5161) of gully (5163) produced mixed charcoal assemblages, with traces of cereal grain, hazel nutshell and burnt bone and soil. This is consistent with hearth waste. The fill (5180) of posthole (5184) only produced a single fragment of heather type charcoal. A further section of ditch (5181/5174) again produced only traces of mixed charcoal, but also a radiocarbon date range of cal AD 1023 – 1157 (SUERC-97145, 970 ± 24 BP).

The south-east area

This area was also dominated by a series of curvilinear ditches or gullies. Gullies (5186 and 5185) created a partial enclosure. The fill (5038)

of gully (5086) produced significant amounts of birch and willow charcoal with traces of hazel, barley and hazel nutshell, suggesting domestic hearth waste. However, the fill (5035) of gully 5185 produced only traces of birch charcoal.

Within the area enclosed by the above gullies were two pits (5193 and 521), located beneath a deposit of charcoal. It has been suggested that these features are both hearths. Pit (5217) had a flat base with a stone lining and was filled by (5041 and 5218). The carbonised assemblages contained significant amounts of birch and willow charcoal, but with hazel, heather type, oak and gorse/broom also present, together with carbonised cereals and fragments of hazel nutshell. The fill (5040) of pit 5217 contained a similar, if slightly less diverse, charcoal assemblage, with traces of cereal and hazel nutshell also present. However, the basal fill (5207) of pit (5217) contained only traces of oak charcoal. The upper fill of pit (5217) produced a radiocarbon date range of cal AD 590 – 655 (SUERC-97146, 1434 ± 24 BP). The carbonised assemblages from these pits are in keeping with use as domestic hearths.

To the west of the structure was a curved linear deposit (5172), with a fill (5019), which produced very significant quantities of birch and willow charcoal. Birch wood is not commonly used for structural components and so this deposit is more likely to be the remains of hearth waste, perhaps raked out to form the deposit. It was dated to cal AD 657 – 775 (SUERC-97125, 1312 ± 24 BP).

Immediately to the north-east was pit (5179) that contained four fills (5020, 5021, 5177 and 5178). The carbonised assemblage produced very significant amounts of birch and willow charcoal, indeterminate bark and small amounts of hazel, heather type and hazel nutshell. There was no evidence of the pit being affected by heat and so it appears that this material was dumped into the pit. It may represent the same burning episode as that seen in (5019). Fill (5020) was dated to cal AD 665 – 775 (SUERC-97126, 1282 ± 24 BP).

In the south-east of this area, was an isolated pit (5101) that contained three fills (5095, 5100 and 5105). The fills produced charcoal assemblages dominated by large amounts of birch and willow charcoal, with trace quantities of alder, hazel, heather type and oak also present. A broken quern stone was also located in the base of this pit and it appears it was used for the disposal of waste material. Six radiocarbon dates were produced from the fills suggesting the pit was in use from cal AD 656 to as late as cal AD 888 (see Table 1).

The north-west area

The north-west area was dominated by a probable occupation deposit (5079), which contained charcoal, lithics and fragments of animal bone. The charcoal assemblage comprises significant amounts of birch, hazel and willow charcoal with traces of oak and hazel nutshell also found. In addition, there were fragments of fucoid seaweed also identified from this area. Burnt seaweed may indicate industrial processes were being undertaken in this location. This deposit was radiocarbon dated to cal AD 561 – 644 (SUERC-97129, 1475 ± 24 BP).

Three postholes (5331, 5333 and 5337) were positioned in an arc, possibly indicating a structure had been present. Their fills (5330, 5332 and 5336) produced small amounts of alder, birch, heather type and willow, suggesting scattered hearth waste across the site. The fill of posthole (5333) was radiocarbon dates to cal AD 666 – 774 (SUERC-97155, 1290 ± 24 BP).

Post-medieval activity

A possible section of drainage ditch (5103) was located at the northern boundary of the site. However, its fill (5070) produced only some evidence of burnt soil but no other identifiable carbonised remains.

Discussion

The excavations at Coultorsay, provided evidence of occupation from the Neolithic to the Iron Age and into the early medieval period.

The earliest occupation was seen at Site 1, with a cluster of pits and postholes probably representing a small settlement and datable by sherds of Bronze Age pottery. This site generally produced mixed charcoal assemblages, with occasional cereal grains and only one pit context with hazel nutshell. This material is considered to be the remains of scattered domestic hearth waste that was probably common across the site.

None of the linear features or postholes provided any evidence for structural remains and so it is not possible to say anything further about the wood used to build the structures. The presence of carbonised cereal grains shows that this site was most likely domestic in nature but the relatively low numbers of cereal grains recorded makes it impossible to say whether cereal processing was being undertaken in this area. The single pit (1013) contained the only concentration of hazel nutshell from this site, suggesting that it may represent a different, possibly earlier, period of occupation.

Site 3 contained the D-shaped timber structure but there was no artefactual evidence to indicate a date for it. Only one posthole (3027), contained possible evidence for structural material, and might suggest that the supporting posts were made from oak. There is no other definitive evidence to suggest whether the walls were wattle and daub or planking, or what material may have formed the roof. The possible remains of an alder post were identified from posthole (3042) but this was located to the north-east of the main D-shaped structure and so may not be contemporaneous. The majority of the contexts examined contained very mixed charcoal assemblages, with alder, birch, hazel, oak and willow all represented. Alder was more frequent in contexts from Site 3 than was seen from Site 1. This may represent a change in environmental conditions e.g. becoming wetter, favouring the growth of alder over other species. As with Site 1, only trace amounts of cereal grain were recovered from this site, with barley and emmer wheat both represented, together with traces of hazel nutshell. It was interesting to note that all the cereal and nutshell evidence was found within a cluster of postholes/deposits inside the structure, with no evidence for cereals or nutshell in the main structural postholes or the features outside the main structure. This suggests that domestic food processing may have been undertaken within this structure.

Site 4 showed potential for the burning of a willow structure or wicker container as there was a significant concentration of willow charcoal present within deposit (4002) but nothing else. The only other carbonised assemblage from this site was a mixed charcoal assemblage with a large number of carbonised cereal grain from pit (4003). Much of this cereal grain was indeterminate, suggesting either burning at high temperatures or multiple episodes of burning. The bulk of the identifiable cereal grain was barley, with smaller amounts of oats. The oat grains were generally quite small, possibly suggesting weeds within the barley crop, rather than being a crop in their own right.

Site 5 contained the greatest concentration of features found at Coultorsay, with finds suggesting that these may be Iron Age/early medieval in date. Industrial waste was found within several pits in this area suggesting a potential industrial use for this area but there was little evidence from the carbonised assemblages to indicate deliberate selection of wood types to fuel industrial hearths. Usually, either oak or alder is preferred for either burning directly or for making charcoal to then provide the high temperatures required for metal working.

None of the structural features provided definitive evidence for their original timbers having been burnt *in situ* and there was no carbonised organic material that appeared to be either roofing or flooring.

Small amounts of cereal grain and hazel nutshell were recorded from this site but never in significant quantities. This does suggest some domestic activity was happening on the site but it does not seem very intensive and so this could support a mainly industrial focus for this site. Small amounts of fucoid seaweed were also identified from Site 5. Seaweed is burned to produce ash, which can then be used for industrial purposes because of the high concentrations of certain elements contained within it. It can also be used for fertiliser for the same reasons but it is not possible to say whether the seaweed from this site had an industrial or agricultural use.

Overall, the carbonised assemblages from Coultorsay show that mixed deciduous woodland was available in the local area from at least the Bronze Age to the Iron Age. Oak does not seem to have been particularly common but birch and willow were widely available for use as fuel. In contrast with Site 3, alder was not commonly seen within the hearth assemblages of Site 5, suggesting that environmental conditions may have changed through time and that alder was perhaps more common when environmental conditions were wetter.

The mammal bone

By Catherine Smith

Introduction and condition of material

A small assemblage of mammal bone, all of it affected by heat, was recovered from the excavations at Coultorsay. All of the hand-recovered bone fragments were calcined and white in colour throughout their thickness, with only a few exceptions having a blackened core. Surfaces were cracked and crazed and the bone texture ranged from dense to crumbly. Fragments recovered in post-excavation from sieving were of a similar appearance but were of course only a few millimetres in size.

Exposure to high temperatures can have a beneficial effect on bone preservation in otherwise unfavourable, usually acidic soil conditions, but in general the fragments will be fairly small and although recognisable as bone may not preserve any diagnostic features allowing identification of the particular element or species. The identification rate at Coultorsay was therefore poor and with only a few exceptions most of the fragments could be categorised only as mammalian in origin (Table 2). Those pieces which could be identified to particular bone tended to be small, dense skeletal elements, for example sesamoids and tarsals of cattle/large ungulates and the distal ends of pig metapodia.

Categorisation

In most cases, the bone has been categorised as indeterminate mammal (IM) in the catalogue. Where relative body size could be estimated, usually on the basis of cortical thickness of long bone fragments (LBSF), the terms large or medium mammal (LM, MM) are used. If the bone was thought to have come from cattle or red deer it was described as large ungulate (LU) and if determined only as sheep/goat/roe deer, it was described as small ungulate (SU).

Results

The accompanying catalogue (Table 3) lists the 47 hand-recovered bone fragments by context, small find number, species and condition. Bone recovered from sieving is listed separately as samples in the table. Weights are those stated for the complete contents of the sample bags.

SF no	Sample no	Context	Species	Bone
97		5079	sheep/ goat	ulna
97		5079	SU	skull fragment
97		5079	LU	cf tibia
62		2	sheep/ goat	scapula
	128	5146	cattle	tarsal
	151	5016	sheep/ goat	calcaneum
	169	5041	pig	skull fragments
	179	5041	pig	metapodial III/IV
	196	5223	pig	metapodial II/V
	201	5014	pig	metapodial II/V
	206	5036	LU	sesamoid
	218	5223	LU	rib shaft
	256	5024	LU	?sesamoid
	269	5332	LU	sesamoid
	294	5079	SU	rib shaft
	210	5061	cf fish	cf rib
	170	5041	cf bird	cf fibula

Table 2: Summary of identifiable fragment.

Bone fragments with the most firm identifications are listed in Table 2. As noted above, most of the hand-recovered fragments were, however, identifiable only as mammalian in origin and are categorised as indeterminate mammal (43 fragments). Of these, eight were further categorised as large mammal long bone shaft fragments, on the basis of size and cortical thickness. A further two fragments were positively identified as sheep/goat and consisted of one fragment of ulna and one of scapula SF 97 from context (5097) and SF 62 from context (002), while another, SF 97 in context (5079), may have been part of a vertebral or skull articulation from a small ungulate.

One fragment, SF 97, probably from a tibia shaft, was thought to be from a large ungulate, most probably cattle or red deer from context (5097).

Breakdown by context indicates that (5079), a large deposit of burnt occupation debris and (002) a subsoil surface produced the greatest numbers of fragments (12 and 8 respectively). Samples from the deposit also included abundant small bone fragments.

Sieving recovered mainly unidentifiable mammalian fragments[3], but notably also three fragments of pig metapodia (Samples 179, 196, 201) and two unfused skull fragments from a juvenile or immature animal (Sample 169). Pig bones had not been recovered by hand-excavation. Both fused and unfused distal ends of metapodia were recovered, indicating that two individuals, one younger and more one mature, were present.

Also retrieved from sampling were a tarsal and sesamoid fragments from large ungulate, most likely cattle (Samples 128, 206 256, 269), a small ungulate rib (Sample 294) and a large ungulate rib (Sample 218). The latter bore abraded marks which are possibly evidence of knife cuts but due to the poor surface condition of the bone, it is not possible to be more definite.

Context	Small find/ sample	Species	No of fragments	Element	Whether calcined	Colour	Condition	Other comments
5014	103	IM	1		calcined	white	crazed	
5016	132	IM	1	LBSF	calcined	white	crazed	large mammal
5016	179	IM	1	LBSF	calcined	white	crazed	large mammal
5016	179	IM	3		calcined	white	crumbly	
ctx 002	104	IM	1		calcined	white	glossy	
5041	71	IM	2	LBSF	calcined	white	crazed	large mammal
5041	71	IM	3		calcined	blackened core	crumbly	
5041	71	IM	2		calcined	white	crumbly	
ctx 002	134	IM	3		calcined	white		
5079	201	IM	1	LBSF	calcined	white	crazed	large mammal
5079	97	?LU	1	?tibia	calcined	white		?large ungulate
5079	97	IM	3	LBSF	calcined	white		large mammal
5079	97	IM	5	LBSF	calcined	white		
5079	97	?SU	1	?skull/ vert	calcined	white		possibly sheep
5079	97	sheep/ goat	1	ulna	calcined	white		articular
5092	127	IM	5		calcined	white	crumbly	abraded
5092	127	IM	1		calcined	blackened core	crumbly	abraded
5267	188	IM	1	LBSF	calcined	white	crazed	
5359	196	IM	3		calcined	white	disintegrating	very small frags
002	52	IM	1	worked	calcined	white		needle fragment
002	85	IM	1		calcined	white		
002	62	sheep/ goat	1	scapula	calcined	white		glenoid fused
002	88	IM	5		calcined	white		
		Total	47					

Abbreviations

IM indeterminate mammal
LBSF long bone shaft fragment

Table 3: Animal bone catalogue for Site 5.

3 The detail of the sieving results can be found in the project archive.

Bone needle SF 52 from context 002, Site 5

with additional note by Beverley Ballin Smith

A fragment of a fine bone needle or bodkin SF 52, calcined by heat and broken across the eye at its widest part and across the shaft, was recovered from the subsoil surface (002). The shank was oval in cross-section and distorted by heat (Figure 12). The fragment retained no characteristics which would allow determination of the particular bone element from which it was made.

Figure 12: SF 52 bone needle fragment.

The surviving fragment does not suggest the actual size or shape of the completed tool or the length of its eye, which could have been several mm longer. Its shaft could have been round or flat. The pointed end of the shaft may have been blunt and not pointed like a steel sewing needle, suggesting the term bodkin rather than needle for the tool. Until the mass production of sewing needles in the sixteenth century AD (Meinke 2012) it is likely that a sturdy bone bodkin would have been used to sew together homespun coarse cloth with a more open weave, or thread a cord through it. It is not possible to date this piece, which could be of any date from the early Bronze Age to the medieval or post-medieval period. However, given the number of radiocarbon dates from the Pictish/early medieval period, it seems most logical that the object is of the same date.

Dimensions of the surviving part: maximum length 14 mm, maximum width 5.4 mm, maximum thickness 3.4 mm, and internal width of the eye 2.2 mm.

Bone needles and awls are known to have been manufactured from pig fibulae, long thin bones from the hind limb, which are easily modified by trimming the dense proximal part of the shaft to form a durable point, while the softer distal end can be easily pierced to form the eye of the needle. Alternatively, a sliver of cortical material from any straight mammalian long bone shaft such as the metapodia (cannon bones) may also be used. Antler may also be used in needle manufacture and although there is no definite evidence this is the case for SF 52 this is also a possibility. Red deer were present on Islay in the prehistoric period in higher proportions than that found at sites of comparable date on the Scottish mainland (Serjeantson *et al.* 2005, 167).

Discussion

All of the bones were reduced to small calcined fragments due to exposure to heat. Site evidence points to industrial activity, perhaps metalworking, resulting in burnt deposits and charcoal fragments (5079) from which burnt bone fragments were also recovered. Such burning may therefore have been accidental. Other deposits from which burnt bones were retrieved by hand included postholes (5267 and 5014), the upper layer of pit (5041) and the fill of linear feature (5359). Post-excavation sieving resulted in the recovery of fragments from the fills of pits (e.g. 5217), gullies (e.g. 5223) and postholes (e.g. 5014). Quantities recovered in this way were very small, the least being under 0.01 g in weight, and most weighing under 1 g. Samples from the fill of pit 5217 were significantly larger and totalled approximately 76 g (samples 169, 170, 179, 180, 183 and 184). Another abundant sample (294) weighing 53 g was recovered from burnt deposit 5079.

Whether the burnt bones were associated with accidental industrial burning or merely disposal of bones within domestic hearths and later deposition in pits and postholes is not possible to determine.

However, the bone assemblage, although very small, is at least an indicator that domestic animals such as sheep/goats, possibly cattle and pigs were being kept at or near the site, as might be expected. Species recorded at Kilellan Farm, Ardnave, dating from the early Bronze Age and middle Iron Age were mainly cattle and sheep, in almost equal proportions (Serjeantson *et al*. 2005, 151). In the early Bronze Age of Kilellan, only a single pig bone was present but by the middle Iron Age the number of pigs seems to have increased (ibid, 153, 160, 166-7). Pig bones were not found in the hand-recovered contexts at Coultorsay, but several positively identified metapodial and skull fragments, indicating both adult and juvenile/immature animals, were recovered during post-excavation sieving.

Red deer bones were also present at Kilellan, more frequent in the early Bronze Age and lower middle Iron Age midden than in the upper MIA midden, indicating a possible decrease with time (ibid 156, 164,) but were not identified at Coultorsay, again probably due to the small sample size. However, it is very likely that the inhabitants at Coultorsay would have had access to the same population of red deer and would have exploited it for meat and antler, a most valuable resource for producing durable artefacts.

The lithics

By Torben Bjarke Ballin

Introduction

All lithics from the assemblage came from the evaluation and Sites 1, 2, 3 and 5, and total 643 pieces. The lithic artefacts have been characterised in detail, with special reference to raw-materials, typo-technological composition, and on-site distribution. From this characterization, it is sought to date and interpret the lithic finds. The evaluation of the lithic material is based upon a detailed catalogue of all the lithic finds submitted in Microsoft Excel format (found in the Project Archive), and the artefacts are referred to by their number (CAT no.) in the catalogue.

The assemblage

General overview

From the total number of pieces recovered, 268 are lithic. They are listed in Table 4. In total, 80% of the artefact assemblage is debitage, 9% is cores, and 11% is tools.

The definitions of the main lithic categories are as follows:

Chips: All flakes and indeterminate pieces the greatest dimension (GD) of which is ≤ 10 mm.

Flakes: All lithic artefacts with one identifiable ventral (positive or convex) surface, GD > 10 mm and L < 2W (L = length; W = width).

Indeterminate pieces: Lithic artefacts which cannot be unequivocally identified as either flakes or cores. Generally the problem of identification is due to irregular breaks, frost-shattering or fire-crazing. *Chunks* are larger indeterminate pieces, and in, for example, the case of quartz, the problem of identification usually originates from a piece flaking along natural planes of weakness rather than flaking in the usual conchoidal way.

Blades and microblades: Flakes where L ≥ 2W. In the case of blades W >8 mm, in the case of microblades W ≤ 8 mm.

Cores: Artefacts with only dorsal (negative or concave) surfaces – if three or more flakes have been detached, the piece is a core, if fewer than three flakes have been detached, the piece is a split or flaked pebble.

Tools: Artefacts with secondary retouch (modification).

Raw materials – types, sources and condition

Amongst the larger pieces (>10 mm), seven flakes are of quartz and two of an indeterminate type of rock, whereas all other artefacts are of flint (97%). With almost 10%, the chips include a slightly larger number of quartz artefacts. The flint is generally fine-grained, mottled, grey material, with some pieces being medium-grained, more opaque, and either cream or yellow/light-brown. The latter variety is usually associated with a higher content of fossils, and

Sites	1	2	3	5	Total
Debitage					
Chips	41	6	9	273	329
Flakes	65	35		70	170
Blades	12	4		8	24
Microblades	3	1		4	8
Indeterminate pieces	7	3		20	30
Crests	4	4		2	10
Platform rejuvenation flakes	1		1	2	4
Total debitage	133	53	10	379	575
Cores					
Split pebbles				1	1
Core rough-outs				1	1
Conical single-platf cores	2	5		2	9
Opp-platf cores	1			2	3
Irregular cores	2			7	9
Bipolar cores	3	3			6
Total cores	8	8		13	29
Tools					
Crescents	1				1
Frags of microliths/backed bladelets	2				2
End-scrapers	3	2		6	11
End-scrapers (informal)				2	2
End-/side-scrapers				1	1
Hollow/concave scrapers	1			1	2
Burins				1	1
Backed knives		1			1
Scale-flaked knives				1	1
Truncated pieces	1			1	2
Serrated pieces	1				1
Pieces w edge-retouch	2	5		4	11
Fire-flints				3	3
Total tools	11	8		20	39
TOTAL	152	69	10	412	643

Table 4: Lithics general artefact list.

occasionally internal chalk balls. The cortex of most flints is abraded, suggesting that almost all flint was collected from a local pebble source, such as a beach wall. However, a small number of pieces have soft cortex, suggesting procurement from a different source, such as surviving deposits of Upper Cretaceous chalk in Mull (Gribun) and Morvern (Beinn Iadain), as well as in other parts of the southern Inner Hebrides (Mortimore *et al.* 2001, Ch. 6; Hopson 2005, 39). Research by Harding *et al*. (2004) indicates that most of the flint in the general Islay area (including Jura and the adjacent parts of the Scottish mainland) may be of the same age (Upper Cretaceous) as the so-called Antrim flint, and that it eroded out of chalk cliffs then extending from Northern Ireland to Scotland.

Most likely, the procured pebbles would have been in the 40-60 mm size category (Figure 13), although some slightly larger pebbles must also have been collected (CAT 248 is a large blade with a length of 78 mm). It is thought that the flint available in the southern parts of the Inner Hebrides (Islay and Jura; e.g. McCullagh 1989; Mithen 2000; Saville 2005) may have been of a generally higher quality (in terms of purity and flaking properties) than that available further to the north (the Skye and Loch Torridon area; e.g. Ballin 2014; Hardy *et al.* 2015).

In total, 178 pieces (28%) are affected by fire to varying degree, from light crazing to heavily crazed and discoloured white (e.g. scale-flaked knife CAT 222). Most of these pieces are chips from the surroundings of hearths (e.g. 1035) or fire-pits (e.g. 5179).

Despite the relatively high topographical level (20-30 m OD), several pieces suggest that the area was affected by the Main Holocene Transgression which occurred towards the end of the Mesolithic period (Ballantyne and Dawson 1997, 39): several pieces are slightly to notably desilicified (e.g. flake CAT 60, Site 1), whereas for example irregular core CAT 203 from Site 5 is rolled. This is slightly problematic, as the sea level during the Main Holocene Transgression did not reach the sites – Dawson (1984) suggests a sea level at this time of 8-10 m OD, whereas Dawson *et al.* (1998) suggests a level of only c. 4.5 m OD. It is possible that, given the fairly flat area between the sites and the shore, the sites may have been affected by the occasional storm surge during the Main Holocene Transgression, and that the rolled pieces have been washed in from sites at lower levels.

Site 1

This site yielded 152 lithic artefacts, including 133 pieces of debitage, eight cores, and 11 tools (Table 4). Most of the debitage is flakes (65 pieces) and blades/microblades (15 pieces), supplemented by some chips, indeterminate pieces and preparation flakes. The blades/microblades are mostly fragments, and they have an average width of 11 mm. Four preparation flakes are crested pieces (mostly blades) including CAT 102 (Figure 14), and one is a platform rejuvenation flake.

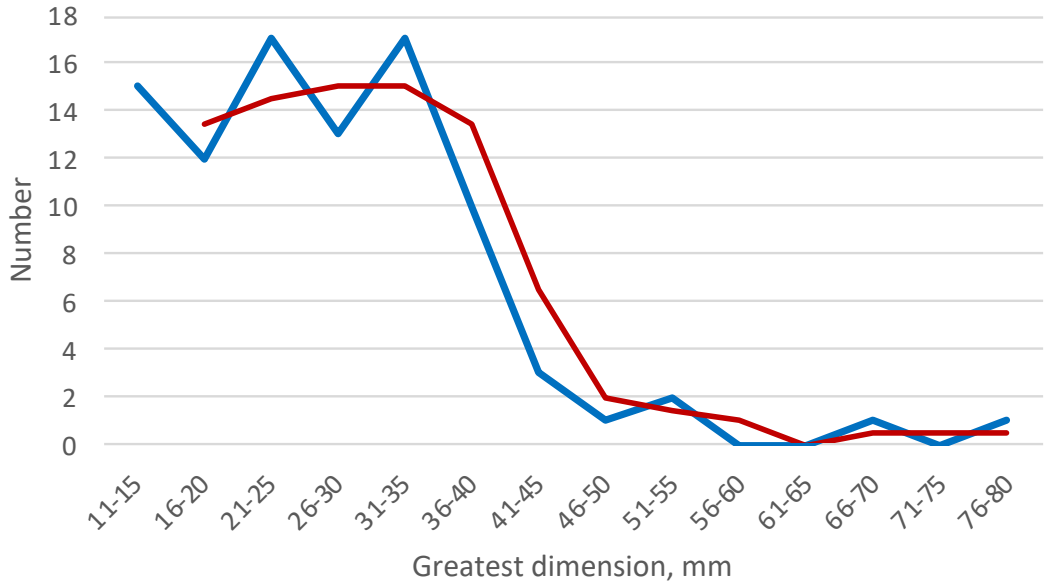

Figure 13: Number and greatest dimension of flint pebbles (blue) with trend line (red).

Eight cores include two conical single-platform cores, one opposed-platform core, two irregular cores and three bipolar cores. The single-platform and opposed-platform cores are all microblade cores.

Eleven tools embrace one crescent, two indeterminate fragments of microliths or backed blades (W = 6-7 mm), three end-scrapers, one hollow scraper, one truncated piece, one serrated piece and two pieces with edge-retouch. The crescent (CAT 298, Figure 14) measures, 17 by 5 by 2 mm and it has regular convex retouch along its left lateral side. The end-scrapers are all relatively small, simple, oval pieces which are roughly as wide as they are long, with their LxW ratio varying between 27 by 26 mm and 40 by 35 mm. Hollow scraper CAT 56 (Figure 14) measuring 48 by 34 by 9 mm, is a well-executed piece which along one lateral side has a regular concave, serrated scraper-edge and along the opposite edge a regular convex scraper-edge. It is clearly related to the Northern Irish later Neolithic hollow scrapers, but in contrast to those it was not based on a specialised blank (Woodman 1992). Serrated piece CAT 57 (47 by 13 by 6 mm, Figure 14) is based on a regular soft percussion blade, and it has a relatively irregular, worn working-edge with c. 12 teeth per cm. CAT 58 (35 by 14 by 6 mm) is also a soft percussion blade but with a straight truncation.

The size and character of the blades (mostly macro-blades, mostly soft percussion-based) suggest that they may be either early Mesolithic (e.g. Coles 1971) or early Neolithic (e.g. Ballin 2006). The narrow-blade microlith and microlith fragments indicate a visit to the site during the late Mesolithic (e.g. Ballin 2019). Although serrated pieces may occur throughout prehistory, serrated soft percussion blades are most likely to date to the early Neolithic period (e.g. Saville 2006). The hollow scraper may not be a Northern Irish import, as it is not based on the specialised blanks used in Northern Ireland, but it is as regular as the Northern Irish pieces, has a regular serrated edge like many of those pieces, and it is therefore likely to have been inspired by them (Woodman 1992). This suggests a date of the scraper of the later Neolithic.

It is highly likely that this sub-assemblage is a palimpsest, including pieces dating to the early Mesolithic, late Mesolithic, early Neolithic and later Neolithic periods.

Site 2

This site yielded 69 lithic artefacts, including 53 pieces of debitage, eight cores, and eight tools (Table 4). Most of the debitage is flakes (35 pieces) and blades/microblades (five pieces), supplemented by some chips, indeterminate pieces and preparation flakes. The blades/microblades are mostly fragments, and they have an average width of 11 mm. Four preparation flakes are all crested pieces (mostly blades).

Eight cores include five conical single-platform cores including CATs 50 and 51 (Figure 14) and three bipolar cores including CAT 174 (Figure 14). The single-platform cores are all microblade cores. CAT 26 is based on a thick flake and it was classified as a single-platform core, but it may possibly be a denticulated end-scraper (29 by 27 by 16 mm). Eight tools embrace two end-scrapers, one backed knife and five pieces with edge-retouch. One end-scraper (CAT 4) is a burnt fragment, but the other is a small oval piece with a LxW ratio of 24 by 23 mm. The backed knife (CAT 53) is based on an indeterminate blade (31 by 13 by 4 mm), and it has slightly convex backing along its left lateral side. This sub-assemblage includes no strictly diagnostic elements, but the production of soft percussion macroblades indicates a date either in the early Mesolithic or early Neolithic period. The microblade cores indicate a date within the late Mesolithic/early Neolithic period.

Site 3

Only 10 pieces were recovered from this site, namely 9 chips and one platform rejuvenation flake.

Site 5

This site yielded 412 lithic artefacts, including 379 pieces of debitage, 13 cores, and 20 tools (Table 4). Most of the debitage is chips (273 pieces), flakes (70 pieces) and indeterminate pieces (20 pieces), supplemented by 12 blades/microblades and four preparation flakes. Approximately half of the blades/microblades are fragments, but six intact blades have average dimensions of 36 by 13 by 6 mm. One exceptionally large hard percussion blade has dimensions of 78 by 26 by 13 mm. Two preparation flakes are crested pieces (both flakes), and two are platform rejuvenation flakes including CAT 202 (Figure 14).

Thirteen cores include one split pebble, one core rough-out, two conical cores, two opposed-platform cores and seven irregular cores. The core rough-out (CAT 231) has a prepared crest along one lateral side and a greatest dimension of 62 mm. One single-platform core and the opposed-platform core are flake cores, whereas one single-platform core (CAT 242) and one opposed-platform core (CAT 617) are microblade cores.

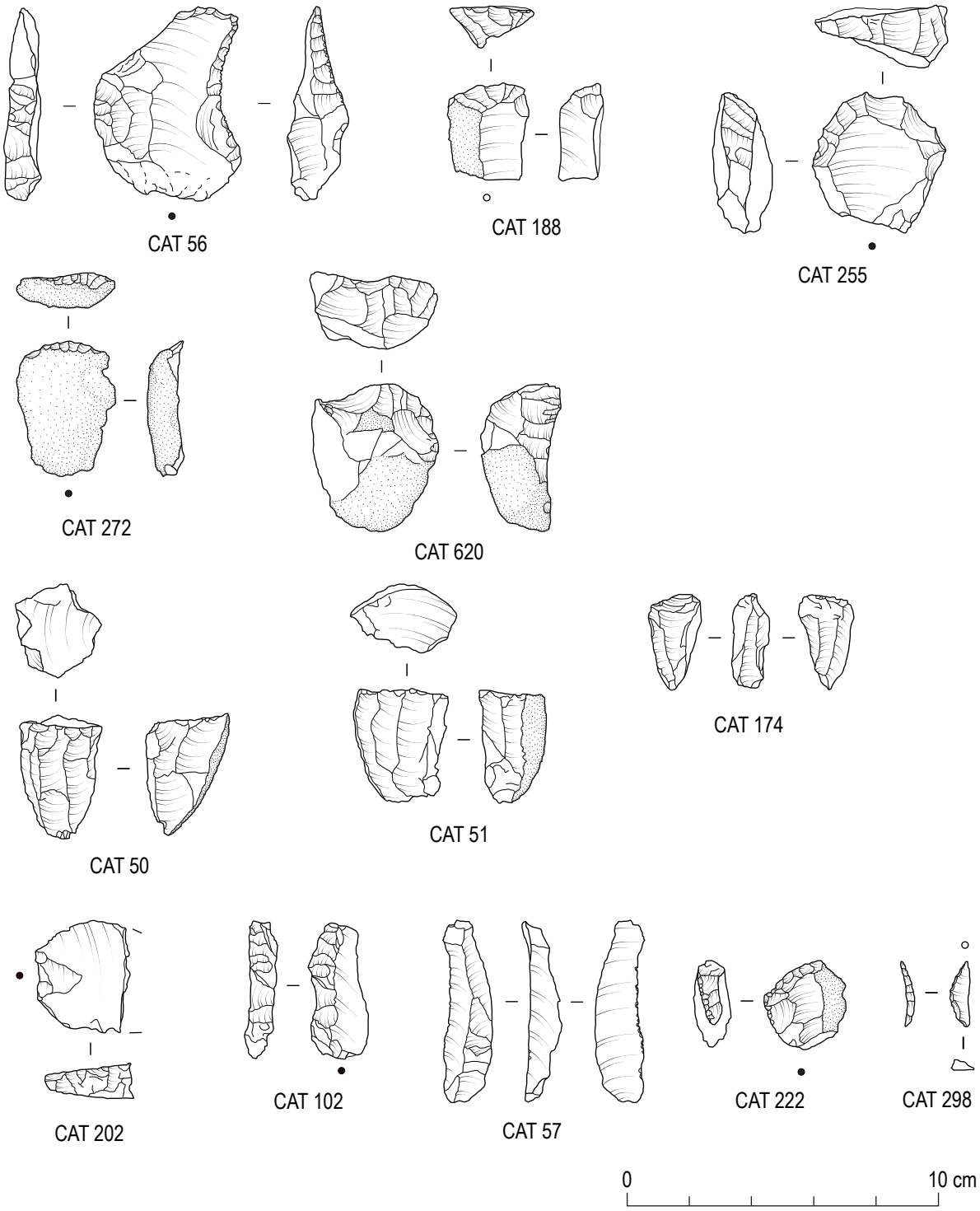

Figure 14: Lithic artefacts: Evaluation CAT 272 short-end scraper; Site 1 CAT 56 hollow or convex scraper, CAT 102 crested blade/flake, CAT 57 serrated piece, CAT 298 crescent (microlith); Site 3 CAT 50 and CAT 51 single platform cores, CAT 174 bipolar core; Site 5 CAT 188 CAT 255 and CAT 620 short-end scrapers, CAT 202 platform rejuvenation flake, CAT 222 scale-flaked knife.

Twenty tools embrace eight end-scrapers and one end-/side-scraper, one concave scraper, one burin, one scale-flaked knife, one truncated piece, four pieces with edge-retouch, and three fire-flints. The end-scrapers form a quite heterogeneous group, including two roughly oval, squat specimen CAT 188 (Figure 14) and CAT 234 measuring on average 22 by 24 by 8 mm; one relatively large, oval, denticulated scraper (CAT 255, Figure 14) measuring 34 by 33 by 13 mm; one large, regular piece (CAT 620, Figure 14) measuring 38 by 33 by 18 mm, one elongated piece with an acute, pressure-flaked scraper-edge (CAT 239) measuring 49 by 24 by 8 mm; one oval flake with a highly regular, acute, pressure-flaked working-edge (CAT 272, Figure 14) measuring 34 by 25 by 8 mm; and two flakes or flake fragments, which had clearly been used for scraping, but where the modified edges may just as well be heavy-duty use-wear as actual retouch (or a combination of both), each with a greatest dimension of 29 mm. The end-/side-scraper CAT 232 is a simple flake with irregular retouch along one lateral side and at the distal end; it measures 37 by 21 by 4 mm, and it has clearly been heavily used for scraping. Concave scraper CAT 528 is related to CAT 56 from Site 1 – it measures 32 by 23 by 8 mm and has a coarse, concave serrated working-edge along one lateral side.

Burin CAT 226 is based on a medial flake fragment that measures 21 by 17 by 10 mm. It has two burin-edges at one end, where burin-spalls were detached along both lateral sides by strikes to a break facet. The opposed break facet was used as an unmodified scraper-edge. CAT 237 (23 by 12 by 4 mm) is a distal flake fragment with an oblique truncation. CAT 222 (Figure 14) is the heavily burnt proximal fragment of a probably bipolar flake with a scale-flaked cutting-edge along its left lateral side, measuring 22 by 21 by 8 mm. CAT 192, 205 and 210 are fire-flints (Ballin 2005) based on irregular blanks (a flake, a flake fragment and an indeterminate piece) and with average dimensions of 25 by 21 by 13 mm.

Half of the blades are soft percussion macroblades, the size and character of which suggest a date of either the early Mesolithic (e.g. Coles 1971) or the early Neolithic (e.g. Ballin 2006). The date of the exceptionally large blade CAT 243 (78 by 26 by 13 mm) is uncertain. The small oval end-scrapers are most likely to be of a similar date, whereas the two end-scrapers with acute pressure-flaked working-edges are most likely to date to the early Bronze Age period (cf. Saville 2005). Burin CAT 226 is definitely pre-Neolithic, as in Scotland no burins have so far been safely dated to the post-Mesolithic period. The scale-flaked knife fragment is datable to the Neolithic/early Bronze Age period.

Context and distribution

As shown in Table 5, a substantial proportion of the finds are from unstratified top- and sub-soil – approximately one-quarter of the lithics from Site 1 and c. one-tenth of the lithics from Site 5. All finds from Site 2 are from hill-wash, and 4% from Site 5. It is thought that most of the finds from pits and linear features (notably dominated by chips) are residual material which entered the features with the back-fill when the features were dug through existing knapping floors/occupation layers.

Only a small number of features and contexts are potentially interesting:

	Numbers				Per cent			
	Site 1	Site 2	Site 3	Site 5	Site 1	Site 2	Site 3	Site 5
Unstratified top- and sub-soil	37			49	24			12
Hillwash	1	69		16	1	100		4
Hearth and surrounding occ. surfaces	44			3	29			1
Pits	19			280	13			68
Postholes	13		9	9	8		90	2
Linear and irregular features	38			33	25			8
Drain				1				trace
Deposits			1	21			10	5
TOTAL	152	69	10	412	100	100	100	100

Table 5: Lithic distribution across sites and contexts.

Site 1

The fill of hearth 1035 and its surrounding occupation surface (1037) contained 38 pieces of debitage supplemented by two crested pieces, two cores, one scraper and one piece with edge-retouch. This was possibly a knapping-floor/ activity area.

Pit 1013, which included five pieces of debitage, one core, one serrated piece (CAT 57), one hollow scraper (CAT 56), and one truncated blade (CAT 58) was possibly a ritual deposition (the context also contained a decorated – although undiagnostic – pot sherd). However, the debitage (including chips) suggests that parts of the pit's content may be residual material from an older disturbed occupation layer.

The hollow scraper is formally related to, but not identical to, the well-known Northern Irish hollow scrapers (Woodman 1992) which are generally dated to the Northern Irish middle Neolithic period (dated at Windy Ridge, Co. Antrim, by the association with Globular Decorated Bowls; Mallory in Woodman 1992). This date is supported by a radiocarbon date from pit 1013 (SUERC-97113) of 3523-3373 cal BC. The serrated broadblade is consistent with this date.

Site 5

A deposit with charcoal (5079), which included seven pieces of debitage (mostly flakes) and three short end-scrapers (CAT 216, 217 and 255) may possibly have been a knapping-floor/activity area.

The heavily burnt, well-executed scale-flaked knife CAT 222 may be from a disturbed early Bronze Age cremation, but was deposited in linear feature (5144), probably with its back-fill. This feature was located south of the Iron Age/ Pictish figure-of-eight shaped building.

Conclusion

As indicated above, this lithic assemblage has limited research potential:

1) All assemblages appear to be heavily mixed – the assemblage from Site 1 includes early and late Mesolithic, as well as early and later Neolithic material; that from Site 2 probably Mesolithic and Early Neolithic material; and that from Site 5 Mesolithic, early Neolithic and early Bronze Age material.

2) Large proportions of the assemblages are from unstratified top- or sub-soil or hill-wash, whereas most of the remaining finds are thought to be residual finds which entered the contexts and features with the back-fill.

3) There is some uncertainty regarding the maximum sea level during the Main Holocene Transgression (either c. 10 m or c. 4.5 m OD), but the presence of a small number of superficially desilicified or water-rolled pieces suggests that the sites (at 20-30 m OD) may have been reached during the occasional storm surge with unknown consequences to the integrity of the sites.

Only two deposits and one pit appear to have some research potential/information value (see above).

The coarse stone

By Beverley Ballin Smith

Introduction

The 14 worked stones from Coultorsay were found in association with sites 1 and 5 and were collected by hand from the archaeological excavation, and although soil samples were taken and later sieved, no further tools were found. It is difficult to indicate with any degree of certainty the historical the period(s) to which the worked stones belong but the Iron Age through to the medieval period is most likely.

The results

The raw materials

Most of the stone used for tools from Site 5[4] is predominantly various grades of mica-schist, and also quartzite. The geology of Islay is complex (BGS 2024, Geology of Britain viewer) with quartzite most likely deriving from the east side of the island, with cobbles possibly from along the shoreline of Loch Indaal, below the site. Although Islay has metamorphic rocks, outcrops of mica-schist are not noted in the literature. It is probable that the mica-schist used on Islay has come from the Kintyre peninsula east of Islay. Mica-schist boulders could have been transported to the island by glaciers as erratics, or by coastal tides, or deliberately by man.

Cobble tool

SF 178, a quartzite cobble tool from Site 5, was found in a deposit of material derived from the creation of a drain (5039) mixed with colluvium (5016) that had moved downhill to cover a significant part of the excavated area including a number of ditches and gullies.

The cobble has noticeable peck marks in a distinct area of wear at its broad end. It has also faint marks from pounding at its narrow end and two areas of discrete pecking down both lateral sides. The tool is a pounder (see Clarke 2006, 45; Ballin Smith 1994, 196).

ML 128 mm, MW 87mm, MT 53.4 mm, Weight 178 g.

Stone discs/roundels

The majority of mica-schist discs (11) from the excavation of Site 5 are thin pieces of stone trimmed to a rounded shape, but some pieces are sub-rounded and unfinished (see Table 6). The largest has a diameter of between 85.3 mm to 89 mm and the smallest a diameter of 55.5 -57 mm, but none of them are perfect round discs of stone (Figure 15). A thin fragment of mica-schist rock, between 3.8 mm and 12.6 mm thick, was worked into a roundel. This was done by flaking or chipping the perimeter of the stone from one surface or from both, to shape the edges of the piece into a disc. SF 58, the thinnest artefact, and SF 78, the lightest in weight, are slightly different as their edges were cut or ground-down to shape or finish the object. The rock is of medium hardness (4 to 5 on Moh's scale) and could easily be trimmed by either a harder stone or an iron or steel blade.

The surfaces of all these examples are unaltered, indicating a characteristic of some mica-schist that

Small Find No.	Context No.	Length (mm)	Width (mm)	Thickness (mm)	Weight (g)	Approx. diameter (mm)	Chipped edges	Cut edges
174	5016	89	85.3	8.6	103	100	✓	
199	5069	86.5	86.5	12.6	172	100	✓	
207	5046	85	76.8	9.5	105	90	✓	
131	2	77.1	76.8	9.9	87	90	✓	
58	2	77.1	76.2	3.8	58	90		✓
79	2	69	63.3	6.2	45	90	✓	
175	5016	64.3	62.8	9.7	60	80	✓	
184	5223	61.2	57.1	10.5	44	70	✓	
78	5016	59.2	55.8	6.2	31	70		✓
181	5174	59.2	57.9	7.1	44	70	✓	
80	2	57	55.6	5.2	32	70	✓	

Table 6: Measurements of the mica-schist discs.

4 The stone from Site 1 was unworked

produces a flat or slightly undulating planes when split. A few examples have naturally undulating surfaces indicating that the shape, more than its flatness, was important. The finished pieces can be attractive with a pale green/grey colour, and often have a naturally smooth and shiny surface. The pieces do not appear to have any distinct areas of wear.

Some of the discs, such as SF 78 and SF 181 (Figure 15) are paired, as they are very similar to each in diameter and thickness. The dimensions and weight of SF 184 is also comparable to that of SF 181 but is less circular in shape (Figure 15). SF 58 and SF 131 are almost identical in diameter, but their thickness and therefore weight, varies widely.

Further analysis was undertaken to examine the disks' approximate diameters, given that they are not perfectly circular, to help elucidate their function. These measurements have been added to Table 6. One suggestion is that the roundels were lids to pottery vessels. However, the question is what were the rim diameters of those vessels? Adding an extra 10 to 20 mm for the thickness of the vessel rims to the approximate diameter of the discs, would suggest that they would fit within the necks of vessels with rim diameters of 90 to 120 mm. This implies that vessels requiring lids were small, and that these discs, if indeed they were lids, were not placed on top of the vessel rim, but sat within the rim on its internal flange or bevel, acting as a plug. From the analysis of the pottery (see Coarseware pottery), SF 143 from Site 5, was a c. 100 mm base to a relatively small vessel. However, a bowl with a rim diameter of 280 mm (SF 1, Site 2) and a base sherd from a large vessel SF 211, Site 5, demonstrate that much larger pots were in use on the site, and stone discs were not found in sizes to be used with them. This suggests that either not all pots needed lids, or that the roundels had other functions.

The smaller discs could have functioned as gaming counters, and the larger ones as weights, perhaps for cheese making. It was considered, giving the apparent pairing of some pieces, whether they were primitive measuring weights, as some of the stones have very similar weights, with a variation of one or two grams. The possibility of discs as weights was also speculated for the stone discs from Cromarty Medieval Burgh (Clarke 2015). Other rough stone roundels of sandstone and micaceous sandstone were found at the medieval farmstead at Laigh Newton, East Ayrshire, which had diameter ranges that were slightly smaller and also larger than those from Coultorsay. They appeared to be expedient items, which were unfinished (Ballin Smith 2017, 32, Illus 22).

Figure 15: Mica schist discs - top row SF 78, SF 80, bottom row SF 181, SF 184 and SF 175.

As far as can be ascertained, none of the roundels were found together or cached, with most located (see below) in the fills of ditches or in overburden deposits, suggesting they were lost or discarded items.

Rotary quern

SF 112, a top stone of a rotary quern unit[5] was found lying horizontally in the base of pit (5101) on Site 5. The stone is in two pieces as one lengthwise segment had sheared off from the main body of the stone just prior to, or during, deposition. This was due to a natural fissure in the stone, but otherwise the piece is intact. The pit measured 0.77 by 0.92 m, with a depth of c. 18 mm, into which the 620 mm diameter and c. 30 mm thick stone fitted. The artefact is a quern made from highly micaceous mica-schist, silvery pink in colour, relatively soft, and therefore not the best material to use for grit-free meal. The stone has a large central eye or perforation 220 mm in diameter for the spindle and to allow the grain to fall to the lower stone. The eye is excessively large and this may be due to wear during use. Its edges show fresh stone and brighter colours than the rest of the piece, indicating much abrasion.

The almost flat upper surface of the stone is slightly rough due to its geological formation but its edges are rounded and smooth. The inner half of the lower but slightly concave surface is worn, although there is evidence it was roughened (pecked) by a chisel or other stone for grinding. The outer half of the surface is worn smooth through the grinding of grain. Unusually, this stone did not have a slot or hole for a wooden handle to help with rotation. An example of a much thicker rotary quern unit from the Open Air Museum, Estonia (Wikimedia 2018) has a leather strap around the top stone to which is fixed a long wooden handle, and this could have been the case for the stone from Coultorsay.

The working surface of this stone around the eye would have had four equally spaced rind slots for a fixing mechanism to the spindle to allow the stone to rotate around an axis and sit above the bed stone with a specific grinding gap (Figure 16). Two rind slots survive with a third that is badly worn, but the fourth is missing. The rind slots are shallow but measure between 45 mm and 55 mm in width and 30 to 35 mm in length. One slot is c. 15-20 mm deep but the other is deeper and almost worn through the stone.

The quern displays a large amount of wear and abrasion, not least around the eye, where one rind slot has worn away and a second is excessively worn. The stone had reached the end of its working life, being thin, heavily used, and with two lateral cracks. The breakage and discarding of the stone was inevitable as it had worn too thin for practical use. The size of this quern suggests it is of medieval date or later.

The location of the finds

All the stones recognised as artefacts came from Site 5. Roundels SFs 58, 79, 80 and 131 were recovered from the subsoil surface, with SFs 78, 174, 175 and SF 178 the cobble pounder came from (5016) an extensive area of colluvium or hill-wash to the south, which was possibly mixed with, the deposited debris produced from the digging of the east/west drain (5039) that cut through the site.

Two of the discs came from small ditches or gullies associated with the figure-of-eight structure, SF 207 was found in the fill of the northern gully (5384) to the larger part of the structure, and SF 184 from the fill of its south-east curved gully (5224). SF 199 was found in the fill (5069) of a short linear ditch (5349) north-east of the building and SF 181 in the fill (5174) of what appears to be a boundary ditch (5181) on south-east side of the building.

5 Comprising a rotating top stone, with a usually slightly concave grinding surface, to a fixed bed or bottom stone, usually with a flat to slightly convex grinding surface. The stones were linked by an adjustable central spindle around which the grain was fed through a central hole or eye in the top stone, to be ground between the stones as flour. The top stone normally had an additional slot or partially drilled hole in its surface for a wooden handle for manual rotation of the quern.

The top rotary quern stone SF 112 was deposited in the bottom of pit 5101, located in the centre of smallest portion of the figure-of-eight building, and is intimately associated with the construction and use of the structure during the seventh to twelfth centuries AD (see Radiocarbon dates Table 1).

Discussion and conclusions

This is a small assemblage of artefacts, where the individual objects provide little indication of the date range of the activities on Site 5.

The pounder, a cobble hand tool, is most typically a tool of later prehistory, perhaps more commonly associated with the Iron Age period from the many cobble tools associated with brochs and later settlements. It is most likely that in prehistory a pounder was used on a quern or with another stone to break open nuts or crack seeds. However, the late Iron Age/ Pictish and medieval radiocarbon dates from this site, suggests that the tool could have had other uses. The excavations at the broch of Dun Mor Vaul on Tiree, completed in 1964, included cobble tools, rotary querns, fragments of two jet or shale bracelets and three categories of stone discs – counters, rough stone discs (pot lids?) and smooth stone discs (MacKay 1974, 135-137). This assemblage indicates that stone was an important resource for many different tools, as well as for decorative objects, and included the range of stone artefacts found at Coultorsay.

Counters and rough stone discs are commonly found on sites dating from the Iron Age and later periods, but with often a wider range of diameters. Most are shaped by chipping or flaking such as those from the Howe Broch, Orkney (Ballin Smith 1994, 204, Illus 119). Discussion of them is taken further by Clarke (2006, 37-38) and illustrates that smaller discs could have had ground edges. Although it has been considered above that the smaller discs could have been counters, those found at broch sites, in particular, are often smaller than 60 mm in diameter. The function of the smaller discs currently remains an enigma. The idea that the collection of discs could be weights is another possibility for these stones, as has been suggested by Clarke 2015, when examining the examples from the excavations of the medieval burgh of Cromarty, but further collections of similar roundels are needed for comparative analysis and further research. The similarity of the Coultorsay discs to those from Cromarty and also from the medieval contexts

Figure 16: SF 112 upper stone to rotary quern unit with worn surface, eye and rind slots.

of the settlement at Laigh Newton (Ballin Smith 2017, 32, Illus 22), suggests the likely period of their origin and use, which agrees with the radiocarbon dates from the site (see Radiocarbon dates Table 1)

The top rotary quern stone provides us with more information on dating through the similarities with other stones from other areas. Its rind slots are more in keeping with querns dated later than the middle Iron Age. Querns from the Loch Glashan crannog in Argyll, were made from various forms of mica schist, also had rind slots (see Clarke 2005, figures 47 and 48) and appeared to be from the early medieval period. Certainly Clarke's 2017 analysis of querns from Cromarty show a remarkable similarity of form to the Coultorsay example. Some of the stones had clearly defined rind slots in the bed and top stones. They are considered to be medieval in date as they were found in buildings of that period and later. The Coultorsay quern is unusual, mainly because of its relatively soft raw material and the lack of a handle hole. It is also a heavily worn piece and its deposition in a pit may have significance to the construction and use of the figure-of-eight building, or at least part of it during the later Iron Age/Pictish-medieval period. The quern could have been an example of a foundation deposit, signifying the wish for good harvests or fertile grain. Alternately, it could have provided secure housing or packing for a roof-bearing post less than 220 mm in diameter that could have been positioned vertically in the stone's eye, as it lay in a pit dug centrally within one part of the structure. This quern was reused once its main function, to grind grain, had come to an end.

The finds from Coultorsay provide a view of mixed activities on the site from the middle Iron Age to the Middle Ages. The pounder suggests a middle Iron Age date, the discs are likely to be medieval and the quern is also likely to be early medieval in date. Analysis of the pottery suggests some of Site 5 is middle to later Iron Age in date, with a prehistoric presence elsewhere. Given the figure-of-eight shaped structure, which is late Iron Age/Pictish/early medieval in date due to its morphology, it is not inconceivable that the bulk of the stone assemblage is contemporary.

The shale bangles

By Fraser Hunter

Two unusual shale bangles were recovered from Site 5 at Coultorsay. One, SF 216, is unusual in its form, the other Sample 308 in being reworked into another bangle or bangle element after splitting. Such jewellery is rare in the Inner Hebrides; these are the only examples known from Islay. All these aspects are discussed below.

The broad, flat section with rounded edges of SF 216 does not fall within standard bangle typologies: variations on a D-section, proportionally taller than this example, are by far the most common form found in Scotland. It is likely that this unusual variant arises from expedient modifications during the production process, with the accidental lamination of a part-finished roughout leaving a thinner but serviceable bangle that could still be finished off. This example is well-finished and was hand carved, with traces of knife-facets on the interior and abrasion scars from final shaping on one face. The surface shows use-wear (Figure 17).

Figure 17: SF 215 shale bangle fragment.

The bangle from Sample 308 (Figure 18) shows highly unusual reworking. The original bangle was a tall, broad D-section, showing minimal use-wear. It seems it split horizontally and snapped vertically, but attempts were made to rework the fragment, apparently as an element of a bangle since the original curve was preserved but one end had been knife-trimmed to a near-circular section. Trimming of the other edges

of the fracture surface was in progress when, it seems, it broke and spalled again. Presumable the intention was to trim the broken fragments and refit them with sleeves, or fit them into a composite bangle with other materials. Evidence of reworking broken ends for repair is quite common, as is reshaping of bangle fragments to make items such as beads or pendants; this attempt to rework it as part of a bangle is innovative and unusual.

Figure 18: Sample 308 shale bangle fragment.

Given two unusual bangles from the one site, the question arises of whether they were both reworked from one original bangle which split horizontally, with SF 216 successfully reused and Sample 308 unsuccessful. This is not feasible, however, as the inner diameters are different: Sample 308 preserves the original (larger) diameter, and there is no indication of any marked irregularity of the diameter in the surviving portions.

Visual characteristics identify the material as oil shale, which is exotic to Islay, although currently available techniques do not allow detailed provenancing. The nearest sources are in Ayrshire and the central belt (Gibson 1922, 10-13; Cameron and Stephenson 1985, 61, 64, 66-91). Jurassic oil shales are reported from north Skye and south Raasay (Emeleus and Bell 2005, 175), although these have not been assessed for workability.

These are the only bangles of black organic-rich stone known to the writer from Islay, and only a single example is known from neighbouring Jura, from King's Cave (Mercer 1975, 54, fig 4.4; its tall section suggests an early Iron Age date). Finds are equally scarce from other islands in the southern Inner Hebrides, with examples known only from Dun Mor Vaul on Tiree (MacKie 1974, 135). Mainland Argyll, closer to the raw material sources, has rather more finds, with bangles or other jewellery recorded from five sites in Kintyre, five in Mid Argyll and Cowal, but only one in northern Argyll (Table 7). This focus on areas of Argyll with more ready access to the Firth of Clyde supports the view that the source of raw materials was from central Scotland rather than the putative Skye source. The presence of roughouts as well as finished products shows that a few sites in Argyll in the first millennia BC/AD were manufacturing jewellery (probably from imported roughouts, as found at Dunadd; Christison *et al.* 1905, 315; NMS X.GP 269) as well as receiving finished items, but on the inner Hebrides only finished items are known in small numbers.

Both bangles came from site 5, SF 216 as a stray find and Sample 308 from the single fill of posthole (5370) within the figure-of-eight building. Context 5370 is associated with a radiocarbon date of cal AD 708 – 886 (SUERC-97156, 1212 ± 23 BP), and given the overwhelmingly early medieval dates from site 5, SF 216 can be dated to this period as well, focussed strongly on the period c. AD 650 – 890 with activity from c. 550 (there is also some later activity in the eleventh-twelfth centuries, but this post-dates the main use-period of such bangles). Other craft activities were recorded within this building, so the reworking of bangle Sample 308 sits within a wider craft context. The efforts put into its repair are consistent with such bangles being locally exotic and valued items.

Catalogue

SF 216

Bangle of unusually broad, flat section, polished to a medium lustre. The faces are flat, with the inner and outer edges rounded. The inner is slightly irregular, and bears thin parallel circumferential bands from knife-trimming to shape. The outer edge bears no tool traces; the faces show faint angled abrasion scratches, but polish over these indicates the bangle was not unfinished. There

are occasional irregular scratches from use-wear or post-depositional wear. Its height is slightly irregular. The piece is broken at both ends with no sign of any attempts at repair.

Near-black, with smooth laminar fracture; oil shale. Length 51 mm; Width 8.0-8.5 mm; Height 4.7-5.5 mm; internal diameter 55-60 mm (26% survives). Site 5, unstratified.

Sample 308

Reworked fragment of a tall, thick D-sectioned bangle, its original height is unclear as there is no sign of the mid-point. The rounded upper edge curves into the slightly convex interior, which has residual circumferential and slightly angled abrasion scars from shaping; the exterior is well-finished to a medium lustre. The material is laminar, and it seems the bangle split horizontally as well as snapping, but attempts were made to rework it for reuse. One end has been cut square and smoothed, and the lower (fractured) edge is trimmed into a near-circular section, 9.3 by 10 mm; there are also less-developed knife-facets all along the fractured edges, indicating a desire to reshape the whole piece, but it either broke again (the other end is snapped and unworked) or spalled on the upper surface.

Laminar, dark grey material with slight conchoidal fracture and grainy surface; oil shale. Length 46 mm; Width 12.5 mm; Height 9.5 mm; internal diameter 65-70 mm (18% survives). Site 5, context (5371), fill of posthole (5370).

Site	Area	Finds	Working evidence	Date	Reference
Coultorsay	Hebrides/Islay	bangles	reworking	EM	This paper
King's Cave	Hebrides/Jura	bangle	-	EIA?	Mercer 1975, 54, fig 4.4
Dun Mor Vaul broch	Hebrides/Tiree	bangle, bead, counter, ring?	-	IA	Mackie 1974, 135
Dun Murchaidh	Ardnamurchan	bangle	-	IA?	P Murtagh, pers comm
Bruach an Druimein settlement	Mid Argyll	bangle		EM?	Hunter 2008
Dunadd hillfort	Mid Argyll	bangles, pendant, gaming pieces	roughouts	EM	Lane and Campbell 2000, 192-5
Duntroon hillfort	Mid Argyll		cuboidal roughout	IA?	Christison et al. 1905, 280
St Columba's Cave, Ellary	Mid Argyll / Knapdale	bangle	-	?	Tolan-Smith 2001, 58, ill 27
Auchategan settlement	Mid Argyll / Cowal		bangle roughout	?	Marshall 1978, 70
Balloch Hill hillfort	Kintyre	bangles	roughouts	IA	Peltenburg 1982, 188, fig 18
Kildonan dun	Kintyre	disc-bead or pendant		EM	Fairhurst 1939, 215, pl LXXXVIII no 2
Kildalloig dun	Kintyre	bangle		?	RCAHMS 1971, no 219
Lochan Dugaill crannog	Kintyre	bangle		EM?	Munro 1893, 219, fig 4
Ugadale Point dun	Kintyre	3 bangles		EM?	Fairhurst 1956, 19, pl VI fig 5

Key: IA Iron Age; EM early medieval

Table 7: Later prehistoric and early medieval finds of black organic stone jewellery from Argyll.

The prehistoric coarseware

By Beverley Ballin Smith

Introduction

A small assemblage of pottery was recovered from the site but with very few diagnostic sherds of rims and bases. The pottery is plain with no decorated pieces. The evidence indicates that the bulk of the pottery is middle to late Iron Age in date, and that some of it could be residual or disturbed through later activities.

Analysis and description of the pieces

This small assemblage is a collection of prehistoric pottery from three sites[6].

The assemblage totals 35 sherds all of which were recovered by hand from the excavation of three sites on Islay, at Coultorsay near Bruichladdich. Together they weigh 825.9 g and comprise a small number of diagnostic sherds (Table 8). There are low numbers of sherds from each of the sites, the highest being from Site 5, which has evidence of a figure-of-eight shaped structure and surrounding ditches/gullies. The pottery from Site 1 is associated with structures and that from Site 2 was found in colluvium or hill-wash.

	Rims	Base sherds	Body sherds	Total	Weight (g)
Site 1	1	1	5	7	148.1
Site 2	0	2	7	9	102.2
Site 3	1	0	0	1	3.4
Site 5	1	2	15	18	572.2
Totals	3	5	27	35	825.9
Percentages	8.6	14.2	77.1	99.9	

Table 8: Pottery sherd forms.

The average thickness of sherds, possibly because of the presence of base sherds and low sherds numbers, varies little between the sites (Table 9). The average sherd weights of sites 1 and 2 indicate that Site 2 pottery was slightly heavier and thicker than that from Site 1, but that the sherds were larger and heavier in Site 1 than Site 2, which experienced higher fragmentation. Site 3 is a single sherd. The sherds from Site 5 have survived as much larger pieces than the other two sites, hence their higher average weight, and indicating that taphonomic conditions were more favourable there.

	Average sherd thickness (mm)	Average sherd weight (g)
Site 1	9.8	21.2
Site 2	11.2	11.4
Site 3	6.5	3.4
Site 5	10.4	31.8

Table 9: Pottery sherd thickness and weight.

Post depositional changes

Much of the pottery shows evidence of abrasion, especially from sites 1 and 2, as soil movement has been in evidence. The movement of soil downslope has caused the removal of much surface detail from sherds and rounded their edges, and many of the sherds may have moved away from their original context of deposition. The sherds from Site 5 are in better condition and have suffered less mechanical abrasion. However, the acidity of the soil (as well as the use to which the vessels were put) may be responsible for the removal of surface detail.

Manufacture of the pottery

The pottery is all hand made using local resources of clay and stone with the addition of straw or chaff. Streams flowing into Loch Indaal could have provided deposits of clay in their banks and small stones or gravel in their stream beds, but the shores of the loch could also have provided the same resources – at little distance from the site. The rock temper identified in the pottery is predominantly igneous, such as dolerite, quartz, with quartz sand and mica. Unidentified fine grained material could include basalt and possibly also quartzite. Most of the rock temper seems to have come from natural deposits of gravel, but some stone could have been made

6 All the sherds were washed before analysis, and they were examined with a x6 hand lens. Their attributes and statistics were compiled in an archivable table devised using Microsoft Excel. The assemblage was analysed according to the revised guidelines for the study of prehistoric pottery of the Prehistoric Ceramics Research Group (2010) and its *Standard for Pottery Studies in Archaeology* (2016), as well as the CIfA's Standards and Guidance for the collection, documentation, conservation and research of archaeological materials (2014, revised 2020).

finer by crushing. Organic material would have been added to the natural clay to make it more workable and small voids are noticed in most sherds where it has burnt away. Stone temper was added to make the pots more resilient to high temperature changes when heated on a hearth, and also to make pots more durable.

Once the clay was prepared, with its mineral and organic temper, various methods were used to make vessels. Although flat bases are noted in the assemblage, the base and lower part of a pot could have been started using the 'thumb-pot' method, with coils of clay added to shape the vessel to the required height and with the right shape of rim. The breakage of a pot along a coil join (where two coils of clay were joined together) was identified in SF 1 from Site 2. Evidence of forming or moulding is present with fingertip impressions still visible on clay surfaces where they were not removed before finishing. Although most of the surfaces of the vessels are abraded, it was noted that some sherds showed evidence of being wiped, with perhaps a handful of grass, to smooth the exterior surface.

Rims

Only three rims were identified. SF 1 from Site 2 is poorly moulded as fingertip marks are noted on the rim bevel. The rim is straight to a curved body indicating possibly a shallow bowl. The rim diameter measures 280 mm and c.5% of it is present. Sample 72 from Site 3 is a small straight rim with a rounded edge to a narrow bevel. Its rim diameter could not be measured.

SF 211 from Site 5 is also a straight rim but to a slightly barrel-shaped pot. The rim has a rounded top to a steep interior bevel with finger moulding marks still visible. The rim diameter could not be measured.

Bases

All the base sherds indicate that vessels were flat-bottomed. The sherds from Site 1 (SF 14 and SF 22) are small fragments of bases that are heavily abraded. The base sherds from sites 2 and 5 are heavily gritted, with SF 211 from Site 5 measuring up to 20 mm in thickness, with most retaining finger marks from moulding. SF 211 has a slight cavity on its lower surface, and the loss of some of the surface is perhaps the result of siting in hot ashes, or directly in the flames of a fire. SF 143 from Site 5 is 100 mm in diameter and c. 20% of it survives, indicating that the vessel of which it was part was probably of medium-sized.

Surface treatments, residues and firing

None of the pottery was decorated and the finishing methods noted included smoothing by the potter's hands and fingers, and marks produced by wiping the surface of the finished pot with dried grass or straw. Marks produced by the fingertips of the potter moulding the clay body into shape have already been mentioned as occurring frequently on the surface of sherds and on rim SF 1.

SF 33 from Site 1 has a slightly darker 'fire-skin', which is not a slip, on the exterior surface, possibly from the finishing or firing process, as has SF 5 from Site 2.

Heavily gritted sherds of SF 211 from Site 5, the fill of the figure-of-eight ditch or gully, appear to have their exterior surfaces left rough, or they were deliberately roughened. This includes the surface of the rim (image below) to a barrel-shaped vessel and one or two additional body sherds. Their exterior surfaces appear to have pockets or small concavities, where the clay may have abraded away, into which accumulated carbonised food remains up to 2 mm thick. Alternatively, the vessel surface could have been left deliberately rough with protruding mineral temper as a means of providing a safe grip when handling a heavy pot (see Ballin Smith forthcoming a).

Sherds from Site 5, in particular, provided evidence of carbonised food remains, as the pottery was less severely abraded than that from the other sites.

Some sherds from SF 211 and also SF 182, both from Site 5, had well integrated mineral and clay and were probably fired at higher temperatures than the other pottery of this assemblage, producing sherds that were hard, and not soft to the touch.

Vessel form and function

From the few sherds of this assemblage, it has not been possible to reconstruct parts of any vessel to inform on their height, size and shape. The two rims, SF 1 and SF 211 suggest that one was probably from a bowl, and the other a barrel-shaped vessel (Figure 19). The latter, SF 211, which provided evidence that it was most likely a large cooking pot, due to the thickness of its large base and due to the amount of carbonised food residues on its surface. In addition, SF 142 also from Site 5 was a base sherd from a medium-sized vessel.

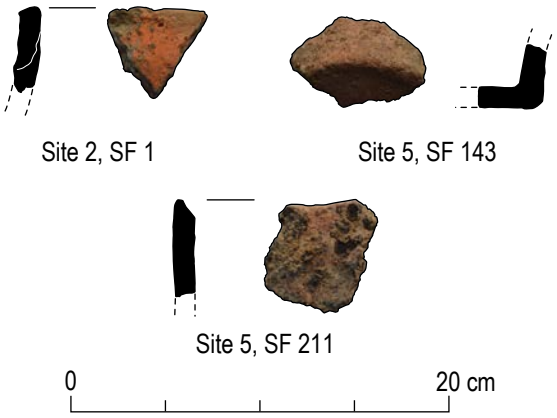

Figure 19: Pottery rim sherds SF 1, Site 1 and SF 211 and base sherd SF 143, both Site 5.

Sherd distribution

The distribution of sherds by site is highlighted in Table 8. However, all pottery from Site 2 was found in colluvium – soil moving from upslope to lower levels and was therefore not in context, and that from Site 3, is a single sherd from the fill of a posthole. The pottery from Site 1 was more interesting. SF 14, a base, was located on the eastern periphery of the northern group of features, possibly a structure, and SF 42 from near the hearth in occupation material was a finer sherd of pottery, but it was not diagnostic. SF 22, the base of a pot was found in a pit between the north and south groups of features. A finer sherd, SF 10, was found in a shallow pit in the southern part of the site.

The pottery from Site 5 came mainly from the southern ditches and gullies of the figure-of-eight structure (SF 182, 183 and 211), with a base sherd, SF 143, located in a modern drainage ditch that cut through the site. No sherds of pottery were directly associated with the activities inside the structure.

Comparison with other sites and dating

This small assemblage from four different sites has yielded very few sherds that provide any indication of the date of vessels. In fact, the sherds are all very similar in appearance which suggests that similar raw materials were used and also that they may all be from a similar time period. One of the largest collections of pottery excavated over the last ten years from the Argyll and Bute region is that from the island of Iona, where a number of archaeological interventions produced 1072 sherds of pottery dating from the early Bronze Age through to the medieval period (see Ballin Smith forthcoming b). There are some similarities between the two collections, one being that the pottery is heavily gritted, and that was especially noticeable in sherds from the Bronze and Iron Ages. Although there seemed to have been discrimination, in the case of pottery from Iona, that Bronze Age wares tended to include more igneous mineral temper and Iron Age wares had more quartz and mica, but this might have been due to resource procurement and availability. There are too few sherds of pottery from Coultorsay to suggest any possible dating from the use of mineral temper.

In narrowing down the date range of the Coultorsay assemblage, it is quite clear that later pottery from the early medieval and later periods is present but is not as recognisable as that from Iona. The decorated and heavier wares from the Bronze Age are not present and decorated wares from the Iron Age are also missing, but the thickness and average weight of sherds is comparable with those from these two prehistoric periods, indicating that part of the Coultorsay pottery is most likely prehistoric, especially that from Site 2. The radiocarbon dates indicate a main period of use from the end of the second century cal BC into the beginning of the second century cal AD, spanning the middle Iron Age period.

The Coultorsay rims are similar to those considered to be Iron Age from Iona, with their internal bevels, but they could be from the early

part of that period through to the late Iron Age or Pictish period. The rim from Site 5 came from the infill of the southern gully forming the figure-of-eight structure. A radiocarbon date from the fill of this feature suggested a date of cal AD 597 – 656 at 95.4% probability (SUERC-97147), the Pictish period. Bowls and bucket/bag-shapes and presumably barrel-shaped vessels are also indicative of the Iron Age and later periods, with bowls possibly being earlier in the period.

Most of the pottery from Coultorsay, was collected from ditch fills or colluvium from Site 5, and colluvium from Site 2, whereas some sherds were more intimately connected to activities with structures in Site 1, but none of these were diagnostic sherds. The present balance of evidence indicates that the pottery from Site 2 is middle Iron Age in date, and that from Site 5 is most likely late Iron Age or Pictish. There is a high probability given the amount of activity on Site 5 that some of the pottery is earlier and therefore residual.

Fired clay

By Beverley Ballin Smith

Introduction

Fragments of fired clay were found on Sites 2, 3 4 and 5. As its name suggests it is the burnt remains of clay used for construction, mixed with organic material such as animal dung and straw, and occasionally with small stones. It is generally a relatively soft material when found in archaeological contexts compared to sherds of pottery, and it is only hardened by exposure to heat or burning. Unfired clay is light weight and generally does not survive burial conditions, taphonomic processes or the post-excavation processing of samples particularly well. However, the presence of pieces or fragments of burnt clay is important for site interpretation, as it can support or enhance the understanding of an abandoned or demolished structure. Fired clay fragments can derive from structures as small as a hearth or an oven, or as large as a wooden building.

A total of 153 pieces and fragments weighing 925.6 g came from ten samples hand-picked during retrieval from the site, and from the processing of the soil samples[7].

The use of clay in wattle constructions

Pieces of fired clay are largely raw clay, possibly dug from deposits in the subsoil, or a stream side, to which organic material has been added to make the clay more pliable. It sometimes has the addition of gravel or the occasional small stone as a strengthener, and is generally referred to as 'daub'. Daub is not pottery, but it was used in an unfired or unburnt raw state as a constructional material together with withies (willow/hazel/alder wands) and hurdle-type wooden constructions, where its main function was as an insulating and infilling material. This combination of wooden withies and clay is traditionally known as wattle work or 'stake and rice' in Scotland (Walker and McGregor 1996, 38). If protected from the weather it was both a windproof and somewhat of an impermeable barrier. In the archaeological record this relatively soft clay substance was used as a building material for light weight, non-load bearing structures such as the walls of prehistoric timber buildings and for smaller structures such as ovens, hearths and furnaces. Clay was generally locally available, it was also cheap and plentiful, as was the organic binder or additive, usually straw or dung. It has a long history of use, not just in Britain but also worldwide, and the different base materials and additives produced different variants such as *adobe, cob* and *daub* (Graham 2004, 27).

The natural yellowish-brown colour of the subsoil clay would have reflected that of the underlying bedrock, but when burnt it changed to grey/buff to orange/red hues. This would normally only occur through the burning down of a house or structure, or through the prolonged heat of a furnace or hearth. In Scotland, due to taphonomic processes (mainly water and root penetration, and mechanical abrasion) much of the fired clay material is lost from the archaeological record, especially if it was not hardened sufficiently through burning. Fired clay pieces normally survive as irregular, abraded and soft clay lumps.

7 The pieces were gently brushed before examination with a X6 hand lens and their attributes were compiled in an archivable table devised using Microsoft Excel. The pottery was analysed according to the revised guidelines of the Prehistoric Ceramics Research Group (2010), the CIfA's Standards and guidance for the collection, documentation, conservation and research of archaeological materials (2014).

Table 10 indicates the number of pieces from the site and the weight from the different contexts in which this material was found.

Results of the analysis

The pieces of fired clay came from Sites 2-5 and from many different contexts in Site 5. The largest pieces from Site 2 are from topsoil deposits washed down from higher up the hill slope and are not in their original context. The other material from this site is mainly very small pieces, mostly measuring between 1-5 mm with a few pieces up to 9 mm. They are burnt and heavily abraded with rounded edges and surfaces and weigh less than 8 g per context. The largest amount by weight came from context 1037 which was radiocarbon dated to the first and second centuries cal BC (SUERC-97116). The pieces from Site 3 are also exceedingly small fragments and come from posthole fills, a ground surface and the fill of a stake hole. Site 4 had only small fragments from a deposit and the fill of a pit. None of these fragments and their locations is dated and they are not discussed further.

Site 5

The majority of pieces of burnt clay have come from the only a few individual contexts. The remainder, largely from soil samples, are again small fragments. Context (5016) on the west part of the site, which contained a small number of burnt clay pieces, overlay earlier features and may have flowed downhill as colluvium deposits. SF 125 and 148 are small, rounded pebbles, pale grey in colour and their shape is due to movement and abrasion in the soil. Beneath the deposits of context 5016, were several gullies, one of which (5163) also contained a small number of similar fired clay pebbles, with pale red/grey to dark grey and cream colours due to burning.

Further fired clay pieces were found to the north of the gullies, in the fill of a pit in the centre of the larger portion of the figure-of-eight-shaped structure. The pit (5323) contained evidence suggesting it had an industrial use, and the abraded fired clay pieces were considered intimately associated with these activities. Only seven fragments of fired clay came from the pit fill, two pieces of SF 194 were heavy, as they contained noticeable fragments of stone and quartz. Voids left by organic material were also noticed. Their reddish brown to yellowish red colours suggests the clay was subject to high temperatures. Although there was no evidence from these pieces that they had been pressed against a wooden frame for a furnace, for example, it is possible they were part of a clay lining to such a structure. If this had indeed been

Site	Contexts	Nr pieces	Weight (g)
2	1006, 1009, 1010, 1025, 1027, 1036, 1037, 1047, 1054	12*	17.9
2	1001 colluvium	2	7.3
3	3008, 3009, 3012, 3014, 3018, 3019, 3021-3023	4*	15.1
3	3022 fill of posthole 3047	4*	51.2
4	4002 deposit, 4004 fill of pit 4003	0*	14.3
5	5014 fill of posthole 5393	8*	19.1
5	5016, mixed deposit over earlier features	7*	19
5	5020/5021 fill of pit 5179	54	423.4
5	5024 upper fill of pit 5351	4*	5.1
5	5040 fill of pit 5193	20*	104.9
5	5087 fill of linear feature	2*	16.5
5	5161 burnt layer	3*	7.2
5	5166 fill of gully 5163	1	2.6
5	5177 upper fill of pit 5179	2*	5.3
5	5178 lower fill of pit 5179	13*	96.7
5	5306 fill of pit 5323	7	99.7
5	Others: 5036, 5038, 5041, 5061, 5145, 5146, 5180, 5207, 5218, 5236, 5267, 5271, 5316, 5330, 5368 and 5371	10*	20.3
	Totals	153	925.6

* includes fragments

Table 10: Number of clay fragments and their weight by context.

the case, more pieces and larger fragments would have been expected in the immediate area.

One other feature of this site produced fired clay of interest, and this was a large but shallow pit (5179) to the south of the figure-of-eight structure. It contained the largest number of pieces (50) at almost 400 g in weight which were confined to the central and eastern parts of the pit. SF 138 (from context 5020) is reddish yellow coloured fragments and contains quartz sand with other small stones and organic material. At least three pieces retained their shaped from being moulded onto roundwood or smooth branches c. 18-24 mm in diameter, possibly willow or hazel (see Archaeobotany). The largest of the shaped pieces measures 52.6 by 28.7 by 24 mm. The pieces have concave faces which were pressed against roundwood, and right-angled moulding to their rear, indicating they originated between the frame or hurdle and the withy infill. The evidence suggests a hurdle (in which the wattle uprights were secured) or a rectangular or square frame that surrounded the roundwood withies.

SF 149 from context 5021 is similar. The pieces are light red/reddish yellow in colour, and further shaped pieces are present, indicating that roundwood c. 19-20 mm in diameter were used to create a structure that was then covered in daub (Figure 20). The largest fired clay piece contains a stone that measures 14.5 by 13.5 by 10 mm, but quartz pieces and organic material are also present. These were also pieces from the edge of a frame.

When excavated the pit was considered to be filled with dumped material, and charcoal was also present. It could be interpreted that the fired clay is evidence of a discarded part of a structure, such as a partition or wall piece, possibly from the figure-of eight building.

Although a number of radiocarbon dates were produced from Site 5, none of the contexts which produced burnt clay were dated.

Discussion

Fired clay pieces are not datable in themselves and the radiocarbon dates from site 5 suggest periods of occupation from the sixth to the twelfth centuries AD, although none of the radiocarbon dates reflect the use of the pits and other features which contained fired clay. What the daub tells us is that parts of a wattle and daub structure were found in pit 5179 that used roundwood withies from willow trees or hazel shrubs. Although the term *withy* is used here, it generally refers to willow wood. What the structure was is uncertain, but it was flat with a frame, and therefore most likely to be a partition or part of the wall of the building. The fired clay pieces indicated the roundwood withies were straight and not curved, indicating the daub in this instance was not from an oven.

The fired clay pieces from the pit in the centre of the building could have had a different function, such as lining the inside or outside of a furnace with a wooden structure of willow or hazel roundwood.

Other small pieces of fired clay found in a small gully and its overlying deposits, is material that has travelled down the hill slope.

Figure 20: SF 149 daub fragments.

Industrial waste

By Christine Rennie

Introduction

The following report details the analysis and interpretation of industrial waste recovered during fieldwork, and from environmental samples taken at Coultorsay. The assemblage comprised 259 pieces of industrial waste with a combined weight of 482 g8 (Table 11).

Results

The majority of the assemblage (158 pieces) consisted of light, frothy vesicular material which was not visually diagnostic of a particular form of industrial activity. The 101 diagnostic pieces were related to iron working and all were from the fills of features located in the possible production area within the internal space of the large figure-of-eight enclosure defined by contexts (5224, 5287, 5311 and 5384).

Metal working waste

One piece of furnace lining (CAT 1) weighed 44.2 g and had been recovered from the fill (5049) of posthole (5355).

A total of 26 pieces of spheroidal hammerscale (CAT 2 to CAT 27) with a combined weight of 0.6 g were recovered from environmental soil samples. CAT 25 had been in a pit at the south-east of the production area and CAT 26 was from the interior of a structure in Area 3. All of the remaining hammerscale was from pits and postholes located in the larger, eastern part of the figure-of-eight structure. Spheroidal hammerscale, or slag spheres, are the product of fire-welding, where molten slag ejected through the force of the hammer-blow is fast-cooled as it travels, resulting in small, often hollow, spheres (Dungworth and Wilkes 2007, 33). Hammerscale is frequently found in conjunction with debris from bloomery smelting, the iron bloom having been consolidated on-site.

Seventy-four pieces of tap slag, many of which had fused to stones, were recovered from environmental soil samples. The combined weight of the tap slag was 57.2 g (CAT 28 to CAT 101). The overwhelming volume of tap slag was recovered from two intercut pits located in the approximate centre of the larger, eastern part of the figure-of-eight building. The fill (5306) of pit 5323 contained 27 pieces (1.7 g) of material (CAT 28 to CAT 54), while the upper fill (5024) of pit 5351 contained 40 pieces (49.9 g) of material (CAT 55 to CAT 94). Tap slag is the product of the periodic removal of slag from the furnace in order to maintain the airflow through the structure. An opening near the base of the furnace is created which allows the accumulated slag to flow out to form pools, and it is at this point that stones and other material become fused with the molten material.

Catalogue Reference	SF no.	Sample	Context	No.	Description	Context description
1	195	-	5049	1	possible furnace lining	Single fill of post hole 5355
2-13	-	244	5306	12	spherical hammerscale	Fill of pit 5323
14	-	308	5371	1	spherical hammerscale	Fill of posthole 5370
15-23	-	287	5351	8	spherical hammerscale	Lower fill of pit 5315
24	-	291	5046	1	spherical hammerscale	Fill of curvilinear gully 5384
25	-	278	5345	1	spherical hammerscale	Fill of pit 5346
26	-	88	3018	1	spherical hammerscale	Deposit within internal structure area
27	-	201	5014	1	spherical hammerscale	Fill of posthole 5393
28-54	-	244	5306	27	slag prill/fused stone	Fill of pit 5323
55-94	-	256	5024	40	slag prill/fused stone	Upper fill of pit 5351
95-99	-	261	5324	5	slag /fused stone	Fill of posthole 532
100	-	244	5306	1	slag prill	Fill of pit 5323
101	-	201	5014	1	slag prill	Fill of posthole 5393

Table 11: Industrial waste from metal-working in Site 5.

8 The industrial waste was examined using a hand lens at x10 magnification, and the visible characteristics of the waste, principally texture and porosity, were noted. Comparison was made with examples from the National Slag Collection held at Ironbridge Museum.

Discussion

Metallurgy

Waste material from metallurgy is readily identifiable, and the types of waste can indicate which of several metal-working activities took place. The examples of metallurgical waste from Coultorsay are representative of iron smelting and hot smithing.

The furnace lining, tap slag and slag prills are an indication that the smelting was carried out within the figure-of-eight building. Judging from the spread of the spheroidal hammerscale, it is most probable that the primary smithing of the hot bloom was also carried out within this structure. Hammerscale is frequently found in conjunction with debris from bloomery smelting, when the iron bloom has been consolidated on-site. The volume of iron-working waste from Coultorsay strongly suggests that the hammerscale derives from primary deposition.

The industrial waste from Coultorsay is indicative of both iron smelting and the initial smithing which would consolidate the bloom. From the available evidence, it is most probable that the spheroidal hammerscale and the tap slag is the result of primary deposition. The single piece of furnace lining is insufficient to determine the form of the furnace.

Discussion

Prehistoric activity

Evidence for prehistoric activity was confined to Sites 1, 2, 3 and 5, with lithic evidence suggesting use of the area from the early Mesolithic to the later Neolithic on Site 1 and from the Mesolithic to the early Neolithic on Site 2. Most of the lithic pieces are considered to be residual i.e., finds disturbed by later activities. Although no radiocarbon dates were obtained from the Mesolithic period during the work, archaeological investigations at Rubha Port an t-Seilich in the north-west of the island has indicated that individuals settled on Islay as early as 12,000 years ago (Mithen 2017). The present work has shown these early inhabitants were in contact with others in the wider landscape through trading routes with other Hebridean islands, the Scottish mainland, and the north coast of Ireland (see Lithics above). This activity continued throughout prehistory with evidence of more permanent structures and agricultural practices.

The earliest evidence of a permanent structure was that of a D-shaped timber building on Site 3 that was radiocarbon dated to the very end of the late Bronze Age (Table 1). The D-shape was probably the result of a large outcrop of bedrock limiting its shape in the eastern end. The botanical evidence suggests oak and alder were used for the structure, with other woodland species used for firewood (see Archaeobotany above). Although small amounts of daub were found within the fills of a number of postholes, and also in the occupation deposits, the largest amount came from posthole 3047 in the centre of the building. Given the widespread occurrence of this material it suggests the walls and/or partitions of the structure may have been wattle and daub panels, using willow, hazel, birch, alder and possibly also oak. Domestic activity was noted by the survival of hazel nutshells and the presence of barley and emmer wheat grains. A small rim of pottery came from the fill of a posthole (3042) on the north-east side of the structure. Although a small number of lithic pieces were found at this site, they are undated but possibly all residual.

Although Site 5 was not considered prehistoric, lithic material of early Neolithic and early Bronze Age date was found there as residual finds in later features, with much of it being washed down hill in colluvium deposits.

Early medieval metalworking workshop

Site 5 was dominated by a figure-of-eight timber structure with associated gullies, pits, postholes and hearths all consistently dated to between the sixth and ninth centuries AD (Table 1), and therefore placing the activities at the site within the early medieval period and contemporary with the kingdom of Dal Riata.

The figure-of-eight structure (Figure 8) comprised several overlapping curvilinear gullies which formed two internal areas, an architectural form that characterises pre-Norse settlement (ScARF n/d). Due to the shallow depth of the building's perimeter gullies, there was a distinct absence of evidence for posts or stakeholes within them. It would seem more than likely that the structure was built using internal timber posts to support its roof, with light-weight wattle and daub panels to create its walls and any internal partitions. Widespread small pebbles of daub and the evidence for roundwood (birch and hazel) in the botanical assemblage, indicates that wattle and daub was a construction material used in the building. Once its walls had fallen into disuse these would, through time, have left little or no trace of their presence, except for the drip gullies that formed when water dripping from its roof eroded the ground immediately below it.

Turf may have also been used in the building's construction, though there was little direct evidence. A few examples of turf construction survive on Islay, at for example, Dun Nosebridge Fort (Lock and Ralston 2017) in the north-east of the island, which has several turf structures, although they are thought to date to as late as the eighteenth/nineteenth centuries. Turves may have been particularly attractive to individuals living on Islay because of the widespread peat bogs, from which they were dug. When dried the turves could provide a waterproof surface and thick insulating layer that could have been used as a roof covering for the figure-of-eight building (TAN 2006).

Several heather fragments from the fills of 'drip gullies' suggest the use of heather turf as a roof covering or as a fuel source. At the Iron Age metalworking site of Culduthel in Inverness the authors suggested that the walls of the metalworking roundhouses were movable to improve ventilation and light (Hatherley and Murray 2021, 64). This suggests that the Culduthel buildings were constructed of lightweight panels, or by the time the building was used for metalworking it might have been in a state of collapse with gaps in its walls, or even missing, or partially missing its roof (Armit *et al*. 2008, 99). This was similar to the structure latterly used for metalworking at Eilean Olabhat on North Uist (ibid) which revealed several phase of use, initially being used as a domestic structure and latterly as a metal workshop, its roof in a state of disrepair probably as an aid for ventilation. At Dunadd (Lane and Campbell 2000) the remnants of several turf buildings were noted in the metalworking area suggesting that this building form was at least used on occasions for craft activities.

During the Coultorsay excavation it was noted that the building had several phases of construction or alteration. The first phase appeared to comprise a linear alignment of postholes/pits demarcating the junction between the small and large internal areas, and the entrance to the latter (5325, 5356, 5381 and 5393), as well as encompassed those postholes and pits below the floor deposits (5320 and 5061). The walls of the figure-of-eight structure (Figure 21) indicated evidence of repair, or wall replacement along its south-western side, with the addition of a further drip gully (5235) positioned external to the larger gully (5224). At some later date the central layout of the larger internal space underwent change, as the building's function changed from domestic to industrial (Figure 22). The change to a workshop for metalworking made several of the building's postholes redundant and they were replaced by bowl furnace pits. Towards the eastern entrance to the building there were two charcoal-rich deposits possibly related to the rake- and sweeping-out of burnt material from the craft work area.

Figure 21: Figure-of-eight building – suggested reconstruction.

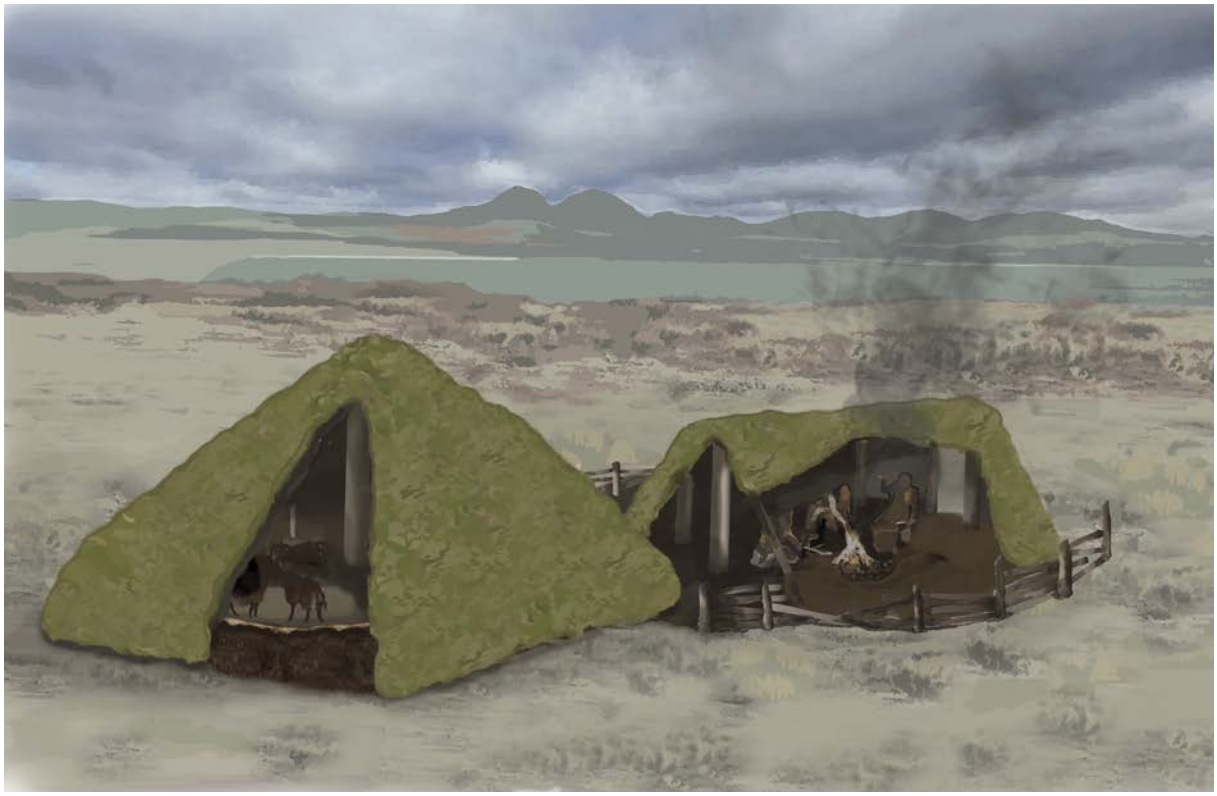

Figure 22: Industrial workshop – suggested reconstruction.

Activities in the figure-of-eight building

Domestic activity was difficult to identify on site although much of the charcoal obtained from pits and postholes within and surrounding the area appeared to be domestic hearth waste, which probably became incorporated into the features through periodic sweeping. The presence of domestic hearth waste would suggest that the building commenced life as a domestic dwelling. Evidence of the burnt bones of livestock and the presence of carbonised cereals also attest to the domestic nature of the building and the site itself.

Artefacts relating to this structure were few, and no contemporary sherds of pottery were recovered, with the exception of several residual Iron Age sherds from features to the south, which hinted at earlier activities. Some stone roundels, with the smaller ones possibly used as gaming pieces, metalworking waste, a very worn and broken upper rotary quern and two fragments of shale bracelets, one which had undergone an attempted repair, were the only artefacts recovered, and were all of probable similar date.

A bone needle was also found, although it was not from a secure context to suggest its date of use and/or manufacture. This and the worn upper quern stone used for grain processing also confirm the (original) domestic use of the building. However, the re-purposing of a building following its initial usage is common in archaeology, and a comparable example was recorded at the late Iron Age site at Eilean Olabhat on North Uist (Armit *et al*. 2008). There, a small stone cellular building initially occupied in the Iron Age was re-used and re-purposed in the early medieval period for metalworking. Unlike the present site, Eilean Olabhat was used for both ferrous and non-ferrous metalworking with moulds and crucibles also recovered. The site was also interpreted as one servicing local demand. However, at Coultorsay, a small building to the south-east of the figure-of-eight structure would suggest that it could have been used as a domestic shelter for craft workers (Figure 9). No other domestic sites of the same period have been found on Islay, and once the building had been abandoned or became a workshop, domestic activities moved elsewhere.

Artefacts from the workshop phase have not survived to provide evidence of what was being made or even repaired at the site, but the recovery of iron slag from metalworking pits located centrally within the building, and an absence of moulds and crucibles, would suggest it was iron-based. Bog ore was a readily available resource on Islay due to the large number of peat bogs. Smelting ore in a furnace above a small bowl-shaped pit was probably the favoured method of iron bloom extraction. Several fragments of fired clay recovered from the building might also have been part of the clay superstructure of a furnace. No obvious fuel was favoured for smelting and it appears likely that whatever was available was used for the purpose. However, fucoid seaweed recovered both from gully 5186 and an occupation deposit 5079 to the north of the structure, could suggest that this resource may also have been utilised as fuel or even a flux to remove impurities. However, no evidence was recovered for peat being used as a fuel, despite its ubiquity on the island and its use for this purpose up to and including present times. No anvil was identified on site either to suggest the building was also used for smithing, as only the primary smelting of the ore bloom took place in the workshop at the furnace location. The size of the furnace and amount of slag recovered could suggest that it was a small local enterprise probably serving a local farming community with most of the objects probably functional rather than decorative in purpose. However, more recent research at Glenlee in Dumfries and Galloway (see below) could equally suggest that the site focus was on ore bloom extraction only, with forging and production of artefacts taking place elsewhere. Hunter and Cruickshanks in Toolis and Bowles (2017) comment on the difficulty of producing decorative objects using iron due to its hardness, as it is more suitable for functional items such as tools and weaponry and this could have been carried out elsewhere following the exportation of the iron bloom. However, it is not inconceivable to suggest that the shale bracelet fragments with evidence of repair might have been brought to the craftworkers for mending. The fact that no other examples of shale bangles have been found on Islay (see Shale Bracelets above) suggests that this could have been a valued possession.

Comparison

The figure-of-eight building is reminiscent of those domestic cellular buildings found during the Pictish period, which generally comprise of several interlinking cells surrounded by stone or turf. These have been mainly found on other western and northern isles sites including Buckquoy on Orkney (Ritchie 1976-7) and at the Udal North Mound, North Uist where two phases of figure of eight or cellular buildings were excavated in 1972 and 1973. Metalworking and comb working activities were associated with the structures which lay below the Viking/Norse levels (B. Ballin Smith pers. comm.).

The artefacts suggest that the workshop at Coultorsay was not a high status site as there was no evidence of non-ferrous metalworking and/or the working of precious metals. The latter are often found on relatively high-status sites such as Dunadd (Lane and Campbell 2000) near Lochgilphead, Dumbarton Rock (Alcock and Alock 1990), Trusty's Hill (Toolis and Bowles 2017) and Mote of Mark (Laing and Longley 2006) in Dumfries and Galloway. Unfortunately, very few domestic structures of this date have been excavated in Argyll and elsewhere in Scotland, with much of the archaeological evidence obtained from the high-status settlements as those listed above and monastic sites such as on Iona (NRHE NM22 SE 5) and Portmahomack Monastery overlooking the Moray Firth (Caver 2004).

The Coultorsay workshop is unusual and relatively rare, in that it is an unenclosed settlement, dated to the early medieval period. In contrast to known metalworking sites that are either high status or enclosed sites, the Coultorsay structure was probably a workshop for smelting bog ore. A similar unenclosed site was found at Blairhall Burn (Strachan *et al.* 1998) in Dumfriesshire and at Walton Road, Dyce in Aberdeen (Woodley 2018) where pits with evidence of metalworking and its waste were uncovered alongside prehistoric remains. This suggests that these types of sites were perhaps more common and geographically widespread than has been realised In 2021 at Glenlee in Dumfries and Galloway a large amount of bloomery slag surrounded by a structural elements including postholes, pits and ditches which were dated to between the seventh and nineth centuries AD was uncovered during pre-development site investigations. Analysis revealed that bloomery iron smelting was taking place on site, possibly using bog ore. No finished products were found at the site suggesting that it was involved in the production of iron bloom only, with the material exported elsewhere for forging (McLaren 2023). The lack of forging evidence at the Coultorsay site could also suggest that the site focus was on iron bloom production only, albeit possibly at a much lesser scale than at Glenlee.

Evidence for metalworking has been found on a wide range of sites in Argyll during this period and includes not only the aforementioned high-status sites but also crannogs such as at Loch Glashan and cave sites. During the seventh and eighth centuries AD Columba's Cave in Mid-Argyll (Tolan-Smith 2001) was used as a metalworking workshop with evidence of non-ferrous metalworking in the form of crucibles, two-piece moulds and tuyere fragments. Evidence of craftwork using bone and antler to produce needles and pins were also found there. Recent research in Ness on Lewis (Barrowman 2015) found that occupation of many of the larger Iron Age sites such as brochs, wheelhouses and duns continued into the first centuries AD. This could also have been the situation on Islay, where the sites of duns and brochs might have been reused for other activities later than previously envisaged, and may have even continued into the early medieval period.

Conclusions

The archaeological works at Coultorsay have provided evidence of not only prehistoric activity but a domestic early medieval settlement, which is highly unusual on Islay and in Scotland in general, where archaeological research has focused predominantly on investigating high status secular and ecclesiastical sites of this period. The Coultorsay workshop was re-purposed from the dilapidated shell of a figure-of-eight building and is quite unusual with few parallels to compare it to. However, it conforms to a hierarchy of settlement found during this period with slight buildings such as this structure, characterising the lower echelons of society (Toolis and Bowles (2017, 254). Indeed, it is

easy to imagine the early medieval landscape of Islay characterised more by slight buildings such as this, where the majority of the population resided, than more substantial fortified or otherwise enclosed settlements that dominate discussion of the archaeology of this period.

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Project archive and finds location

The site archives will be lodged with the NRHE at Historic Environment Scotland, Edinburgh, and the finds will be reported to Treasure Trove Scotland.

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Archaeology Reports Online
52 Elderpark Workspace
100 Elderpark Street
Glasgow
G51 3TR
Tel: 0141 445 8800
Fax: 0141 445 3222
editor@archaeologyreportsonline.com
archaeologyreportsonline.com