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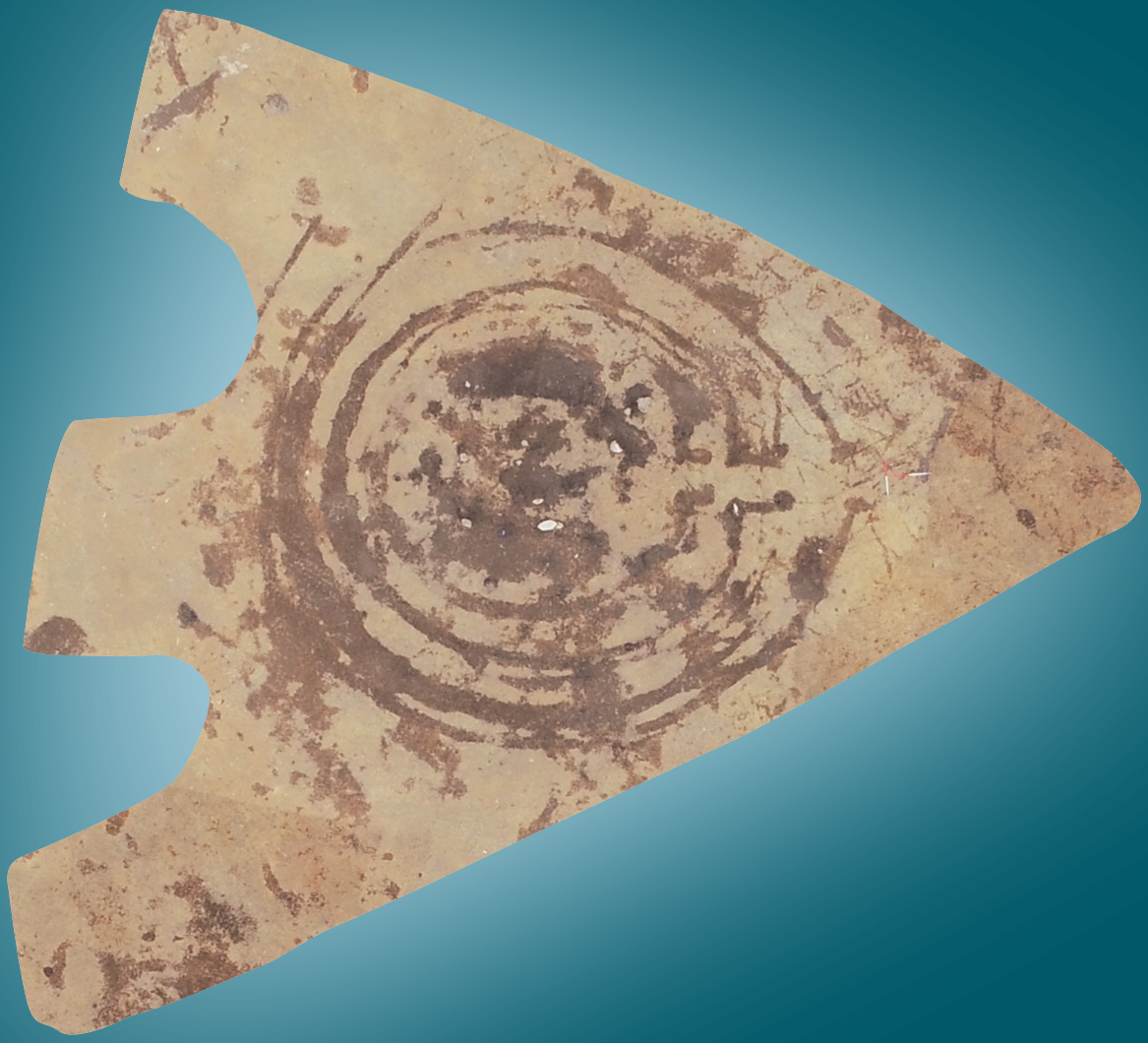

ARO70: Bronze Age Graves and Roundhouses at Northbar, Erskine

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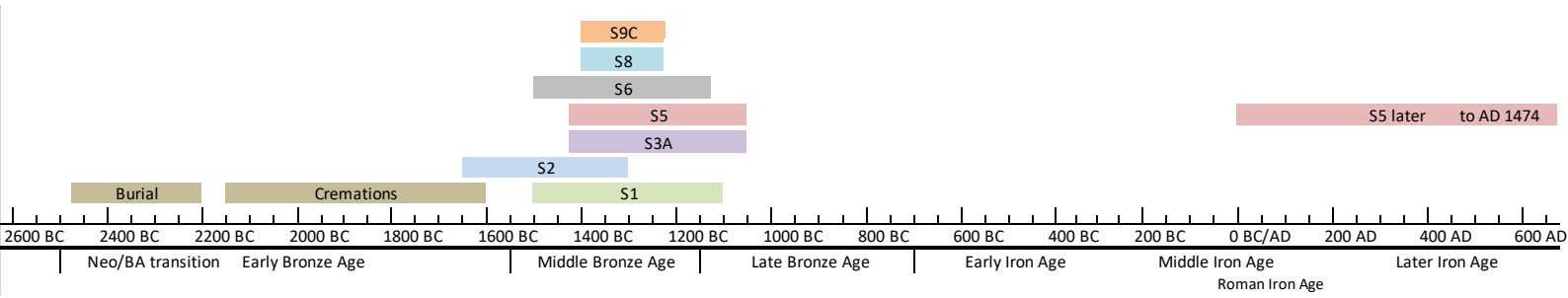

Summary

The excavations at Northbar near Erskine produced evidence of burials and settlement from the early to middle Bronze Age, and has provided a rare insight into daily life and rituals during this period, from the funerary activity, to evidence of crop production and processing, animal husbandry, weaving, construction techniques and settlement development over several centuries. The earliest features, one large and several smaller pits with sherds of 15 early Beaker vessels were located at the top of sloping ground. Several centuries later the first structure, a roundhouse was built close by followed by a second building. This pattern was repeated c. 150 m to the south-west where cremation burials formed a small cemetery later in the early Bronze Age. Its location also attracted the construction of two middle Bronze Age roundhouses.

The survival of postholes, pits and gullies informed changes that took place in rebuilding and enlargement of the structures over time. Material culture included pottery, several clay loom weights, stone tools, burnt animal bones and charred barley and wheat grains and hazelnuts, indicating the domestic function of the roundhouses. Several kiln pits, rare evidence from this period, were found within a roundhouse demonstrating industry within the Middle Bronze Age settlement too. Additional, less complex roundhouses were found to the south-east. The settlement continued into the earliest part of the late Bronze Age before disappearing from the archaeological record. Roman Iron Age use of the landscape was also recorded.

Introduction

by Warren Bailie

Between June 2018 and April 2019, GUARD Archaeology Ltd undertook a major excavation at Northbar, Erskine, commissioned by CALA Homes (West). This work followed a previous metal detecting survey and trial trench evaluation in 2017 that discovered a number of pits and postholes, as well as linear and curvilinear features (Bailie et al. 2017). As a result of this, a monitored topsoil strip of an area amounting to 6.3 hectares (c. 59% of the total development area) was undertaken, and the extent of archaeological features established. This led to an extensive excavation of over 1000 archaeological features.

Site Location, Topography and Geology

by Warren Bailie

The development area at Northbar, Erskine, Renfrewshire (NGR: centred at NS 4820 6933) (Figure 1) comprised c.10.6 hectares divided into two fields formerly used for grazing. A wooded area was excluded from the archaeological investigation. The eastern field (Field A) sloped from the south-west down to the north-east and the western field (Field B) sloped down to the north but was otherwise predominantly flat. Post-war housing bordered the site to the north and west, open fields lay to the north-east and woodland delimited the site to the south. The site lies on the former post-glacial shoreline of the River Clyde basin, with the lower lying land to the north-east being the current River Clyde floodplain.

The solid geology consists of Lawmuire Formation, Sedimentary Rock Cycles and the overlying drift deposits (subsoil) consist of Devensian Diamicton tills, with an area of Raised Marine Beach Deposits of Late Devensian sand and gravel to the south along the edge of the woodland (British Geological Survey 2026). During the fieldwork the subsoil was observed to consist of pale yellowish-brown sandy clay on the higher ground and orangey-brown sandy gravel in the lower lying parts, with a c. 0.3 m depth of topsoil covering it.

Archaeological Background

by Warren Bailie

An Archaeological Desk-Based Assessment of the development area and its surroundings was carried out as a preliminary part of the project and included a walkover survey (Rennie 2016a). It indicated that there was evidence for significant medieval occupation in the area surrounding the Northbar development area, including part of the battlefield of the Battle of Renfrew, fought in AD 1164. This battle was fought between Somerled, the Lord of the Isles, and Walter Fitz Alan, the High Steward of Scotland, with some of the fiercest fighting apparently having taken place in Teucheen Wood, located immediately south of the development area (Figure 1). The ploughing of a mound within this wood, presumably in the nineteenth century, uncovered human bone and fragments of armour thought to be the burial spot of those killed during the battle (McClelland 1905, 22-23).

The Knights Templar “appear to have obtained considerable grants of land at Inchinnan, and are supposed to have had an establishment at Greenend, now called House of Hill” (New Statistical Account of Scotland 1845), on the present location of Northbar House. The Scheduled Monument of Inchinnan Old Parish Church (HES, SM2792), was given to the Knights Templar by King David I (1124-53), and is located approximately one kilometre south of the site.

In 2017 the metal detecting survey carried out by GUARD Archaeology on the proposed development site (Bailie et al. 2017), recovered horseshoes and horseshoe fragments, iron machinery parts, and general metal waste of nineteenth to twentieth century date, indicating the use of the land for agricultural purposes. The lack of any battlefield finds suggests that this area was not part of the Battle of Renfrew in 1164.

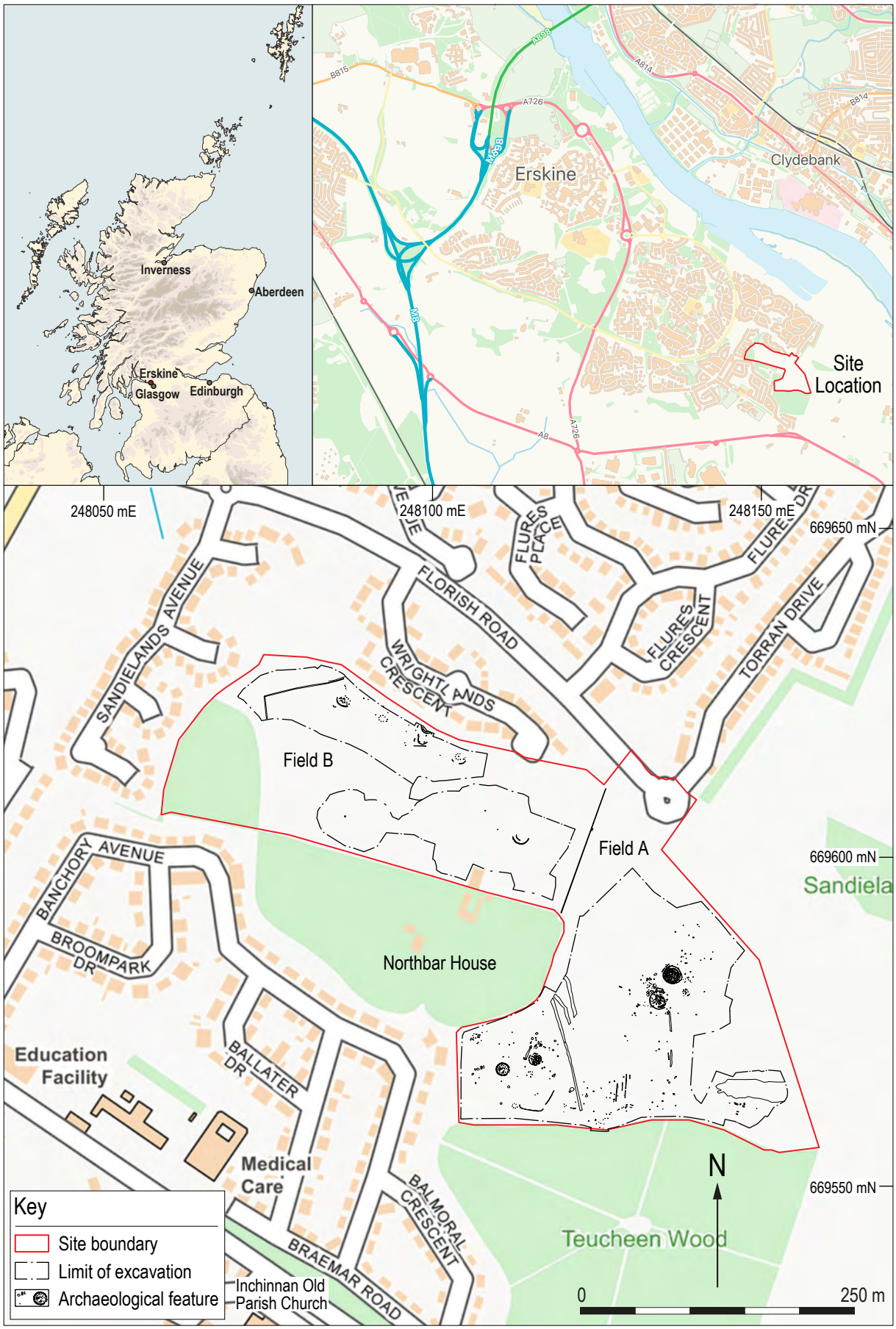

Figure 1: Location of the site.

The Fieldwork Results

Early pits

Towards the middle of Field A, situated north and west of Bronze Age Structures S1 and S3A were a large number of oval-shaped pits. The largest and most informative of these lay furthest from the buildings (Figure 2) and comprised a small group of four sub-circular pits (contexts 840, 875, 877 and 1064) that were identified during their excavation as possible waste pits because of their contents. Other pits located close to them are presumed to be the result of later activities or related to S3A (Figure 3).

The largest pit (840) measured 1.4 m by 1.1 m by 0.29 m with a fill of orangey-brown silty sand. To its immediate north-east was a shallow pit (875) with a greyish-brown sand fill. The feature measured 0.98 m by 0.52 m but had a depth of only 0.15 m. To the north-west was a smaller pit (877) and further to the north-east was another (1064). Both these were c. 0.7 by c. 0.65 and by 0.16 m to 0.2 m in depth, and both were filled with reddish-brown silty sand. Each of these features contained charcoal and sherds of prehistoric pottery that represented 15 different vessels (114 sherds) distributed among them, all of them early Bronze Age Beakers (see *Prehistoric Pottery*, below). In addition, a flint blade SF 194 was also recovered from the fill of pit (840) and a stone pounder SF 223 from the fill of pit (1064).

A radiocarbon date range of 2462 – 2208 cal BC (UBA-49250) was determined from birch charcoal from the fill of the largest pit (840), indicating the activities associated with these pits was from the very end of the late Neolithic and into the earliest part of the early Bronze Age (Table 1 and Figure 4).

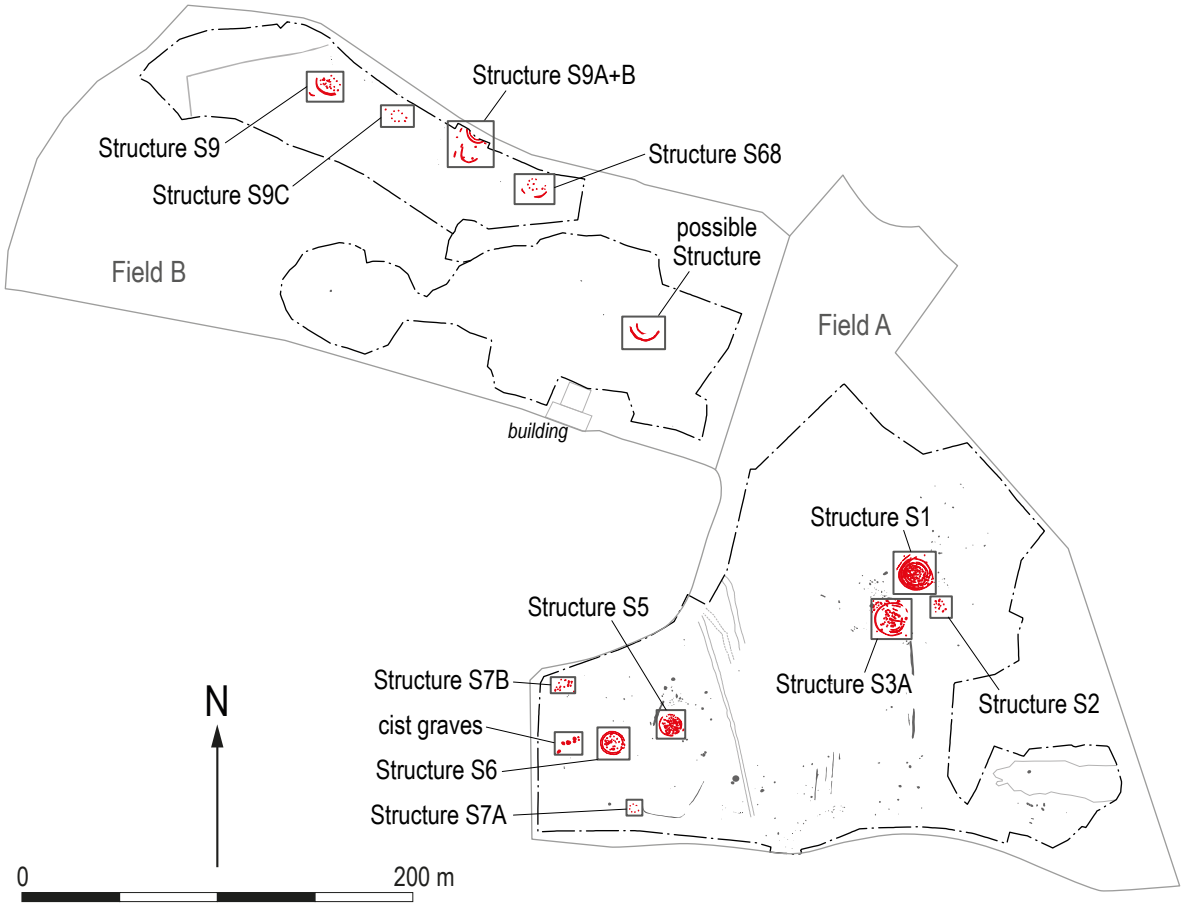

Figure 2: Site plan Field A and B.

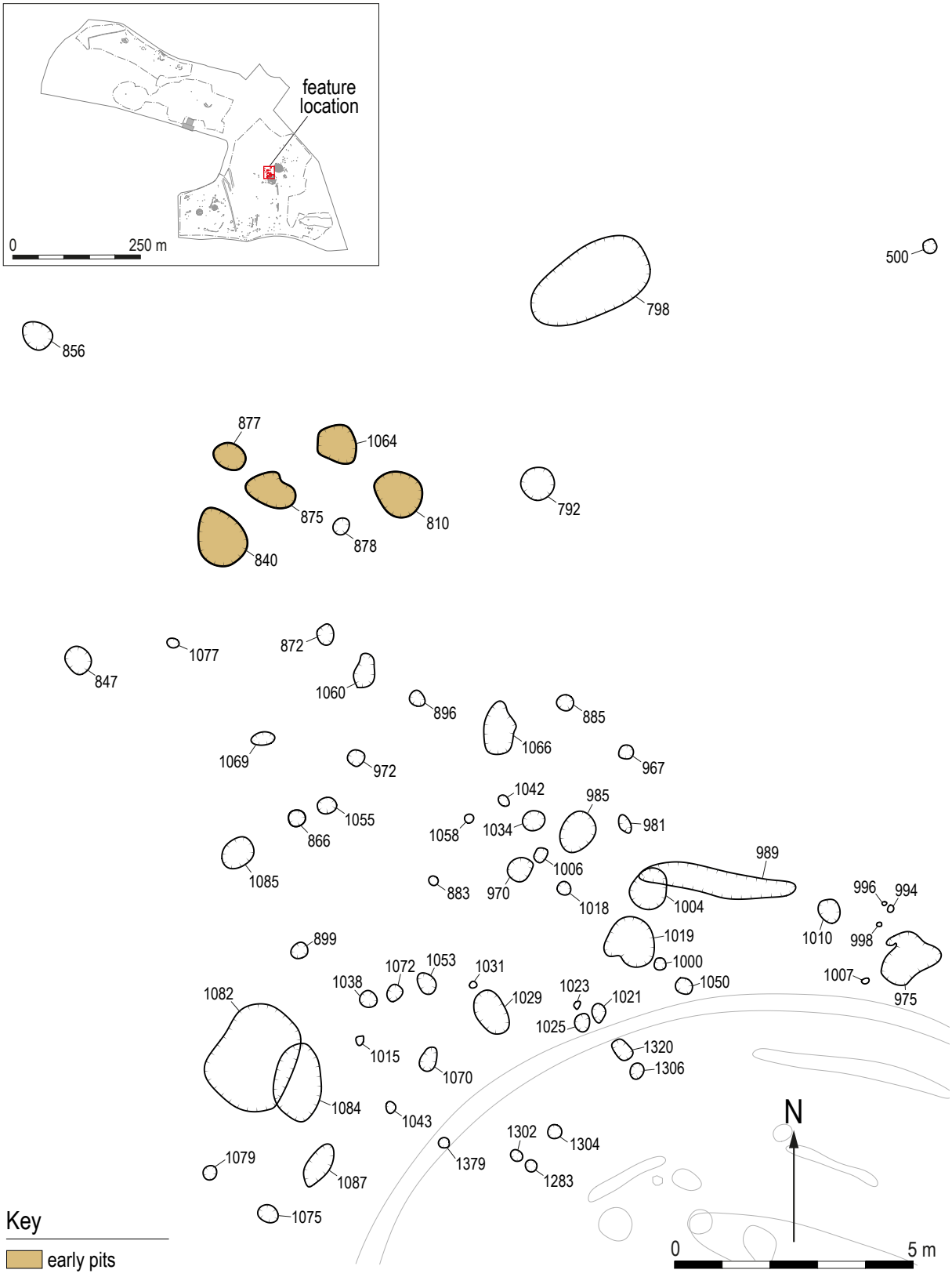

Figure 3: Location of the earliest dated pits.

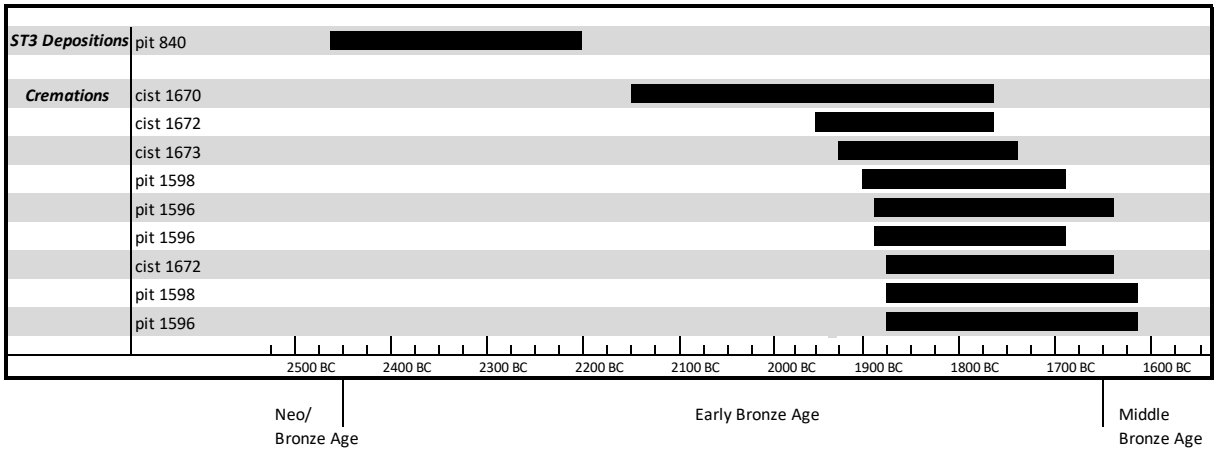

Figure 4: Diagram of earliest radiocarbon dates from pit depostions, cremations and burials.

Cists and cremations

The earliest stone structures identified during the excavation were the remains of four cists, or simple burial chambers, located at the western extremity of Field A, to the south-western extremity of Structure S6 and at an elevation of c. 23 m OD (Figure 2). They formed a small cemetery together with a number of cremation pits. Additional cremation pits to the immediate north, east and further south, to the limit of the excavation, indicated that the practice of cremation and burial, and the activities associated with them continued across the area.

Of the nine cremations uncovered, four of them were closely associated with the group of cist graves (1672, 1673, 1678 and 1749, Figure 5). The westernmost of these cists (1678) measured 1.2 m by 0.82 m by 0.41 m and was aligned roughly north-west/south-east. Directly east of this, the second cist grave (1672) aligned east/west was much larger at 2.12 m by 1.85 m, with a depth of 0.45 m. To the north-east of 1672, the third cist (1673) was aligned north/south and measured 1.7 m by 1.3 m with a depth of 0.5 m (Figure 6). A smaller cist grave (1749) that was c. 1.1 m by 1 m was uncovered to the immediate south of the latter, and its stone lining was clearly visible in its base (Figure 7). It was significantly deeper than the other graves, reaching 0.8 m in depth.

Within the fill (1671) of the westernmost cist (1670/1678), fragments of a near complete Bronze Age vessel V41 were recovered, along with a small amount of burnt bone and hazel nutshell. Its contents were dated to 2137 – 1944 cal BC (UBA-49274), the early Bronze Age. This is the earliest radiocarbon date produced from the carbonised material recovered from this group of features (Figure 4).

The fragmented remains of a complete Bronze Age vessel V40 were also recovered from the fill (1661) of cist (1672) to the immediate east. In addition, there was a large amount of burnt human bone, SF 256. A burnt piece of alder wood from this cist was also dated to the early Bronze Age, between 1879 – 1646 cal BC (UBA-49273). In addition, a second radiocarbon date from a burnt fragment of human limb bone produced a date range of 1948 – 1770 cal BC (UBA-49302), indicating that this bone fragment was marginally older than the alder wood that accompanied it into the cist (Figure 4).

No vessel fragments were recovered from the upper fill of the cist (1673) to the east of this. However, a concentration of burnt bone was uncovered deep within southern extent of its lower fill (1677) and a burnt fragment of a human limb bone recovered from it was dated to the same early Bronze Age period of 1920 – 1746 cal BC (UBA-49298). To the immediate south-west of these cists a pit (1665) measuring 1.94 m by 1.06 m with a depth of 0.4 m was discovered, possibly representing an unfinished or unused grave.

Directly to the east of the cist graves, two small cremation pits (1596) and (1598) were also uncovered, both measuring 0.6 m in diameter with depths of 0.25 m. These were filled with layers that included flecks of charcoal and burnt bone. A number of fragments from a fragmentary Bronze Age vessel V42 (Figure 8) were recovered from one of the cremation pits

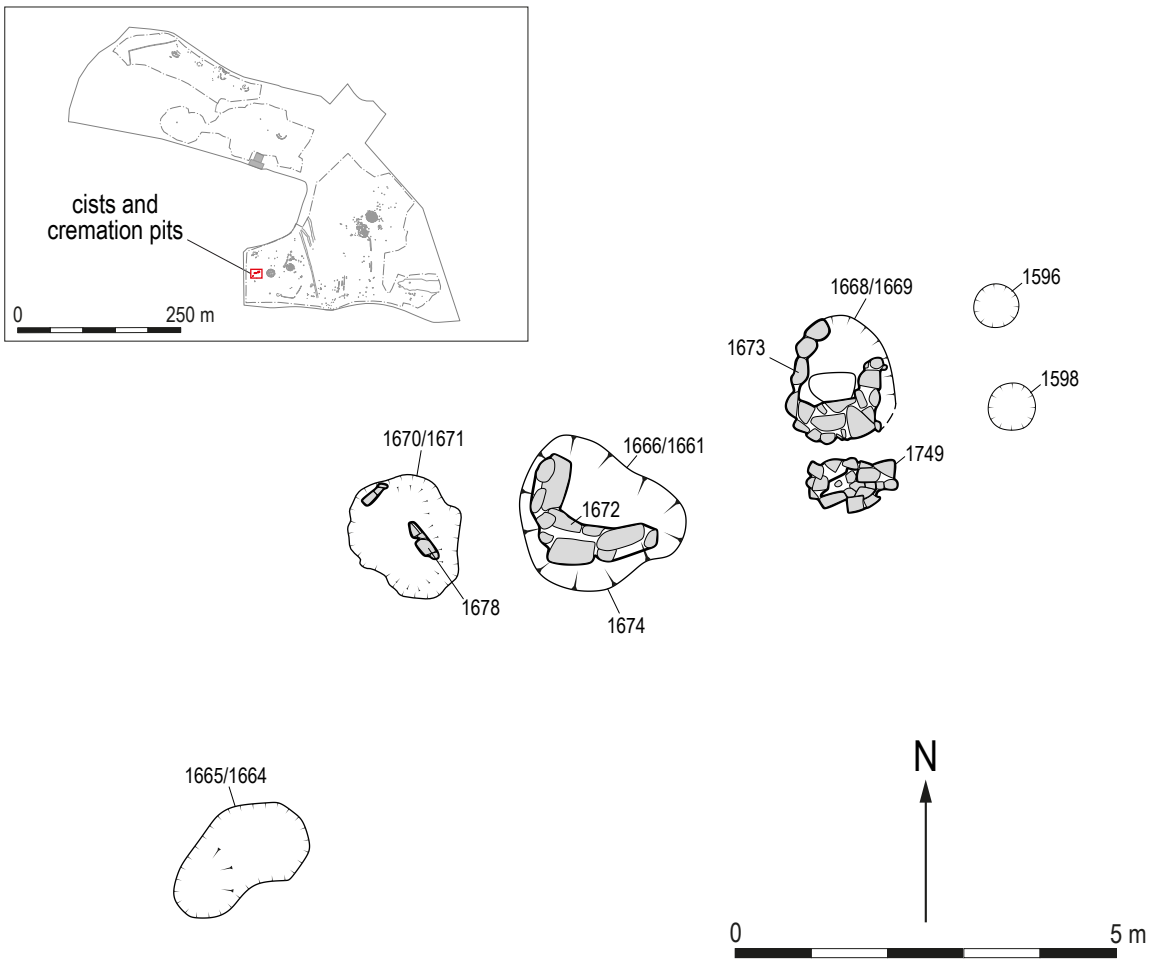

Figure 5: Plan of cists and cremation pits.

Figure 6: Cist graves 1672, 1673, and 1678 during excavation, viewed from the east.

Figure 7: Cist grave 1749, view from the east.

Figure 8: Cremation pit 1596 with Bronze Age vessel V42, viewed from the east.

(1596). Additionally, burnt alder wood from this cremation pit was also dated to the early Bronze Age with date ranges of 1880 – 1688 cal BC (UBA-49271) and 1865 – 1621 cal BC (UBA-49270); with a burnt fragment of human limb bone also recovered from the same pit producing an almost identical date range of 1881 – 1647 cal BC (UBA-49299) (Figure 4).

A piece of burnt birch wood from a cremation pit (1598) to the immediate south of this was also dated to the early Bronze Age 1865 – 1624 cal BC (UBA-49272); along with, a small fragment of burnt human skull which produced a near identical date range of 1880 – 1690 cal BC (UBA-49300). These radiocarbon dates suggest that the cremations in the area are contemporary with the cist burials (Figure 4).

Apart from this small cemetery a small number of other burial features were identified and excavated. A single cremation pit (1620) was situated to the north of the cemetery but directly south of Structure S7B. It was 0.45 m in diameter and had a depth of 0.15 m but it contained only flecks of charcoal and burnt bone (1619).

A small circular pit burial (348) was uncovered 8 m to the south-east of the entrance to Structure S6 that was c. 0.3 m in diameter with a depth of 0.29 m. An inverted plain Bronze Age urn V29, missing only its base, was found within it but no burnt bone was recovered from its fill (349).

Another small pit (168) was also uncovered at the southern edge of the Field A that measured 0.3 m by 0.22 m with a depth of 0.17 m. It also appeared to be a cremation as it contained a small amount of burnt bone and the fragmentary base of another Bronze Age vessel V28, which was covered by a large flat stone. The vessel was filled with two distinct deposits (170/169), both of which contained flecks of burnt bone that strongly suggesting its usage as an urn for a cremation burial.

Domestic structures

During the excavation twelve round structures were identified either by the presence of a roughly circular narrow gully or ditch, and/or by a circular pattern of postholes that were uncovered. There were seven structures in Field A and five in Field B (Figures 2). The first group of three buildings, Structures S1, S2 and S3A were situated close together in the centre of Field A, and to the east and south-east of the earliest dated pits (see above) at between c. 20 m and 24 m OD. Other structures S5, S6, S7A and S7B nestled in the south-western part of Field A. The remainder Structures S8, S9, S9A, S9B and S9C were positioned along the northern edge of Field B.

The gullies that identified the roundhouses were shallow to very shallow, and were often no more than 0.25 m in depth. The average width they attained was c. 0.4 m. They could have been dug as channels around the buildings to keep water away from the walls but there is a strong indication that these may have formed naturally from rain water run-off from the steeply pitched roundhouse roofs. The gullies contained no evidence of postholes or stakeholes in their bases, and there was no evidence of stone packing. Their fills appeared to be very similar - fine sandy silt, gravel and small pebbles, suggesting water-sorted material. There also appeared to be little distinguishing successive gullies around a building, either in their formation or in their filling.

Structure S1

This building, together with Structure S3 was one the largest roundhouses on the excavated area (Figure 9). In terms of building development and alterations, Structure S1 was the most complex.

Concentric gullies and entrances

The location and intercutting nature of the circular and somewhat segmented gullies (also referred to as external eaves trenches by Pope 2015, 159, or as drip-gullies), surrounding the interior of this structure suggests at least three phases of activity related to the enlargement or remodelling of the building. The original gully (420) had a diameter of approximately 8.5 m but it was later replaced on its eastern side by three other concentric and successive gullies (419) and (418) and the outermost (415) (Figure 10).

The western arc of the building was complicated with the presence of another gully (417) and with that of (419) in between the third and fourth gullies. The outermost gully (415) was made more complex by the addition of further

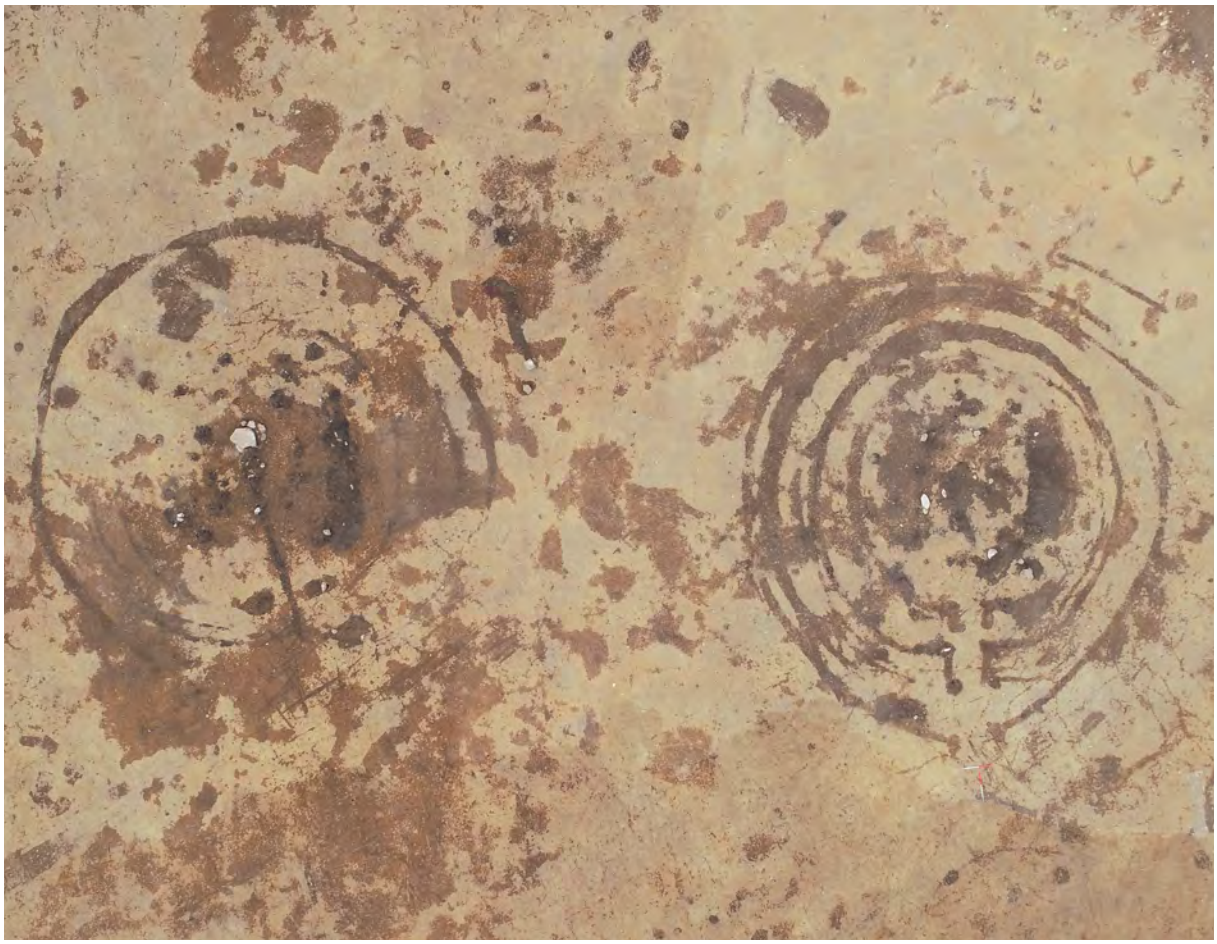

Figure 9: Structures S1 and S3A , aerial view from the west.

segments of shallow linear features externally to it to the north-west, such as the segmented (394), and a roughly parallel length of straight gully (416) extending to the north-east from the intermediate gully (417), suggesting either alterations to the roof of the structure or the addition of a lean-to structure(s). The gullies varied in width from 0.19 m to c. 0.67 m with the average being c. 0.38 m, but their depths were more regular averaging 0.17 m (Figure 11). The multiple gullies relate to alterations to the original structure and a more elaborate and intricate second or even third phase of activity for it. The estimated internal diameters of the area enclosed by the gullies were (419) 10.5 m, (418) 11.75 m and (415) 16.5 m.

Intimately connected to the gullies was the entranceway located in the eastern arc of the structure and oriented towards the ESE. During alterations and enlargement of the building, indicated by the additional circular gullies, it maintained its alignment even though the entranceway was lengthened, and the original doorway was abandoned and replaced.

The original entrance measured 1.25 m in width between a pair of sub-oval pits (529) and (533) (Figure 12) with additional pits added to either side. Pits (549), (469) and (489) lay to the north-east, and (613) and (674) to the south-west. Additional pits (550) and (551) formed the north-east wall of the entrance passage, with (577), (575) and (573) forming the south-west wall. The doorway was aligned with innermost gully (420) initially. With subsequent enlargement of the building and the formation of gully (419) located c. 2 m further out on the eastern arc of the building, two pits to either side of the doorway indicated where it was altered to re-align with the building roof to the north-east. At this time the doorway was possibly recessed beneath the roof. The evidence of similar features suggesting re-alignment to the south and south-west is not clear because of further alterations there that obscured the pattern.

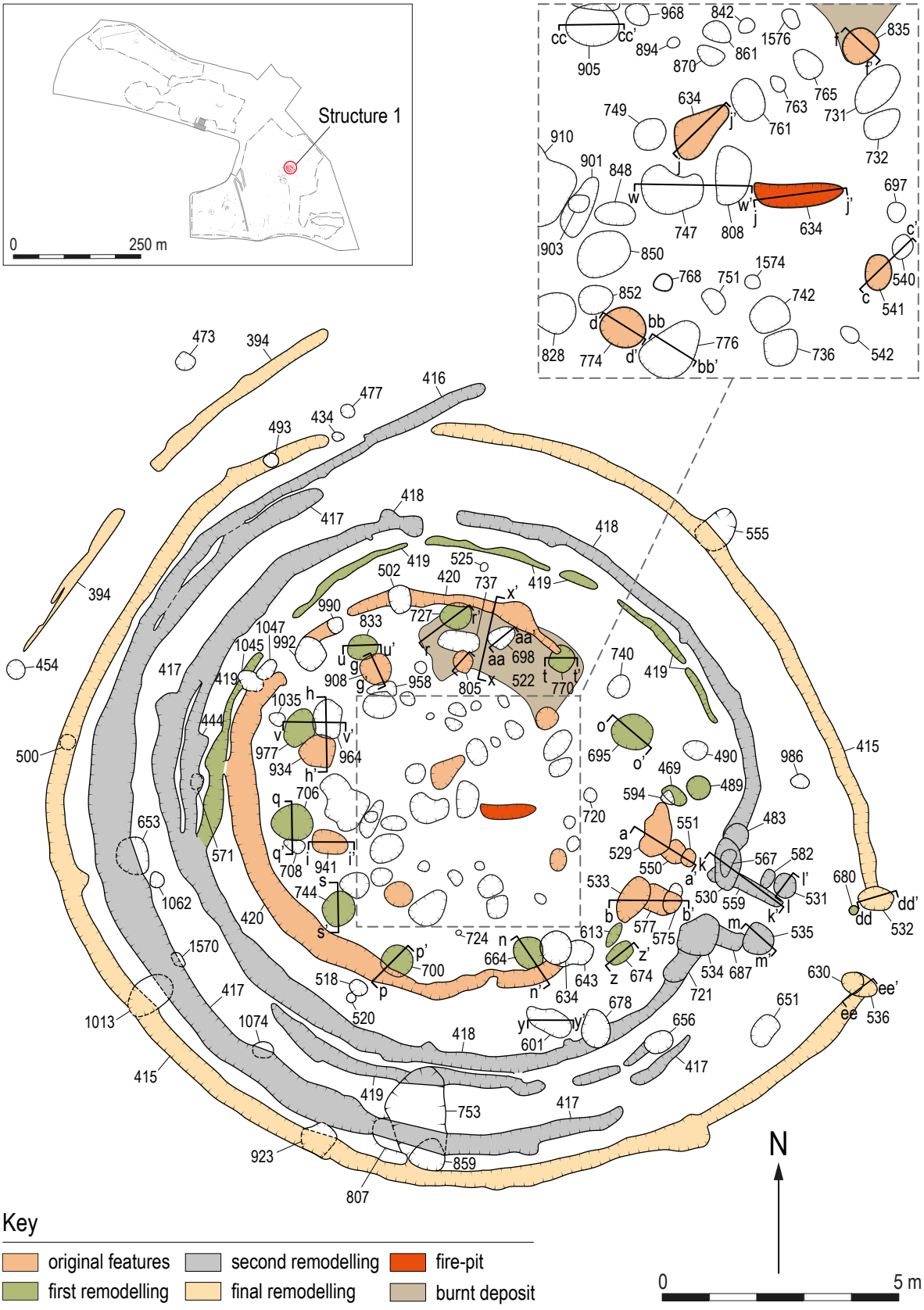

Figure 10: Plan of Structure 1.

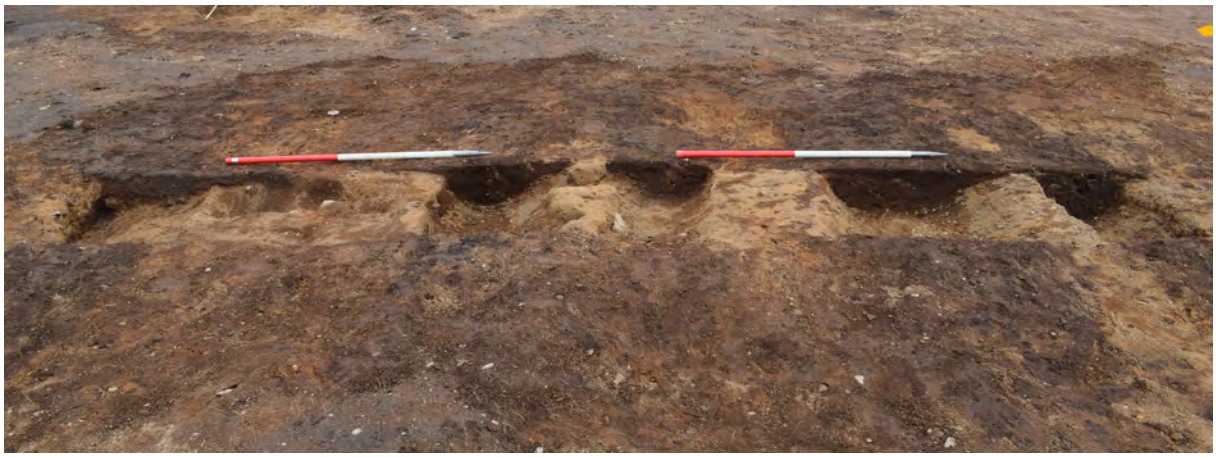

Figure 11: Section through the gullies 420, 418, 419, 417, and 415, from the WNW.

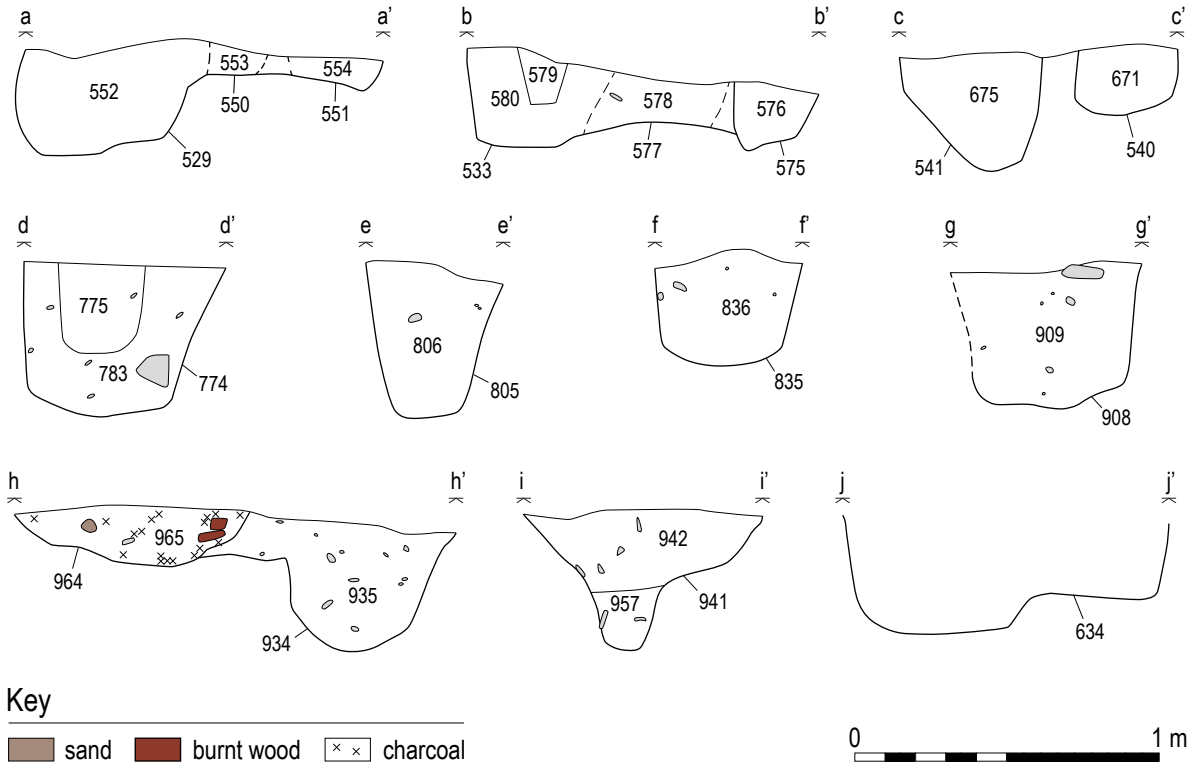

Figure 12: Section through original features 529, 533, 541, 774, 941, 934, 908, 805, 835, 634.

The creation of another circular gully (418), with subsequent enlargement of the building, provides evidence that the entrance and porch was rebuilt further out with postholes (530), (483) and (567) to the north-east and (534) and (721) to the south-west (Figure 13). The entrance created was now c. 1.75 m in width and at the same time it was lengthened c. 1.75 m by the addition of further pits/postholes (559), (531) and (582) to the north-east, and with (535) and (687) to the south-west to create a porch. The largest posthole (534) of the modified entrance contained over 450 grains of barley, suggesting that this might have been a deliberate deposition. The fill of its neighbouring posthole (721) to the south-west contained a single sherd of decorated pottery V47, possibly from an early Bronze Age Beaker.

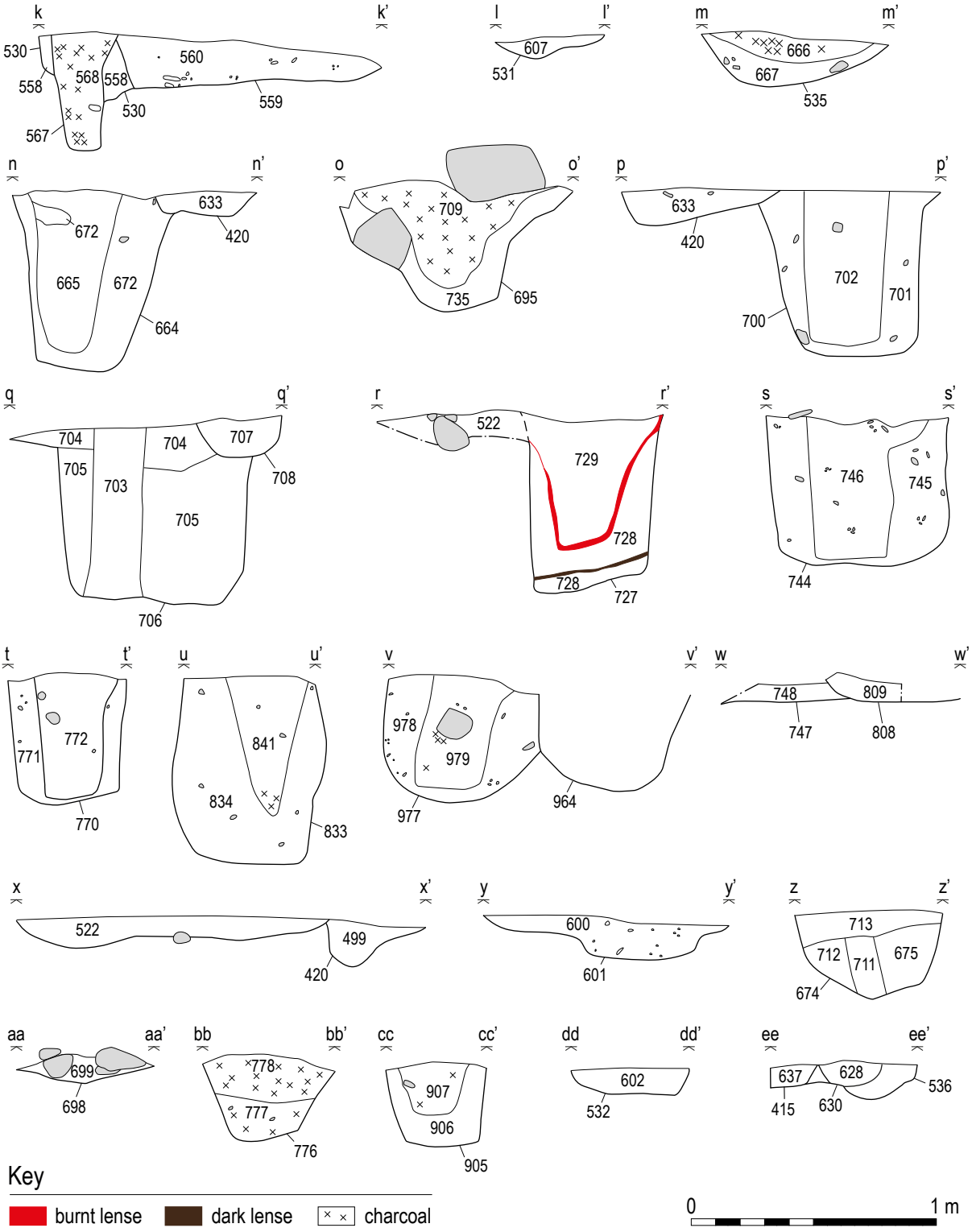

Figure 13: Sections through secondary features: entranceway 530, 531 and 535, large post holes 664, 695, 700, 706, 727, 744, 770, 833, 977 and central feature 808, with pits: 522, 601, 674, 698, 776, 905, with entranceway pits 532 and 536.

The outermost gully (415) resembled the others but with postholes (532), (680), (536) and (630) located at the termini suggesting a gateway or doorway c. 2 m in width on the same alignment as its predecessors suggesting have demarcated the outer boundary of the building plot (Figure 10).

The central area of the building

The internal area delimited by the innermost gully was a highly complex area of postholes and pits of various sizes and depths. It contained the remains of both original and secondary features representing the alterations that took place to the structure over time, and therefore the interpretation of that evidence is restricted, difficult and indeed open to question (Figures 10 and 14).

Seven postholes (541), (774), (941), (934), (908), (805) and (835), possibly nine originally, were identified as belonging to the earliest phase of the building and the inner-most gully (420). They formed a circle approximately 5.5 m in diameter identifying the central space of the building. Their oak posts were positioned c. 2 m apart. The diameter of the postholes averaged 0.58 m by 0.63 m and they survived c. 0.5 m in depth (Figure 12). A pit (634), a possible fire-pit was situated at the centre of the circle of posts. The narrow c. 1 m gap between the posts and the external drip gully indicates that the pitch of the roof at this time was steep.

Artefacts and environmental evidence from these features was sparse. A stone pounder, SF 217, was found in posthole (941), together with traces of carbonised oak and barley grains. Additional barley grains were also found in postholes (774) and (934).

Figure 14: Structure S1 during excavation. Viewed from the ESE.

At some later stage the building was enlarged as the original posts and postholes were replaced by nine others positioned to their immediate exterior. These were (664), (700), (744), (706), (977), (833), (727), (770) and (695) for load-bearing oak timbers to carry the building's roof (Figure 10). However, there was a strong correlation between the locations of the two sets of postholes, with the new posts on the north-eastern arc of the building moved further out than those on the west. The diameter of the new area was 9.75 m. The new postholes varied in size but their average diameter was between c. 0.65 m by 0.72 m, their average depth was c. 0.65 m, but the distance between each post was maintained at c. 2 m. Also identified by its similar dimensions was a posthole (808) situated in the centre of the building, which may have housed a post that functioned as a key element in the building's roof construction. As described above, the original entrance was retained, but altered at either side to accommodate the new roof. A new drip gully (419) developed c. 1.5-2 m beyond the roof supports, especially on the eastern arc of the building. Environmental evidence from these new postholes included much carbonised grain, mostly barley, with oak charcoal and sparse evidence of birch and alder, and the presence of a cherry stone in posthole (727). In addition, fragments of burnt bone, SF 148, and also a daub, Sample 733, were found in the fill of posthole (695).

Subsequently, a further alteration was made, possibly because the roof and doorway did not function correctly. The original doorway was replaced and a new one (530) and (534) was built (Figure 10) with a porch comprising postholes (559) and (531) with (587) and (535). Alterations were also made to the pitch of the roof that created a new drip gully (418). Without changing the internal arrangement of posts, the building was enlarged to a diameter of c. 11.5 m.

Additional alterations to the building roof with the creation of further gullies have been described above, but they may not have substantially affected the interior of the building. Although some pits and occupation deposits are noted beyond the ring of internal posts, the main activities in the building were largely confined to its centre. Fire-pits (698) and 9737) were noted in the northern arc of the building, with another (742), towards the southern arc, with possibly a larger fire-pit (905) towards the north-west. Other pits may have also functioned as fire- or waste-pits.

Extensive but relatively shallow occupation deposits in the north-eastern and south-eastern arcs of the building were recorded comprising greyish-brown silty sand. They contained sherds from a number of pottery vessels (V3, V4, V5 and V6), with fragments of a pottery whorl or counter SF 248, and barley grains were found in (827). Pit (776) located within the southern occupation deposits was filled with a large quantity of burnt barley grain suggest it might have been a storage pit, while pit (736) situated just to the north of it was identified as a fire-pit that also included a large number of burnt barley grains. The northern occupation deposit (522) also contained a large piece of daub or fired clay, Sample 230, that indicated the building had light-weight panels forming any interior divisions as well as its exterior walls.

Fragments of burnt bone, SF 164, were recovered from occupation deposits (760) in the northern arc of the building and SF 141, a cremation deposit containing human and possibly also animal remains, was found within the filling of pit (634) located to the immediate east of structural posthole (664) (Figure 10). The deposit was dated to the middle Bronze Age, and its location might suggest a structured foundation deposition.

Between the gullies

Most of the activities between the gullies, identified as a few large pits and small postholes, took place in the south-western and southern arcs of the building. The assumption is that they are contemporary with the use of the structure, but this is far from certain. The larger pits such as (635), (678), (753), (807), (859) and (1013) may have been necessary as external supporting timbers for the roof, as prevailing south-westerly winds may have made it insecure (Figure 10). Postholes along the inner edge of gully (417) may have performed a similar function or made the wattle and daub wall of the building more stable.

Two pits situated between the inner-most gully (420) and that of the second entrance gully (418) and to the south-west of the inner-most entrance are noted for their contents. Pit (674)

contained over 650 grains of barley plus a sherd of V45, a domestic middle Bronze Age vessel with a pronounced cordon. It is suggested that this pit had been a kiln for drying a harvest of barley. A larger example, pit (601), further to the south-west may have function similarly but it contained only a modest amount of 75 grains of barley. A saddle quern or rubber, SF 208, was found in the fill of one of the gullies (417) and a fragmentary clay loom-weight, SF 135, was located in a small posthole (520) between gullies (420 and 418). Although this is sparse evidence, the artefacts and samples indicate that domestic activities were associated with the building.

Dating of Structure S1

A total of 22 radiocarbon dates were produced for this structure from postholes, gullies, occupation deposits, entrances and pits, using predominantly carbonised barley grains. The results indicated considerable overlap in the date ranges with no clear phasing, but its construction and use were clearly in the middle Bronze Age (see Figure 15 and Table 1).

Structure S2

In contrast to Structure S1, Structure S2 was a much smaller building located c. 10 m south-east of the former (Figures 2 and 16). It was also less well preserved, consisting of two entrance postholes (597) and (615), and an interior ring of seven postholes (546), (569), (562), (584/587), (595), (603/605) and (608). The latter were smaller in diameter than those in Structure S1 measuring on average 0.37 m by 0.35 m with an average depth of 0.26 m, and indicating the much smaller oak timbers used in its construction. No evidence of a circular gully survived. Estimates of the size of the building from the existing features indicate that its overall diameter would have been approximately 8.5 m and the diameter of the inner space would have been c. 4.8 m. Situated in the middle of the building was a large fire-pit (543) that was 0.8 m in diameter and survived c. 0.19 m in depth.

Environmental evidence from samples from the features indicated some barley grains with some charcoal from oak, hazel, alder and birch

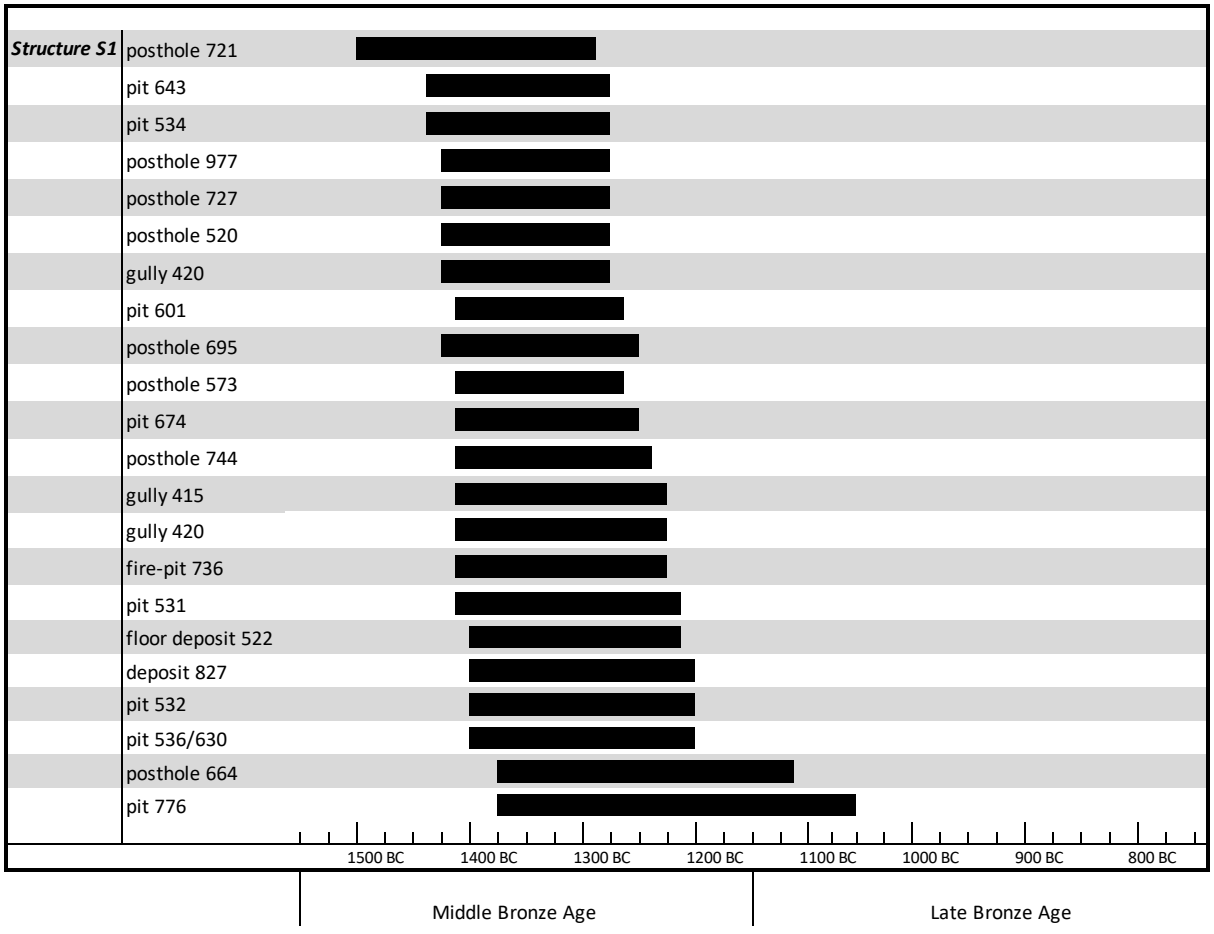

Figure 15: Diagram of the distribution of radiocarbon dates for Structure S1.

were present in the fills of the postholes. The only artefacts were three small sherds of pottery unidentified to period, two from posthole (603) and one from posthole (595). Posthole (603) was radiocarbon dated to the latter part of the early Bronze Age (UBA-49237) and the central fire-pit to the middle Bronze Age (UBA-49233) (Figure 17).

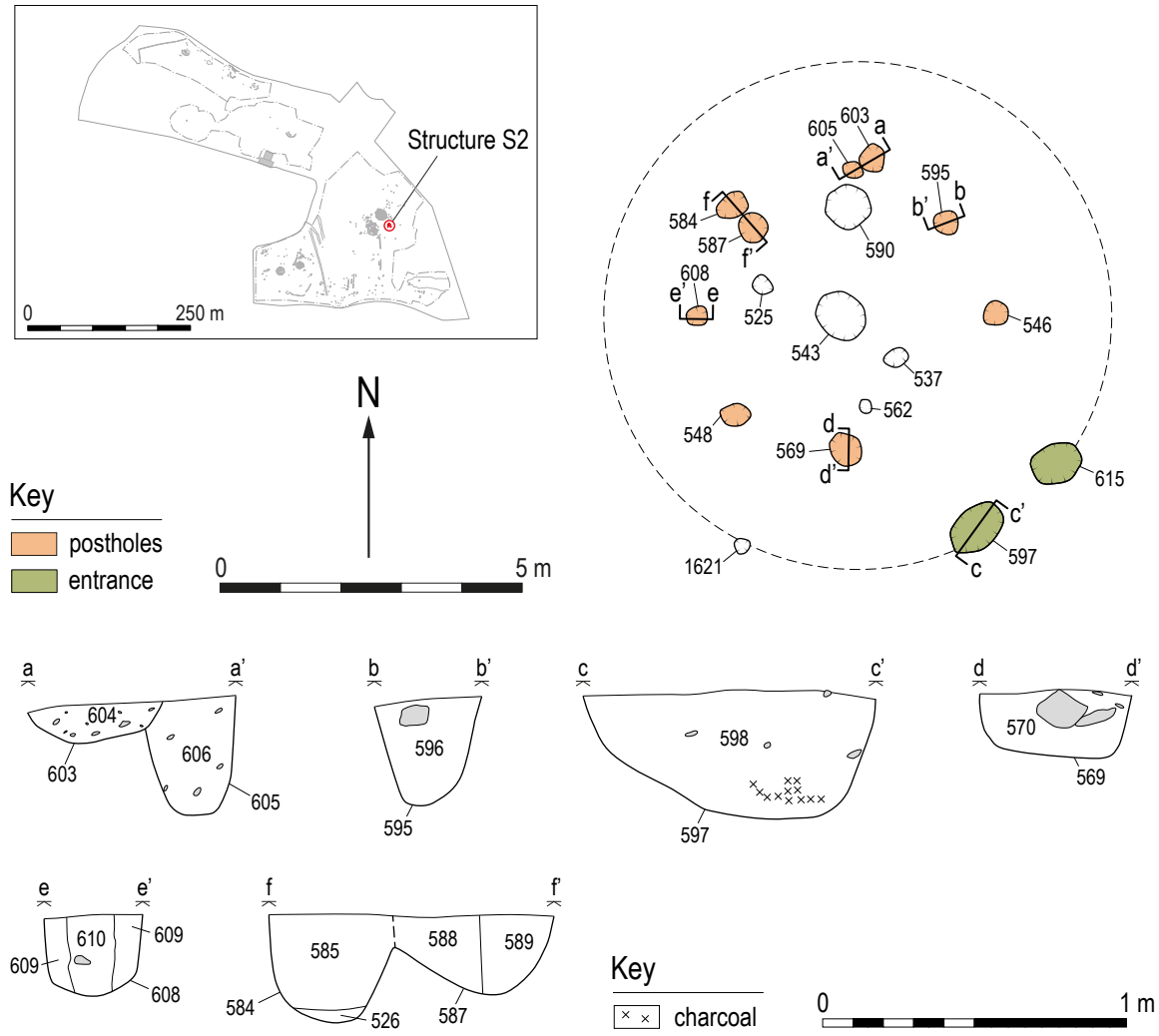

Figure 16: Plan of Structure S2 with section drawings of entrance pit 597 and interior postholes 587, 569, 595, 603 and 608.

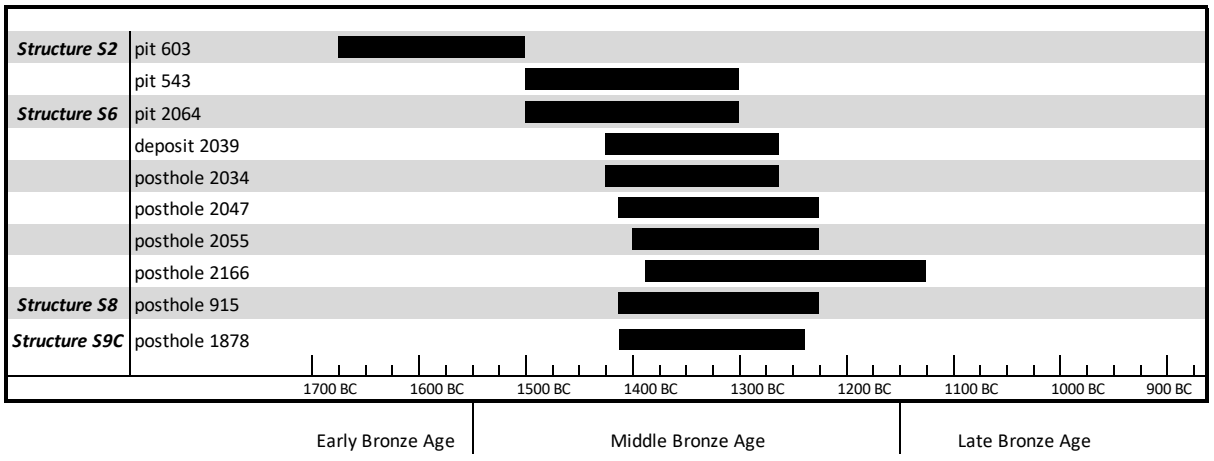

Figure 17: Diagram of radiocarbon dates for Structures S2, S6, S8 and S9.

Structure S3A

This structure was located c. 9.3 m to the south-west of Structure S1, and c. 12.5 m west of Structure S2. It is similar to Structure S1 as it had evidence of three concentric circular gullies (Figures 2 and 18).

Concentric gullies and the entrance

The inner (1211) and middle gullies (1274) of this structure survived only as small sections of their circuits. The inner gully, identified as three dislocated sections, was approximately 10.4 m in diameter. It had an average width of 0.24 m and

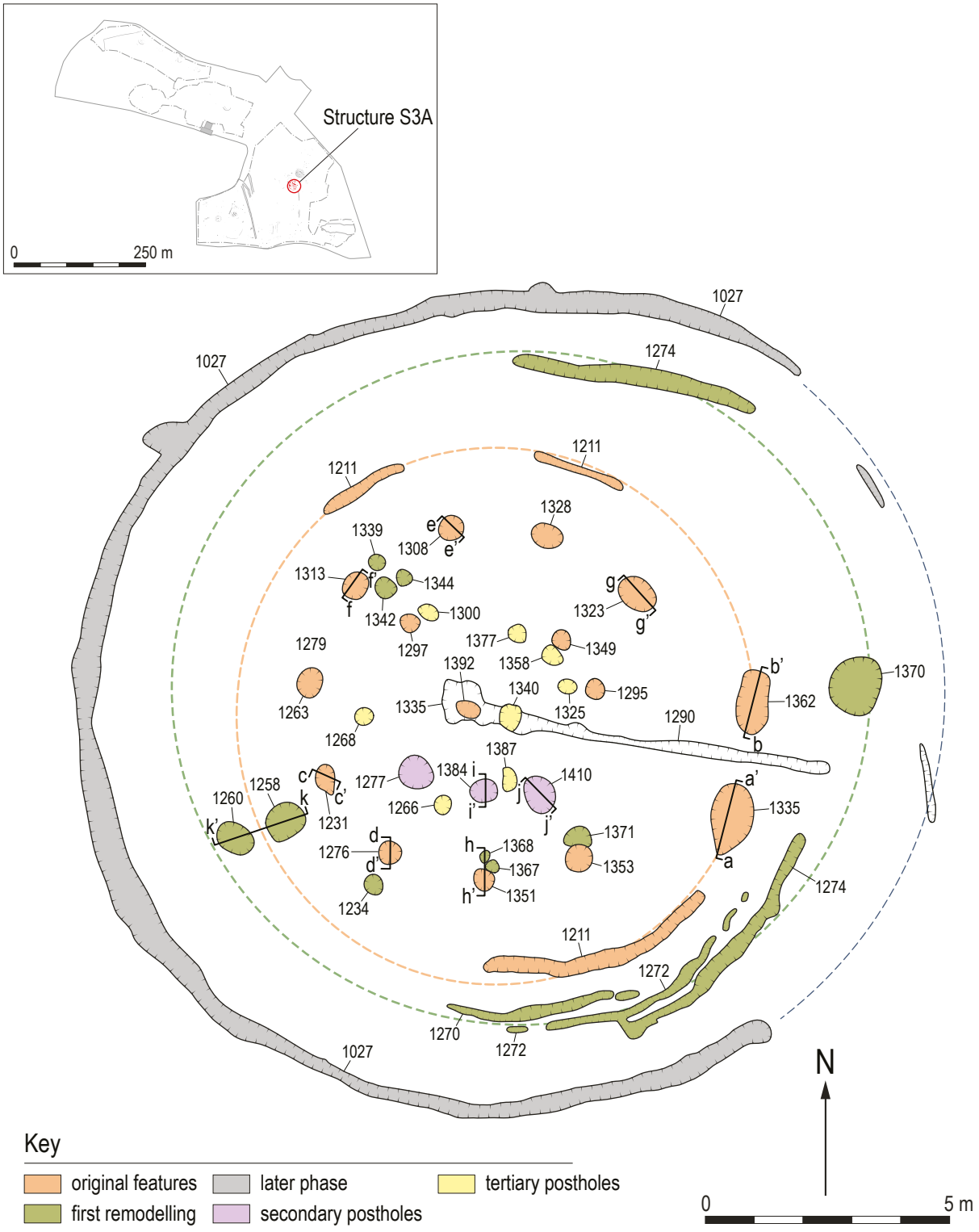

Figure 18: Plan of Structure S3A.

an average depth of c. 8 mm. The middle gully (1274) was approximately 13.5 m in diameter and consisted of three separate segments (1270), (1272) and (1274), which appeared to merge together in the south-east. Its width was between 0.13 m and 0.38 m and its average depth was 0.12 m. The interlocking nature of this gully indicated possible reinforcement, repair or reconstruction efforts to the roof in the south-easterly portion of the structure. Fragments of two pottery vessels were found in segments of the middle gully, part of vessel V21 in the north and part of vessel V24 in the south. The outer gully (1027) was c. 16.2 m in diameter and was the best-preserved. It had an average width of 0.38 m and a depth of 0.1 m. Its fill included a single sherd from a Beaker vessel V16, one sherd from a plain Bronze Age domestic pot V25, and other unidentified pottery fragments.

The entrance was marked by a pair of large, elongated postholes (1355) and (1362) located on the eastern side of the structure in line with the inner gully (1211). They were approximately 1.3 m in length and 0.62 m to 1 m in width (Figure 19), with an average depth of 0.35 m. Posthole (1355) retained evidence of its burnt oak post in its fill.

The majority of the inner and middle gullies were not preserved due to the effects of ploughing. A shallow deposit (1370) suggested the likelihood of a potentially truncated entrance pit or posthole at the northern terminus of the middle gully, but the possibility of additional postholes or pits forming an elongated entranceway had been removed by later farming activities.

The central area of the building

A ring of nine postholes that demarcated the interior of the structure had a diameter of c. 7 m. The nine postholes (1231), (1263), (1276), (1308), (1313), (1323), (1328), (1351) and (1353) averaged 0.65 m by 0.54 m in diameter and c. 0.29 m in depth and would have contained the load-bearing posts used to support the roof of the building. Three of them (1308), (1323) and (1328) in the north to north-eastern arc of the building were sealed by a burnt deposit (1229). In another three postholes (1263), (1313) and (1328) the carbonised remains of the oak posts were found in situ.

In the southern arc of the building three of the main postholes (1276), (1351) and (1353) had additional postholes: (1234) to the exterior of (1276); with (1367) and (1368) to the interior of (1351); and (1371) to the interior of (1353) (Figures 18 and 19). These are interpreted as either for supporting posts to the existing timbers, or for replacement timbers. Posthole (1313) to the north-west was supported or replaced by postholes (1339), (1342) and (1344). These additional postholes were small averaging c. 0.38 m by 0.28 m in diameter that survived only c. 0.15 in depth. Their dimensions indicated that they carried smaller diameter posts, which may have helped support the larger load-bearing posts carrying the roof timbers.

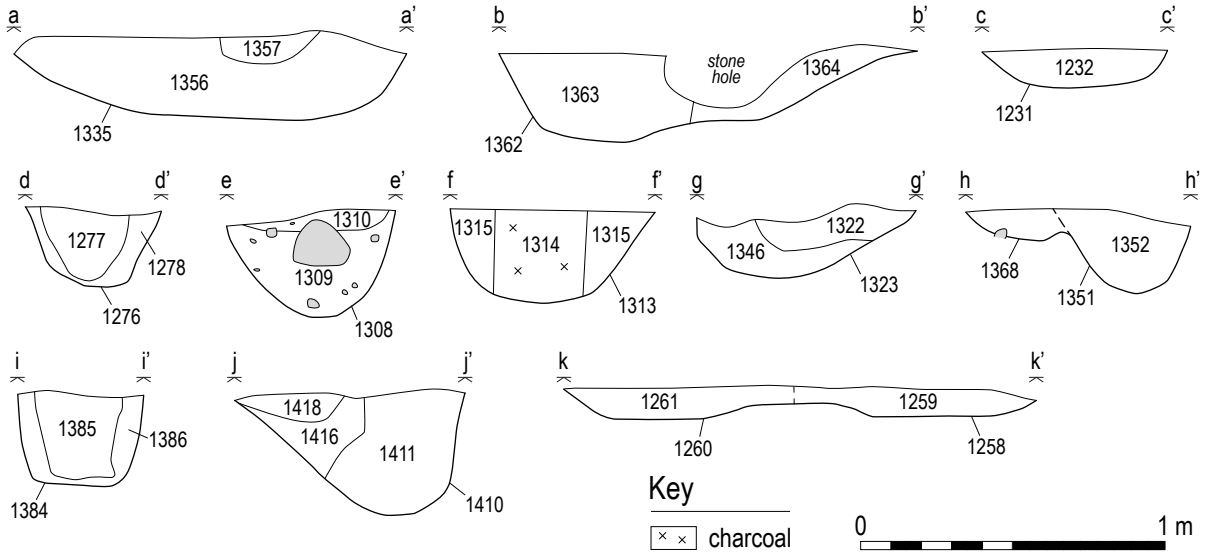

Figure 19: Section drawings of Structure S3A entrance pits 1335 and 1362, with interior features 1231, 1276, 1308, 1313, 1323, 1351, 1384, 1410, 1258 and 1260.

Several additional postholes and pits within the area encircled by the load-bearing posts appeared to be linked to them by their locations and formed a distinct pattern. The largest, in excess of 0.5 m by 0.45 m, were (1277), (1384) and (1410) in the southern part of the interior, with (1295), (1297) and (1349) to the north. Several had evidence of charcoal and burning within their fills. They were positioned between 1.25 m and 1.9 m from the load-bearing posts and suggested in most cases they were paired with them, perhaps indicating the ends of partitions radiating into the centre from the larger posts, or they may have been additional roof supports. Another group of smaller postholes and pits, (1266), (1268), (1300), (1377), (1358), (1325) and (1387), c. 0.4 m in diameter, located between or beside them, suggested reworking or replacement of partitions or timbers. Further pits and postholes (1279), (1281), (1285), (1347), (1375), (1410), (1468), (1470) and (1472) all under 0.4 m in diameter indicated close association with the latter features.

In the centre of the building was a large stone-lined pit (1335/1292) that measured 1.12 m by 0.91 m, which had a single large flat stone capping it. The pit was filled with black sandy silt 0.32 m deep. This feature overlay a smaller pit (1392) that was 0.53 m by 0.46 m in extent but only 0.19 m deep. The lower pit contained charcoal and burnt clay. These features are likely to represent the main hearths for the building, with the latter pit being the larger more formalised pit.

An 8.5 m long, shallow gully (1290) extended from the eastern side of the large stone-lined hearth pit (1335), to exit eastwards beyond the entrance postholes (1355) and (1362) (Figures 18 and 20). It is interpreted as a contemporary flue or drain c. 0.3 m wide, which had a charcoal-rich fill (1291) that included some fragments of unidentified pottery. A presumably later hearth (1340), 0.77 m in diameter and 0.15 m deep, was located directly to the east of stone-lined pit (1335) and over the top of the gully (1290).

Figure 20: Structure S3A, aerial view from the ENE.

A 6 m long and 1.8 m wide occupation deposit (1229), with lower layers (1324) and (1334), was located against and around the three north-eastern load-bearing postholes (1308), (1323) and (1328). The deposit included burnt material as well as burnt bone that accumulated to a depth of 40 mm. It also contained sherds of vessel V23, a plain domestic Bronze Age pot, and might account for the burnt bone, SF 237, that was found in the fill of posthole (1308). Closely associated with the occupation deposit but also with load-bearing pit (1323) were the fragments of three different clay loom weights (see *Perforated Weights*, below). A sample from the fill of (1323) provided a radiocarbon date range of 1418 – 1234 cal BC (UBA-49263), the middle Bronze Age. The occupation deposits (1324) and a pit (1311) beneath them contained fragments of another two loom weights, and pit (1349) to the immediate south-west contained another. Together, the evidence of six loom-weights suggests a loom was used in this part of the interior of the building. A further deposit of occupation debris (1372) was noted in the southern part of the internal area between load-bearing postholes (1351) and (1353) but it produced nothing artefactual.

A few additional features were found within the northern part of the structure in the occupation deposit (1229) and beyond it to the edge of the first gully. The latter included three pits (1287), (1393) and (1331) that measured between 0.4 m and 0.75 m in diameter and were between 0.18 m and 0.25 m in depth. These all likely relate to the domestic usage of the area, including waste disposal, as pottery V22, part of a Bronze Age cooking pot, was found in the fill of pit (1287).

Between the gullies

Two large pits (1258) and (1260) of uncertain function were uncovered in the south-western part of the structure beside the likely course of the inner gully and between the inner and middle gullies. They measured between 0.7 m and 0.85 m in diameter and each was 0.7 m deep. Two additional deposits of occupation debris: (1217) close to the outer gully on the west, and (1256) to the south-west, were found in slight hollows in the subsoil. Sherds of Bronze Age pot V24 probably contemporary with the building was found in deposit (1217). The paucity of evidence in this area suggests that main activities of the building took place in its central area.

Dating of Structure S3A

A total of 17 radiocarbon dates (see Table 1 and Figure 21) were returned for features within this building, mainly produced from various types of barley grains, with some hazel and alder wood. The dates span the middle to the late Bronze Age. However the majority of dates suggest the main use of the building took place from the late fourteenth century BC to middle of the twelfth century BC. In that time frame alterations to the structure were made. These included its enlargement and reroofing, the development of the external gully, most likely a new entrance or porch was added, and internal partitions or further supports were added or altered. Occupation deposits developed in the building along with changes to internal partitions or supports. The last dated change to an internal partition or support spanned the period between 1250 cal BC and 1050 cal BC (UBA-49258).

Structure S5

This building was located to the south-west of those structures described above and close to the western edge of Field A (Figures 2 and 22).

The gully and the entrance

This structure's single but somewhat segmented gully was approximately 0.2 m wide and 0.1 m deep, with an average diameter of 11.2 m. An entranceway at the gully termini was located to the south-east and consisted of two large postholes or pits (1916) and (1964), measuring between 1 m and 1.8 m in length and by 0.6 m and 0.8 m in width, with depths up to 0.45 m. The remains of carbonised oak posts were recorded in the fills of both of these postholes, which also contained packing stones. A third large posthole or pit (1698), of similar size to the former two but with a depth of 0.27 m was uncovered beyond the entrance to the south-east, which given its position, may have functioned to continue the entrance as a porch.

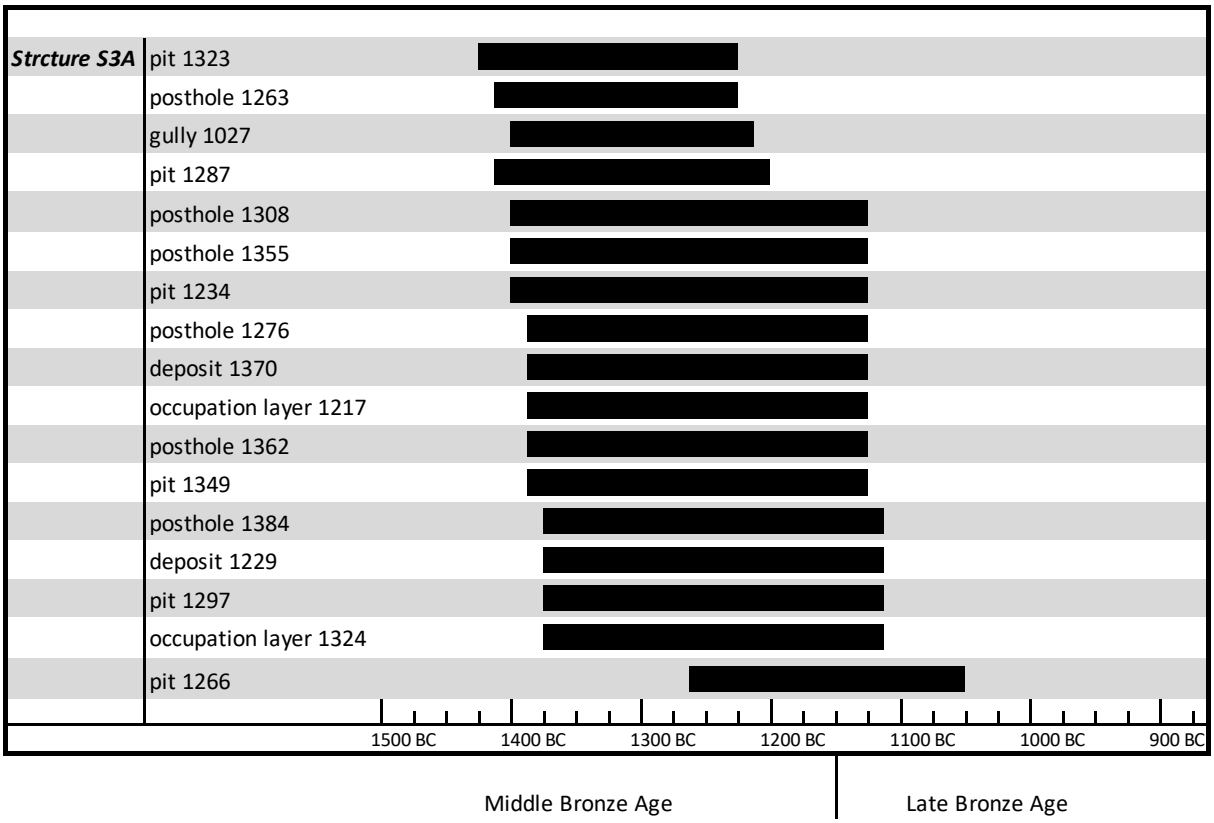

Figure 21: Diagram of radiocarbon dates for Structure S3A.

The central area of the building

The centre of the building is difficult to interpret due to its reworking and the later intrusions of large pits. The removal of features, possibly by ploughing has also affected the survival of evidence but the pattern of features is somewhat clearer on the north-western half of the interior than the south-eastern where there was more activity (Figure 22).

Like the other large roundhouses, the partial remains of a ring of posts demarcating the interior of the building were identified, and these had an estimated diameter of 8 m to 9 m. The structure probably consisted of ten load-bearing postholes but only seven remained (1679), (1718), (1738), (1776), (1787), (1988) and possibly (1743). Most of the postholes were in excess of 0.5 m in diameter and the deepest was 0.47 m. Stone packing was noted in (1787) and (1988). Fragments of Bronze Age pottery, V39, were found in the fill of posthole (1738). There was also evidence of additional smaller postholes (1949), (1789), (1676) and (1701) besides four of the load-bearing postholes on the southern to western arcs of the building. Another small posthole (1722) was positioned in a gap in the northern part of the ring and may have fulfilled a purpose as a support or replacement timber. Fragments of urn-like Bronze Age vessels V37 and V38 were found in the fill of posthole (1676) along with a fragment of daub, Sample 733, and barley grains that were radiocarbon dated to the end of the middle Bronze Age, 1397 – 1131 cal BC (UBA-49275).

Further evidence suggests a number of predominantly smaller postholes (1684), (1760), (1769), (1804), (1818), (1834), (1895) and (1897) were positioned 1 m further into the interior of the building from the load-bearing postholes. With the exception of (1834) and (1897), which were slightly larger, the remainder were less than 0.38 m in diameter and all were less than 0.4 m in depth. Their function could have been as additional supports or buttressing timbers during a phase of repair or rebuilding work in this area rather than for partitions, as noted elsewhere.

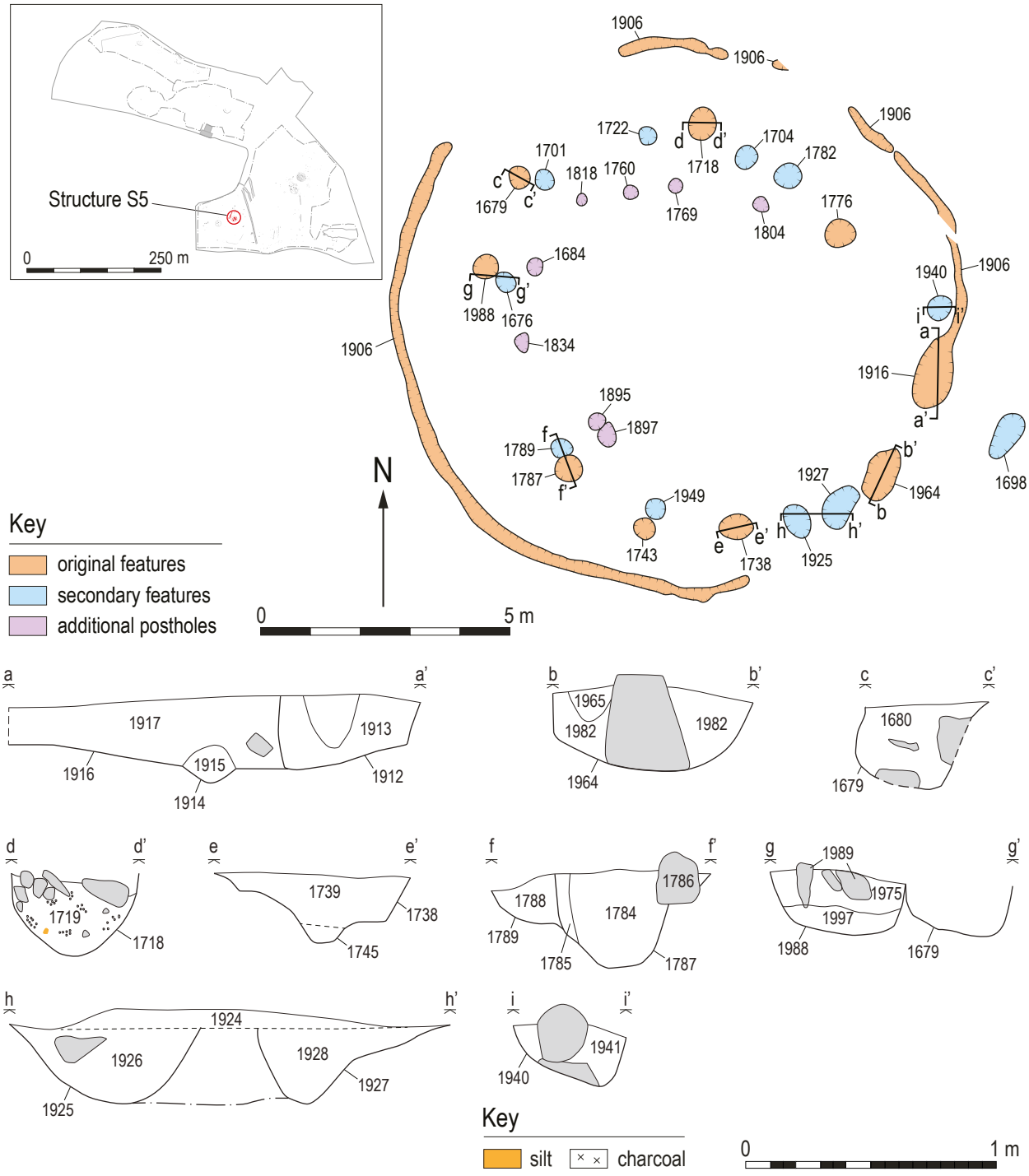

Figure 22: Plan of Structure S5 with sections through primary features 1916, 1964, 1679, 1718, 1738, 1787/1789, 1988/1676, and secondary featues 1925/1927 and 1940.

Later activities

Two postholes (1927) and (1940), 0.4 m to 0.48 m in diameter, were uncovered to either side of doorway into the structure. They were situated close to the inner edge of the gully and indicated some alteration was made to the entrance area. Possibly linked to this and located approximately 1.6 m inside the building and behind the entrance were three other large postholes (1686), (1767) and (1790) in excess of 0.6 m diameter and accompanied by four smaller postholes, two

(1813) and (1815) besides (1686) and (1992), and (1808) besides (1790) (Figure 23). Their fills contained stone packing for wooden posts. Posthole (1686) was deliberately positioned to block direct access into the interior of the building from the entrance but a small fire-pit (2012) was located between the posthole (1686) and the main entrance postholes (1916) and (1964). This feature was 0.8 m by 0.6 m and was filled by a 0.2 m thick deposit of charcoal. A large deposit of occupation material (1685) was also uncovered between the entrance and posthole (1686) covering an area of 2.3 m by 1 m, with an average depth of 0.17 m. These alterations to the structure at this point probably indicate changes in use.

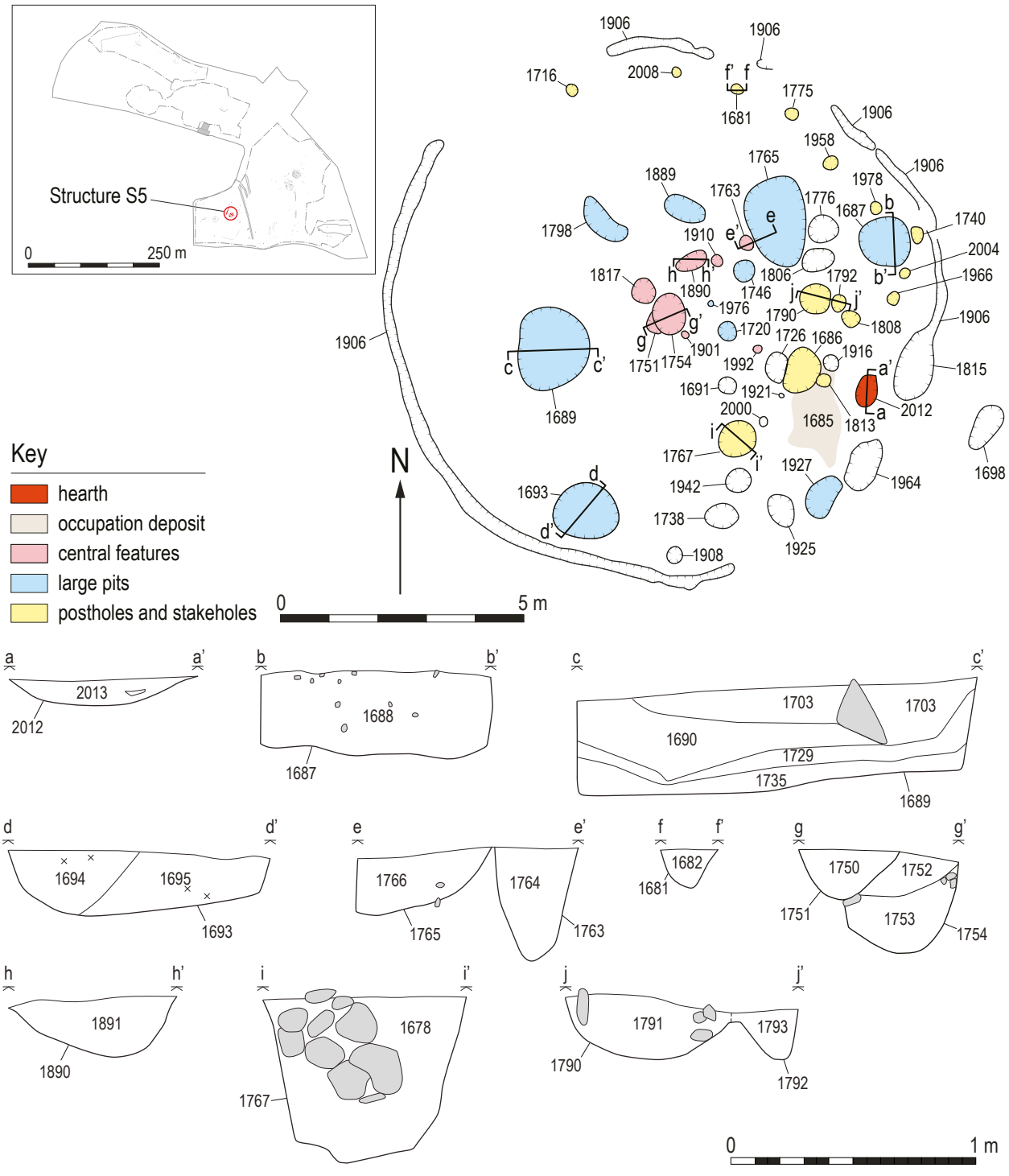

Figure 23: Plan of later features of Structure S5 with sections through fire-pit 2012, large pits 1687, 1689, 1693, 1765/1763, central features 1751/1754, 1890, and later postholes/stakeholes 1681, 1767, 1790/1792.

A small group of seven structural elements with two additional stakeholes were located in the centre of the building, enclosing a roughly U-shaped area, which was demarcated by six postholes (1720), (1746), (1751), (1817), (1890) and (1910) and a large pit (1754). The postholes generally were 0.45 m in diameter and between 0.32 m and 0.55 m in depth, although (1890) was a little larger. Two deposits of occupation material (1706) and (1844) were also located within this area, with the largest (1844) sealing pit (1754) which contained sherds of pottery V37, and the edge of posthole (1817). This deposit was itself truncated by pit (1751), suggesting multiple phases of activity was made more complex by animal burrowing.

Four relatively large pits (1687), (1689), (1693), and (1765) were also uncovered within the structure, with (1689) measuring approximately 0.8 m in diameter and 0.34 m in depth, and given its contents of large numbers of fragments of Bronze Age urn-like vessels, V34-V36, and other unidentified sherds of pottery, it possibly was a kiln (Figure 24). However, it also contained fragments of three clay loom weights, and a piece of burnt alder wood which was radiocarbon dated to the middle Bronze Age, 1410 – 1268 cal BC (UBA-49280). A posthole (1937), beside it also contained sherds of Bronze Age pottery and a stone polisher, SF 275. The function of the largest pit (1765) that measured 2.12 m by 1.14 m and 0.13 m in depth was not determined. These pits suggest a later phase of activity as they truncated earlier features (Figure 25).

Possibly also belonging to a later phase of activity were ten small postholes (1681), (1716), (1740), (1775), (1908), (1958), (1966), (1978), (2004) and (2008) averaging 0.3 m in diameter. Nine were located close to the inner edge of the gully in the north and north-eastern arc of the building, with one to the south. Their position may locate a later outer wall of the building, or a wind or shelter belt.

Remaining features (1767), (1798), (1889), (1952), (1955) and (1957) within the central area of the gully were truncated, being generally very shallow and indicated no discernible pattern Some may have been animal burrows.

Beyond the building

External to the structure were several features that were likely associated with it. Just over 2 m to the north-west was a large NE/SW orientated ditch (1903) that was 13.85 m in length, 1.3 m in width and 0.55 m in depth. Two postholes were uncovered at either end of the ditch, with the north-eastern pair (1972) and (1974) located partially outside the ditch and the south-western pair (1929) and (1931) within it. A 1.9 m length of a smaller, shallower ditch (2020), aligned north/south was located adjacent to the west of the south-western end of the larger ditch (1903), but contained no dating evidence.

Figure 24: WSW facing section of pit 1689, the possible kiln.

Figure 25: Structure S5, aerial view from the south-east.

Dating of Structure S5

The sixteen radiocarbon dates for this structure based on carbonised wood and cereal grains are as complex as the structure itself. The earliest are middle Bronze Age dates, (see Table 1 and Figure 26) from a load-bearing posthole (1738), the possible kiln (1689), a pit beside it (1837) and the reworking of the entrance area internally (1808). Later middle to late Bronze Age dates include the entrance to the building (1964), a load-bearing posthole (1679), supplementary postholes (1676) and (1704), and a pit (1693) in the southern arc of the building. Later dates of the first three centuries AD, the Roman-Iron Age include the central pit (1890), a later posthole (1681) in the north of the building, a small pit (1963) to the south of the interior, the secondary entrance (1790), a large pit in the north-east (1765), and a tertiary posthole (1769) north of the centre. The gully (1906) returned a medieval date.

Structure S6

Concentric gullies and the entrance

Structure S6 was located 19 m WSW of Structure S5 and was a similar sized building to it (Figure 27). It consisted of two concentric narrow gullies (2083 and 2085) approximately 0.6 m apart. The inner gully (2083) was slightly segmented in the north but was c. 10 m in diameter, and the outer one (2085) was approximately 11.7 m in diameter. The gullies averaged 0.22 m in width and up to 0.23 m in depth. Two postholes (2119) and (2125) were found either within or cutting the outer gully, and while this may suggest evidence of use of the gully as a palisade, it is more likely that this shallow feature represents a natural depression caused by roof run-off formed during the life of the structure, and that the two postholes may not be contemporary with the wider structure (Figure 28).

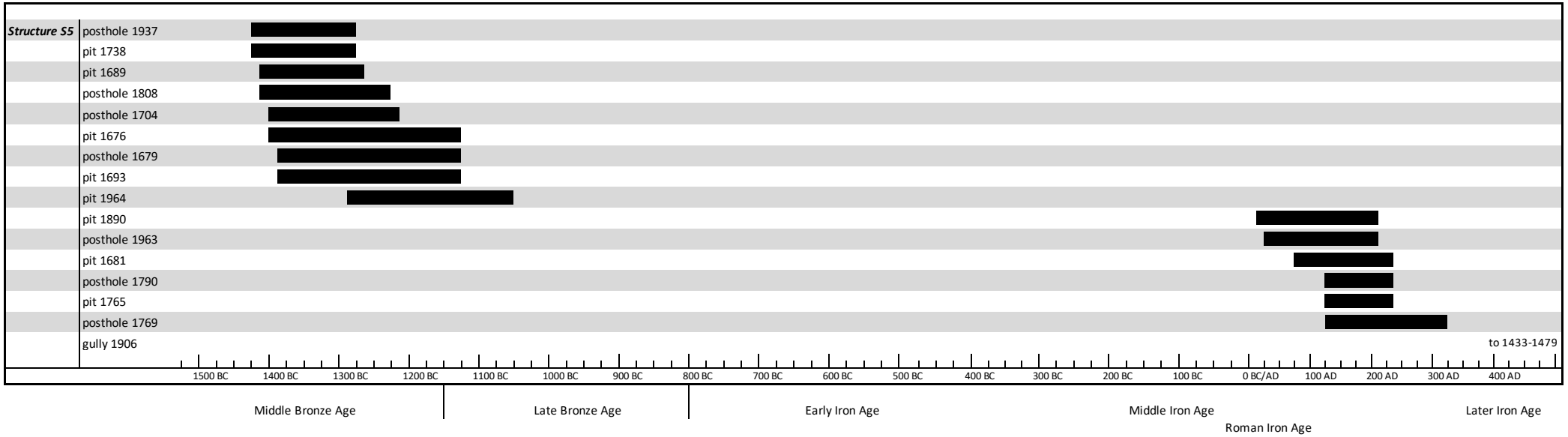

Figure 26: Diagram of radiocarbon dates for Structure S5.

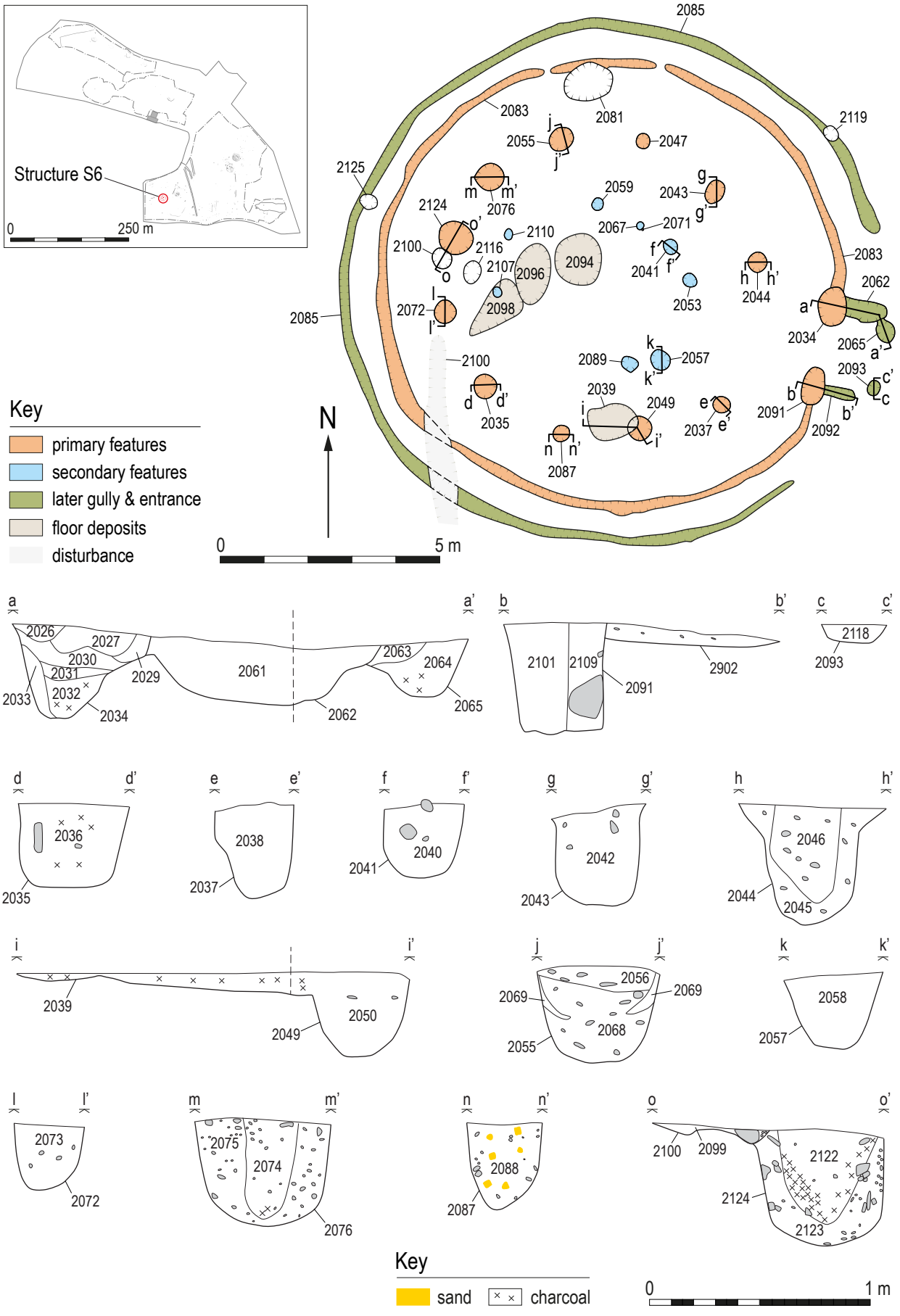

Figure 27: Plan of Structure S6 with sections through the entrance pits 2034/2062/2068, 2091/2092, 2093, postholes 2037, 2043, 2044, 2049/2039, 2055, 2072, 2076, 2087, 2124/2100, and scondary features 2041 and 2054.

An entranceway, measuring approximately 1.8 m by 1.5 m was located on the eastern arc of the inner gully. It consisted of two postholes (2034) and (2091) at the gully termini with two additional postholes (2065) and (2093) located at what would have been the termini of the outer gully with two linear features (2062) and (2092) running between each set of postholes and forming the sides of the entrance passageway. Posthole (2091), the largest was approximately 0.9 m by 0.55 m with an average depth of c. 0.47 m, and some carbonised grain and charcoal was found in posthole (2034) that produced a radiocarbon date of 1416 – 1274 cal BC (UBA-49292).

Eleven substantial postholes (2035), (2037), (2043), (2044), (2047), (2049), (2055), (2072), (2076), (2087), and (2124) formed a 7.2 m diameter circle within the building (Figure 28). The postholes ranged in diameter from 0.38 m to 0.66 m with depths between 0.4 m and 0.6 m, and would have contained the load-bearing posts for the roof of the structure. Most of the posts were distributed with a 2 m gap between them, but in the western arc of the building the gaps between postholes (2072), (2174) and (2076) that contained some of largest posts used in the construction were reduced to 1.5 m. This suggests that the design of this building took into account the problems caused by the prevailing winds and its western part was correspondingly made stronger.

In addition to the load-bearing postholes there was a discontinuous inner ring approximately 4 m in diameter of eight much smaller postholes. It comprised postholes (2041), (2053), (2057), (2059), (2067), (2089), (2107) and (2110) that ranged in diameter from 0.2 m to 0.6 m and were between 0.08 m and 0.41 m in depth. Their distribution and location c. 1.5 m from the outer post ring indicated that they may have functioned as ends of screens or partitions to divide the interior into different activity areas.

Figure 28: Structure S6, aerial view from the ESE.

To the west of the interior between the inner and outer post-rings was a small circular pit (2116) that was 0.45 m in diameter and was 0.56 m in depth. Its contents, which included charcoal, burnt bone, a quern, SF 284, and sherds of pottery vessel V27, may suggest it was either a fire-pit or a waste pit. A shallow circular pit (2081) located in the northern arc of the structure that was 1.3 m in diameter by 0.2 m in depth, may be a later feature as it partly overlay the inner gully (2083).

Other features in the interior of the building included two shallow deposits of occupation deposits: (2098) by the western arc of building surrounding posthole (2098) that covered a small stakehole (2107), and (2039), which abutted the load-bearing posthole (2049) in the south. The latter covered an area of 0.8 m by 1.8 m but it was no deeper than 40 mm. Two other shallow but larger sub-circular features (2094) and (2096) were also uncovered directly east of (2098). Their central location within the building suggests these were also occupation deposits.

Two pottery vessels were represented from the fills of features. The earliest was a small sherd of early Bronze Age Beaker, V46, from the fill of structural posthole (2055) together sherds of an early or middle Bronze Age urn, V27. Fragments of this latter vessel were found in another load-bearing posthole (2141), from the possible fire-pit (2116) and from the occupation deposit (2039) suggesting that a cremation burial had been disturbed by the construction of the building. Other unidentified sherds were found in the same or similar contexts

Dating of Structure S6

The remnants of barley cereal grain, recovered from the filling of structural postholes and a deposit in the interior of the structure provided six radiocarbon dates. Five dates place the structure in the middle Bronze Age (Figure 17). A radiocarbon date from the possible fire-pit (2116) extended the sequence into the late Bronze Age. Although this building comprised fewer features than those described above, understanding its use and function is just as complicated.

Structure 7A

The sparse remains of this structure were found south of Structure S6 to the south-western extent of Field A (Figures 2 and 29). It comprised seven small postholes averaging 0.3 m in diameter that formed a ring 4 m to 4.5 m in diameter that was not dated, and no material remains were found within them.

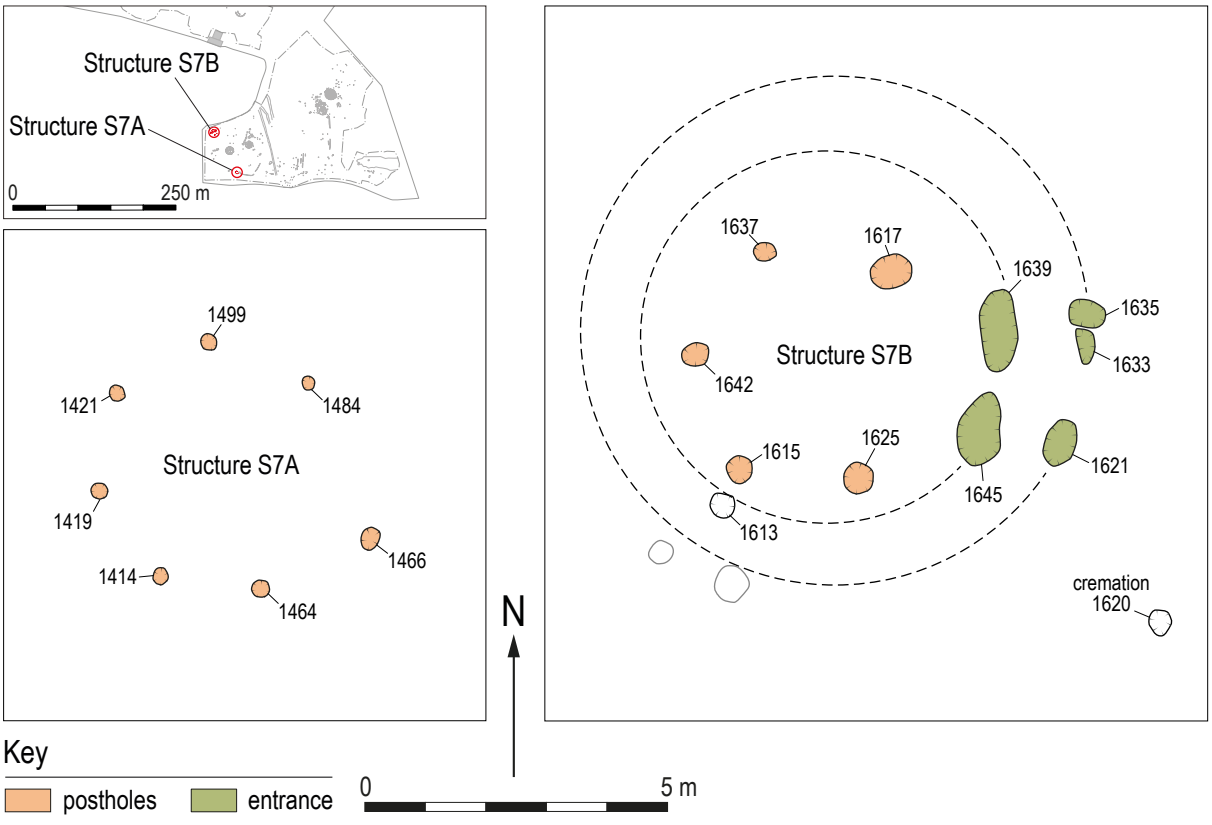

Figure 29: Plans of Structure S7A and S7B.

Structure 7B

This structure was situated to the north-west of Structures S5 and S6 at the western edge of Field A (Figures 2 and 29). Only the structural postholes of its entrance (1639) and (1645), its porch (1621), (1633) and (1635) and its ring of five postholes (1615), (1617), (1625), (1637) and (1642) for its load-bearing timbers survived. Its internal area was between 4 m and 4.5 m in diameter. Fragments of pottery vessel, V32, were found in the fill of posthole (1617), and fragments of daub were found in (1639), one of the entrance postholes. This structure was not dated.

Structure S8

This structure was uncovered at the northern edge of Field B (Figures 2 and 30), and is possibly the remains of a small roundhouse. Its main feature was a ring of seven postholes (915), (916), (918), (920), (925), (927) and (936) positioned c. 1.5 metres apart, with a structural diameter of a little over 5 m.

The postholes were between 0.25 m and 0.5 m in diameter with an average depth of 0.2 m. Two of them (920) and (936) had the remains of the bases of their carbonised wooden posts, with stone packing used to keep a post erect noted in (920). An entrance posthole (960) was present at the eastern extent of the structure, with a porch

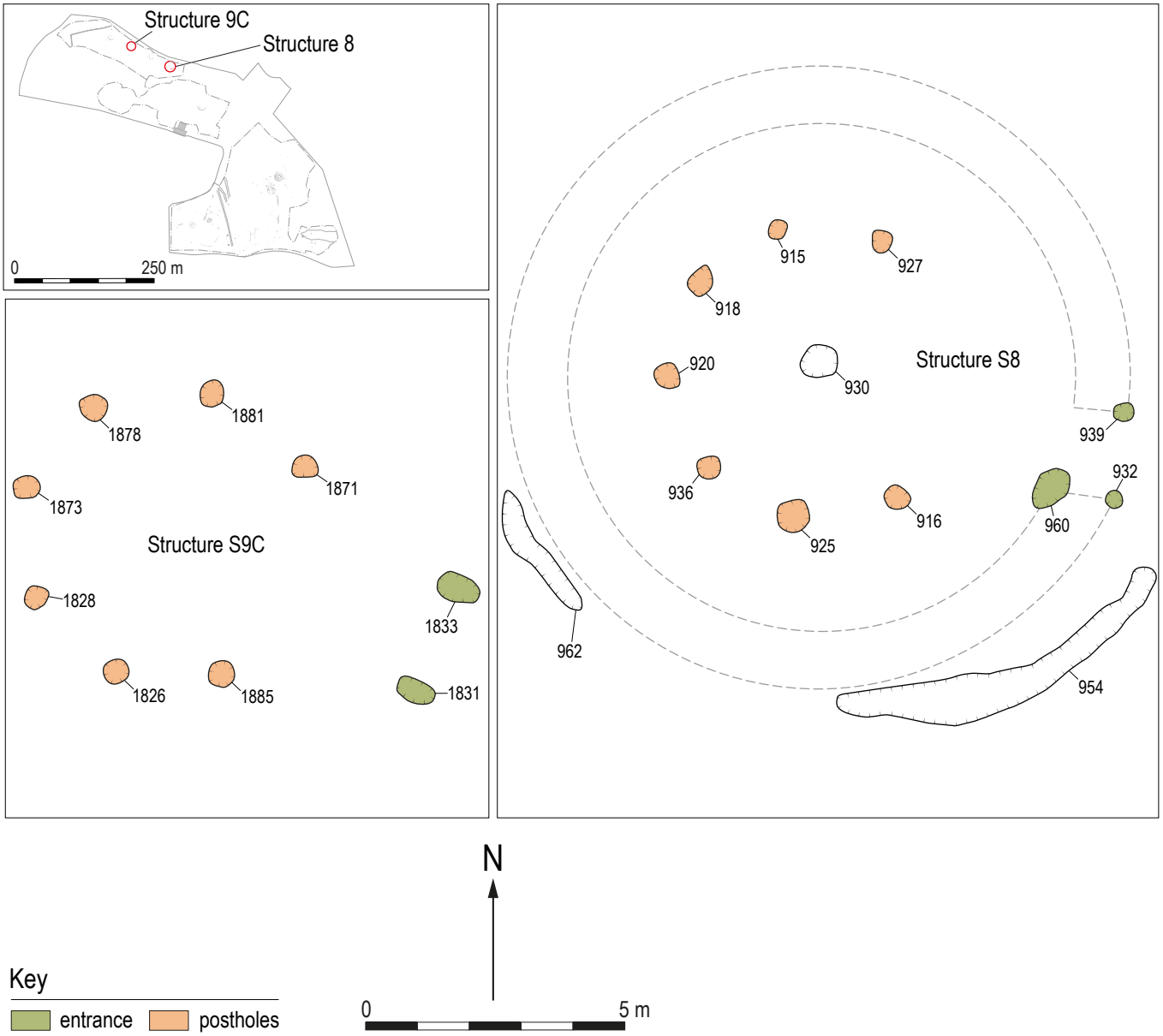

Figure 30: Plans of Structure S8 and S9C.

comprising two postholes (932) and (939) with an average diameter of 0.3 m and a depth of 0.25 m. A small hearth (930), 0.32 m in diameter and 0.3 m deep, was located centrally within the structure.

To the immediate exterior of the ring of posts were two segments forming a heavily truncated shallow curvilinear ditch (954) and (962). The ditch was up to 1 m wide in part and may have been an integral part of the building. A number of Bronze Age pottery sherds, SF 218 and SF 220, were recovered from its fill (955).

The location of this ditch, directly upslope from the main structural features of the building suggests it was used to divert water away from it. However, it may also represent the remains of a surrounding gully, which would have had a diameter of c. 13.8 m. A radiocarbon date of 1412 – 1233 cal BC (UBA-49251) was determined from barley grains from the fill of posthole 915 (Figure 17).

Structure S9

Structure S9 was located in the north-west corner of Field B and, consisted of an arc of a single gully or ditch (2137), which measured on average 0.5 m in width and 0.4 m in depth (Figures 2 and 31). Only the south-western portion of the gully survived as the rest of it was probably ploughed away. A short length of gully (2162) was recorded possibly truncating the southern end of the larger and may represent a later or earlier phase of this structure.

Within the arc of the ditch were the remains of a ring of 13 postholes, which had a diameter of 6.6 m (1858), (2140), (2144), (2150), (2158), (2170), (2172), (2176), (2178), (2180), (2186), (2187) and (2188). Some of the postholes were clustered and others were single. The postholes were on average 0.4 m in diameter with depths of between 0.2 m and 0.34 m.

Five possible pits and postholes (2133), (2152), (2182) and (2202) were recorded between the gully and the ring of posts, including (2210), which may have been an entrance posthole. These features were between 0.3 m and 0.7 m in diameter, with depths of between 0.1 m and 0.38 m. The remains of an irregularly shaped hearth (2156) were identified in the centre of the features. It measured 1.51 m by 1.08 m and had a maximum depth of 0.16 m. A further four pits and postholes (2127), (2174), (2199) and (2146) were located within the ring of posts of similar dimensions to the other features.

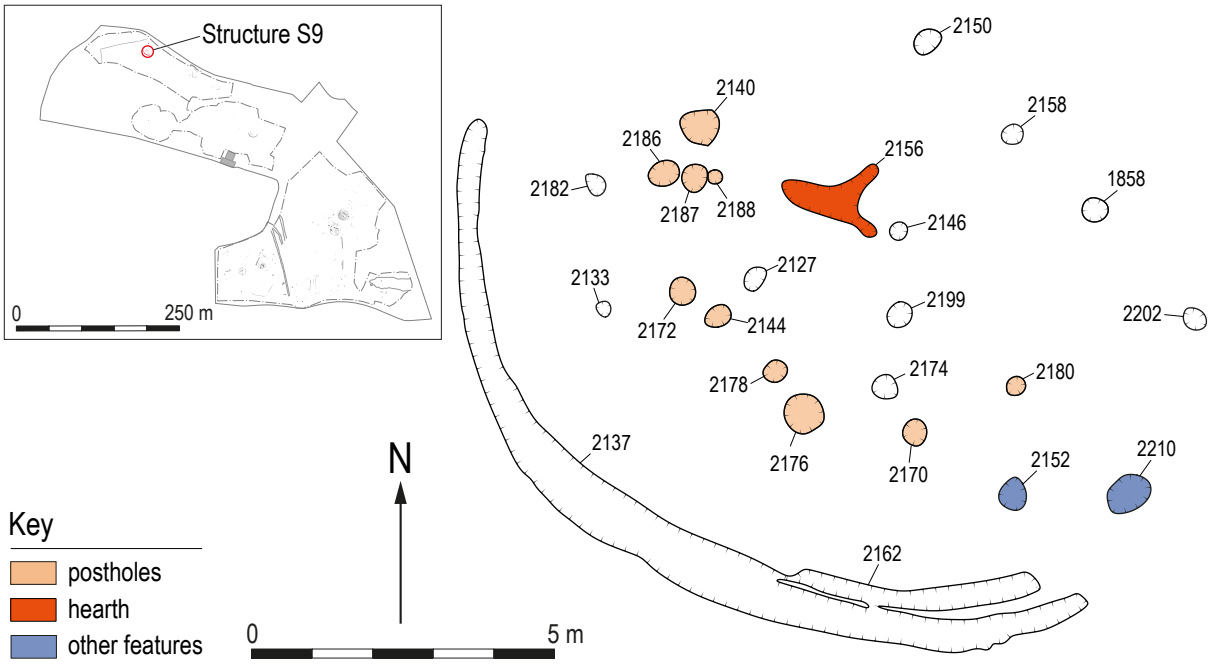

Figure 31: Plan of Structure S9.

Although the building was not dated, a number of Bronze Age pottery sherds, SF 288, were recovered from pit (2182), with a large amount of burnt clay/daub, SF 287, which was recovered from the hearth (2156) and a nearby posthole (2187). The structure appeared to be in a similar architectural style to the other structures described above and is undated.

Structure S9A

Structure S9A consisted of two concentric ditches or gullies (2244) and (2265) located at the northern edge of Field B (Figure 2). Only about a third of this structure was uncovered with the remainder continuing beyond the limits of the excavation area. The gullies both measured between 0.45 m and 0.3 m in width and were 0.2 m deep. No internal features and no finds were discovered in association with them, and the structure is undated.

Structure S9B

This undated structure comprised an arc of a ditch or gully that was located south-west of Structure S9A (Figure 2). The gully (2226) was on average 0.3 m wide and 0.2 m deep, and it contained a large concentration of stones in its southern extent. A possible worked fragment of quartz (SF 292) was recovered from this feature, along with traces of nutshell from pit (2243) within the ditch.

Structure S9C

The remains of another roundhouse were located at the northern edge of Field B, situated between Structures S9 and S9A and B (Figures 2 and 30). It consisted of a ring of seven postholes (1826), (1828), (1871), (1873), (1878), (1881) and (1885) distributed at intervals of 1.6 m, with a structural diameter of 6 m. The postholes were on average 0.4 m in diameter and 0.1 m to 0.45 m deep. In addition, there were two pits (1831) and (1833) located directly to the south-east that may have formed a 1.4 m wide entrance or porch to the building. They averaged 0.75 m by 0.4 m in diameter with depths of 0.1 m and 0.26 m. No other features were present and no finds were recovered from any of the structural postholes. However, barley grain from posthole (1878) was radiocarbon dated to the middle Bronze Age, 1409 –1235 cal BC (UBA-49286) (Figure 17).

Outlying features

A further 300 pits, postholes and stakeholes were uncovered over the course of the excavation distributed across the investigated area. These features were located within four rough concentrations: the south-eastern corner of the site; the southern edge of the site; adjacent to Structure S5; and directly to the north of Structure S3A (Figure 2). Their full details can be found in the site archive.

Features in the south-eastern corner of Field A included a small concentration of nine pits and a single posthole. The majority of the pits contained fire-cracked stones within charcoal-rich deposits while others contained a high concentration of stone.

Along the southern edge of Field A 85 pits, postholes and stakeholes with Bronze Age pottery fragments were recovered from three of them. With the exception of 14 stakeholes that appeared to be run in a line for over 4.5 m, no pattern to the pits or postholes was apparent.

Another 50 pits and postholes with no discernible pattern were uncovered immediately adjacent to Structure S5 (Figure 2). Some Bronze Age pottery, V31, came from pit (1489) to the south-east, and pottery and stone from pits (1561) and (1563) towards the north suggesting that some of these outlying features could have been contemporary with the building.

Approximately 50 pits, some large, postholes and stakeholes were excavated from the immediate north-west of Structure S3A to surround the pits lying to the north (Figure 3). Although investigated from the point of view that another building may have existed there most were the product of random activities, although some may have been related to the building S3A. No material cultural evidence, apart from some hazel nutshells was found in these features.

Radiocarbon Dates

Samples processed from the features of the various excavated structures produced a total of 75 radiocarbon dates (Table 1 radiocarbon dates and Table 2 dates in structure order). These dates covered the main events – the early pits, the cremations and structures S1, S2, S3A, S5 and S6 with a single radiocarbon date from each of S8 and S9 (displayed in Figures 4, 15, 17, 21 and 26). Like the structures themselves the radiocarbon dates are complex. The phasing within and between buildings is not easy to demonstrate. It would seem that there are paired events; that Structures S1 and S6 were contemporary buildings with Structure S2, although they were c. 170 m apart. Structures S3A and S5, c. 110 m distant from each other were also contemporary and may have replaced the earlier buildings. The smaller structures S8 and S9C in Field B are also contemporary but were slightly later buildings than Structures S3A and S5. The radiocarbon dates suggest a pattern of structural movement and probably a slight expansion of settlement across the landscape (see below).

UB No	Sample	Context	Material	Radiocarbon Age BP	Calibrated 1-sigma (68.3% probability)	Calibrated 2-sigma (95.4% probability)	Period
UBA-49228	134	492 fill of gully 415	Hordeum vulgare sl.	3059 ± 26	1387 – 1338 cal BC 1320 – 1278 cal BC	1409 – 1259 cal BC 1244 – 1231 cal BC	MBA
UBA-49229	137	499 fill of gully 420	Hordeum vulgare sl.	3056 ± 28	1385 – 1339 cal BC 1317 – 1270 cal BC	1408 – 1257 cal BC 1247 – 1227 cal BC	MBA
UBA-49230	137A	500 fill of gully 420	Alnus	3086 ± 24	1407 – 1377 cal BC 1349 – 1303 cal BC	1419 – 1279 cal BC	MBA
UBA-49231	152	521 fill of posthole 520	Hordeum vulgare sl.	3088 ± 25	1409 – 1377 cal BC 1348 – 1303 cal BC	1420 – 1281 cal BC	MBA
UBA-49232	230	522 floor deposits	Hordeum vulgare nudum	3049 ± 24	1382 – 1341 cal BC 1310 – 1265 cal BC	1399 – 1255 cal BC 1248 – 1225 cal BC	MBA
UBA-49233	157	544 fill of pit 543	Corylus	3133 ± 31	1443 – 1388 cal BC 1337 – 1321 cal BC	1497 – 1472 cal BC 1462 – 1373 cal BC 1353 – 1300 cal BC	MBA
UBA-49234	182	574 fill of posthole 573	Hordeum vulgare nudum	3073 ± 24	1397 – 1369 cal BC 1357 – 1332 cal BC 1327 – 1293 cal BC	1411 – 1267 cal BC	MBA
UBA-49235	188	600 fill of pit 601	Hordeum vulgare var. nudum	3074 ± 23	1398 – 1370 cal BC 1356 – 1331 cal BC 1328 – 1295 cal BC	1411 – 1269 cal BC	MBA
UBA-49236	194	602 fill of pit 532	Hordeum vulgare var. nudum	3028 ± 25	1374 – 1352 cal BC 1301 – 1256 cal BC 1248 – 1226 cal BC	1393 – 1335 cal BC 1323 – 1204 cal BC	MBA
UBA-49237	191	604 fill of pit 603	Alnus	3319 ± 25	1614 – 1599 cal BC 1592 – 1542 cal BC	1667 – 1657 cal BC 1632 – 1509 cal BC	EBA (late)
UBA-49238	193	607 fill of pit 531	Hordeum vulgare sl.	3049 ± 25	1382 – 1341 cal BC 1311 – 1265 cal BC	1400 – 1255 cal BC 1249 – 1224 cal BC	MBA
UBA-49239	198	628A fill of pit 536+630	Hordeum vulgare sl.	3025 ± 24	1372 – 1354 cal BC 1298 – 1255 cal BC 1249 – 1224 cal BC	1390 – 1337 cal BC 1321 – 1200 cal BC	MBA
UBA-49240	222	672 fill of posthole 664	Hordeum vulgare var. nudum	2991 ± 26	1267 – 1197 cal BC 1172 – 1163 cal BC 1142 – 1131 cal BC	1372 – 1355 cal BC 1297 – 1124 cal BC	MBA/LBA
UBA-49241	228	675 fill of pit 674	Hordeum vulgare var. nudum	3066 ± 26	1390 – 1365 cal BC 1361 – 1336 cal BC 1322 – 1284 cal BC	1413 – 1260 cal BC	MBA
UBA-49242	236	689 fill of pit 534	Hordeum vulgare sl.	3098 ± 26	1415 – 1380 cal BC 1344 – 1306 cal BC	1427 – 1285 cal BC	MBA

Table 1: Radiocarbon dates.

UB No	Sample	Context	Material	Radiocarbon Age BP	Calibrated 1-sigma (68.3% probability)	Calibrated 2-sigma (95.4% probability)	Period
UBA-49243	250	709 fill of posthole 695	Hordeum vulgare var. nudum	3073 ± 28	1398 – 1369 cal BC 1357 – 1331 cal BC 1328 – 1292 cal BC	1417 – 1261 cal BC	MBA
UBA-49244	246	723 fill of posthole 721	Hordeum vulgare var. nudum	3118 ± 30	1429 – 1384 cal BC 1340 – 1314 cal BC	1490 – 1484 cal BC 1448 – 1292 cal BC	MBA
UBA-49245	245	729 fill of posthole 727	Hordeum vulgare var. nudum	3088 ± 27	1410 – 1376 cal BC 1349 – 1302 cal BC	1422 – 1275 cal BC	MBA
UBA-49246	249	730 fill of fire-pit 736	Hordeum vulgare var. vulgare	3051 ± 27	1384 – 1340 cal BC 1314 – 1265 cal BC	1404 – 1256 cal BC 1248 – 1225 cal BC	MBA
UBA-49247	258	746 fill of posthole 744	Hordeum vulgare var. nudum	3065 ± 28	1390 – 1336 cal BC 1323 – 1283 cal BC	1413 – 1259 cal BC 1242 – 1233 cal BC	MBA
UBA-49248	272	778 fill of pit 776	Hordeum vulgare var. vulgare	2975 ± 26	1258 – 1244 cal BC 1231 – 1190 cal BC 1178 – 1157 cal BC 1146 – 1127 cal BC	1367 – 1359 cal BC 1284 – 1112cal BC 1091 – 1086 cal BC 1063 – 1058 cal BC	MBA/LBA
UBA-49249	305	827 deposit	Hordeum vulgare var. nudum	3035 ± 27	1378 – 1346 cal BC 1305 – 1258 cal BC 1245 – 1230 cal BC	1397 – 1332 cal BC 1327 – 1213 cal BC	MBA
UBA-49250	307	839 fill of pit 840	Betula	3870 ± 29	2453 – 2419 cal BC 2407 – 2375 cal BC 2352 – 2292 cal BC	2462 – 2281 cal BC 2252 – 2230 cal BC 2222 – 2208 cal BC	EBA (earliest)
UBA-49251	342	914 fill of posthole 915	Hordeum vulgare var. vulgare	3063 ± 27	1389 – 1336 cal BC 1322 – 1281 cal BC	1412 – 1259 cal BC 1243 – 1233 cal BC	MBA
UBA-49252	418	979 fill of posthole 977	Betula	3094 ± 25	1412 – 1379 cal BC 1345 – 1305 cal BC	1424 – 1284 cal BC	MBA
UBA-49253	517	1217 occupation layer	Hordeum vulgare var. nudum	3010 ± 23	1366 – 1360 cal BC 1286 – 1215 cal BC	1381 – 1343 cal BC 1306 – 1194 cal BC 1175 – 1161 cal BC 1143 – 1130 cal BC	MBA/LBA
UBA-49254	519	1225 fill of gully 1027	Hordeum vulgare sl./ Hordeum vulgare var. nudum	3046 ± 24	1382 – 1342 cal BC 1309 – 1263 cal BC	1396 - 1333 cal BC 1326 - 1223 cal BC	MBA
UBA-49255	521	1229 deposit	Hordeum vulgare var. nudum	2980 ± 25	1260 – 1240 cal BC 1236 – 1194 cal BC 1175 – 1160 cal BC 1144 – 1129 cal BC	1368 – 1358 cal BC 1286 – 1117 cal BC	MBA/LBA
UBA-49256	523	1235 fill of pit 1234	Hordeum vulgare var. nudum	3022 ± 25	1370 – 1356 cal BC 1295 – 1222 cal BC	1388 – 1338 cal BC 1320 – 1198 cal BC 1170 – 1165 cal BC 1140 – 1133 cal BC	MBA/LBA
UBA-49257	533	1264 fill of posthole 1263	Corylus	3057 ± 25	1388 – 1338 cal BC 1320 – 1198 cal BC 1170 – 1165 cal BC 1140 – 1133cal BC	1407 – 1259 cal BC 1244 – 1231 cal BC	MBA
UBA-49258	528	1267 fill of pit 1266	Hordeum vulgare var. nudum	2944 ± 26	1213 – 1118 cal BC	1256 – 1246 cal BC 1227 – 1050 cal BC	MBA/LBA

Table 1 (continued): Radiocarbon dates.

UB No	Sample	Context	Material	Radiocarbon Age BP	Calibrated 1-sigma (68.3% probability)	Calibrated 2-sigma (95.4% probability)	Period
UBA-49259	545	1277 fill of posthole 1276	Hordeum vulgare sl.	3010 ± 25	1368 – 1358 cal BC 1289 – 1214 cal BC	1383 – 1341 cal BC 1309 – 1192 cal BC 1178 – 1159 cal BC 1144 – 1129 cal BC	MBA/LBA
UBA-49260	540	1288 fill of pit 1287	Hordeum vulgare sl.	3038 ± 31	1381 – 1342 cal BC 1308 – 1258 cal BC 1244 – 1230 cal BC	1405 – 1212 cal BC	MBA
UBA-49261	551	1299 fill of pit 1297	Hordeum vulgare var. vulgare	2979 ± 26	1260 – 1241 cal BC 1235 – 1193 cal BC 1176 – 1159 cal BC 1144 – 1129 cal BC	1369 – 1357 cal BC 1290 – 1115 cal BC	MBA/LBA
UBA-49262	557	1310 fill of posthole 1308	Hordeum vulgare var. nudum	3025 ± 27	1373 – 1353 cal BC 1299 – 1253 cal BC 1251 – 1223 cal BC	1392 – 1336 cal BC 1323 – 1198 cal BC 1170 – 1165 cal BC 1140 – 1133 cal BC	MBA/LBA
UBA-49263	575	1322 fill of pit 1323	Corylus	3072 ± 31	1398 – 1367 cal BC 1359 – 1331 cal BC 1328 – 1288 cal BC	1418 – 1259 cal BC 1242 – 1234 cal BC	MBA
UBA-49264	568	1324 occupation deposit	Hordeum vulgare sl.	2978 ± 25	1259 – 1242 cal BC 1234 – 1192 cal BC 1176 – 1159 cal BC 1145 – 1128 cal BC	1368 – 1358 cal BC 1285 – 1115 cal BC	MBA/LBA
UBA-49265	582	1357 fill of posthole 1355	Hordeum vulgare var. nudum/ Hordeum vulgare sl.	3022 ± 26	1370 – 1355 cal BC 1296 – 1222 cal BC	1389 – 1337 cal BC 1321 – 1197 cal BC 1171 – 1164 cal BC 1141 – 1132 cal BC	MBA/LBA
UBA-49266	586	1361 fill of pit 1349	Hordeum vulgare var. nudum/ Hordeum vulgare sl.	3000 ± 25	1282 – 1200 cal BC 1140 – 1133 cal BC	1377 – 1350 cal BC 1302 – 1156 cal BC 1146 – 1127 cal BC	MBA/LBA
UBA-49267	577	1363 fill of posthole 1362	Indet. cereal	3004 ± 26	1366 – 1360 cal BC 1286 – 1204 cal BC 1138 – 1137 cal BC	1380 – 1345 cal BC 1305 – 1187 cal BC 1182 – 1157 cal BC 1146 – 1127 cal BC	MBA/LBA
UBA-49268	591	1370 deposit	Alnus	3010 ± 25	1368 – 1358 cal BC 1289 – 1214 cal BC	1383 – 1341 cal BC 1309 – 1192 cal BC 1178 – 1159 cal BC 1144 – 1129 cal BC	MBA/LBA
UBA-49269	599	1386 fill of posthole 1384	Hordeum vulgare var. vulgare	2981 ± 25	1260 – 1240 cal BC 1236 – 1195 cal BC 1174 – 1161 cal BC 1144 – 1130 cal BC	1368 – 1358 cal BC 1287 – 1118 cal BC	MBA/LBA
UBA-49270	703	1597 spit2 quad C fill of pit 1596	Alnus	3407 ± 27	1742 – 1708 cal BC 1701 – 1669 cal BC 1655 – 1636 cal BC	1865 – 1853 cal BC 1768 – 1621 cal BC	EBA (3-4)
UBA-49271	703	1597 spit2 quad D fill of pit 1596	Alnus	3452 ± 26	1872 – 1847 cal BC 1813 – 1807 cal BC 1774 – 1738 cal BC 1714 – 1694 cal BC	1880 – 1838 cal BC 1827 – 1688 cal BC	EBA (3-4)
UBA-49272	702	1599 spit2 quad C fill of pit 1598	Betula	3412 ± 25	1744 – 1674 cal BC 1653 – 1641 cal BC	1865 – 1853 cal BC 1768 – 1624 cal BC	EBA (3-4)

Table 1 (continued): Radiocarbon dates.

UB No	Sample	Context	Material	Radiocarbon Age BP	Calibrated 1-sigma (68.3% probability)	Calibrated 2-sigma (95.4% probability)	Period
UBA-49273	730	1661 fill of cist 1672	Alnus	3450 ± 26	1871 – 1847 cal BC 1812 – 1811 cal BC 1774 – 1737 cal BC 1715 – 1694 cal BC	1879 – 1839 cal BC 1827 – 1687 cal BC 1649 – 1646 cal BC	EBA (3-4)
UBA-49274	732	1671 fill of cist 1670	Corylus avellana nutshell	3657 ± 31	2130 – 2090 cal BC 2044 – 2009 cal BC 2002 – 1972 cal BC	2137 – 1944 cal BC	EBA (2-3)
UBA-49275	733	1675 fill of pit 1676	Hordeum vulgare sl.	3026 ± 32	1375 – 1350 cal BC 1302 – 1222 cal BC	1397 – 1332 cal BC 1327 – 1196 cal BC 1173 – 1162 cal BC 1142 – 1131 cal BC	MBA/LBA
UBA-49276	736	1680 fill of posthole 1679	Alnus	3004 ± 27	1367 – 1359 cal BC 1288 – 1204 cal BC 1139 – 1135 cal BC	1380 – 1345 cal BC 1305 – 1185 cal BC 1183 – 1157 cal BC 1146 – 1127 cal BC	MBA/LBA
UBA-49277	734	1682 fill of pit 1681	Corylus avellana nutshell	1883 ± 23	cal AD 127 – 171 cal AD 183 – 204	cal AD 84 – 95 cal AD 117 – 228	MIA
UBA-49278	738	1694 fill of pit 1693	Hordeum vulgare var. vulgare	3003 ± 25	1284 – 1204 cal BC 1139 – 1135 cal BC	1379 – 1347 cal BC 1303 – 1187 cal BC 1181 – 1157 cal BC 1146 – 1127 cal BC	MBA/LBA
UBA-49279	749	1705 fill of posthole 1704	Alnus	3048 ± 24	1382 – 1341 cal BC 1310 – 1264 cal BC	1398 – 1331 cal BC 1328 – 1254 cal BC 1250 – 1224 cal Bc	MBA
UBA-49280	744	1709 fill of pit 1689	Alnus	3072 ± 23	1396 – 1368 cal BC 1358 – 1333 cal BC 1326 – 1291 cal BC	1410 – 1268 cal BC	MBA
UBA-49281	754	1739 fill of pit 1738	Corylus	3085 ± 24	1407 – 1376 cal BC 1349 – 1302 cal BC	1418 – 1278 cal BC	MBA
UBA-49282	769	1766 fill of pit 1765	Alnus	1852 ± 21	cal AD 132 – 139 cal AD 162 – 189 cal AD 201 – 234	cal AD 129 – 147 cal AD 152 – 236	RIA
UBA-49283	770	1770 fill of posthole 1769	Corylus	1818 ± 21	cal AD 212 – 247 cal AD 300 – 304	cal AD 133 – 138 cal AD 163 – 188 cal AD 201 – 255 cal AD 284 – 325	RIA
UBA-49284	781	1791 fill of posthole 1790	Hordeum vulgare var. vulgare	1856 ± 21	cal AD 132 – 139 cal AD 162 – 189 cal AD 201 – 231	cal AD 128 – 234	RIA
UBA-49285	786	1809 fill of posthole 1808	Corylus	3052 ± 23	1382 – 1341cal BC 1311 – 1268 cal BC	1401 – 1257 cal BC 1245 – 1228 cal BC	MBA
UBA-49286	799	1879 fill of posthole 1878	Hordeum vulgare sl.	3061 ± 24	1387 – 1338 cal BC 1320 – 1281 cal BC	1409 – 1260 cal BC 1241 – 1235 cal BC	MBA
UBA-49287	807	1891 fill of pit 1890	Hordeum vulgare var. vulgare	1932 ± 20	cal AD 67 – 124	cal AD 24 – 132 cal AD 138 – 163 cal AD 188 – 202	RIA
UBA-49288	817	1907 fill of gully 1906	Indet. cereal	435 ± 20	cal AD 1441 – 1456	cal AD 1433 – 1474	Medieval
UBA-49289	824	1936 fill of posthole 1937	Indet. cereal	3088 ± 23	1408 – 1378 cal BC 1347 – 1304 cal BC	1419 – 1282 cal BC	MBA

Table 1 (continued): Radiocarbon dates.

UB No	Sample	Context	Material	Radiocarbon Age BP	Calibrated 1-sigma (68.3% probability)	Calibrated 2-sigma (95.4% probability)	Period
UBA-49290	840	1962 fill of posthole 1963	Hordeum vulgare var. vulgare/ Hordeum vulgare sl.	1921 ± 28	cal AD 65 – 131 cal AD 141 – 158 cal AD 190 – 201	cal AD 27 – 47 cal AD 57 – 208	RIA
UBA-49291	841	1965 fill of posthole 1964	Alnus	2970 ± 28	1256 – 1247 cal BC 1227 – 1186 cal BC 1181 – 1155 cal BC 1147 – 1126 cal BC	1282 – 1107 cal BC 1098 – 1079 cal BC 1070 – 1055 cal BC	MBA/LBA
UBA-49292	874	2032 fill of posthole 2034	Hordeum vulgare sl.	3081 ± 24	1404 – 1374 cal BC 1352 – 1301 cal BC	1416 – 1274 cal BC	MBA
UBA-49293	862	2039 deposit	Hordeum vulgare sl.	3090 ± 31	1412 – 1375 cal BC 1350 – 1301 cal BC	1425 – 1268 cal BC	MBA
UBA-49294	866	2048 fill of posthole 2047	Hordeum vulgare sl.	3057 ± 27	1386 – 1339 cal BC 1318 – 1274 cal BC	1408 – 1258 cal BC 1245 – 1229 cal Bc	MBA
UBA-49295	883	2056 fill of posthole 2055	Hordeum vulgare sl.	3037 ± 24	1379 – 1345 cal BC 1305 – 1259 cal BC 1242 – 1233 cal BC	1393 – 1335 cal BC 1323 – 1217 cal BC	MBA
UBA-49296	875	2061 fill of it 2062	Hordeum vulgare var. vulgare	3133 ± 25	1438 – 1393 cal BC 1334 – 1324 cal BC	1494 – 1478 cal BC 1455 – 1376 cal BC 1346 – 1305 cal BC	MBA
UBA-49297	903	2117 fill of posthole 2166	Alnus	2996 ± 27	1277 – 1198 cal BC 1170 – 1164 cal BC 1141 – 1132 cal BC	1376 – 1351 cal BC 1301 – 1153 cal BC 1149 – 1125 cal BC	MBA/LBA
UBA-49298	262	1677 from fill of cist 1673	Human lower limb	3510 ± 26	1885 – 1871 cal BC 1847 – 1812 cal BC 1808 – 1774 cal BC	1920 – 1912 cal BC 1902 – 1746 cal Bc	EBA (3)
UBA-49299	703	1597 fill of pit 1596	Human lower limb	3454 ± 28	1872 – 1846 cal BC 1816 – 1803 cal BC 1775 – 1738 cal BC 1714 – 1695 cal BC	1881 – 1836 cal BC 1830 – 1688 cal BC 1648 – 1647 cal BC	EBA (3-4)
UBA-49300	702	1599 spit4 quad D fill of pit 1598	Human skull	3458 ± 25	1872 – 1846 cal BC 1816 – 1803 cal BC 1775 – 1740 cal BC 1711 – 1698 cal BC	1880 – 1838 cal BC 1828 – 1732 cal BC 1721 – 1690 cal BC	EBA (3-4)
UBA-49301	141	644 fill of pit 643	Human limb	3099 ± 25	1415 – 1381 cal BC 1343 – 1307 cal BC	1427 – 1288 cal BC	MBA
UBA-49302	256	1661 fill of cist 1672	Human limb	3537 ± 25	1924 – 1876 cal BC 1842 – 1822 cal BC 1795 – 1779 cal BC	1948 – 1866 cal BC 1852 – 1770 cal BC	EBA (3)

Table 1 (continued): Radiocarbon dates.

UB No	Sample	Context	Material	Radiocarbon Age BP	Calibrated 1-sigma (68.3% probability)	Calibrated 2-sigma (95.4% probability)	Period	Structure
UBA-49274	732	1671 fill of cist 1670	Corylus avellana nutshell	3657 ± 31	2130 – 2090 cal BC 2044 – 2009 cal BC 2002 – 1972 cal BC	2137 – 1944 cal BC	EBA (2-3)	Cremation
UBA-49302	256	1661 fill of cist 1672	Human limb	3537 ± 25	1924 – 1876 cal BC 1842 – 1822 cal BC 1795 – 1779 cal BC	1948 – 1866 cal BC 1852 – 1770 cal BC	EBA (3)	Cremation
UBA-49298	262	1677 from fill of cist 1673	Human lower limb	3510 ± 26	1885 – 1871 cal BC 1847 – 1812 cal BC 1808 – 1774 cal BC	1920 – 1912 cal BC 1902 – 1746 cal Bc	EBA (3)	Cremation
UBA-49300	702	1599 spit4 quad D fill of pit 1598	Human skull	3458 ± 25	1872 – 1846 cal BC 1816 – 1803 cal BC 1775 – 1740 cal BC 1711 – 1698 cal BC	1880 – 1838 cal BC 1828 – 1732 cal BC 1721 – 1690 cal BC	EBA (3-4)	Cremation
UBA-49299	703	1597 fill of pit 1596	Human lower limb	3454 ± 28	1872 – 1846 cal BC 1816 – 1803 cal BC 1775 – 1738 cal BC 1714 – 1695 cal BC	1881 – 1836 cal BC 1830 – 1688 cal BC 1648 – 1647 cal BC	EBA (3-4)	Cremation
UBA-49271	703	1597 spit2 quad D fill of pit 1596	Alnus	3452 ± 26	1872 – 1847 cal BC 1813 – 1807 cal BC 1774 – 1738 cal BC 1714 – 1694 cal BC	1880 – 1838 cal BC 1827 – 1688 cal BC	EBA (3-4)	Cremation
UBA-49273	730	1661 fill of cist 1672	Alnus	3450 ± 26	1871 – 1847 cal BC 1812 – 1811 cal BC 1774 – 1737 cal BC 1715 – 1694 cal BC	1879 – 1839 cal BC 1827 – 1687 cal BC 1649 – 1646 cal BC	EBA (3-4)	Cremation
UBA-49272	702	1599 spit2 quad C fill of pit 1598	Betula	3412 ± 25	1744 – 1674 cal BC 1653 – 1641 cal BC	1865 – 1853 cal BC 1768 – 1624 cal BC	EBA (3-4)	Cremation
UBA-49270	703	1597 spit2 quad C fill of pit 1596	Alnus	3407 ± 27	1742 – 1708 cal BC 1701 – 1669 cal BC 1655 – 1636 cal BC	1865 – 1853 cal BC 1768 – 1621 cal BC	EBA (3-4)	Cremation
UBA-49244	246	723 fill of posthole 721	Hordeum vulgare var.nudum	3118 ± 30	1429 – 1384 cal BC 1340 – 1314 cal BC	1490 – 1484 cal BC 1448 – 1292 cal BC	MBA	Structure 1
UBA-49301	141	644 fill of pit 643	Human limb bone	3099 ± 25	1415 – 1381 cal BC 1343 – 1307 cal BC	1427 – 1288 cal BC	MBA	Structure 1
UBA-49242	236	689 fill of pit 534	Hordeum vulgare sl.	3098 ± 26	1415 – 1380 cal BC 1344 – 1306 cal BC	1427 – 1285 cal BC	MBA	Structure 1
UBA-49252	418	979 fill of posthole 977	Betula	3094 ± 25	1412 – 1379 cal BC 1345 – 1305 cal BC	1424 – 1284 cal BC	MBA	Structure 1
UBA-49245	245	729 fill of posthole 727	Hordeum vulgare var.nudum	3088 ± 27	1410 – 1376 cal BC 1349 – 1302 cal BC	1422 – 1275 cal BC	MBA	Structure 1
UBA-49231	152	521 fill of posthole 520	Hordeum vulgare sl.	3088 ± 25	1409 – 1377 cal BC 1348 – 1303 cal BC	1420 – 1281 cal BC	MBA	Structure 1
UBA-49230	137A	500 fill of gully 420	Alnus	3086 ± 24	1407 – 1377 cal BC 1349 – 1303 cal BC	1419 – 1279 cal BC	MBA	Structure 1
UBA-49235	188	600 fill of pit 601	Hordeum vulgare var.nudum	3074 ± 23	1398 – 1370 cal BC 1356 – 1331 cal BC 1328 – 1295 cal BC	1411 – 1269 cal BC	MBA	Structure 1

Table 2: Northbar 14C dates by structure.

UB No	Sample	Context	Material	Radiocarbon Age BP	Calibrated 1-sigma (68.3% probability)	Calibrated 2-sigma (95.4% probability)	Period	Structure
UBA-49243	250	709 fill of posthole 695	Hordeum vulgare var.nudum	3073 ± 28	1398 – 1369 cal BC 1357 – 1331 cal BC 1328 – 1292 cal BC	1417 – 1261 cal BC	MBA	Structure 1
UBA-49234	182	574 fill of posthole 573	Hordeum vulgare nudum	3073 ± 24	1397 – 1369 cal BC 1357 – 1332 cal BC 1327 – 1293 cal BC	1411 – 1267 cal BC	MBA	Structure 1
UBA-49241	228	675 fill of pit 674	Hordeum vulgare var.nudum	3066 ± 26	1390 – 1365 cal BC 1361 – 1336 cal BC 1322 – 1284 cal BC	1413 – 1260 cal BC	MBA	Structure 1
UBA-49247	258	746 fill of posthole 744	Hordeum vulgare var.nudum	3065 ± 28	1390 – 1336 cal BC 1323 – 1283 cal BC	1413 – 1259 cal BC 1242 – 1233 cal BC	MBA	Structure 1
UBA-49228	134	492 fill of gully 415	Hordeum vulgare sl.	3059 ± 26	1387 – 1338 cal BC 1320 – 1278 cal BC	1409 – 1259 cal BC 1244 – 1231 cal BC	MBA	Structure 1
UBA-49229	137	499 fill of gully 420	Hordeum vulgare sl.	3056 ± 28	1385 – 1339 cal BC 1317 – 1270 cal BC	1408 – 1257 cal BC 1247 – 1227 cal BC	MBA	Structure 1
UBA-49246	249	730 fill of fire-pit 736	Hordeum vulgare var.vulgare	3051 ± 27	1384 – 1340 cal BC 1314 – 1265 cal BC	1404 – 1256 cal BC 1248 – 1225 cal BC	MBA	Structure 1
UBA-49238	193	607 fill of pit 531	Hordeum vulgare sl.	3049 ± 25	1382 – 1341 cal BC 1311 – 1265 cal BC	1400 – 1255 cal BC 1249 – 1224 cal BC	MBA	Structure 1
UBA-49232	230	522 floor deposits	Hordeum vulgare nudum	3049 ± 24	1382 – 1341 cal BC 1310 – 1265 cal BC	1399 – 1255 cal BC 1248 – 1225 cal BC	MBA	Structure 1
UBA-49249	305	827 deposit	Hordeum vulgare var.nudum	3035 ± 27	1378 – 1346 cal BC 1305 – 1258 cal BC 1245 – 1230 cal BC	1397 – 1332 cal BC 1327 – 1213 cal BC	MBA	Structure 1
UBA-49236	194	602 fill of pit 532	Hordeum vulgare var.nudum	3028 ± 25	1374 – 1352 cal BC 1301 – 1256 cal BC 1248 – 1226 cal BC	1393 – 1335 cal BC 1323 – 1204 cal BC	MBA	Structure 1
UBA-49239	198	628A fill of pit 536+630	Hordeum vulgare sl.	3025 ± 24	1372 – 1354 cal BC 1298 – 1255 cal BC 1249 – 1224 cal BC	1390 – 1337 cal BC 1321 – 1200 cal BC	MBA	Structure 1
UBA-49240	222	672 fill of posthole 664	Hordeum vulgare var.nudum	2991 ± 26	1267 – 1197 cal BC 1172 – 1163 cal BC 1142 – 1131 cal BC	1372 – 1355 cal BC 1297 – 1124 cal BC	MBA/ LBA	Structure 1
UBA-49248	272	778 fill of pit 776	Hordeum vulgare var.vulgare	2975 ± 26	1258 – 1244 cal BC 1231 – 1190 cal BC 1178 – 1157 cal BC 1146 – 1127 cal BC	1367 – 1359 cal BC 1284 – 1112cal BC 1091 – 1086 cal BC 1063 – 1058 cal BC	MBA/ LBA	Structure 1
UBA-49237	191	604 fill of pit 603	Alnus	3319 ± 25	1614 – 1599 cal BC 1592 – 1542 cal BC	1667 – 1657 cal BC 1632 – 1509 cal BC	EBA (late)	Structure 2
UBA-49233	157	544 fill of pit 543	Corylus	3133 ± 31	1443 – 1388 cal BC 1337 – 1321 cal BC	1497 – 1472 cal BC 1462 – 1373 cal BC 1353 – 1300 cal BC	MBA	Structure 2
UBA-49250	307	839 fill of pit 840	Betula	3870 ± 29	2453 – 2419 cal BC 2407 – 2375 cal BC 2352 – 2292 cal BC	2462 – 2281 cal BC 2252 – 2230 cal BC 2222 – 2208 cal BC	EBA (earliest)	Structure 3

Table 2 (continued): Northbar 14C dates by structure.

UB No	Sample	Context	Material	Radiocarbon Age BP	Calibrated 1-sigma (68.3% probability)	Calibrated 2-sigma (95.4% probability)	Period	Structure
UBA-49263	575	1322 fill of pit 1323	Corylus	3072 ± 31	1398 – 1367 cal BC 1359 – 1331 cal BC 1328 – 1288 cal BC	1418 – 1259 cal BC 1242 – 1234 cal BC	MBA	Structure 3A
UBA-49257	533	1264 fill of posthole 1263	Corylus	3057 ± 25	1388 – 1338 cal BC 1320 – 1198 cal BC 1170 – 1165 cal BC 1140 – 1133cal BC	1407 – 1259 cal BC 1244 – 1231 cal BC	MBA	Structure 3A
UBA-49254	519	1225 fill of outer gully 1027	Hordeum vulgare sl./ Hordeum vulgare var.nudum	3046 ± 24	1382 – 1342 cal BC 1309 – 1263 cal BC	1396 - 1333 cal BC 1326 - 1223 cal BC	MBA	Structure 3A
UBA-49260	540	1288 fill of pit 1287	Hordeum vulgare sl.	3038 ± 31	1381 – 1342 cal BC 1308 – 1258 cal BC 1244 – 1230 cal BC	1405 – 1212 cal BC	MBA	Structure 3A
UBA-49262	557	1310 fill of posthole 1308	Hordeum vulgare var.nudum	3025 ± 27	1373 – 1353 cal BC 1299 – 1253 cal BC 1251 – 1223 cal BC	1392 – 1336 cal BC 1323 – 1198 cal BC 1170 – 1165 cal BC 1140 – 1133 cal BC	MBA/ LBA	Structure 3A
UBA-49265	582	1357 fill of posthole 1355	Hordeum vulgare var. nudum/ Hordeum vulgare sl.	3022 ± 26	1370 – 1355 cal BC 1296 – 1222 cal BC	1389 – 1337 cal BC 1321 – 1197 cal BC 1171 – 1164 cal BC 1141 – 1132 cal BC	MBA/ LBA	Structure 3A
UBA-49256	523	1235 fill of pit 1234	Hordeum vulgare var.nudum	3022 ± 25	1370 – 1356 cal BC 1295 – 1222 cal BC	1388 – 1338 cal BC 1320 – 1198 cal BC 1170 – 1165 cal BC 1140 – 1133 cal BC	MBA/ LBA	Structure 3A
UBA-49259	545	1277 fill of posthole 1276	Hordeum vulgare sl.	3010 ± 25	1368 – 1358 cal BC 1289 – 1214 cal BC	1383 – 1341 cal BC 1309 – 1192 cal BC 1178 – 1159 cal BC 1144 – 1129 cal BC	MBA/ LBA	Structure 3A
UBA-49268	591	1370 deposit	Alnus	3010 ± 25	1368 – 1358 cal BC 1289 – 1214 cal BC	1383 – 1341 cal BC 1309 – 1192 cal BC 1178 – 1159 cal BC 1144 – 1129 cal BC	MBA/ LBA	Structure 3A
UBA-49253	517	1217 occupation layer	Hordeum vulgare var.nudum	3010 ± 23	1366 – 1360 cal BC 1286 – 1215 cal BC	1381 – 1343 cal BC 1306 – 1194 cal BC 1175 – 1161 cal BC 1143 – 1130 cal BC	MBA/ LBA	Structure 3A
UBA-49267	577	1363 fill of posthole 1362	Indet. cereal	3004 ± 26	1366 – 1360 cal BC 1286 – 1204 cal BC 1138 – 1137 cal BC	1380 – 1345 cal BC 1305 – 1187 cal BC 1182 – 1157 cal BC 1146 – 1127 cal BC	MBA/ LBA	Structure 3A
UBA-49266	586	1361 fill of pit 1349	Hordeum vulgare var. nudum/ Hordeum vulgare sl.	3000 ± 25	1282 – 1200 cal BC 1140 – 1133 cal BC	1377 – 1350 cal BC 1302 – 1156 cal BC 1146 – 1127 cal BC	MBA/ LBA	Structure 3A
UBA-49269	599	1386 fill of posthole 1384	Hordeum vulgare var.vulgare	2981 ± 25	1260 – 1240 cal BC 1236 – 1195 cal BC 1174 – 1161 cal BC 1144 – 1130 cal BC	1368 – 1358 cal BC 1287 – 1118 cal BC	MBA/ LBA	Structure 3A

Table 2 (continued): Northbar 14C dates by structure.

UB No	Sample	Context	Material	Radiocarbon Age BP	Calibrated 1-sigma (68.3% probability)	Calibrated 2-sigma (95.4% probability)	Period	Structure
UBA-49255	521	1229 deposit	Hordeum vulgare var.nudum	2980 ± 25	1260 – 1240 cal BC 1236 – 1194 cal BC 1175 – 1160 cal BC 1144 – 1129 cal BC	1368 – 1358 cal BC 1286 – 1117 cal BC	MBA/ LBA	Structure 3A
UBA-49261	551	1299 fill of pit 1297	Hordeum vulgare var.vulgare	2979 ± 26	1260 – 1241 cal BC 1235 – 1193 cal BC 1176 – 1159 cal BC 1144 – 1129 cal BC	1369 – 1357 cal BC 1290 – 1115 cal BC	MBA/ LBA	Structure 3A
UBA-49264	568	1324 occupation deposit	Hordeum vulgare sl.	2978 ± 25	1259 – 1242 cal BC 1234 – 1192 cal BC 1176 – 1159 cal BC 1145 – 1128 cal BC	1368 – 1358 cal BC 1285 – 1115 cal BC	MBA/ LBA	Structure 3A
UBA-49258	528	1267 fill of pit 1266	Hordeum vulgare var.nudum	2944 ± 26	1213 – 1118 cal BC	1256 – 1246 cal BC 1227 – 1050 cal BC	MBA/ LBA	Structure 3A
UBA-49289	824	1936 fill of posthole 1937	Indet. cereal	3088 ± 23	1408 – 1378 cal BC 1347 – 1304 cal BC	1419 – 1282 cal BC	MBA	Structure 5
UBA-49281	754	1739 fill of pit 1738	Corylus	3085 ± 24	1407 – 1376 cal BC 1349 – 1302 cal BC	1418 – 1278 cal BC	MBA	Structure 5
UBA-49280	744	1709 fill of pit 1689	Alnus	3072 ± 23	1396 – 1368 cal BC 1358 – 1333 cal BC 1326 – 1291 cal BC	1410 – 1268 cal BC	MBA	Structure 5
UBA-49285	786	1809 fill of posthole 1808	Corylus	3052 ± 23	1382 – 1341cal BC 1311 – 1268 cal BC	1401 – 1257 cal BC 1245 – 1228 cal BC	MBA	Structure 5
UBA-49279	749	1705 fill of posthole 1704	Alnus	3048 ± 24	1382 – 1341 cal BC 1310 – 1264 cal BC	1398 – 1331 cal BC 1328 – 1254 cal BC 1250 – 1224 cal Bc	MBA	Structure 5
UBA-49275	733	1675 fill of pit 1676	Hordeum vulgare sl.	3026 ± 32	1375 – 1350 cal BC 1302 – 1222 cal BC	1397 – 1332 cal BC 1327 – 1196 cal BC 1173 – 1162 cal BC 1142 – 1131 cal BC	MBA/ LBA	Structure 5
UBA-49276	736	1680 fill of posthole 1679	Alnus	3004 ± 27	1367 – 1359 cal BC 1288 – 1204 cal BC 1139 – 1135 cal BC	1380 – 1345 cal BC 1305 – 1185 cal BC 1183 – 1157 cal BC 1146 – 1127 cal BC	MBA/ LBA	Structure 5
UBA-49278	738	1694 fill of pit 1693	Hordeum vulgare var.vulgare	3003 ± 25	1284 – 1204 cal BC 1139 – 1135 cal BC	1379 – 1347 cal BC 1303 – 1187 cal BC 1181 – 1157 cal BC 1146 – 1127 cal BC	MBA/ LBA	Structure 5
UBA-49291	841	1965 fill of posthole 1964	Alnus	2970 ± 28	1256 – 1247 cal BC 1227 – 1186 cal BC 1181 – 1155 cal BC 1147 – 1126 cal BC	1282 – 1107 cal BC 1098 – 1079 cal BC 1070 – 1055 cal BC	MBA/ LBA	Structure 5
UBA-49287	807	1891 fill of pit 1890	Hordeum vulgare var.vulgare	1932 ± 20	cal AD 67 – 124	cal AD 24 – 132 cal AD 138 – 163 cal AD 188 – 202	RIA	Structure 5
UBA-49290	840	1962 fill of posthole 1963	Hordeum vulgare var. vulgare/ Hordeum vulgare sl.	1921 ± 28	cal AD 65 – 131 cal AD 141 – 158 cal AD 190 – 201	cal AD 27 – 47 cal AD 57 – 208	RIA	Structure 5

Table 2 (continued): Northbar 14C dates by structure.

UB No	Sample	Context	Material	Radiocarbon Age BP	Calibrated 1-sigma (68.3% probability)	Calibrated 2-sigma (95.4% probability)	Period	Structure
UBA-49277	734	1682 fill of pit 1681	Corylus avellana nutshell	1883 ± 23	cal AD 127 – 171 cal AD 183 – 204	cal AD 84 – 95 cal AD 117 – 228	RIA	Structure 5
UBA-49284	781	1791 fill of posthole 1790	Hordeum vulgare var.vulgare	1856 ± 21	cal AD 132 – 139 cal AD 162 – 189 cal AD 201 – 231	cal AD 128 – 234	RIA	Structure 5
UBA-49282	769	1766 fill of pit 1765	Alnus	1852 ± 21	cal AD 132 – 139 cal AD 162 – 189 cal AD 201 – 234	cal AD 129 – 147 cal AD 152 – 236	RIA	Structure 5
UBA-49283	770	1770 fill of posthole 1769	Corylus	1818 ± 21	cal AD 212 – 247 cal AD 300 – 304	cal AD 133 – 138 cal AD 163 – 188 cal AD 201 – 255 cal AD 284 – 325	RIA	Structure 5
UBA-49288	817	1907 fill of gully 1906	Indet. cereal	435 ± 20	cal AD 1441 – 1456	cal AD 1433 – 1474	Medieval	Structure 5
UBA-49296	875	2061 fill of pit 2062	Hordeum vulgare var.vulgare	3133 ± 25	1438 – 1393 cal BC 1334 – 1324 cal BC	1494 – 1478 cal BC 1455 – 1376 cal BC 1346 – 1305 cal BC	MBA	Structure 6
UBA-49293	862	2039 deposit	Hordeum vulgare sl.	3090 ± 31	1412 – 1375 cal BC 1350 – 1301 cal BC	1425 – 1268 cal BC	MBA	Structure 6
UBA-49292	874	2032 fill of posthole 2034	Hordeum vulgare sl.	3081 ± 24	1404 – 1374 cal BC 1352 – 1301 cal BC	1416 – 1274 cal BC	MBA	Structure 6
UBA-49294	866	2048 fill of posthole 2047	Hordeum vulgare sl.	3057 ± 27	1386 – 1339 cal BC 1318 – 1274 cal BC	1408 – 1258 cal BC 1245 – 1229 cal Bc	MBA	Structure 6
UBA-49295	883	2056 fill of posthole 2055	Hordeum vulgare sl.	3037 ± 24	1379 – 1345 cal BC 1305 – 1259 cal BC 1242 – 1233 cal BC	1393 – 1335 cal BC 1323 – 1217 cal BC	MBA	Structure 6
UBA-49297	903	2117 fill of posthole 2166	Alnus	2996 ± 27	1277 – 1198 cal BC 1170 – 1164 cal BC 1141 – 1132 cal BC	1376 – 1351 cal BC 1301 – 1153 cal BC 1149 – 1125 cal BC	MBA/ LBA	Structure 6
UBA-49251	342	914 fill of posthole 915	Hordeum vulgare var.vulgare	3063 ± 27	1389 – 1336 cal BC 1322 – 1281 cal BC	1412 – 1259 cal BC 1243 – 1233 cal BC	MBA	Structure 8
UBA-49286	799	1879 fill of posthole 1878	Hordeum vulgare sl.	3061 ± 24	1387 – 1338 cal BC 1320 – 1281 cal BC	1409 – 1260 cal BC 1241 – 1235 cal BC	MBA	Structure 9C

Table 2 (continued): Northbar 14C dates by structure.

Specialists Reports

Carbonised Plant Macrofossils and Charcoal

By Diane Alldritt

A total of 339 environmental sample flots were examined for carbonised plant macrofossils and charcoal, and material sorted from 331 of the sample retents was also analysed for the presence of identifiable carbonised remains. The samples were from 0.5 litres up to 66 litres in volume[1].

The environmental samples produced high levels of recovery of carbonised plant remains <2.5 ml up to 4500 ml in volume. The assemblage consisted of significant deposits of well-preserved cereal grain together with charcoal fragments 5 mm to 40 mm in size, deposits of hazel nutshell and sporadic finds of burnt peat fragments and other vesicular burnt material in amongst crushed ashy charred detritus below the level of identification. Modern remains were present in amounts <2.5 ml to 500 ml in volume mostly root detritus with occasional finds of modern straw, seeds and earthworm egg capsules indicating potential for a degree of plough mixing and bioturbation to be taking place through the deposits. Results of the analysis are found in the tables (Appendix 1)

Burials

This area contained evidence for low levels of burning activity. Pit (840, fill 839) contained mainly fuel waste with a mixture of oak, hazel and birch charcoal and a single grain of (bread wheat) which was probably intrusive from later activity. Pit (1064, fill 1065) contained crushed traces of oak charcoal. Trace amounts of oat and barley grain were recorded from pit (875, fill 874). Traces of degraded barley and hazel nutshell were found in pit (1034, fill 1033). Deposit (1092) may have been a hearth rake out or waste dump with crushed oak charcoal recorded. The fill of pit (840) was radiocarbon dated to the earliest part of the early Bronze Age 2462 – 2208 cal BC (UBA-49250).

Cremation pit (168, fills 169 and 170) produced small deposits of fuel waste with all the charcoal identified as alder, indicating this was probably the main fuel being used for the cremation process.

Cremation pit (1598, fill 1599) was sampled in spits resulting in recovery of small quantities of charcoal indicative of use of mixed open scrub woodland and wetland resources for fuel. Spit 1 QB, QD, spit 2 QB, spit 3 QB, QD, spit 4 QC and spit 5 QA all contained alder charcoal. Spit 1 QC, spit 2 QC and spit 3 QC contained birch charcoal, whilst spit 2 QD and spit 4 QD contained hazel charcoal. A sample from this pit produced a radiocarbon date range of 1865 – 1624 cal BC (UB-49272).

Cremation pit (1596, fill 1597) was sampled similarly and produced alder and hazel charcoal, with a slightly greater emphasis on use of alder for fuel. However, both cremations (1596 and 1598) were likely to be of contemporary Bronze Age date. Pit 1596 spit 1 QA, QD, spit 2 QC, QD, spit 3 QD, spit 4 QB, QC, and spit 5 QB, QC, QD all contained alder charcoal. Spit 1 QC, spit 2 QA, spit 3 QA, QC, spit 4 QA contained hazel charcoal. A radiocarbon date range of 1880 – 1688 cal BC (UB-49271) was obtained from a sample from this pit.

Cremation pit (1620, fill 1619) contained trace amounts of crushed and degraded charcoal with nothing identifiable and cremation cist (1672, fill 1661) produced trace degraded charred remains likely to be residual, including indeterminate cereal grain and hazel nutshell. One fragment of alder charcoal from (1661) may have been fuel waste.

1 Bulk soil samples were processed using a Siraf style water flotation system (French 1971). The flots were dried before being examined under a low power binocular microscope typically at x10 magnification. Wood charcoal was examined using a high powered Vickers M10 metallurgical microscope at magnifications up to x200. The reference photographs of Schweingruber (1990) were consulted for charcoal identification. Plant nomenclature utilised in the text follows Stace (1997) for all vascular plants apart from cereals, which follow Zohary and Hopf (2000).

Structures

A number of pits and postholes in Structure S1 produced significant deposits of cereal grain and charcoal with some hazel nutshell also present. The presence of grain and charcoal was indicative of substantial deposition of agricultural and domestic waste remains from burning activity taking place storage or waste pits during later phases of activity.

Pit (674, fill 675) was probably the remains of a corn drying area, perhaps the basal remains of a kiln with significant amounts of naked barley grain recorded along with oak and hazel charcoal likely to be fuel waste. Pits (534, fill 689), (601, fill 600) and (634, fill 635) also contained large amounts of naked barley grain and were probably contemporary with pit (674). Pit (601, fill 600) produced well-preserved hazel charcoal likely to be fuel waste from cereal drying. Hearth (737, fill 738) contained mainly naked barley together with alder charcoal and a small amount of hazel nutshell and was possibly the source for some of the burnt waste deposited in the pits. Possible hearth (698, fill 699) contained a small amount of naked barley with oak charcoal and had possibly been cleaned out. The barley was radiocarbon dated to 1427 – 1285 cal BC (UBA-49242), the middle Bronze Age. Burnt deposit (522) was probably rake out from a hearth or corn drying area, and contained naked barley, oak charcoal and some nicely preserved hazel nutshell. Barley was again radiocarbon dated to the middle Bronze Age 1399 – 1225 cal BC (UBA-49232) with a similar date range (see Table 1).

Fire-pit (736, fill 730) was probably remains of a corn drier or hearth area but perhaps from a different phase of use with mainly var. (six row hulled barley) recovered from it, together with oak and hazel charcoal. This too was dated similarly to the middle Bronze Age 1404 – 1225 cal BC (UBA-49246). Pit (776, fill 778) was also similar and contained a substantial quantity of six row hulled barley cereal grain and oak charcoal, as well as alder charcoal. This produced a date range of the middle to late Bronze Age of 1367 – 1359 cal BC (UBA-49248). Pit (934, fill 935) also had hulled barley with (birch) charcoal present.

Pit (489, fill 668) mainly had oak charcoal and was probably a waste or fire-pit. Pits (550, fill 553), (555, fill 556) and (850, fill 851) contained small amounts of barley grain with a few fragments of burnt peat also recorded in pit (850).

Posthole (483) was possibly a hearth area, waste pit or posthole conversion, with fill (485) found to contain a large deposit of oak and alder charcoal together with naked barley grain. Similarly posthole (706, fills 702 and 704) contained large deposits of naked barley together with a mixture of oak, birch and alder charcoal and this may have been a hearth exhibiting repeat burning episodes or a waste pit. Postholes (685, fill 686), (695, fills 709 and 735), (727, fills 728 and 729), and (977, fill 979) continued this trend with significant quantities of naked barley recovered from all, in addition to oak charcoal and hazel nutshell. Postholes (770, fill 772), (721, fill 723), (744, fill 746) contained naked barley and burnt peat fragments indicating the use of peat resources for domestic fuel in addition to oak charcoal, with birch charcoal also present in (770). Postholes (727 and 770) in particular are likely to have originated as oak posts and become incorporated into waste or fire-pits with significant amounts of oak charcoal recovered from both.

Remains more likely to be residual or trace sweepings from internal burning activities were found in posthole (520, fill 521) which contained small amounts of naked barley and alder charcoal, (546, fill 547) with barley and birch charcoal and postholes (573, fill 574) and (577, fill 578), which had barley grain and crushed hazel nutshell. Posthole (434, fill 435) had trace oat grain, and (477, fill 478) trace barley possibly residual. Posthole (454, fill 455) contained a small amount of hazel charcoal, probably trace fuel waste.

The series of gullies associated with S1 produced small quantities of carbonised remains, likely to have originated from general domestic burning activity taking place within the structure and radiated outwards from the main areas of burning. Gully (420, fill 499) contained a well-preserved deposit of naked barley cereal grain, together with oak and alder charcoal, which were possibly a deliberate deposition, whilst ditch (415, fill 492) also had a small amount of barley and some hazel charcoal. Alder charcoal

from gully (420) produced a middle Bronze Age radiocarbon date range of 1419 – 1279 cal BC (UBA-49230). Gully (395) contained trace remains of barley grain, crushed hazel nutshell and indeterminate charcoal, likely to be trample or hearth sweepings. Similarly gully (418, fill 468) and (419, fill 476) also contained trace barley grain together with small concentrations of oak charcoal.

Pit (543) contained a large deposit of alder charcoal in amongst ashy charred detritus including trace finds of hazel nutshell from fill (545), with hazel charcoal in fill (544), and this was likely to have been a substantial fire-pit. Hazel charcoal was dated to the middle Bronze Age, 1462 – 1300 cal BC (UBA-49233). Pit (603, fill 604) produced a small amount of alder charcoal, which produced a later early Bronze Age date range of 1667 – 1472 cal BC (UBA-49237). Posthole (605, fill 606) contained trace remains of degraded barley grain and hazel charcoal, likely to be hearth sweepings indicating low levels of domestic burning activity in the vicinity.

This structure produced evidence for a significant phase of burning activity, possibly contemporary with some of the activity in Structure S1 but with potential evidence for later/multi-period use.

Pit (1227, fill 1228) contained substantial volumes of cereal grain mainly six row hulled barley, but with the notable presence of well-preserved (spelt wheat) grains, potentially indicating Iron Age farming activity. The fuel remains in (1227) were dominated by birch charcoal which would be suitable for radiocarbon dating. Pit (1340, fill 1341) also produced a nicely preserved deposit of spelt wheat grains. Burnt deposits (1229) was probably the rake out from a grain drying area or waste pit overflow, producing barley grain, including naked type and a few grains of spelt wheat, with alder charcoal and fragments of burnt peat present. The upper fill of pit (1287, fill 1288) produced a large cache of oak charcoal together a few barley grains and crushed hazel nutshell fragments and was probably a fire-pit. Oval pit (1297, fill 1299) contained a significant deposit of hulled barley cereal grain together with a few grains of spelt wheat in amongst oak and hazel charcoal fuel waste. This feature was potentially a corn drying area or waste pit.

Pit (1353 and 1371, fill 1354) contained a large deposit of alder charcoal along with spelt wheat and barley grain and was probably a waste or fire-pit. Pit (1358, fill 1359) contained mixed fuel waste consisting of burnt peat fragments and oak charcoal along with a scatter of spelt wheat, naked and hulled barley and hazel nutshell, probably waste from domestic burning. Pit (1349, fill 1361) contained mainly burnt peat fragments with scarce barley grain.

Pits (1230, fill 1232), (1234, fill 1235), (1266, fill 1267) and (1268, fill 1269) contained small amounts of barley cereal grain with alder in (1230) and hazel charcoal in (1268).

Posthole (1263, fill 1264) was more likely to have been a waste pit or area of burning. It contained naked barley, spelt wheat and a large supply of oak charcoal with some hazel charcoal also present as well as crushed hazel nutshell. Hazel charcoal from this pit returned a middle Bronze Age date, 1407 – 1231 cal BC (UBA-49257). Fill (1265) was similar containing naked barley and oak charcoal. Postholes (1276, fill 1277) and (1384, fill 1386) may also have been waste pits with hulled barley and spelt wheat grain present along with oak and birch charcoal in (1277) and hazel charcoal in (1386). The fills from these postholes returned middle to late Bronze Age dates (see Table 1). Similarly posthole (1328, fill 1329) contained a cache of barley grain and spelt wheat with hazel charcoal, whilst posthole (1351, fill 1352) had naked barley, with oak and hazel charcoal. Posthole (1355, fill 1357) produced a substantial volume of oak charcoal, perhaps a post burnt in situ, but also contained a thin scatter of mixed cereal types including spelt wheat and barley. Posthole (1285, fill 1286) had a few degraded finds of barley and indeterminate cereal grain.

The deposits (1312 and 1319) below capping stone (1292) contained barley grain and spelt wheat as well as a small amount of oak charcoal and were probably hearth sweepings trampled into the floor.

Gully (1216, fill 1213), (1027, fill 1225) and (1270, fill 1271), produced a few grains of barley with some crushed hazel nutshell, whilst (1272, fill 1273) had a small deposit of degraded barley grains. Grain from (1225) produced a middle

Bronze Age date of 1396 – 1223 cal BC (UBA-49254). Gully slot B fill (1212) contained degraded cereal grain including barley and a single wheat grain, possibly emmer/spelt type. Linear feature (1290, fill 1291) contained a nicely preserved cache of spelt wheat grains along with some barley type cereal, likely to be a direct waste deposit from a nearby hearth.

Occupation layer/deposits (1217 and 1374) contained well-preserved caches of naked barley with oak charcoal, perhaps discrete deposits of hearth waste. Occupation deposit (1311) produced a small number of hulled barley grains with some oak charcoal whilst deposit (1324) had oak charcoal, barley grain and crushed hazel nutshell. Grain from this deposit produced a date range of the middle to late Bronze Age, 1256 – 1050 cal BC (UBA-49264). Deposit (1373) had a few grains of hulled barley and trace spelt wheat. These floor deposits were probably the source for some of the trampled residual grain found in the postholes and below capping stone (1292).

A series of pits and possible postholes from Structure S5 produced small amounts of cereal grain and charcoal fragments suggesting low levels of domestic burning activity taking place there. Structure S5 more notably contained concentrations of hazel nutshell, suggesting possibly earlier prehistoric activity and there is potential evidence for multi-period use of this feature, perhaps with its final use being as an animal byre for livestock.

Structure S5 produced a number of concentrated deposits of well-preserved hazel nutshell in particular from pits (1765, fill 1766) and (1890, fill 1891) indicating seasonal processing of hazel nuts prior to storage and consumption. These deposits both produced Roman-Iron Age radiocarbon dates (see Table 1) as they may provide further evidence for continuity of use of gathered food resources into later periods (Bishop et al. 2009). Interestingly both pits (1765) and (1890) also contained small amounts of hulled barley with oat cereal grain and alder charcoal in (1765) although this may have resulted from later floor trample or re-use of the pits for waste disposal. Posthole (1910, fill 1911) was probably also a hazel nut processing pit as a large quantity of nutshell was recovered from this feature. Posthole (1790, fill 1791) and pit/posthole (1806, fill 1807) also had nicely preserved caches of hazel nutshell together with hulled barley cereal grain, whilst posthole (1937, fill 1936) contained nutshell with indeterminate grains. Trace finds of hazel nutshell found scattered throughout other deposits in Structure S5 possibly originated from pits (1765, 1890 and 1910). Pit (1676, fill 1675) contained a small cache of hazel nutshell together with oak charcoal and barley grain, but this was of middle to late Bronze Age in date, 1397 – 1131 (UBA-49275), in contrast to the predominantly middle Iron Age or Roman/Iron Age dates from the postholes and pits described above. Pit (1693, fill 1694) was probably a waste pit with oak charcoal and hulled barley present. Trace amounts of hazel nutshell were recovered from pits (1681, fill 1682), (1693, fill 1694), (1687, fill 1688) and (1738, fill 1739) and postholes (1895, fill 1896), (1992, fill 1993) and (2006, fill 2007).

Structure S5 was also notable for a number of features containing burnt peat and vesicular remains, in particular in pit (1689, fill 1690) which also contained oak charcoal and in pit (1689, fill 1709) and posthole (1704, fill 1705) both of which also had alder charcoal. Both these pits produced middle Bronze Age radiocarbon date ranges from wood charcoal (see Table 1). Some of the burnt peat and vesicular residue contained fragments of cereal straw suggesting these may have been burnt remains from compacted byre floor material including dung. Burnt peat fragments were also present in pit (1751, fill 1750) and postholes (1746, fill 1748) and (1776, fill 1777).

Postholes (1722, fill 1723) and (1964, fill 1965) contained large amounts of oak charcoal, possibly from post remains burnt in situ. Posthole (1949, fill 1947) also had oak but in lower amounts. Structure S5 was likely to have mainly been constructed using oak support timbers.

Structure S6 produced posthole deposits containing large amounts of charcoal together with well-preserved cereal grain.

Possible burnt structural remains were found in a number of postholes, including a significant amount of oak charcoal from postholes (2035, fill 2036), (2047, fill 2048) and (2049, fill 2050) possibly posts burnt in situ, but with cereal grain also present in (2035) and (2047), perhaps

representing hearth sweepings from activities within the structure. Cereal grain from posthole 2047 returned a middle Bronze Age date range of 1408 – 1229 cal BC (UBA-49294). Posthole (2037, fill 2038) had a small amount of oak charcoal mixed with hulled barley grain, (2041, fill 2040) oak and barley, (2043, fill 2042) alder and oak charcoal with barley grain, and (2044, fill 2046) alder charcoal and trace barley grain. Posthole (2116, fill 2117) had alder charcoal only (middle to late Bronze Age) whilst (2124, fills 2122 and 2123) had oak charcoal only but produced a middle to late Bronze Age date of 1376 – 1125 cal BC (UBA-49297).

Burnt deposit (2039) contained a scatter of hulled barley and oak charcoal, probably hearth rake out, of middle Bronze Age date (see Table 1). Gully (2083, fill 2084) produced a deposit of crushed oak charcoal probably fuel waste.

Structure S7A pit (1489, fill 1490) contained a small amount of alder charcoal probably fuel waste. Pit (1561, fill 1562) had a single fragment of hazel nutshell, possibly residual material and pit (1627, fill 1628) had trace finds of alder charcoal and barley grain. Postholes (1414, fill 1415), (1464, fill 1465), (1466, fill 1467), (1484, fill 1484B), and (1499, fill 1500) contained trace charred detritus with nothing identifiable, probably general background detritus.

Structure S7B pit (1617, fill 1618) contained crushed charred remains with trace finds of hazel nutshell, likely to be residual. Nothing was identifiable from pits (1621, fill 1622) or (1639, fill 1640) due to poor preservation. Posthole (1642, fill 1641) and pit (1645, fill 1646) contained trace finds of hazel nutshell, mostly degraded.

The pit and postholes in this structure provided evidence for domestic burning activity taking place within it. The feature was probably constructed using a series of substantial oak posts, with postholes (915, fill 914), (918, fill 919), (920, fill 921) and (936, fill 938) all found to contain large amounts of oak charcoal. Postholes (925, fill 926), (927, fill 929) and (941, fill 942) also had oak charcoal but in lower amounts and found together with cereal grain suggesting this may be fuel waste from internal burning activity.

Posthole (915) contained a mixture of naked and hulled barley dated to the middle Bronze Age (see Table 1), with naked barley also present in posthole (925), probably hearth sweepings or waste deposition. Pit (916, fill 917) contained oak charcoal with trace barley grain, whilst central fire pit (930, fill 931) produced trace finds of alder charcoal. Pit (954, fill 956) had a small amount of birch charcoal. Ditch (962, fill 963) and pit (960, fill 961) contained trace charred detritus with no identifiable remains.

Structure S9 contained small deposits of hazel nutshell and trace finds of degraded cereal grain. Burnt deposit (2157) produced a small cache of well-preserved hazel nutshell, perhaps a pit rake out or area of burning. Ditch (2162, fill 2163) also contained a few fragments of nutshell.

Structure S9A inner gully (2265, fill 2266) and ditch (2244, fill 2245) contained trace hazel nutshell perhaps residual remains, with a fragment of hazel charcoal in (2244). Similar trace nutshell was present in pit (2243, fill 2242) in Structure S9B.

Structure S9C posthole (1878, fill 1879) contained a small cache of degraded barley grains dated the middle Bronze Age (see Table 1). However, postholes (1871, fill 1872), (1873, fill 1874), (1881, fill 1882) contained trace charred detritus with nothing identifiable.

Conclusion

The environmental samples produced a significant number of well-preserved caches of carbonised cereal grain and charcoal originating from the later prehistoric period, the middle to later Bronze Age with potential continuity into Iron Age farming settlement. The cereal grain revealed an agricultural economy largely reliant upon cultivation of barley types, with substantial quantities of hulled and naked barley recovered from pit and posthole deposits in Structure S1. Similarly large amounts of cereal grain, mainly hulled barley with spelt wheat were found in Structure S3A suggesting an Iron Age phase in this feature, but this was not confirmed by radiocarbon dates, which indicated middle and later Bronze Age (Boyd 1988). Trace amounts of

oat were also found. The dominance of naked barley in some features mainly Structure S1 pits (534), (601), (634) and (674), with hulled barley in others such as Structure S1 fire-pit (736) may represent a temporal change in agricultural regime.

The cereal grain indicated crop processing and grain drying activity taking place at the site with recovery of burnt waste remains primarily focused in pits and postholes in Structures S1 and S3A, indicating these structures were probably being used for drying and storage of large quantities of grain. In Structure S1 burnt deposit (522) was probably the rake out from grain drying activity. Cereal-rich pits (534), (601), (634) and (674), hearth (737) and fire-pits (736) and (776) were possibly remains of features used for cereal drying, or may have been waste or storage pits. Some of the postholes in Structure S1 were possibly later re-purposed as storage or waste pits given the quantities of grain recovered, in particular postholes (685), (695), (706) and (770). Small quantities of grain mostly barley type were recovered from Structures S8, S5 and S6 indicating domestic burning activity also taking place in these structures. Residual scatters of grain and charcoal were found elsewhere across the site, reflecting typical farming settlement waste, including trample and background burnt detritus from cereal processing and drying activities, cooking and fuel waste.

The concentrated deposits of hazel nutshell recorded from Structure S5 pits (1765) and (1890) are notable for further investigation and their radiocarbon dating results of the middle or Roman/Iron Age is interesting. The presence of significant caches of hazel nutshell in these features possibly demonstrates continuity of earlier prehistoric gathering practices taking place in conjunction with highly developed cereal agriculture at the site. If the nutshell proves contemporary with the agricultural material it will show that large scale gathering and over-winter storage of wild resources was continuing into later prehistory, perhaps as an insurance policy against failed arable harvests. Alternatively these pits may have been isolated earlier features on the landscape that became incorporated into Structure S5.

Charcoal identification indicated the use of mixed deciduous oak woodland for fuel and construction purposes including more open areas of hazel with alder and birch indicating wetter ground in the vicinity. Structures S1 and S3A probably incorporated large oak timbers during certain phases of their construction, particularly notable in Structures S1 posthole (727) and S3A posthole (1263). Structures S6 and S8 were probably also constructed mainly using oak timbers, whilst alder may have been used for Structure S2 and in S5. However the majority of charcoal recovered from the site was likely to have been fuel waste from domestic use. Similarly the cremations used a mixture of alder, birch and hazel for fuel, with alder generally the more dominant in cremation pits (168), (1596) and (1598).

Finds of burnt peat indicated exploitation of peat and heathland for fuel resources in addition to using charcoal, probably for domestic heating and cereal drying purposes. Structure S1 pits (770) and (850), Structure S3A pit (1349) and Structure S5 pit (1689) were most notable for containing significant quantities of burnt peat. Some of the burnt vesicular remains from Structures S1 pit (770) and S5 pit (1689) included fragments of cereal straw suggesting potential byre material, possibly dung and byre sweepings being re-used as fuel or representing later phases of re-use of these features as animal corrals.

The carbonised plant remains from Northbar included cereal grain, wood charcoal, hazel nutshell and burnt peat from possible multi-period settlement activity mainly of middle to late Bronze in date with continuity into the Iron Age. The assemblage has both local and regional significance to our understanding of changes in the economy and environment at this time supported by radiocarbon dating.

Cremated Bone Report[2]

By Iraia Arabaolaza

Introduction

This report focuses on the cremated bone found across the western half of the site in Field A, in particular that from cist (1672) in association with V40, a food vessel urn; stone structure (1673) a possible stone-lined cist without a cap stone; cremation pits (1596, fill 1597) and cremation pit (1598, fill 1599); as well as pit (643) possibly truncating gully (420) found within Structure S1.

The process of cremation is one of dehydration and oxidation of the organic component of the body. As it combusts the bone mineral re-crystallises resulting in the bone to shrink, distort and fracture (Holden et al. 1995). As a result, cremated bone is more friable and susceptible to mechanical damage than un-burnt bone.

All of the bone within the present assemblage was assessed for preservation based on two criteria, its overall surface appearance and the percentage fraction size of each deposit. Factors influencing preservation include original cremation ritual, collection, and burial of the deposit. Post-depositional processes including weathering such as freeze/thaw and/or water percolation can result in surface changes and fragmentation to the bone. Other factors influencing bone preservation include the archaeologist's skill during excavation and subsequent handling of the bones following removal from the soil. All these factors can result in further bone deterioration and fragmentation.

The distinction between human and animal bone is more difficult when the bones have been cremated. This is due to the cremation process shrinking, warping, fragmenting and changing the colour of the bone. It therefore changes the main characteristics in which the identification is based such as the size, morphology, density, surface texture and colour of the bone (Gejvall 1963; McKinley 1989). Animal bone does, however, have a greater ratio of cortical to trabecular bone and the trabecular bone structure itself is finer thus allowing a determination of species.

Possible animal bone was identified together with human remains within SF 256 and SF 262 from cists (1672) and (1673) respectively. Other remains were unidentifiable within these two small finds and contexts (1597) and (1599) and considered either animal or human.

The minimum number of individuals (MNI) was calculated by identifying any repeated skeletal element from the same side (left/right) or different age categories.

The methods employed in the determination of age at death in cremated remains are the same as those used on inhumation: dental eruption and epiphyseal fusion in sub-adult remains and degenerative changes in auricular surface, pubic symphysis and sternal rib ends and cranial suture closure in adult remains (Bass 2005; Brooks and Suchey 1990; Buisktra and Ubelaker 1994; Lovejoy et al. 1985; Meindl and Lovejoy 1989; Scheuer and Black 2004).

Very few of these methods were applicable to the cremated bones discussed below, due to the lack of preservation and conservation of the skeletal elements. Consequently, the different age categories identified in these cremated remains were based largely in observations of the size and thickness of fragments of skull and of cortical bone, as well as epiphyseal fusion. Even though these observations can be quite problematic, since the bone elements can shrink up to 15% during the cremation process two different age categories were identified on the cremated remains recovered in several contexts. Adult refers to individuals older than 18 years of age while sub-adult refers to any individual less than 18 years of age (see Table 3). This differentiation was based on the cranial size and thickness and cortical bone thickness.

2 The full report forms part of the project archive

The bone was recorded in accordance with the British Association of Biological Anthropologists and Osteoarchaeologists/Chartered Institute for Archaeologists standards from human bone analysis (Brickley and McKinlay 2004) and Historic Environment Scotland 2016 Framework for the treatment of human remains in Archaeology.

Foetus	< birth
Infant	birth - 3 years
Child	3 - 12 years
Adolescent (AO)	12 - 20 years
Young Adult (YAd)	20-35 years
Middle Adult (Mad)	35-50 years
Old Adults	50 years +

Sub-adult: Refers to any individual less than 18 years of age

Adult: Individuals of adult size and development where no more precise indicators of age are present

Table 3: Age Categories (based on Buisktra and Ubelaker 1994).

The sex determination of human remains is based on pelvic and cranial morphology, and post cranial metric data. None of the biological sex determination markers were identified within this assemblage.

The non-metric traits, as their name indicates are not measurable traits which are simply recorded as present or absent. Some of them are related to genetic causes while others are thought to be linked with the environment, occupation and lifestyle. Consequently, they are generally used to identify and compare different genetic groups. A single cranial ossicle was recorded in SF 262, which suggests a non-metric trait. However, as it was found individually, its exact location on the skull was not possible to determine.

Evidence of disease or trauma can be identified on cremated bone although differential diagnosis is made more difficult due to the very fragmented nature of the remains. Surface erosion and none or partial survival of the appropriate skeletal element can also hinder diagnosis of any pathological condition. Studies have shown that certain disease groups have been recorded from cremated bone. These include trauma, degenerative joint disease, dental disease and infections including periostitis and osteomyelitis. All the bone within the assemblage was observed for evidence of pathology but none were recorded.

The colour of the bone from each context was recorded as this can give some indication on the temperature in which the bones were burnt. The colour range varies from brown/orange (unburnt), to black (charred; c. 300°C), blue and grey (up to c. 600°C) to the fully oxidised white (c. >600°C) (Shipman et al. 1984). In this assemblage the bones were mostly white/cream, although some light grey/blue coloured bones were recorded too. This range indicates that the bones were subjected to a temperature between 645 and <940°C. Most of the grey/blue colours recorded were visible either in the trabecular or interior of the bone, although some were also recorded in the outer surfaces of some bones, which indicated their exposure to a lower temperature.

Most of the cremated bone showed surface cracking, with transverse cracks and U-shaped cracks noted along long bone shafts. Some warping was also noted on several bones within SF 256 and SF 262. These cracks indicate that when the bone was cremated it was still “green” or covered with flesh (Buisktra and Ubelaker 1994). However occasional vertical splitting was also noted which is often indicative of the bones being dry or without flesh when the cremation occurred although irregular vertical splitting, as in this case, has also been noted in “green” bones (ibid. 1994). Slight erosion was also noted on several of the cremation remains across all the studied cremations.

The total weight of the cremated bone found in each context was just a small fraction of the average weight of a complete adult cremation (McKinley 1993). As indicated by McKinley (ibid.) the average weight of a modern complete cremated skeleton is 1615.7 g for a female and 2283.5 g for a male. This suggests that all cremated bone found on this site had been re-deposited and move from their original pyre sites into pits and cists.

The smaller average weight of the bones as well as the absence or small number of some of the elements is a common trait in some Bronze Age cremation. It could be due to few causes: taphonomic agents, secondary deposition of the remains after their initial cremation and the possible selection of certain bones or by an unintentional avoidance of some fragments, maybe due to their size, when collecting them. McKinley also states the possibility of another (or more) “unknown location” for this bone, i.e. somewhere other than the burial place, or the pyre site. It compares with ethnographic evidence

from the nineteenth century Aborigines, where cremated bone was given to mourners as keepsakes (McKinley 1997).

Animal bone fragments were identified in SF 256 and SF 262 and numerous other remains were unidentifiable and recorded as either human or animal in nature. It is unknown whether these animal bones were part of the cremation process and burnt alongside the corpse or added later as part of deposition and burial or even later intrusion from an unrelated feature. No pyre sites were observed during excavation although recent research by Henriksen (2019) notes the lack of physical evidence for burning during reconstruction cremation experiments using pig carcasses.

Results of the analysis

Each cremation deposit is discussed separately and by context or small find.

Nine possible cremation features were identified during excavation at the western half of Field A, and identified either as cist graves or cremation pits, however cremated bone was only recovered from four of them. In addition to this group of cremations, further remains identified as possible human remains were also recorded in pit (643), located in the centre of the site and associated with Structure S1. All these are described in detail here.

Cist grave (1672) contained a complete Bronze Age vessel V40 along with the cremated bone SF 256 within fill (1661). A total of 47.6 g of fragments of burnt bone, all recovered as part of SF 256, were collected from the main disturbed fill (1661) of this cist (Table 4). Human remains of at least two individuals, an adult and a sub-adult were identified, based on the different skull sizes and the unfused end of a possible limb (Figure 32). All the bone was either cream or white in colour with some surface erosion and U-shaped, longitudinal and horizontal cracks. The only skeletal elements represented were skull fragments, including both the right and left petrous bones, and unidentified limb cortical bones and few joint surfaces. Due to the fragmentation of the remains, and the lack of any sexual dimorphic bones, the sex of the remains was undetermined. Radiocarbon dating of the cremated bone provided an early Bronze Age date between 1948 – 1770 cal BC (UBA-49302). Some remains were unidentified and thus considered either human or animal. Further remains identified as animal bone were also recovered from the cist.

Directly to the north-east of cist (1672), possible cremation (1673) was located. Although disturbed by ploughing as was cist (1672), its eastern, western and southern sides were still present and mostly intact. The cremation deposit, recovered as SF 262 was clearly defined and placed at a deeper southern end of the cist. A total of 107 grams of cremated bone were retrieved from this small find. Most of the skeletal elements were recorded including skull, lower and upper limb, vertebrae and ribs and teeth roots. Even though the weight of all the cremated bone retrieved from this small find is very small, the larger size of the fragments allowed the identification of at least one individual, a sub-adult, based on the size of the bones (Table 4). This minimum number of individuals, identified from the cremated bone remains collected, was based on the skull size and thickness of other bones (Figure 33). The bone appeared completely

Area	Feature	Find no.	Sample	Context	MNI	Weight (gr)	Age and Sex
S1		141		644	1	13.6	Adult, indeterminate sex
	Cist 1672	256		1661	2	47.6	Adult and subadult, both indeterminate sex
	Cist 1673	262		1677	1	107	Sub-adult, indeterminate sex
	Cist 1673		731	1677	1	2.8	Sub-adult, indeterminate sex
	Cist 1673		737	1677	1	15.1	Sub-adult, indeterminate sex
	Cremation pit 1596		703	1597	2	33.3	Possible adult and possible sub-adult, both indeterminate sex
	Cremation pit 1598		702	1599	1	8.8	Possible adult, indeterminate sex

Foetus: < birth
Infant: birth - 3 years
Child: 3 - 12 years
Adolescent (AO): 12 - 20 years
Young Adult (YAd): 20-35 years
Middle Adult (Mad): 35-50 years
Old Adults: 50 years +

Sub-adult: Refers to any individual less than 18 years of age
Adult: Individuals of adult size and development where no more precise indicators of age are present

Table 4: Details of cremated bone from the features.

calcined, apart from blue/grey staining recorded in the interior of some of the bones which indicates that they were exposed to a lower temperature. Cracks, some of them in a mosaic pattern were observed along with slight wapping and erosion. Radiocarbon dating of a fragment of the cremated bone provided an early Bronze Age date between 1920 – 1746 cal BC (UBA-49298). Analysis of the cremated bone recovered from samples 731 and 737, same context as SF 262, identified fully calcined remains of fragment of skull, cortical bone and tooth roots. The remains measuring 2.8 grams and 15.1 grams respectively were also of a sub-adult of indeterminate sex which suggests that they likely belonged to the same individual as the main cremation recovered as SF 262.

To the east of cist (1673), cists (1596 and 1598) were located: they were parallel to each other with pit (1596) to the north of pit (1598). Even though the weight of all the cremated bone retrieved from cremation pit (1596, fill 1597) was very small at 33.3 g, the size of the larger fragments allowed the identification of at least two individuals, a possible adult and possible sub-adult (Table 4). This minimum number of individuals, identified from the cremated bone remains collected, was based on the skull size and thickness (Figure 34). Most of the identifiable bone elements within context (1597) were either skull or long bone fragments: a possible maxilla and the proximal end of an ulna were identified too. Radiocarbon dating of a fragment of limb bone provided an early Bronze Age date of 1881 – 1647 cal BC (UBA-49299).

Figure 32: Adult limb bone fragment from SF 141.

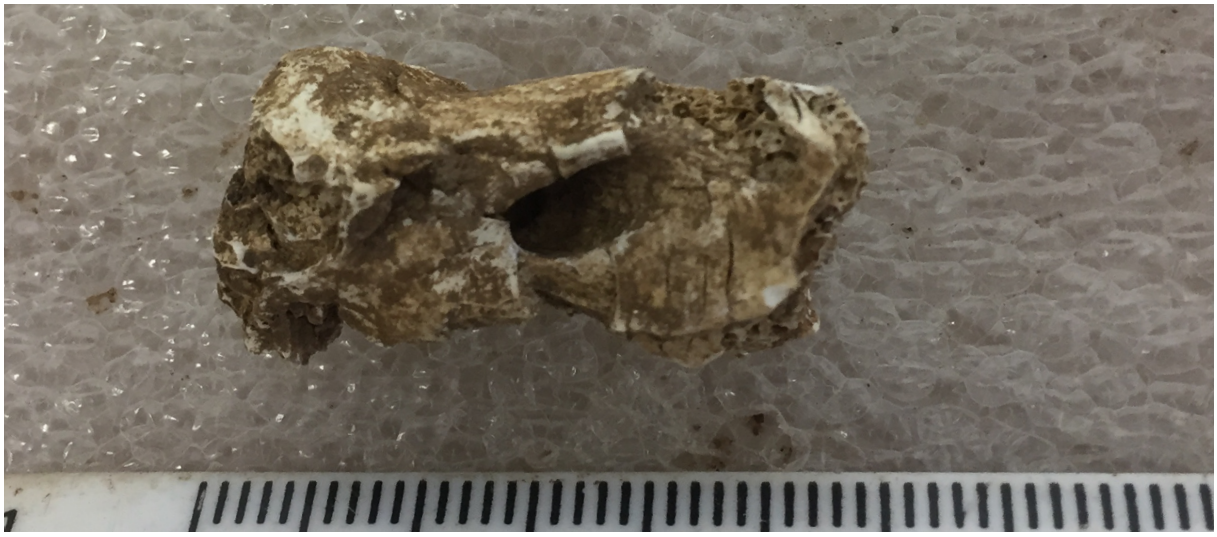

Figure 33: Adult petrous bone from SF 256.

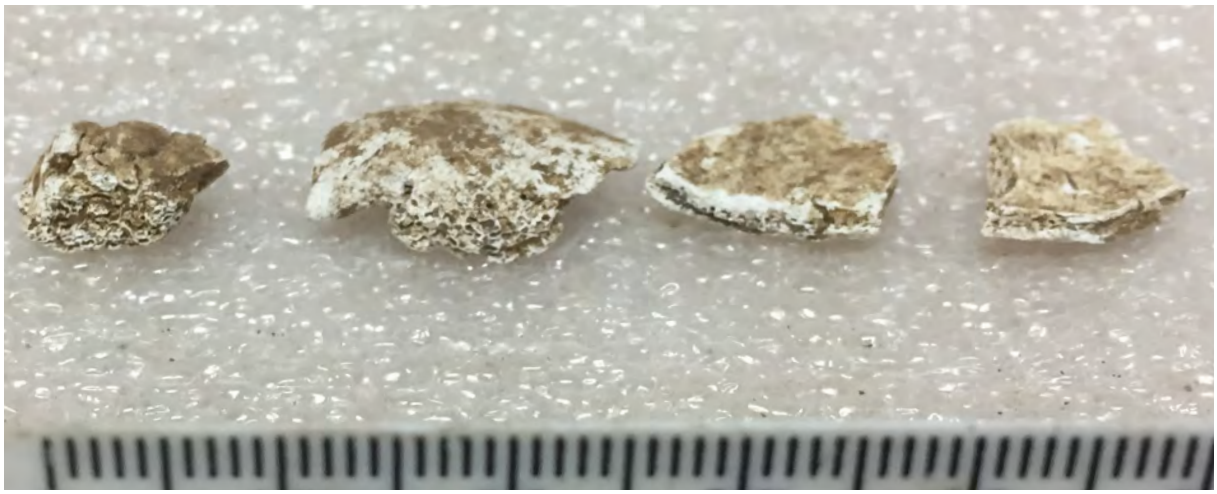

Figure 34: Skull fragments showing different thicknesses suggesting the remains of a child and an adult from context 1596.

The weight of all cremated bone recovered from (1598) was significantly lower compared to the rest of cremations at 8.8 grams (Table 4). The identified skeletal elements recorded were mostly skull fragments with a rare long bone fragment. A skull fragment was radiocarbon dated and provided an early Bronze Age date of 1880 – 1690 cal BC (UBA-49300). The rest, a quarter of the cremated remains, were unidentifiable with some considered either animal or human.

A single cremation deposit, recovered as SF 141 was retrieved from pit (643) close to the entrance of Structure S1. The pit possibly truncates the earliest gully (420) near the entrance to the site. Cortical limb bones were identified within fill (644) with the rest identified either as animal or human in origin. Radiocarbon dating of the cremated remains provided a middle Bronze Age date of 1427-1288 cal BC (UBA-49301).

The retents analysed were identified either as animal or human in origin.

Discussion

The treatment of the dead varied during the prehistory and in particular the early Bronze Age, ranging from crouched inhumations in cist burials to cremations placed in urns or un-urned (no urn), either as isolated features or as part of a burial complex. At Northbar the preferred burial method appears to have been cremation, with most of the cremated remains concentrated at the western half of Field A and placed either directly into small pits with no obvious cairn or capping stones to mark their location, or in a stone-lined cists. The presence of an empty stone-lined cist (1749), along with the recovery of sherds of Bronze Age vessels within cists (1672), (1678) and cremation pit (1596) suggests that this was an area used for ritual activity. The only exceptions were the cremated remains recovered from within pit (643) from Structure S1 and dated to the middle Bronze Age. These remains of later date, located in the centre of the site were isolated from the main remains. Their presence suggests a separate ritual event to the main burial activity on the western corner of the site.

All the bone assemblages retrieved from Northbar have substantially less bone than that weighed in the average modern cremation (see above), indicating that none of the cremation remains were complete burials. The incompleteness of burials, particularly so with cremations, is often assumed to be due to non-survival of the bone either as the result of human pre-burial actions and/or post-depositional decomposition processes. The latter includes how effective the combustion process was, the sorting and collecting of the bones post-burning from the collapsed pyre material, and the burial conditions with weathering, such as freeze/thaw and the soil chemical properties. These are significant factors in bone erosion. Excavation and handling of the bones after lifting are also further significant factors. Research by Henrikson (2019, 294) on reconstructed pyres using pig carcasses has postulated that the collection

of bone following the cremation process is easier than envisaged and complete collection of body parts is achievable in a relatively short amount of time. He suggests, as others do, that the incomplete body parts found within a single burial is a deliberate choice made by those collecting, rather than post-depositional processes or the increased effectiveness of the combustion method resulting in fewer bones surviving. These burials have been described as 'token' burials with the burial 'rite' or rites more important than the burial itself.

The lack of pyre material on site indicates that the cremations were secondary depositions rather than primary burials and were deposited away from their pyre location. The well-defined placement of the cremated remains in cist (1673), could further suggest their deliberate selection and deposition.

Most bones within the assemblage were fully oxidised with temperatures over 600° C attained during the firing process. It suggests that the corpse was positioned on the pyre stack where heat and oxygen would have circulated most freely, and combustion would have been complete rather than partial. The few bones that were noted to be grey/blue were generally the internal area of the bones that would have been subject to less heat.

Radiocarbon dating of the remains revealed that most of the remains were dated to the early Bronze Age. Two different phases were discernible within this broad period; an initial phase characterised by stone-lined cists (1672) and (1673) (1948 – 1770 cal BC, Early Bronze Age), followed by seemly contemporary cremation pits (1596) (1880 – 1688 cal BC) and (1598) (1880 – 1690 cal BC) both Early Bronze Age.

Conclusion

The bone assemblage at Northbar has revealed that cremation was the most common method of body disposal/modification practiced on site during the Bronze Age. The cremation deposits probably represent symbolic deposition rather than actual burial, although many missing elements from single pits could have been deposited in several different contexts across the site or could be the result of later disturbance by ploughing as noted in cists (1672) and (1673). The surface texture of the bones, cracks and warping suggest that some bones were fleshed prior to burning. Although most individuals were adult in age based on the relative size of the bones, a nearly equal number of possible sub-adults were noted in the assemblage. Sub-adult remains, based on the thickness of the skull, were found alongside adult remains in cist (1672) and cremation pit (1596). This is quite common in prehistory and could suggest that they were cremated at the same time (McKinley 1997). A few grave goods were also found in stone-lined cist (1672) and cremation pit (1596). Other possible Bronze Age vessels, one of them inverted, were also found in the vicinity of the cremation burial group, in pit (348) and pit (168), but none of them had any cremated remains associated with them.

The animal bone

By Catherine Smith

Introduction and condition of material

A small quantity of fragmentary bone was recovered during the excavations at Northbar. Fragments from the majority of the contexts were burnt, most of them to the point of calcination, meaning that most of the organic material has been burned away. These fragments were therefore very small and unfortunately not identifiable to species level, although all appeared to be mammalian. Only one context (054) contained larger fragments of unburnt bone, SF 105.

Mammalian fragments were described as either large mammal or indeterminate mammal on the basis of cortical thickness. 'Large mammal' applies to animals of the size of cattle or red deer. The term 'small ungulate' is used to describe vertebral fragments which are likely to be sheep/goat but are too fragmentary to determine.

Results

Identifications are listed in Table 5. As noted above, the calcined fragments can only be categorised as large mammal or indeterminate mammal. Such fragments were found in SF 148, SF 158, SF 164, SF 215, SF 224, SF 237, SF 273, SF 283 and SF 143.

Context	SF	Structure	Species	Weight (g)	No. of frags	Bone	Part	Details	Comments
54	105		sheep/goat		2	L innominate	acetabulum & ilium		unburnt
54	105		sheep/goat		2	L femur	proximal	prox fused	unburnt
54	105		sheep/goat		2	R femur	proximal	prox fused	unburnt
54	105		sheep/goat		1	L/R femur	distal	dist fused	unburnt
54	105		sheep/goat		1	R tibia	proximal, anterior	prox fused	unburnt
54	105		sheep/goat		1	patella			unburnt
54	105		sheep/goat		1	vertebra	sacrum	fragment	unburnt
54	105		small ungulate		1	vertebra		fragment	unburnt
54	105		indeterminate mammal		++			fragment	unburnt
u/s	143	S1	IM	0.1	4			?cortical bone	calcined
522	158	S1	indeterminate mammal	0.9	1			fragment	calcined
709	148	S1	indeterminate mammal	0.7	2			fragments	calcined
760	164	S1	indeterminate mammal	1.3	6			fragments	calcined
898	215	S3	?human	3.3	1		?talus, proximal	fragment	?burnt
898	215	S3	indeterminate mammal	<0.1	1			fragment	calcined
898	216	S3	indeterminate mammal	1.5	3		prob cortical	fragment	calcined
1051	224	S3	indeterminate mammal	0.7	1		prob cortical	fragment	calcined
1309	237	S3A	indeterminate mammal	0.8	1		prob cortical	fragment	calcined
1669	273	S7	indeterminate mammal	1.8	20			fragment	calcined
2117	283		large mammal	1.1	1		cortical	fragment	calcined

Table 5: Animal bone identifications.

However, a single burnt fragment in (898), SF 215 was thought to be part of a human talus. In addition a partial sheep/goat skeleton, represented by parts of the pelvis, sacrum, femora, tibia and patella, was found in Field A (054), SF 105. The animal was adult, based on fused epiphyses and was apparently unbutchered. The bones were in a very poor, crumbling and friable condition.

Interpretation

Calcined fragments recovered from roundhouses Structure S1, SF 148, SF 158 and SF 164, Structure S3A, SF 283, and Structure S6, S283, may represent the remains of cooked meats, possibly bones disposed of in a domestic fire. Their identification as animal rather than human bones is based as much on their provenance within the structures as on their size and appearance. It was not possible to determine which animal the bones came from, but given the structures' middle Bronze Age dates they may well have been domestic species.

Radiocarbon dates obtained from botanical samples in the same contexts as animal bones in Structure S1 indicated a date range in the middle Bronze Age SF 148, context (709) and SF 158, context (522).

The calcined bone fragment in Structure 6, SF 283 came from (2117) described as the fill of a small circular pit (2116) containing 'dark brownish-black silty sand' and was accompanied by fragments of Bronze Age pottery. Botanical samples from this context dated the bone fragment to the middle or late Bronze Age. It has been assumed to be from a large mammal on the basis of cortical thickness but the particular mammal cannot be determined. The most likely interpretation is cattle or large deer.

A burnt fragment, SF 215, which although not directly associated with a human cremation, is possibly the proximal part of a human talus, was found in context (898).

The unburnt bones in context (054), SF 105 were from a partial adult sheep/goat skeleton, or 'associated bone group' (ABG). The presence of associated bone groups is increasingly being recognised as part of deliberate depositional events at prehistoric sites and might be a possibility in this instance. The size of the bones does seem to indicate a small animal of a pre-modern date. However as there was no obvious evidence of burning and no butchery marks on the bones it is possible that the remains were from a natural fallen casualty.

The lithic assemblage

By Torben Bjarke Ballin

Introduction

During the field investigation 54 lithic artefacts were recovered. This report characterises the lithic artefacts in detail, with reference to raw-materials, typo-technological composition, and on-site distribution. From this characterization, it is sought to date and interpret the lithic finds.

General overview of the assemblage

From the excavation at Northbar, 54 lithic artefacts were recovered. They are listed in Tables 6 and 7. In total, 87% of this assemblage is debitage, whereas 0% is cores and 13% tools. For definitions of lithic categories see Ballin 2021.

The assemblage includes four types of raw materials: flint (31 pieces), chert (seven pieces), quartz (15 pieces) and jet (one piece).

The flint is generally fine-grained, mottled grey and slightly corticated (Shepherd 1972). Despite the discolouration, some pieces (like CAT 14) are clearly opaque in contrast to Yorkshire flint which tends to be more vitreous (Ballin 2011), and it is assumed that this is local Antrim flint which is present along the shores of south-west Scotland (Smith 1880). A number of relatively large (up to GD 60 mm) heavily burnt indeterminate pieces (CATs 7-10) may be post-medieval pieces representing industrial processes such as lime burning for fertilizer. (CAT 7 has soft cortex indicating procurement from regions with fresh chalk).

The chert is fine-grained dark-grey to black radiolarian chert, and it was most likely procured from the local Carboniferous limestone (Cameron and Stephenson 1985). The quartz is white milky quartz with abraded cortex which may have been procured from local beach walls or riverine sources (Ballin 2008). One piece of a material belonging to the jet family (jet, lignite, cannel coal or oil shale; Watts and Pollard 1998) was also recovered. This piece has abraded edges, probably not due to water-rolling, but due to the fact that this material is considerably softer than most lithic raw materials which would have a hardness of between 5.5 and 7 on Moh's scale (Pellant 1992, 25). Three rolled pieces of chert and quartz may be associated with Palaeolithic and Mesolithic raised beaches (McNicol 2020).

Eight burnt pieces were recovered, including the four probably industrially burnt pieces, as well as thumbnail-scraper, CAT 16, and scale-flaked knife, CAT 20.

	Flint	Chert	Quartz	Jet	Total
Debitage					
Chips	13	2	2		17
Flakes	2	2	8	1	13
Blades	1	2	2		5
Microblades	2				2
Indeterminate pieces	5	1	3		9
Crested pieces	1				1
Total debitage	24	7	15	1	47
Tools					
Thumbnail-scrapers	2				2
Backed knives	1				1
Scale-flaked knives	2				2
Serrated pieces	1				1
Truncated pieces	1				1
Total Tools	7				7
TOTAL	31	7	15	1	54

Table 6: General artefact list by raw material.

	Cists	Pits	Ditches	Post-holes	Occ. layers	Natural, topsoil, unstratified	Total
Debitage							
Chips		4	6	6	1		17
Flakes	1	5	2	1	1	3	13
Blades		1	1	1		2	5
Microblades	1		1				2
Indeterminate pieces		2		1	1	5	9
Crested pieces						1	1
Total debitage	2	12	10	9	3	11	47
Tools							
Thumbnail-scrapers				1	1		2
Backed & Sc-flaked knives	1	1		1			3
Serrated pieces	1						1
Truncated pieces	1						1
Total Tools	3	1		2	1		7
TOTAL	5	13	10	11	4	11	54

Table 7: General artefact list, by context category.

In total, 47 pieces of debitage were retrieved, including 17 chips, 13 flakes, five broadblades, two microblades, nine indeterminate pieces and one crested blade. The flakes are dominated by eight pieces of quartz, but also include specimens of flint, chert and jet. One blade is flint, two are chert and two are quartz, and two microblades are of flint. Nine indeterminate pieces embrace five pieces of flint, three pieces of quartz and one piece of chert, but as mentioned several of these pieces may be modern objects. And the crested piece is of flint.

The flint blade (CAT 5; width 15 mm) is the fragment of a regular, soft-hammer specimen; one of the two chert blades (CAT 3) is a relatively regular intact hard-hammer specimen (34 mm by 17 mm by 7 mm), whereas the other is an indeterminate blade fragment (CAT 17; width 13 mm); and one of the two quartz blades (CAT 18) is a relatively irregular hard-hammer piece (30 mm by 14 mm by 11 mm), whereas the other is a fragment of a bipolar specimen (CAT 1; width 10 mm). The two microblades are fragments, both having a width of c. 7 mm. CAT 38 is a soft-hammer microblade.

The crested flint blade (CAT 11; 33 mm by 11 mm by 5 mm) is a regular soft-hammer specimen (Figure 35).

The seven tools include two thumbnail-scrapers (CATs 16 and 47), one backed knife (CAT 46), two scale-flaked knives (CATs 20 and 14), one serrated knife (CAT 39), and one piece with a straight truncation (CAT 36), all of flint. Generally speaking, two tools are scrapers and five are cutting implements (backed, scale-flaked and serrated knives).

CAT 16 is an exceedingly small thumbnail-scraper (9 mm by 13 mm by 5 mm) with a convex, slightly acute pressure-flaked scraper-edge at one end. It is burnt. CAT 47 is a slightly larger (18 mm by 16 mm by 8 mm), and slightly less well-executed piece (Figure 35).

CAT 46 is a backed knife based on a small hard-hammer flake (16 mm by 12 mm by 4 mm). It may be mistaken for a thumbnail-scraper, but one lateral retouch is clearly protective blunting, whereas the opposite lateral edge is finely chipped from its use as a cutting implement.

The two scale-flaked knives include a highly regular, well-executed specimen (CAT 20) and the left lateral fragment of an expedient specimen (CAT 14) (both Figure 35). The former is based on a regular broadblade (46 mm by 17 mm by 7 mm), and the outermost couple of millimetres have broken off at either end. Its dorsal face is

partially cortical. The piece has a regular highly acute cutting-edge along its entire right lateral side and fine steep blunting along the left side. It is vitrified, indicating deposition in a cremation burial (cist 1673). The other scale-flaked knife is based on a large flake (56 mm by 25 mm by 10 mm), and it has a plain, acute cutting-edge at the distal end of its right lateral side.

Serrated piece CAT 39 is based on a soft-hammer blade (39 mm by 16 mm by 4 mm, and it has a heavily worn cutting-edge with 10-15 teeth per cm. CAT 36 is the distal segment of a blade with a straight truncation (11 mm by 9 mm by 2 mm).

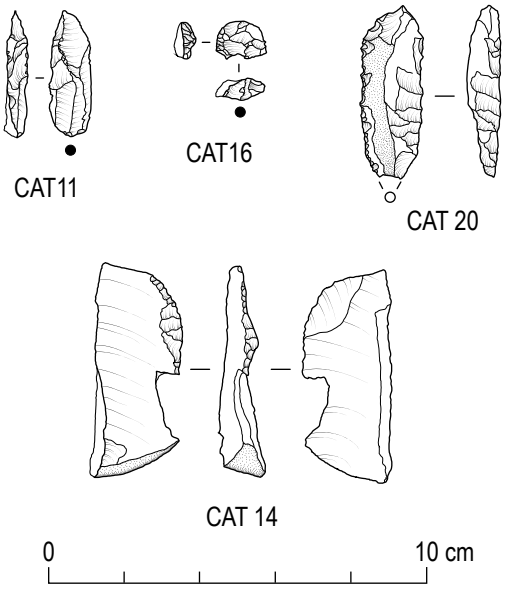

Figure 35: Lithics CATs 11, 14, 16 and 20.

Distribution

Approximately one-fifth of the assemblage is poorly contexted, being either stray or deriving from contexts like 'natural/topsoil interface' or 'fill of natural feature' (Table 7).

The remainder of the artefacts are from cists, pits, gullies or ditches, postholes or likely occupation surfaces. Most of the debitage is chips or waste flakes and may generally represent occupation floor or knapping floor debris which ended up in the features with the backfill.

Thumbnail-scraper CAT 16 is associated with occupation layer (2039), and thumbnail-scraper CAT 47 was recovered from posthole (2047), probably representing an occupation/knapping floor which pre-dates this feature; vitrified scale-flaked knife CAT 20 was recovered from cremation cist (1673) with bone, and scale-flaked knife CAT 14 was found in pit (840) associated with the deposition of Bronze Age pottery. Serrated blade CAT 39 and truncation CAT 36 were both retrieved from cremation pit (1672), Robust crested blade CAT 11 was retrieved from a natural feature pit (331) in Area Structure S7 indicating some later Neolithic activity in this part of the site.

The recovery of vitrified piece CAT 20 from an assumed early Bronze Age cremation cist is problematic, as the production of proper blades had been abandoned by the Neolithic/Bronze Age transition. The deposition may therefore be interpreted in one of three ways: that the cremation may date to the later Neolithic and not the Bronze Age; that Bronze Age people found a later Neolithic blade-based knife and deposited it with one of their dead (like at Colinhill, Lanarkshire, where an early Neolithic conical microblade core of pitchstone had been found by Bronze Age people and inserted into the pit of a door post when a roundhouse was constructed; Ballin 2019); or the blank of this knife is simply a Bronze Age flake which accidentally turned out more regular and elongated than anticipated. However, serrated piece CAT 39 and truncation CAT 36 are also blade-based, and the same considerations therefore have to be made regarding cremation pit (1672). The presence of crested blade CAT 11 in Structure S7 makes it quite likely that scale-flaked knife CAT 20, which was also found in Structure S7, may actually be later Neolithic. These problems are discussed further below.

Dating

This small assemblage includes five diagnostic elements: 1) the application of broadblade technology; 2) thumbnail-scrapers CAT 16 and CAT 47; 3) scale-flaked knives CATs 14 and 20, 4) serrated piece CAT 39, and 5) the jet flake (CAT 13).

Crested blade CAT 11 is regular and robust, suggesting a date in the later Neolithic (Ballin 2011). The collection's blades include two unmodified microblades and nine unmodified and modified regular broadblades, supporting a later Neolithic date.

Very small scrapers occur in Mesolithic as well as early Bronze Age contexts, but in Ballin (2021) it is suggested to define thumbnail-scrapers (Saville 2005, 108; David 2017).

This, plus the size and a pressure-flaked acute scraper-edge, clearly defines CAT 16 as an early Bronze Age specimen, and the size of CAT 47 indicates that it may date to the same period.

Scale-flaked knives were produced throughout the Neolithic/early Bronze Age framework, and it is not possible formally to date CAT 14 more precisely. CAT 20, on the other hand, is defined by its regular blade blank as most likely dating to the later Neolithic (Manby 1974, various illustrations). Serrated pieces generally date to the Neolithic – early Bronze Age period, although the blade blank of this piece indicates a pre-Bronze Age date

As mentioned above, the fact that CAT 11 as well as CAT 20 were both found in Structure S7 suggests that they may be contemporary, and that the blade blank of CAT 20 may actually have been produced in the later Neolithic – no matter when it was deposited.

Six implements are from radiocarbon-dated features (Table 8), and the dating of one flake-based scale-flaked knife (CAT 14) and two thumbnail-scrapers (CATs 16 and 47) are as expected (post-Neolithic). However, surprisingly, three blade-based tools (scale-flaked knife CAT 20, serrated piece CAT 39 and truncated piece CAT 36) have all been radiocarbon dated to the early Bronze Age, where their blade blanks indicate a pre-Bronze Age date. As mentioned above, it is possible that these late Neolithic objects were picked up by early Bronze Age people and deposited in the two cists (1672/1673) in the same way that the early Neolithic conical microblade core of pitchstone had been picked up and deposited in an entrance posthole of a roundhouse at Colinhill in Lanarkshire (Ballin 2019).

Jet (Shepherd 1985; Watts and Pollard 1998) was used extensively during the Scottish later Neolithic and Bronze Age and again during the Roman period. Considering the date of other activities at the site, unstratified flake CAT 13 is likely to date to the later Neolithic/early Bronze Age.

Discussion

As mentioned above, the datable finds suggest activity at the location during the later Neolithic and early Bronze Age periods. No lithic finds indicate activity at Northbar prior to the later Neolithic or after the early Bronze Age. Most of the finds are either uncontexted or are residual, but a small number of pieces may add to our understanding of certain processes.

Thumbnail-scraper CAT 16, for example, was recovered from a deposit, possibly an occupation surface, and it informs us on the use of scrapers on a probably early Bronze Age domestic settlement site. Most of the residual knapping debris in the features may relate to later Neolithic domestic settlement in the area, predating the construction of the features.

Scale-flaked knives CATs 14 and 20 were both deposited in ritual circumstances – CAT 14 in a pit and CAT 20 in a cist. The former was deposited in a pit with the remains of 14 Beaker vessels, whereas CAT 20 followed the deceased onto the pyre where it was heavily burnt or vitrified. Serrated piece CAT 39 and truncated piece CAT 36 both derive from cremation cist (1672), and the fact that they are both based on blade blanks indicate a possible later Neolithic date.

CAT	Artefact	Context	Feature	Sample	UBA No	Date (2å)	Period
14	Scale-flaked knife (flake)	839	Pit 840	307	49250	2462-2208	Chalcolithic
39	Serrated piece (blade)	1661	Cist 1672	730	49273	1879-1646	EBA
				256	49302	1948-1770	EBA
36	Truncated piece (blade)	1661	Cist 1672	730	49273	1879-1646	EBA
				256	49302	1948-1770	EBA
20	Scale-flaked knife (blade)	1677	Cist 1673	262	49298	1920-1746	EBA
16	Thumbnail-scraper	2039	Occupation layer Structure S6	862	49293	1425-1268	MBA
47	Thumbnail-scraper	2048	Posthole 2047 Structure S6	866	49294	1408-1229	MBA

Table 8: Lithic implements from radiocarbon-dated features.

The Coarse Stone[3]

By Beverley Ballin Smith

Introduction

From the structures and features excavated, a total of 19 possible stone artefacts and samples were recovered. Most of the stones and samples were collected by hand from the archaeological interventions, and although soil samples were taken and later sieved, no further tools were found. A total of seven artefacts or tools out of the 19 stones that formed this assemblage are described further. The remaining 12 after analysis were considered to be unworked, natural stones.

The results

The raw materials used for tools at this site included quartz, quartzite and possibly dolerite but others remain unidentified. Most are probably derived from the superficial glacial deposits (subsoil) that blankets the area (British Geological Survey 2026). They are described initially by their location (see Table 9).

Two artefacts were associated with this roundhouse S1. The first, SF 131, identified as a hammerstone/pounder, came from the fill (395) of an outer curved gully (394) to the structure. The raw material of this split and naturally flattened cobble was not identified, but flaking had removed one end of the stone. This was probably done to make it fit more easily in the hand. The apex of the stone had also been pecked to a broad, rounded and slightly facetted shape. There are surface chips along each side of the piece, some more severe than others. The middle of one surface is also chipped and damaged by the use of the tool as a hammer. The curved worn area of the tip measures 35.2 by 63.5 mm. The tool weighs 538 g and its maximum measurements are 91.8 mm by 82.6 mm by 41 mm.

The other artefact, SF 217, is from (942), the upper fill of a posthole (941) within the same building. This is a small to medium-sized cobble of quartz with two faces worn away or removed, possibly by flaking or pounding. The stone has been worked all round its circumference by its use as a pounder and very little of its natural surface is present. The pounder weighs 364 g and measures 72.4 mm by 62.5 mm by 47.6 mm.

A single artefact, SF 275 from (1936), the fill of a posthole (1937), lay among other packing stones. The raw material was not identified but the naturally split fine-grained cobble was used as a polisher. The stone has a domed top which fits well in the hand and its lower worked surface is slightly concave where it has been used as a rubber or polisher. It has been later damaged around the edges of its polished surface. It weighs 600 g and measures 67.8 mm by 88.3 mm by 71 mm.

The largest stone tool found on the excavation site is quern SF 284. It was located in a posthole (2117) within the interior of the roundhouse but towards the west. It was found together with a large number of pottery sherds and bone that were including in the backfilling material of the feature.

This small saddle quern is made from a slightly coarse-grained split boulder, possibly a type of schist. The stone is longer than it is broad, and it has a very slightly concave upper surface. In order to assist its use, the stone may have been chipped around two of its edges to shape

SF no.	Structure	Context Information	No. of pieces	Identification
217	Structure 1	942 upper fill of posthole 941	1	Pounder
131	Structure 1	395 fill of outer curved ditch 394	1	Hammerstone/pounder
275	Structure 5	1936 fill of posthole 1937	1	Polisher
284	Structure 6	2117 fill of posthole 2116, with burning	1	Quern
108	Field A	078 from pit 075 along S edge of site	1	Whetstone
250	Field A	1562 fill of pit 1561	1	Grinder
223	Field A	1065 fill of pit 1066/1064	1	Pounder

Table 9: Stone artefacts and their contexts.

3 The full report forms part of the project archive.

it better, but it may have also broken along one edge. The worked surface is noticeably smooth around its perimeter and especially at both ends, but it had been roughened or dressed to aid the grinding of grain. The roughened area had been used and subsequently was worn smooth. This valuable tool may have been discarded into the posthole or used to support a timber post as part of the packing around it. It is highly likely that the use of this quern was contemporary with the occupation of the timber roundhouse.

The stone weights 4500 g and its length is 300 mm, width 175 mm and thickness 52-70 mm.

The three remaining stones were located across this field.

SF 108 is from pit (075) along the southern edge of the site. It is a fine-grained block of igneous material possibly dolerite or basalt, used as a whetstone, with its upper surface finely polished through use. The piece has been damaged and shattered on three sides as the polished area continued beyond the breaks. The polished surface is very slightly hollowed with use. The stone weighs 1614 g and the piece measures 160 mm by 125 mm by 54 mm.

SF 223, a quartzite cobble pounder, which was also found with the fill of pit (1066). The split cobble has one pecked and slightly facetted end and the tool is also flaked to make the stone more usable. The area of wear measures 33.7 mm by 21.3 mm. It weighs 268 g and its overall dimensions are 85.7 mm by 64.9 mm by 44.5 mm.

SF 250 was found within the fill of pit (1561). This small but naturally flattened cobbled, of unidentified raw material, was facetted and ground to an edge at the broadest end. The stone may also have an area of polish on one surface. The other end of the stone has some superficial damage, where the stone surface has been removed. It was most likely used as a grinder and weighs 308 g with measurements of 81 mm by 70 mm by 31 mm.

Discussion

This is a small assemblage of tools given the extent of occupation across the project area and the number of structures identified. Nevertheless it produced an example of each of the main types of tool used throughout later prehistory – a pounder, hammerstone, grinder (or a combination of the three), a whetstone, polisher and a quern.

Most of the stones chosen for tools were cobbles, with a small boulder utilised for the quern, all of which were resources that were available locally. The single exception is SF 108, where a fine grained igneous block was used as a whetstone. However, basalts and other igneous rocks are to be found north of Erskine and the River Clyde, and therefore it is possible that this material was also fairly locally derived.

Cobble tools were an important element of prehistoric life in Scotland from the Neolithic onwards (see Clarke 2006), and specific raw materials were often favoured for particular jobs, which is demonstrated by the choice of raw materials for the tools at Northbar. These hand-sized, smooth stones were selected for their density and weight. The facetted and concave wear patterns on some of them indicate long use, and the type of uses they were put to: hammering of other stone and wooden posts, for example; pounding and grinding of grain, hazel nuts and other seeds; and a whetstone for putting an edge on stone axes, adzes and perhaps even metal tools, although the latter use is perhaps unlikely at Northbar. It is suggested that each of these tools were owned by individuals but that they were lost, or discarded after breakage, or even reused after they were no longer required for their original purpose.

Most of the tools, and especially those from Structures S1, S5 and S6, were found in features (mainly the fills of postholes) attributed to the middle or later Bronze Age. The posthole fill containing the polisher from Structure S5 provided a middle Bronze Age radiocarbon

date of 1419 – 1282 cal BC (UBA-49289). The radiocarbon date of the fill of posthole (2116) in which the quern from Structure S6 was found spanned the middle Bronze Age to the beginning of the later Bronze Age from 1376 – 1125 cal BC (UBA-49297).

Although copper alloy metals were in existence at that time, they were too expensive and fragile for the mundane domestic activities of hammering, pounding and grinding. Even during the succeeding Iron Age period, stone tools, including cobble tools, were heavily relied upon for daily activities as can be demonstrated by the relatively large numbers of these tools found on Iron Age broch and roundhouse sites (see Ballin Smith 1994, 192-204; Ballin Smith 2025g, Table 4.5). It is noticeable that in the Midland Valley/ Central Belt area of Scotland, cobble tools from Neolithic and Bronze Age sites are not numerous, and their paucity is possibly a direct result of the intensive use of the region for later agricultural and industrial activities, including the clearance of stones from fields. For example, the two middle Bronze Age roundhouses at Colinhill, Strathaven (Spence 2019), did not produce any stone cobble tools. The paucity of stone artefacts was also noted at the later Bronze Age and Iron Age structures at Braehead, Glasgow (Ellis 2007, 257), where subsequent ploughing and perhaps seasonal occupation of the site (roundhouses within a palisade) was responsible for their loss. In spite of the number of structures at extensive multi-period site of Guardbridge in Fife, the actual number of stone tools per building was low (Ballin Smith 2025d, Table 18) probably due to the same causes already noted.

Although stone tools from Northbar are small in number, their functions reveal a little about the daily life of the people at the structures on this site and the activities that took place there.

The Prehistoric Pottery

By Beverley Ballin Smith

Introduction

This collection[4] of prehistoric hand-made, coarse pottery from the site of Northbar was in currency across a significant part of the Bronze Age. The types of vessels produced included Beakers, a Food Vessel, a collared urn, other urns as well as pots that are possibly domestic in origin. A total of 47 vessels have been recorded from Structures S1, S3, S3A, S5, S6, S7B and also the wider area of Field A. The radiocarbon dates[5] produced agree with date range of vessels from the early Bronze Age into the later part of that era, with many of the vessels falling into the middle Bronze Age period.

Analysis of the pieces

The analysis of the sherds is discussed as a single collection and then by structure and area. The total collection amounts to 704 sherds, excluding small fragments less than 10 by 10 mm (Table 10). Most sherds were recovered and bagged on site during the excavations, but a small number of sherds and fragments were retrieved from soil samples that had been processed after the excavations, and three urns were lifted on site for excavation under laboratory conditions.

As expected, the majority of the sherds are body sherds, but base sherds are less than half as numerous as rim sherds. Table 10 displays the total number of sherds from each location and the range of sherds recovered. The total percentage of each type of sherd is also shown.

The pottery was dispersed across the northern central and western parts of Field A where it was mostly associated with structures or small groups

4 The assemblage is a collection of prehistoric pottery sherds. All pieces have been gently brushed before analysis and all were examined using a x6 hand lens. The attributes and statistics of the collection 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, revised 2020).

5 all quoted at 95.4% probability

of burials. The pottery in Field B was limited to Structures S8 and S9 along the northern part of the investigated area.

The total weight of the assemblage is 21.7 kg (Table 11), with average sherd weights from Field A and the structures varying between 2.4 g to more than 64 g. The number of pieces compared to the average sherd weight can give some idea of fragmentation. The table indicates that the sherds from Structure S5, although heavier because of their thick walls, are also less fragmented than the sherds from other areas. Apart from the sherds from Structure S3 which are both light in weight and fine in construction, all the remaining sherds from all other structures are heavy and certainly robustly made (over 11 mm in wall thickness). The sherds from Structure S8 are few in number, but because of their low average weight, they indicate a higher degree of fragmentation than the rest of the assemblage.

Changes after deposition include the disturbance of urns in their burial context and the loss of parts of vessels. Much of this may have been caused by deeper ploughing and the use of heavy farm machinery. However, there did not appear to be any disturbance of burial urns cause by the archaeological topsoil removal. Other changes that have affected specific pots or areas are discussed below.

Manufacture of the pottery

The prehistoric people that lived in the area covered by the Northbar project used locally available materials in their pottery production. Raw clay, possibly dug from the glacial till or subsoil, was most likely also available in the western banks of the River Clyde or close to its confluence with the White Cart Water/River Gryfe to the south, both presently equidistant from the site. The rivers were also a source of the

Location	Rims	Bases	Bodies	Fragments present*	Total Nr
Structure 1	4	0	37	*	41
Structure 2	0	0	3	*	3
Structure 3	13	16	85	*	114
Structure 3A	12	1	41	*	54
Structure 5	15	0	144	*	159
Structure 6	8	1	82	*	91
Structure 7B	4	0	4	0	8
Structure 8	1	0	7	*	8
Structure 9	0	1	16	0	17
Field A	15	13	181	*	209
Totals	72	32	600		704
Percentages	10.2	4.5	85.2		100%

Table 10: Sherd form numbers by location.

Location	Total sherd Nos	Total weight (g)	Average sherd weight (g)	Average wall thickness (mm)
Structure 1	41	866.1	21.1	13.6
Structure 2	3	7.3	2.4	9.5
Structure 3	114	736.3	6.5	7.1
Structure 3A	54	710.1	13.1	13.9
Structure 5	159	10280.3	64.7	14.8
Structure 6	91	1069.6	11.7	11.6
Structure 7B	8	141.6	17.7	13.3
Structure 8	8	26.5	3.3	14
Structure 9	17	293.3	17.2	13.3
Field A	209	7584	36.3	9.6
Totals	704	21,715.10		

Table 11: Sherd weight by location.

varied rock temper added as temper or a filler to the clay, as too were the raise beach deposits of sand and gravel that formed part of the geology of the site (see British Geological Survey 2026). Much of the filler was medium to coarse to very coarse rounded grains of quartz, quartz sand, mica, coal, sometimes sandstone and possibly hornfels. It also included finer material and also black to grey or brown unidentified minerals, which were common. From Structure 3A there is also an indication that larger fragments of stone or broken rock were ground up and added to the clay.

Organic material was identified in the majority sherds examined as it was a necessary ingredient. It was added to the raw clay and stone mix as finely chopped dried grasses or straw/hay. The organic component made the clay more pliable and easer to work, while stone temper strengthened the clay, and prevented it from shrinking and cracking prior to firing. Stone temper also helped the vessel to withstand thermal shock during heating and cooling, which would have taken place during firing and when in use on the hearth (Kilikouglou et al. 1998).

The vessels of Structure S3, and to a large extent those from Structure S3A, contained fine temper or filler but there was greater variability of temper size in the pottery from Structure S1. Whilst vessels from Structures S5 and S7B tended to have very coarse temper, there was a tendency for some of the vessels in Structure S6 and Field A to be similar. As the vessels are discussed in more detail below, the size of rock temper may indicate different raw material preferences over time by the potters themselves, but also variations in availability of local resources.

The technique of manufacture of the earliest vessels at Northbar, those from the early Bronze Age, was the thumb-pot method. This meant opening up a hand-sized ball of clay with the thumb to make a small open-mouthed, rounded form, and working around the clay with the thumb and fingers to make the base and the beginning of the vessel walls. In order to increase the size of the vessel, coils of clay would be added around the perimeter of the opening to add height and for the desired shape to be formed. An extra coil could have been added on the outside of the form to make a carination or shoulder, or the carination could have been pinched out from an existing coil. From there, further coils would have been added to make the neck of the vessel and finally the rim. During the building of the vessel the potter would have needed to support its base on a flat stone, possibly with matting, in order to turn the vessel around whilst forming. After, or even during construction, the coils would have been made secure by luting them on the outer and inner surfaces in order to bond them together. Once the pot had attained the correct shape and height it was left to air dry. After that, the finishing of it required the final smoothing of surfaces by polishing or burnishing, and if applicable, the vessel would be decorated. The final process would be the firing of the pot in a pit, kiln or on a hearth.

Vessel characteristics

A number of different types of vessels are discussed below, with their general attributes and characteristics described. Vessel is shortened to ‘V’ when describing specific pots.

Rims

The rims from Structure S1 are heavy with wall widths of 10 mm to 13 mm. V4 is a straight rim with a rounded top to a vessel c. 160 mm in diameter, the V6 rim is bevelled internally to a rounded or bowl-shaped pot, and the rim of V5 is slightly unevenly moulded but has a flat top to a vessel c. 180 mm in diameter.

The rims from Structure S3 are more delicate than those of vessels from other parts of the project area, measuring only 4-8 mm in wall width, and indicate pots with rim diameters of c. 90 mm to c. 220 mm. The fine, mostly straight rims with flat or round tops indicate well-made thinner vessels identified in Table 11, where their average sherd weights are only just over 3 g. Several of these rims also carry a gentle cordon (a protruding rounded ridge) c. 10-15 mm below the rim top, not only as part of the overall vessel shape but to emphasis a distinction or break in the decoration.

In contrast to rims from Structure S3, those from Structure 3A are considerably heavier, indicating pots with rim diameters of 200 mm to c. 260 mm. On average, they are rounded topped broad rims with wall widths of 11 mm to 18 mm. V21 and

V22 have a slight concavities c. 20 mm below the rim top to demarcate the neck and the area between the rim and the bulbous vessel body. V23 through to V26 are predominantly straight rims to bucket or barrel-shaped vessels.

The robust rims of Structure S5 show great variety, with rounded to oblique or bevelled rim tops, with that of V38 having a c. 18 mm wide flat rim with a bulge to the exterior, perhaps it was inverted during manufacture and the weight of the vessel allowed the rim to protrude outwards. In general, the rims are slightly inturned and the narrowed rim of V39 reveals the vessel was perforated to allow its suspension. Rim diameters range from c. 210 mm to c. 240 mm and wall widths are generally over 13 mm.

The V27 rim from Structure S6 is slightly flat topped but everted with a rounded protuberance to the exterior. Its neck is clearly identified as a concavity and a narrowing below the rim.

The two rims identified from Structure S7, V32 (rounded and straight) and V33 (wedge-shaped) and are relatively unevenly moulded. The rim diameter of V32 was measured to be c. 260 mm.

Pottery from Field A was varied. V28 has an oblique straight topped rim to a small vessel, and that of V31 was rounded and straight. Neither rim diameter could be measured. However, Field A also produced a number of complete or near complete vessels. V29 has a flattened top to a rounded rim with a neck c. 15 mm below the rim top, and measures 140 mm in diameter. V40 is triangular, with bevels to both interior and exterior, it measures 150 mm in diameter and is heavily decorated. V41 has a slightly unevenly moulded rim that in parts is rolled over, but it also has an interior bevel. The vessel has a rim diameter of 180 mm. V42 is oblique because it is part of a collar, and it has a wide bevel to the interior. The rim diameter is 200 mm.

Carinations and cordons

The shoulders or carinations of traditional hand-made pottery were positioned to allow the change in shape of a vessel at the junction of the neck and belly. The funerary vessels from Field A show typical examples. In V40 the carination denotes the significant change of angle from the rim and neck to the narrowing of the vessel to its base. It is also combined with a cordon that is situated c. 10 mm above it. Again, in V41 the carination indicates the change in angle of the vessel shape from the neck to the narrower base. In this example the carination protrudes as much as c. 5 mm outwards from neck of the vessel. V42 has a distinct collar, but below it the slightly protruding carination facilitates the change in the wall angle to the base.

Bases

All the vessel bases where they survive are flat. As noted in Table 10, bases account for only 4.5% of the assemblage, compared to 10.2% of rims. They are most prominent in the pottery from Structure S3 and Field A.

A total of 35% of the vessels are decorated but most of the surface finishing of the pots has been lost through use, abrasion or subsequent taphonomic conditions. Smoothing of the exterior surfaces of vessels has been noted across all structures of the project area, but it is most noticeable from Structure S3 and Field A, and it is particularly associated with pots that were decorated, but not exclusively so. Surfaces of undecorated vessels often have surviving finger moulding marks and impressions from organic materials such as dried grasses that were used to wipe the finished pot. One example, V3 from Structure 1, has a clear impression of a cereal grain.

The finishing of many of the vessels is unclear and especially where gritty temper protrudes through their exterior surfaces as seen in vessels from Structures S1, S3A, S5, S6 and S7B. In these vessels the surfaces are uneven or even lumpy to the touch and occasional small cavities are visible from the loss of mineral temper. A piece of stone temper was lost from V29 from Field A producing a large surface pit. It is possible that a gritty surface could have a practical application in domestic wares, enabling the pot to be handled more securely without it slipping through the hands. Domestic pots were practical vessels, not ones that had to look good.

Several of the larger vessels such as V29 were not particularly well made, and in this example the coil joins are quite prominent both internally

and externally, as are finger moulding marks. It is unlikely that this is a decorative effect, but more a product of hurried manufacture. Moulding marks are also particularly visible inside the miniature collared urn V42.

From a total of six vessels from Structure S5, sherds from four of them had a significant number of stress cracks in the clay body. These unusual sherds also showed evidence of distortion and uneven firing. From their large sizes they were probably pieces of significant sized vessels such as urns, which could have collapsed when fired, to become discarded failed pieces.

From the use of some pots from structures S1, S3A, S5, S6, S7B and Field A deposits of soot and carbonised food remains were present on rims and surfaces, either externally or internally, or both, suggesting that these vessels had a domestic function.

The decoration of pots was undertaken when the vessel had dried to 'leather hard'. If the clay was too wet the decoration would have been indistinct and if the vessel had dried too much, it would have been difficult to execute the decoration easily.

Vessels with decoration and sherds with decorative motifs are confined to Structure S3 and Field A predominantly, with isolated single examples from Structure S1 and also Field A. Without exception all the vessels (15) from Structure S3 were decorated, as were three near complete or reconstructed vessels from Field A. The Structure S3 vessels are all Beakers and are highly decorated. V10 produced most of the pot profile and the decorative motifs were created by a fine-toothed implement. These include horizontal bands with chevrons or lattice work between them, and with plain fields between. Impressed lines on the exterior walls of bases V11 and V13, indicate that other vessels were present that had decoration also created by a fine-toothed tool. A single sherd, V44 from Structure S1, was decorated by a much coarser toothed implement producing horizontal lines.

The most common means of decorating the majority of Structure S3 vessels was by a fine twisted cord being impressed into the clay to create a horizontal parallel line designs, as in V1, V8, V12, V17, V19 (and cross-hatching) and V43. Not all the decoration was clearly executed and abrasion may have resulted in its loss across some sherds such as that of V8.

V43 is an interesting sherd as it had internal rim decoration of impressed cord, but the exterior decoration included impressed small circles, possibly from a bird or small mammal bone. V2 was different again, as its decoration was made of regularly spaced small pricks created by a small roundish object.

Another vessel from Structure S3, V9, is a larger and heavier vessel than the majority in this area, and has paired vertical lines made by the end of the finger nail pressed into the clay. V47 from Structure S1 is also decorated using finger nails, but in this example a half-moon shape motif was created by finger nails pinching the clay.

The three vessels from Field A have different decorative motifs. That of V42 is created by the use of thicker but less well twisted cord or twine than those pots mentioned above. The decoration on V41 is a random toothed design that is impressed then dragged slightly before being removed, and that on V40 is the most unusual. This design has previously been called a 'maggot' motif, but what tool was used to create a semi-circular design of closely positioned small horizontal lines, is difficult to determine. A composite tool is the most likely.

There are differences in firing conditions noted in the assemblage. The best fired vessels are those of Structure S3, which are mostly all oxidised and have a light red colour throughout. Although the surface colours of vessels from Field A have been masked by soot and other discolouration, the pots were generally fired in oxidising conditions, and that was probably the case for most of the other vessels except for some from Structure S5. It has already been noted that there were issues of stress fractures in the clay of fired sherds from this structure, and there is a greater range of colours of the fired pottery. Some retain the pale grey colours of the natural clay, whereas others were deeper orange and red. These variations might suggest that there were problems of not achieving the right firing temperatures at times during the occupation of the structure.

Description of the vessels by period and type

The different vessel types identified across the excavated area are displayed in Table 12 along with the structures/areas they are associated with.

One of the largest categories of vessel types on this site is that of Beakers, as a total of 133 sherds from 20 individual vessels were identified. The number of sherds per vessel varied between 1 and 22 (V10), but only seven plain sherds, two small decorated pieces and a fragment of base could not be attributed to a vessel. The majority of the 114 sherds from Structure S3 (see Pottery Distribution below) were found together in one large pit (840) of a group of four. The remaining sherds were found in the other three pits of the group. During the analysis the allocation of sherds to vessels was heavily dependent on similarities and differences in the identification of types of decoration combined with possibilities of joins, wall thickness etc. The average wall thicknesses of the majority of the vessels is 7.1 mm, with sherds averaging c. 6.5 g in weight (see Table 11) only V9 and V30 are thicker-walled heavier vessels. Most of the sherds/vessels had quartz sand and organic material added to the clay as the dominant ingredients, with occasional other unidentified fine to coarse minerals derived from gravel.

Only one radiocarbon date, based on a sample of carbonised wood, was returned from pit (840), which contained V1, V2, V8-V15 and V17-20, and produced an age range of 2462 – 2208 cal BC (UBA-49250) from the earliest part of the Bronze Age (Chalcolithic).

Structure S3

A reconstruction of the rim and neck of V1 (Figure 36) was possible, which produced a gentle S-shaped vessel with a rim diameter of c. 110 mm. The narrow rim is flat topped with a slight pinched-out cordon c. 10 mm below it. A weak carination is positioned c. 45 mm below the rim and indicates a change of angle to the body of the vessel. However, the majority of the belly is missing along with the base of the vessel. The seven sherds that survived are decorated all-over with parallel impressed lines of cord. The narrow cordon and carination are both plain.

V2 (Figure 36) is unique in the assemblage as it is the only vessel decorated by parallel rows of tiny prick marks. Its straight rim sherd with a rounded top, estimated to have a diameter of c. 170 mm, and a non-joining sherd with a small plain pinched-out cordon are the only diagnostic pieces from this vessel that comprises nine sherds in total.

Two flattish rim sherds and one body sherd of V8 (Figure 36) do not join, but they have a slight cordon c. 10 mm below the rim top. The cord impressed decoration, which starts just below the cordon, is poorly executed and it is either faint or missing in places. The vessel was turned upside down to dry.

Of the 11 sherds of V9, eight are base fragments and the remainder are body sherds. In contrast to most of the sherds in Structure S3, these are thicker with a wall thickness up to 15 mm. Three main pieces conjoin to form about half the circumference of the vessel base which has a diameter of c. 125 mm. Two sherds are

Structure/ Area	Beakers	Food Vessels	Collared urns	Urns	Domestic vessels?
Structure 1	V47				V3, V4, V5, V6, V7, V45
Structure 3	V1, V2, V8, V9, V10, V11, V12, V13, V14, V15, V17, V18, V19, V20, V43				
Structure 3A	V16				V21, V22, V23, V24, V25, V26
Structure 5					V34, V35, V36, V37, V38, V39
Structure 6	V46				V27
Structure 7					V32, V33
Field A	V30, V44	V40, V41	V42	V28, V29	V31
	20	2	1	2	22

Table 12 Vessel types associated with the different structures.

decorated with a motif of oblique / paired finger-nail incisions forming a vertical line from the base and up the vessel (Figure 36). Up to five vertical incisions have survived. Further vertical lines of finger-nail incisions indicate that the motif was repeated around the vessel with a c. 15mm gap between each.

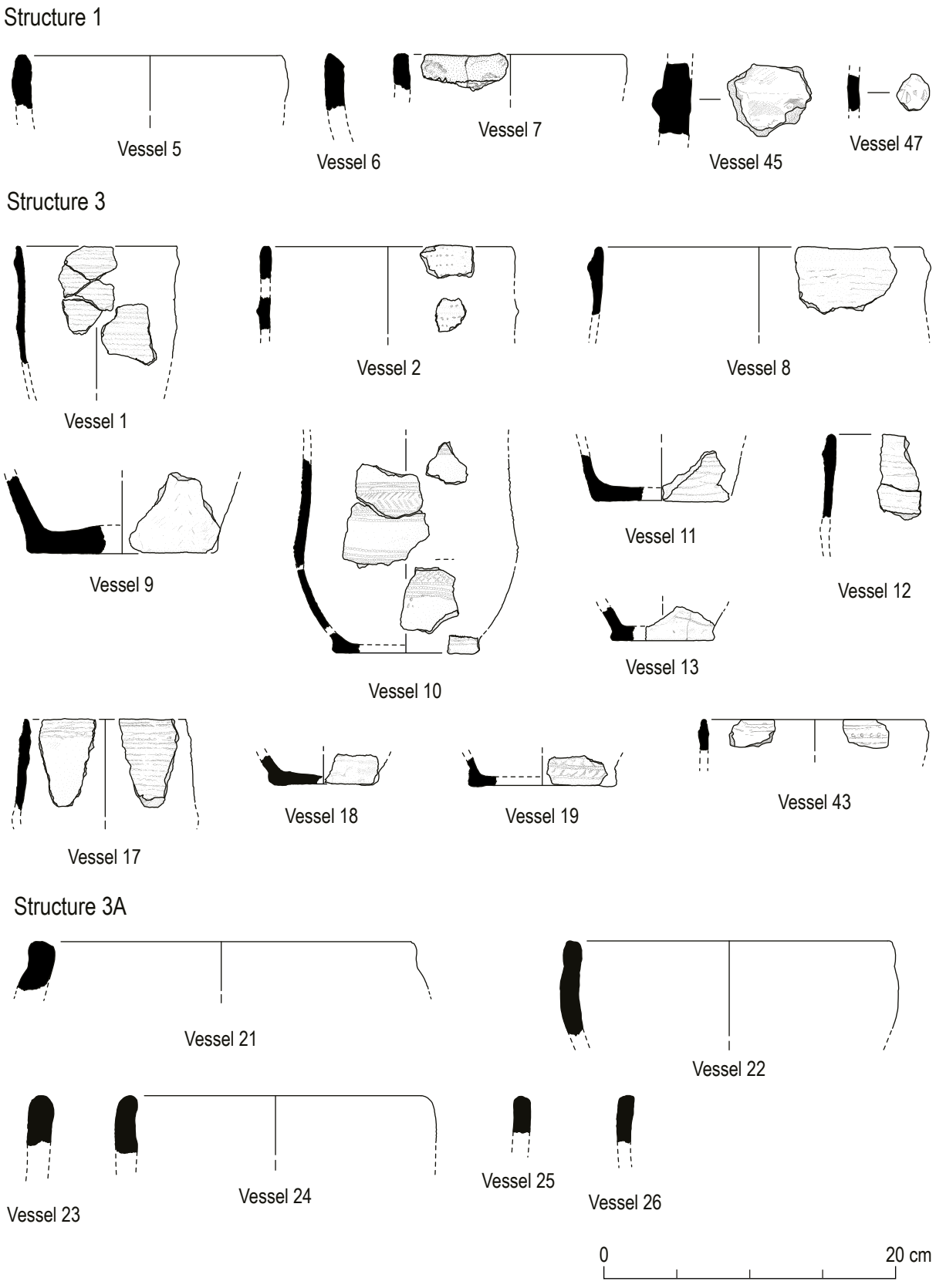

Figure 36: Pottery from Structures 1, 3 and 3A.

An almost complete profile of V10 was reconstructed (Figure 36), minus its rim and the junction of the body to the base, a total of 22 sherds. It had a very gentle S-shaped curve to a 100 mm diameter base, with a slight carination nearer the base than the neck of the vessel. All the decoration on this pot was carried out using a fine tool with five small, square teeth. The neck was decorated, and the evidence of three impressed horizontal lines survived. A blank field c. 20 mm deep followed. Below the latter was a c. 25 mm deep design of three horizontal rows either side of a motif of closely positioned vertical chevrons with their apices pointing to the left. Below this was another blank field c. 20 mm deep followed by four impressed lines forming an upper and lower border to a 10 mm motif of lattice work or impressed tooth cross-hatching. A further blank field followed, and the lowest part of the vessel belly above the slightly protruding base edge had four impressed horizontal rows. The decoration was reasonably well executed on the smooth surface of the vessel but the occasional loss of some organic material from it was noted, giving the lower part of the belly a slightly corky appearance.

V11 comprises 12 plain and decorated body sherds, as well as one base fragment, but none of the sherds join (Figure 36). The well-made base has a rounded basal angle and its smooth surface is decorated with seven roughly parallel combed lines that travel up the sherd from c. 5 mm above the base. Two of the incised lines overlap where they join and this feature is noted on some of the body sherds. The decorated body sherds carry 3-7 horizontal incised lines, and the smallest sherd has four parallel incised lines with one running obliquely on one side of the motif. The largest sherd has five parallel incised lines with a c. 5 mm gap travelling at an angle up one side of the sherd as a deliberate part of the design, and this is also noted on several other sherds. The tool used on this vessel had fine squared teeth of uneven width and length.

The neck and rim sherds (a total of 13) of V12 (Figure 36) indicate a round topped rim with a slight pinched-out cordon c. 15 mm below it, and a neck that is gently concave. The pieces are decorated with an irregular impressed cord design from just below the rim to the plain cordon and from the cordon down the vessel. The incised lines are distributed 3-4.5 mm apart. The parallel horizontal cord impressions are not well-executed, suggesting either that the vessel was either not leather hard when decorated or the surface was smoothed over after being decorated, leading to its loss in places. There are grass marks on the pottery surface and some cavities through loss of vegetable temper. The vessel was polished smooth but has suffered some loss of its surface through abrasion.

Two base fragments and a body sherd comprise V13. The former have a splayed basal edge and one sherd is decorated with an oblique line of finely impressed toothed design (Figure 36). The line of decoration on the other sherd is horizontal. The base is c. 70 mm in diameter, 25% of it is present, but there is some loss of the surface due to abrasion. The non-joining body sherd has four parallel impressed lines made by a fine-toothed tool.

V14 (not illustrated) is one small fragment of a base, with a rounded base edge and with remnants of a single line of toothed design (2 teeth) c. 10 mm above the base edge. V15 comprises two sherds with a clear incised design of three lines c. 1-2 mm apart made by an irregular toothed tool.

A total of 16 rim and body sherds comprise V17 (Figure 36). The largest sherd is predominantly a straight rim, slightly flattened on the top, but with slight external cordon below it and a gentle bevel to the interior. The rim is decorated on the bevel by up to four horizontal and parallel lines of cord impressions and the exterior surface is decorated with all-over design of fine horizontal impressed lines of cord. Approximately 7 to 13 mm below the rim, between the third and fourth lines of decoration, there is a slightly raised cordon, which forms a plain field between the rows of impressed cord. On other sherds the rim is thin and everted and rounded indicating slightly uneven moulding

V18 is a slightly concave base sherd c. 70 mm in diameter and c. 17.5% of it is present (Figure 36). The base is thin bottomed and slightly concave, but its rounded base edge and has a fragmentary line of horizontal cord impressions c. 15 mm above the base edge.

Another base sherd is V19 (Figure 36) with a diameter of c. 100 mm and c. 12.5% of it has survived. The flat-based sherd has a rounded base edge and it may have been slightly concave, as V18. It is decorated with three horizontal lines of cord in a 10 mm wide field and has opposed straight lines between, forming a chevron design pointing to the right. The horizontal lines are deeply and doubly incised.

V20 (not illustrated) is two sherds of a thin but slightly inturned rim with a flat to rounded top. It is undecorated.

The last fine Beaker, V43, from Structure S3 is a fragment of a decorated rim, c. 150 mm in diameter but only c. 5% has survived (Figure 36). The rim is straight but it narrows to a rounded top and has a slight cordon c. 8 mm below it. It is decorated below the rim top on the exterior by two horizontal lines of twine impression above the cordon with two surviving lines of impressed cord below. The cordon has five circles impressed into it in a line towards the bottom of it. The circles could have been made with a tool made from a small bird bone. The rim is also decorated to the interior on its slight bevel where two parallel incised lines of coarse twine are impressed horizontally into it. Little of the vessel survives and the rim is damaged and burnt.

The remaining five Beaker vessels are isolated examples found across the excavated area.

V47 from Structure S1 (Figure 36) is a small, thin piece that has up to four finger nail impressions in two rows on its surface. The motive is possibly a pinched design but only fragments of it remain.

In Structure S3A immediately south of Structure S3 was V16 (not illustrated). This is a flat topped rim with a slightly concave neck. It has four horizontal closely positioned lines of indistinct impressions from a toothed tool. On the interior surface of the rim are three partial horizontal toothed impressions.

Structure S6 produced a very small sherd of Beaker pottery V46, (not illustrated), with two parallel lines of fine-toothed impressions.

Five fragments of a possible AOC (all-over-corded) Beaker vessel, V30 (not illustrated), were found in Field A. Although the sherds are extremely worn they are decorated with a total of seven to 11 horizontal impressed lines spaced c. 2.3 mm apart made by a fine twisted cord. A slightly finer walled sherd V44 (Figure 37) of Beaker pottery was also found in Field A with evidence of four lines of coarse toothed impressions, with a slight cordon formed between the middle two lines.

Two bipartite Food Vessels were found in the western part of Field A, in connection with cist (1672). V40 was found within the cist and V41 in the fill of the pit into which the cist was constructed. Both vessels are decorated using different motifs and tools and V40 is smaller than V41. Although the mineral content of V40 was coarse, it was unidentified, but organic material was present. It is likely that organic material was also part of the clay mix in V41 along with grey stone, dolerite, quartz sand, mica and other minerals. Wall thicknesses of the two vessels range between 8.5 mm and 13 mm, and the average weight of each sherd is over 100 g.

Well-made vessel, V40 (Figure 37), comprises five rim sherds, a complete base and three body sherds. It is c. 90-95% complete. The full reconstructed rim measures c. 150 mm in diameter, the flat base is 80 mm in diameter, and the height of vessel is 130 mm. The exterior surface of the vessel was smoothed and wiped with grass or other vegetation before decorating but the interior surface is not smoothed. Some sooting survives on the external surface of the vessel, but that could be from the firing or from its use as a vessel to accompany a burial.

The rim of the vessel is triangular, with a 9 mm bevel to the exterior and also to the interior. Both surfaces of the rim are decorated with vertical close positioned impressed motifs. Below the rim is a slightly concave neck 23-29 mm deep to the cordon that is also decorated with the somewhat irregular but similar vertical motifs that are most prominent below the rim and just above the cordon, fading out in the middle of the neck. The vessel's cordon and carination are slight, protruding as little as c. 2 mm from the vessel wall, with the carination positioned 10-12 mm below the cordon. Separating them is a concave blank field. The lower part of the carination is decorated with the same vertical incised motif. The rest of the vessel is slightly concave as it narrows to the base. It is also plain apart from

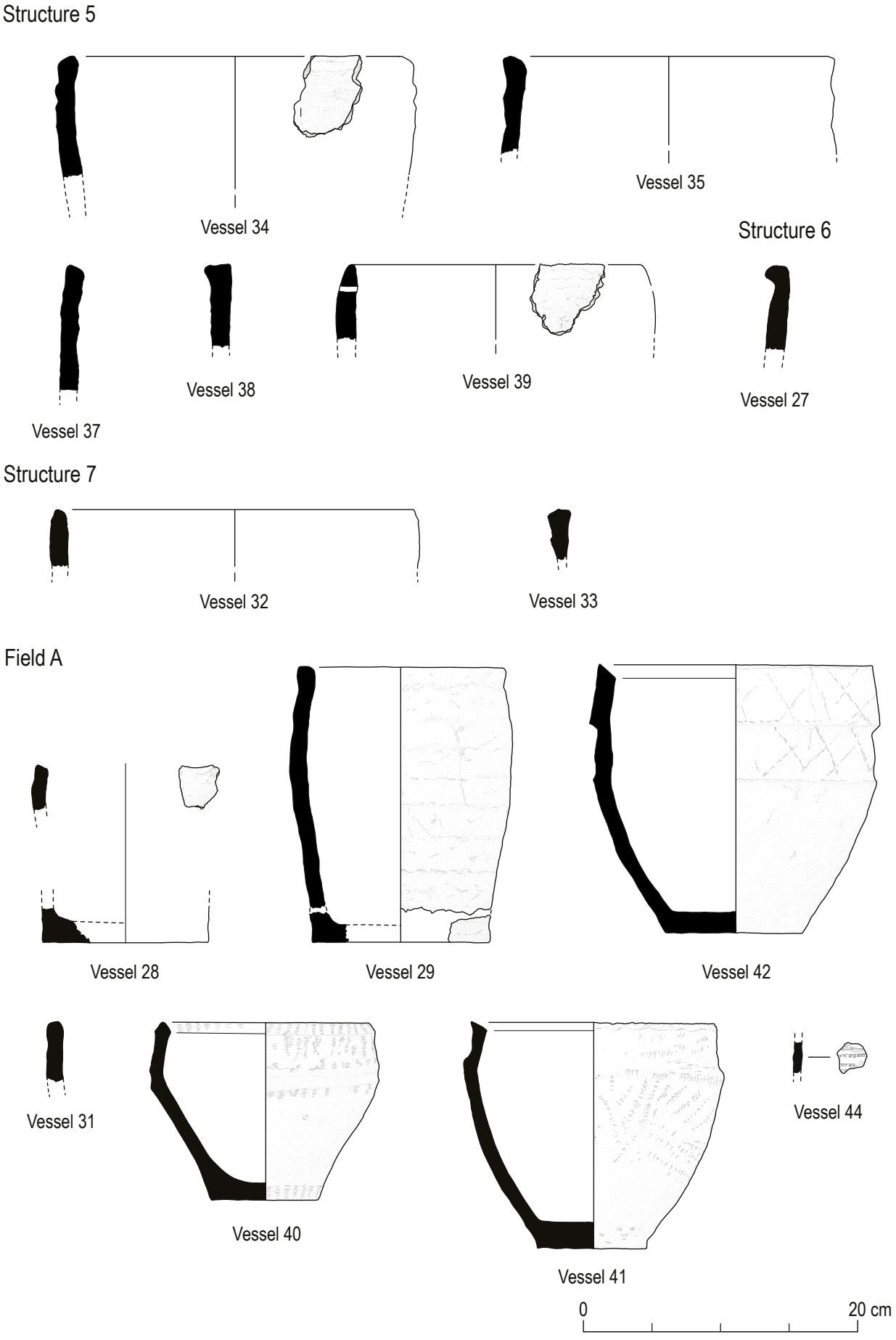

Figure 37: Pottery from Structures 5, 6, 7 and Field A.

just above the base edge where there is a 10 mm band of the same vertical motif seen elsewhere on the vessel.

The motif comprises fine horizontal lines c. 4 mm long, stacked vertically, and the lines are positioned very close together, with a tendency for them to become narrower towards the base of the motif. It is possible that the individual lines of the motif are created by a sharp, but narrow piece of flint or wood. Two radiocarbon dates were returned from within the cist.

V41 (Figure 37) is another Food Vessel comprising 12 sherds. Approximately 80% of the rim is present and it measures c. 180 mm in diameter. The base is c. 80 mm in diameter but only c. 35% of it has survived. Three rim sherds and two base sherds form the bulk of the vessel and indicate its full height of 165 mm. The rim is everted with an internal bevel. Finger-nail marks from moulding beneath the rim survive and give it an uneven finish. The neck is straight, but it too has finger-nail moulding marks, and ends in a noticeably protruding carination 30-40 mm below the rim edge. Again finger-nail marks are visible on and below the carination, which appears to be pinched out rather than applied. The decoration of the exterior of the rounded bellied vessel is largely confined to the neck and upper part of the belly, and is a random design created by impressing what seems to be heads of grain/ grass into the surface. The decorative marks, often in groups of five, appear to be organic in origin. The interior of the vessel is rough with protruding grits, and moulding marks are noticed along the visible coil joins. The base is flat with a rounded base edge, and it is heavily gritted. Parts of it protrude outward where it joins the body, but this is probably due to how it was moulded, and it is plain except for a double line of widely spaced 'seed' impressions located above the base-edge.

The cist infills have produced radiocarbon dates that provide date ranges for the two Food Vessels. A date range of 1948 – 1770 cal BC (UBA-49302) was produced from a fragment of cremated human bone. A fragment of alder wood charcoal from the fill of the cist gave a slightly later date range of 1879 – 1646 cal BC (UBA-449273). A hazel nutshell produced a slightly earlier date range of 2137 – 1944 cal BC (UBA-49274), from the infilling of the cist (1672), implying that the hazel nutshell was a residual piece. However, these dates are consistently early Bronze Age.

Only three definite Bronze Age urns were found across the excavated area, in Field A, and two, V28 and V29, were clearly identified as containing cremated human remains. These were large vessels with wall thicknesses of between 10.5 and 13 mm but their rock temper varied between medium to very coarse (up to 10 by 10 mm) in size. V28 was slightly different, as a larger amount of quartz sand was also used in its construction, which gave the sherds a sandy texture.

V28 (Figure 37) is a plain burial urn which comprises 155 sherds of which only the rim, base and base-edge sherds are diagnostic, but it has not been possible to reconstruct its full profile. The base of the vessel is flat with an angular base-edge and its diameter is 120 mm with c.16% of it surviving. The rim sherd is poorly moulded and could not be measured. It has a concave depression on its flat/bevelled top and there is a corresponding slight outward bulge of the rim. There is a slight finger runnel beneath the rim where the rim coil joins the body of the vessel. The pot was wiped after forming as grass marks are present. Additional smoothing may have occurred but the exterior surface remains slightly lumpy and there is slight evidence of sooting.

Like the previously described vessel, V29 (Figure 37), is a plain jar-shaped urn comprising 11 fragments. It is largely intact with a surviving height of 185 mm but it has an uneven, lumpy texture due to the very coarse rock temper added to the clay - a piece of stone has fallen out of the clay body of the vessel leaving a large cavity. Its rounded rim has a diameter is 150 mm and is complete. The rim has a finger moulding runnel c. 10-15 mm below the rim top and the base of the vessel is flat, with finger moulding at the junction of the base with the body. The base is detached from the body but measures 130 mm in diameter with only 20% present. Coil divisions are clearly visible on the external surface as are moulding marks, suggesting the surface was only roughly smoothed and not well finished, but some sooting is noted internally. Parts of the vessel have parted at the coil joins and broken away. The characteristics of this vessel suggest it is from the latter half of the Bronze Age.

This small collared urn, V42 (Figure 37), survives as two large fragments but is incomplete. Its rim measures 200 mm in diameter but only 35% of it survives. The complete base is 100 mm in diameter and its overall height is 195 mm. The vessel has small surface cavities where carbonised seeds have fallen out of the clay. Its rim has an interior bevel 15-16 mm wide, which is undecorated and abraded but it is part of a decorated collar 45 mm deep. Approximately 45 mm below the collar is a carination and the area between the two is also decorated. The belly of the vessel from the carination to its base is plain. The pot was well-made probably using the thumb-pot method for the base, and coils were subsequently added which were c. 30 mm deep. The finishing of the vessel included smoothing of the surfaces before being decorated. A coarsely twisted cord was impressed into the clay to form a horizontal border at the top and bottom of the collar. Roughly straight lines of cord at a c. 45° angle, with a c. 30 mm gap between were then added between the borders. The decoration was completed with the addition of further lines of oblique cord crossing the others at a 90° angle to form triangular and diamond spaces. The pattern is repeated below the collar where a single horizontal line of impressed cord borders the base of the field above the carination. The design is not as well executed on the collar as in the field below it.

Three samples from the fill of the burial pit produced good overlapping date ranges of 1881 – 1647 cal BC (UBA-49299) from a fragment of human bone, and 1880 – 1688 cal BC (UBA 49271) and 1865 – 1621 cal BC (UBA 49270) from wood charcoal. These dates are from the middle to later part of the early Bronze Age.

The remaining sherds from across the excavated area are considered to represent vessels that were intended to be used for domestic purposes, but there are pots whose identification is uncertain. None of these vessels are decorated.

Structure S1

The six plain vessels identified from this structure are among the heaviest sherds (averaging 21.1 g) and those with the greatest wall-thickness (averaging 13.6 mm) (see Table 11). They are all heavily gritted with unidentified gravel, quartz, coal and mica (V6) and in one example, cereal grains (V3). Finger moulding marks are common as the surface finishing of the pots was reduced to wiping them smooth with dried grasses. Their use by the hearth or as cooking pots is evident in the survival of carbonised food residues (V4 and V5) and by the presence of soot.

The following vessels are described. V3 (body sherds) suggests that it was fired at a low temperature as both the stone and organic temper i.e. carbonised cereal grain, have a tendency to fall out of the clay body. Cereal grain from the fill of the fire-pit in which it was found produced a radiocarbon date range of 1404 – 1225 cal BC (UBA-49246), placing this vessel firmly in the middle Bronze Age. V4 comprises a slightly flattened rounded rim that measures c. 120 mm in diameter although only 7.5% of it survives. Cereal from the floor deposits in which V4 was located provided a similar date to V3 of 1399 – 1225 cal BC, (UBA 49232). V5 (Figure 36) is a rounded rim c. 180 mm in diameter, with 7.5% present, and four additional body sherds. The rim is slightly uneven and has external moulding marks below its top but it is also bevelled to the interior. V6 (Figure 36) is an unevenly moulded and bevelled rim to a slightly bulbous and plain vessel. V7 (Figure 36) is two conjoined rim sherds suggesting that the vessel had a rim diameter of c. 160 mm of which c. 9% is present. The rim is straight to slightly inverted, and it is also flat topped to slightly round in shape. The radiocarbon date range of 1367 – 1058 cal BC (UBA 49248) from pit (776) in which the pottery was found, suggests this is possibly a slightly later vessel spanning the middle and later Bronze Age. V45 (Figure 36) is a 18.5 mm thick-walled sherd with a pronounced rounded cordon, which protrudes 8.5 mm from the vessel wall and it is 18.5 mm in depth. The cordon was possibly added as an extra strip to the partly formed vessel. Sooting and carbonised food remains on the sherd suggesting this was the remains of a substantial cooking vessel where the cordon perhaps functioning as a handle or lug. A middle Bronze Age date range of 1413 – 1260 cal BC (UBA 49241) was provided by cereal grain found in the pit (674) along with the vessel.

SF 248 is not a vessel but comprises two conjoined fragments of a possible is a moulded piece that could be a clay whorl or counter, weighing 2.9 g and with a thickness of c. 9.2 mm

(not illustrated). The fragments are worn, and the edges are possibly polished, but it is difficult to determine what the curved shaped piece some 26 mm in diameter would have been. There is no evidence of a perforation in the surviving fragments but this may be due to the fact that the piece is burnt. The presence of stone and organic temper is noted.

Structure S3A

In comparison with the vessels from Structure S1 above, the vessels from Structure S3A are also thick-walled, robust pots. However, their reduced average sherd weight (Table 11) suggests they are smaller sherds, possibly subject to more disturbance and movement over time. They are also coarsely-gritted pots, but generally they are poorly finished due to their uneven surfaces with protruding grits and the survival of moulding marks. Some of the vessels were smoothed over before firing but abrasion and loss of surfaces has removed much of the detail, suggesting taphonomic influences. The presence of soot and carbonised food remains on most of the vessels, again suggests that most of them were probably cooking pots.

V21 (Figure 36) is probably the largest represented vessel from this structure. The rim measured c.260 mm in diameter but only c. 3.5% of it is present. The rim is slightly everted with a flattish top and concave neck, but it is thick-walled. V22 (Figure 36) was a smaller but rounded bodied vessel. It had a rim diameter of c.220 mm, but only c. 10% survives. The rim was unevenly moulded but it has a flat to rounded top, with finger runnel c. 20 mm beneath it to indicate the neck. This is likely to be a middle Bronze Age vessel given the radiocarbon date range of 1405 – 1212 cal BC (UBA-49260) from pit (1287) in which it was found. The two sherds of V23 (Figure 36), are non-joining fragments of a robust, round-topped but straight rim. The deposit (1229) containing this vessel could be slightly later in date as the radiocarbon date range of 1368 – 1117 cal BC (UBA-49255), runs into the later Bronze Age from the middle of that period.

V24 (Figure 36) comprises three rim and six body sherds. The rim sherds are round topped and slightly inverted and indicate that the vessel had a diameter of c.200 mm but only c.5% is present. A single incised line runs c. 9-10 mm below the rim top externally, which may be a product of the moulding and surface smoothing of the vessel rather than decoration. Similar to V23, this pot could also be slightly later from the radiocarbon date range of 1381 – 1130 cal BC (UBA-49253), from its location in occupation deposit (1217). The date spans the middle Bronze Age into the later Bronze Age.

V25 (Figure 36) is identified as 15 sherds, including two misshapen rounded-topped/bevelled rims that have a straight neck and slight carbonised food deposits. This vessel is firmly dated to the middle Bronze Age from its radiocarbon date range of 1396 - 1223 cal BC (UBA-49254) from within gully (1027). V26 (Figure 36) is a poorly moulded flat rim with a straight neck, and is undated.

Structure S5

A large number of similar sherds were found together in the backfilling material of one pit (1689) from this structure. Although there is uniformity between most of the sherds, they have been divided into three vessels (V34-V36). Apart from the rims, there are no other diagnostic sherds. Together, they are the heaviest individual sherds of the assemblage, and have the greatest average wall thickness of over 14 mm (Table 11). They also weigh a total of 7.7 kg. The sherds have crudely 'smoothed' finished surfaces with protruding rock temper of quartz, possibly sandstone and other unidentified minerals. Finger moulding marks, coil joins and grass marks are all present in varying degrees. One of the most noticeable features of these sherds is the visible stress cracks which occurred during production. Those forming V36 are particularly distorted. The firing is uneven as both reduced and oxidised sherds are present and it seems likely that the vessel(s) may have collapsed or shattered during firing. These vessels can be dated to the middle Bronze Age from the radiocarbon date range of 1410 – 1268 cal BC (UBA-49280) from the fill of the pit (1689).

V34 (Figure 37) is a significant portion of the upper part of a large vessel. The substantial c.240 mm diameter rim (c. 75% of it is present) is rounded to somewhat bevelled, with two clearly distinct finger runnels. The first lies c. 12-17 mm below the rim top, and a second is c. 17 mm

below the first. Several of the rim sherds conjoin but not all join together.

V35 (Figure 37), is an oxidised, pale red coloured rim sherd, most likely from a separate c.200 mm diameter vessel with only 8.5% present. The rim has a rounded top and an interior bevel. The external finger runnels below the rim are faint, with the first one occurring about 20 mm below the rim top and the second, c. 20 mm below it.

V36 comprises 36 badly distorted body sherds not dissimilar to V34. No rim or base sherds survive.

The remaining vessels from this structure are also heavy, thick-walled and gritted with coarse or very coarse temper of quartz, possibly some sandstone, and other unidentified minerals, which often protrudes through the vessels' surfaces. Organic material is also noted in most sherds. Coil joins are noted as are moulding marks around them.

Of the 11 sherds of V37 (Figure 37), the two non-joining large rim sherds are round topped but are too straight to measure: one has a weak bevelled. The slight eversion of one of the rims is formed by finger moulding c. 18 mm below the rim top. A second area of horizontal finger moulding marks, forming another slight concavity is situated c. 30 mm below the first, both the result of joining coils together. The almost straight-sided vessel was poorly finished and stress cracks are present. A radiocarbon date range from the fill of (1676) pit of 1397 – 1131 cal BC (UBA-49275) suggests this pot was used during the middle to late Bronze Age.

V38 (Figure 37) is a rounded and everted rim with a flat top and a finger runnel beneath it. The pottery is distorted and the rim is not measured. Carbonised wood from the same pit fill as the pottery (1738) indicated a radiocarbon date range of 1418 – 1278 cal BC (UBA-49281), the middle Bronze Age for this vessel.

The largest sherd from V39 (Figure 37) is a rim which has a diameter of c.210 mm, and c. 7.5% of the circumference is present. The rim is predominantly straight but tapers to a thin rounded top that is slightly everted. It also has a single perforation c. 9 mm below the rim top, which is c. 5 mm in diameter and was made by pushing a tool from the exterior to the interior of the vessel before it was fired. The vessel has grass marks from the wiping of its surface and it has carbon deposits on its internal surface.

Structure S6

Six rim sherds and 23 body sherds are present of V27 (Figure 37). The pottery is thick, heavy, plain and urn-like in appearance. The rim has a straight back, a flat top and is strongly everted, with a concavity at its neck. Although unidentified, its mineral content of its heavily gritted fabric is very coarse and may include sedimentary rock. Some of the grit protrudes through both surfaces, but the exterior of the vessel seems to have been roughly smoothed. Some sherds are pink, suggesting the presence of oxygen and higher temperature burning than the reduced grey of the rim. This pottery was found in four locations but three of them produced samples for dating. The radiocarbon date ranges: from a deposit 1425 – 1268 cal BC (UBA-49293), a posthole 1393 – 1217 cal BC (UBA-49295) and a second posthole 1376 – 1125 cal BC (UBA 49297) suggest the pottery was predominantly spanned the middle Bronze Age into the beginning of the later Bronze Age.

Structure S7

V32 (Figure 37) comprises two conjoined heavy rim sherds that indicate a rim diameter of c. 260 mm and 11% of it is present. The rim sherds are approximately straight and rounded topped to a barrel-shaped vessel that contains exceedingly coarse unidentified stone with some quartz and other minerals. The grits protrude through its surfaces and carbonised food deposits are encrusted on the interior surfaces of the sherds.

The rim of the four sherds which comprise V33 (Figure 37), has a flat to angular top and is everted to the exterior. Finger moulding marks are present on both sides of the rim, but they are more prominent externally and have formed an inconsistent lumpy ridge due to the presence of coarse temper. The rim is also slightly flattened above the ridge.

Field A

V31 (Figure 37) is a rounded rim sherd in a sandy fabric that is soft, fragile and badly cracked. The rim is not necessarily everted but has gently

bulged because of the finger moulding creating a slight concavity beneath it.

Pottery function and its distribution

Most areas of the excavation produced pottery but no vessels were discernible from Structures S2, S8 and S9.

Structure S1

There is little discernible pattern to the distribution of pottery across the largest roundhouse (Table 12). The earliest vessel V47, a sherd of decorated Beaker pottery, was located in the backfill of a pit connected to the middle or second entrance of the building with its penannular gully that encircled its central area. Like most or all of the pottery found associated with this structure, its occurrence in the gully is considered fortuitous rather than deliberate, and indicates that piece had been moved from its original place of deposition or burial.

The other six vessels, whose sizes range between 120 and 180 mm in rim diameter, are most likely associated with domestic activities within the building such as cooking, as the majority have surviving carbonised food deposits or sooting. V3 was found in the fill of a fire-pit in the SW quadrant of the centre of the structure. The majority of V4 came from a pit fill in the NE quadrant of the building's interior and the overlying occupation deposits. Vessels V5, V6 and V7 came from the fills of separate pits located beneath an occupation layer in the south-west quadrant of the building interior. A body sherd belonging to V5 was also found in the fill of a small pit outside the outer entrance to the structure. V45, a heavy cordon from a substantial cooking pot, was located in the fill of a pit associated with the inner doorway to the building.

In addition, SF 248 a clay counter or whorl was found in a stone hole beneath the occupation deposits in the south-west interior of the structure. Although pottery was found nearby in other features, this piece was an isolated occurrence.

Structure S3

A total of 15 vessels of Beaker pottery (Table 12) were located in an alignment of three large pits with a fourth to the immediate NW, which were situated c. 12.5 m to the north-west of Structure S3A. These features are identified as one large pit that received the majority of the vessels with three related but subsidiary pits. The largest pit (840) that contained vessels (V1, V2, V8-15 and V17-20) and a piece of flint, was over 1 m in diameter and was the deepest at c. 0.3 m. Pit (875) was smaller in size and contained two body sherds of V1, one sherd of V11 and of V13, and seven sherds of V17, as well as hazel nutshells. Pit (1064) to the north-east contained a rim and body sherd of V17, about half of V2 as well as a stone pounder. The remaining pit (877), the smallest, contained V43 and single fragments of V10 and V13.

The distribution of sherds is interesting. It is without doubt that 14 vessels were deliberately deposited in pit (840). It is unusual that this large number of vessels/sherds was collected together, seemingly without the presence of human remains, and deposited in a single pit. However, redistribution of some of the vessels, whether deliberate or accidental also occurred: although a body sherd of V13 was found in pit (840), its base sherds were found in two other pits (875 and 877). In the case of V17, a single rim sherd was located in each of pits (876 and 1064), with two rim sherds in pit (840). Only V43 was separately buried in pit (877).

Structure S3A

This building was a roundhouse that may have been rebuilt several times or changed its function. V16, a Beaker sherd was found in the fill of its outer gully (1027) demarcating the outer edge of the building. The rest of the pottery from this structure represented thick-walled, heavy domestic cooking vessels. Sherds of V25 were also found in the outer gully (1027), and sherds of V24 were located in segments of a discontinuous inner gully (1274) along with V21. Other sherds of the latter were located in a large pit (082). V22 was found within the fill of a large pit (1287) in the NW quadrant of the centre of the building between an outer ring of postholes and the discontinuous innermost gully. The occupation layer in the north and north-east part of the inner area of the building contained V23, and other sherds of V24 were located in a deposit/occupation layer (1217) in the east of the structure close to the outer gully. V26 is unstratified.

Structure S5

This round building, possibly a house or workshop, is a complex structure and the location of a large amount of pottery from pit (1689) in its west quadrant suggests that it was used as a kiln. It was here that vessels V34-V36 were located. Approximately 1 m to the north-west in another pit (1676) was the remains of V37 and V38. This latter pit could have functioned as a refuse pit for the failed pottery removed from the kiln, or a possible fire-pit. Additional sherds of V37 were found to the east of the kiln in pit (1754) in the centre of the building. The final vessel, V39, probably a cooking pot with a surviving perforation, was located in a pit to the south close to the gully demarcating the limit of the structure. It is not clear what type of vessels were represented by V34-V38 but straight sided large pots, possibly urns were manufactured and fired here.

Structure S6

Only two vessels came from this roundhouse. A sherd of Beaker pottery, V46, was found in the backfill of a structural posthole in the northern part of the interior of the building. The other vessel, V27 an urn, came from the fills of two postholes on the west side of the interior of the building: (2124) a structural posthole and (2116) a smaller feature in the near vicinity. Further sherds of the same urn were located in a patch of occupation debris (2039) in the southern arc of the interior. The distribution of the pottery suggests the construction of the building disturbed an earlier grave with an urn, with the sherds being dispersed into the backfilling material of a number of features.

Structure S7b

This small round building contained sherds of a possible domestic vessel, V32, located in the filling of a structural posthole (1617) in the north, and the similar remains of V33 in posthole (1613) to the south-west.

Field A

The large field contained most of the structures, and most of the vessels found there were associated with probable burials. Along the southern border of the field was an isolated burial pit that contained V28 urn. V29 another plain urn was found in a pit situated between, and south of, Structures S5 and S6. Again, the burial was an isolated feature. The location of the pit that contained Beaker sherds, V30, was also along the southern border of the field. A possible domestic vessel, V31, was found in the fill of a large pit that was one of a small group of pits to the south-west of Structure S5.

V40, V41, V42 and V44 were found in burial pits located close to the south-western edge of the field and west of Structure S6. The vessels were intimately associated with four pits with cists and two cremation pits grouped together in a linear arrangement. Food Vessel V41 was located in the westernmost cist, with the second Food Vessel V40 in the middle cist. A single sherd of Beaker pottery V44 came from the third cist lying to the north-east, and the small collared urn, V42 was located in a cremation pit to the immediate north-east of the latter. The two food vessels and the small collared urn were clearly part of burial rites and cremations. The Beaker pottery V44 may have been a deliberate deposition into the cist or an accidental occurrence.

Discussion

The location of the site, close to the River Clyde and its estuary, has been important for a number of reasons concerning the pottery found there. It provided the raw materials for pottery manufacture but it was the river - a routeway that allowed not only the physical movement of people through the landscape and between communities, but also the movement of ideas, ideology and expressions of identity behind the pottery forms, the decorative motifs, and the use of pots in burial rites and in domestic settings.

The earliest pottery identified from the site are Beakers, the most ubiquitous of prehistoric vessels, which were in currency for about five hundred years during the transition between the late Neolithic c. 2450 BC to as late as c. 1950 BC in the early Bronze Age (ScARF Bronze Age 2012). However, the radiocarbon date associated with the single pit in Structure 3 where most of this pottery has come from produced a date range spanning the very end of the late Neolithic and into the first half of the Bronze Age 2462 – 2208 cal BC (UBA-49250), suggesting these are early Beakers.

Most of the Beaker sherds (representing 14 vessels) came from the largest pit (840) out of a small group in Structure S3, but other isolated examples were found in contexts related to both domestic and burial situations. The distribution of Beakers indicates their widespread use and to some extent their popularity and ideological versatility. These highly decorated and generally finely produced wares show a wide variety of decorative motifs positioned in different places on the vessels that were made by a number of different tools. As far as can be ascertained, most of the vessels were slender and weakly S-shaped, with low carinations, such as the early AOC Beaker V152 from Carnoustie (Ballin Smith 2025b, 212, 213 Figure 5.51). Another almost complete low carinated Beaker, but more severely S-shaped, was found at Guardbridge in Fife (Ballin Smith 2025e, 165, Figure 111). Its decoration was made by a fine-toothed comb, and although not dated, its currency in Scotland was considered to be around the 25th century BC (Sheridan 2007, 96-99).

One or two other Beakers are narrower-mouthed and more jar like. V1 and V8 could be AOC (all-over-corded) Beakers, but V10, the most complete, has horizontal bands of decoration either side of incised chevrons or cross-hatching that are motifs commonly found across Britain. V9 is a larger and more robust Beaker, but its vertical decoration of opposed finger nail incisions is also mirrored in other rare examples in Scotland, such as in East Lothian, Wigtown and also Northumberland (Clarke 1970, Vol 2, 286). V2 with its horizontal lines of fine pin-pricks, and V43 with a line of incised circles amongst cord impressed lines, indicate rare local variations and experimentation.

The question remains as to why pit (840) in Structure S3 received so many different vessels/ sherds. Do these pots represent 14 different events or burials, or were the pots contemporary and buried at the same time? And what do the sherds or parts of vessels represent that were deposited in other nearby pits? V43 is a single sherd, but was it a token of a vessel from another place that was brought to be buried close to the others, possibly at a different time? The apparent lack of human remains in the pit associated with the Beakers could indicate desecration of a burial site, where the pots were removed from their resting place and reburied or concealed in what can be described as a refuse pit. Sheridan (2007) from her analysis of the partial remains of four Beaker vessels from Pit 3 (028) at Eweford West, along the A1, concluded that the remains were not associated with funerary rites. The presence of cereal grains with the pottery and the location of the pit close to a cairn, suggested to her that the remains may be one from feasting, and one of 'ritualised activity' related to visits to the cairn.

Two pits with Beaker pottery were also found near Portree in 2006-07 (Johnson 2013, 35-36, illus 28). Pit F168 contained 112 sherds representing 39 different Beaker vessels together with lithic artefacts, but it was not clear to the excavator or the specialist whether this represented ritual or domestic activity. The interpretation was made complex by the location nearby of a large enclosure and a disturbed cremation burial.

A single grain of bread wheat was found among the pottery in pit (840) at Northbar, but it is slim evidence to suggest feasting. Although the collection of Beaker pottery in pits is rare, the suggestion by Sheridan (above) is probably the most plausible, that they represent a gathering of people to a place, with the use of the vessels related perhaps to feasting or a specific event, with the pots later deposited or discarded together within a pit, as a form of memorial. The different decorative motifs on the vessels may therefore represent the identities of the individuals/communities who possibly brought their own Beakers to the occasion. Questions remain as to whether the vessels were deliberately broken up before deposition so that they could not be reused, or whether specific pieces were retained and carried away by their owners as tokens. And could V43 have been deliberately brought to the gathering as a token of another occasion, an event or a person?

Another interesting part of the excavated area from the point of view of pottery vessels, but also as a group of cists and pits, is the western part of Field A that produced two Food Vessels. This small burial grouping also included a sherd of Beaker pottery and a small collared urn (see below). Food Vessels overlap with the currency of Beakers during the early Bronze Age, from

c. 2200 - 1750 BC (ScARF Bronze Age 2012, and Sheridan 2004, 257-260, Fig 89). The two radiocarbon dates returned from within the cist provided date ranges of 1948 – 1770 cal BC (UBA-49302) and 1879 – 1646 cal BC (UBA-449273). One is firmly within the accepted currency for Food Vessels but the other is slightly later. A third date produced by a hazel nutshell fragment indicated a slightly earlier date range of 2137 – 1944 cal BC (UBA-49274), but again within the accepted time-frame. The slightly later date could imply that there had been some disturbance of the burials.

Food Vessels also express identity, individuality, cognition and community through their shapes and often their elaborate decoration. They were vessels that were often also works of art, perhaps an offering or dedication to the deceased, instead of a container for the remains. These vessels may have reinforced, or represented changes to the elaborate belief systems and customs of the time (Curtis and Wilkin 2019, 236).

Commonly, Food Vessels exhibit consistency in their overall shapes, most commonly in their bipartite or tripartite forms, and in their decoration but with local or regional variations. The Northbar examples, although differing in size and shape from each other, are vessels of bipartite form, and in comparison with others of the type, their decoration is simple and random rather than structured, and is by no means elaborate. Although there has been a tendency to consider these vessels as having a predominantly east coast distribution (Cowie 1978, Fig 36), there are regional clusters elsewhere, with one along the River Clyde valley, and others along the west and south-west coasts of Scotland (Simpson 1965, 27). Although there is no direct comparison with the decoration seen on illustrated examples (ibid), there are similarities in vessel shape with those from the wider Lanarkshire area and also from the south-west of Scotland.

The picture of the use of vessels is made more complex with the addition of the small collared urn from a pit besides the cists in the west of Field A. Although a possibly contemporary vessel with the Food Vessels, its relatively small size and its inclusion in a pit, rather than a cist, may suggest it is somewhat later. Collared urns were primarily containers for the cremated remains of the dead and therefore had a specific function in the burial rites. These were often large vessels, but V42 is a small example, which may have been for the cremated remains of a sub-adult or child.

Collared urns both larger than V42 and a miniature example, together with a highly decorative Food Vessel were recently found at Sawmill Field to the south of Helensburgh (Ballin Smith 2023). The shape of the Northbar collared urn V42 is more round bellied, like that of one of the Food Vessels (V41), but it has a short neck to a carination as in the larger urns from Sawmill Field. However, the miniature urn from Sawmill Field has no carination and a slightly convex belly. The collars of the urns are their dominant feature and all are decorated by a coarsely twisted cord being impressed into the clay. All the collars appear to have one or two horizontal borders of twisted cord and with either horizontal or oblique patterning in between. The decoration on the collar of Northbar V42 is poorly executed like that of Vessel 2 at Sawmill Field. However, the decoration of V42 continues on neck of the vessel, while the miniature Sawmill Field Vessel 5 is similarly decorated below the collar but using a different design and motif. The latter was dated within the range of 1882 – 1689 cal BC (UBA-47670), and the burial pit of Vessel 42 produced similar date ranges (UBA-49299), (UBA 49271) and (UBA 49270), (Table 2).

These radiocarbon dates indicate there is some strong comparison between the two sites and demonstrate contemporaneity between the manufacture and use of these vessels. Although the form of the vessel might express shared beliefs across a wider Bronze Age community, the decoration of the collars might represent individual or clan motifs.

Another urn, V29, is a bucket-shaped vessel of probably the middle Bronze Age, and it is distinguished because of its poor construction and finish. This is a simple, functional vessel without the characteristic collar, carination, cordon or decoration of earlier examples. Much of the work on dating these types of urns was carried out early in 2000s by the National Museums of Scotland dating cremated human remains project (Sheridan 2003), which later

formed the basis of the ScARF Bronze Age dates (ScARF Bronze Age 2012). One similar example of a plain urn given by Sheridan (2003, 221 and Fig 13.11) is Urn 2 from Glenluce, Dumfries and Galloway, a slightly larger example than V29 but which was dated between 1630 and 1370 cal BC, towards the end of the early Bronze Age and into the middle Bronze Age. Unfortunately, the fill of the pit in which V29 rested could not be dated.

What is also interesting is the change in pottery manufacturing styles, from generally reasonably finished urns, with decorative collars to the possibly later, plainer and simpler versions such as V29 that may come towards the end of this Bronze Age sequence. This urn, V29, also represents a change, not only in the belief systems of the time, but the lack of decorative motifs could suggest a loss/omission of the identity and characterisation of the individual or the group. The pot is purely a utilitarian vessel to hold the remains of a cremated individual that was buried in a pit in the ground, and where ornamentation has been deliberately rejected or ignored.

Although the remaining vessels from Structures S1, S3A, S6 and S7, and to some extent Field A, indicate domesticity through the identification of cooking vessels, the small number of sherds from them are difficult to distinguish from plain burial urns. They are so fragmented that identifying their shape is not achieved with any accuracy. Their dating is also difficult and dependent on the dating of features in the structure in which they were found. Pottery of the middle and later Bronze Age from Guardbridge, Fife and Rosemarkie, Black Isle, shared this similar problem, but at both these sites the actual sherd numbers were greater (Ballin Smith 2025e and 2025h).

However, among these are the large numbers of pottery fragments found in a large pit (1689) in Structure S5. The identification of the pit as a possible kiln from the distorted and highly fired pieces of pottery is exciting for this period of the Bronze Age. Charcoal from the pit fill produced a middle Bronze Age date range of 1410 – 1268 cal BC (UBA-49280). Two other large pits with similar fills, but without the pottery, were also found within the same building, and indicate they may also be kiln pits. Although the evidence from the pottery indicates the vessels were large and possibly urn-like, the identification and survival of the kiln situated in a building, or the remains of one, is rare for this period. Kilns or pottery firing sites dated to the Neolithic have been found at Allt Christal, Barra (Foster 1995, 85-88) and at the Neolithic or Iron Age at Dunasbroc, Lewis (McHardy et al. 2009, 140-45). Highly burnt areas at Carnoustie in the late Neolithic may indicate the site of at least one kiln (Ballin Smith 2025).

Conclusions

The pottery is an interesting collection, which is as well dated as was possible given the relative paucity of carbonised material from many of the structural pits and postholes. The Beaker assemblage from pit (840) is early and is one of the few examples in Scotland of the deposition and burial of many vessels/sherds in one feature. The range of vessels related to cremations and burials and also to domestic occupation, indicates a dynamic landscape and changing pottery designs and uses throughout the earlier part of the Bronze Age, with domestic activity during the middle Bronze Age. A situation mirrored at other sites across Scotland. Together, the pottery vessels and the radiocarbon dates give us an interesting but relatively narrow time frame to piece together the changes in occupation that occurred across this landscape and the activities that took place there.

Perforated weights – loom weights

By Beverley Ballin Smith

Introduction

From features within or clearly associated with Structures S1, S3A and S5 a total of three near complete perforated clay weights and fragments of seven others were recovered. The more intact or easily recognisable artefacts were collected by hand from the archaeological interventions, with fragments of others recovered from sieved soil samples. Most of the artefacts were found in pits or occupation deposits, some together with sherds of pottery.

Description of the pieces

The artefacts, with the exception of SF 135, which seems to have been highly burnt or fired, were made of unfired raw clay. The colour of the clay of SF 239, SF 265 and SF 268 is Munsell 10 YR 6/1 grey, with the clay of SF 272 described as Munsell 7.5YR 6/4 light brown. The inclusion of the occasional small stone into the clay mix is likely to have been accidental but small amounts of organic material may have been added deliberately, especially in those examples from Structure S5. As the project area was located close to the River Clyde, both marine and glacial clay deposits were available to its Bronze Age settlers for the production of these artefacts.

From the examples of SF 239, SF 265 and SF 268, samples 575 and 586, and possibly SF 135, raw clay lumps were moulded into spheres with smooth surfaces. In order to make them into weights that could be suspended from a loom, they were perforated through the centre of the clay sphere and their spherical shapes were flattened into a torus or doughnut. The surviving dimensions of all the pieces can be found in Table 13. In some examples, extra wear or notching of part of the circumference of the perforation at the surface of the weight indicates where a warp cord (or cords) was tied to it. The warp was then held under tension on the loom during the weaving process by the clay loom weight.

SF Nr	Site location	Feature location	Nr of pieces	Weight (g)	Length (mm)	Width (mm)	Thickness (mm)	Perforation (mm)	Radiocarbon dates	Period
135	Structure 1	521 fill of posthole 520	1	15.6			22.6		1420-1281 cal BC	MBA
239	Structure 3A	1322 fill of pit 1323	1	204	93.8	90.7	45.6	18.4 diameter with a splay of 38.4	1418-1234 cal BC	MBA
S549	Structure 3A	1311 occupation layer	7	19.1	n/m	n/m	n/m			
S568	Structure 3A	1324 occupation deposits	2	14.8	40.8	28	14.4		1368-1115 cal BC	MBA/LBA
S575a	Structure 3A	1322 fill of pit 1323	31	121.5	49	46	21.7	14.6	1418-1234 cal BC	MBA
S575b	Structure 3A	1322 fill of pit 1323	1	38.2	49	41	28.3		1418-1234 cal BC	MBA
S586	Structure 3A	1361 upper fill of pit 1349	34	218	48.4	c.90	48.5	20 by 26	1377-1127 cal BC	MBA/LBA
265	Structure 5	1709 fill of pit 1689	1	458	102.8	102.8	70.7	13.5 by 18	1410-1268 cal BC	MBA
268	Structure 5	1690 fill of pit 1689	1	38.3	63.3	56	16	12.9 by 14.5		
272	Structure 5	1709 fill of pit 1689	1	326	109.5	99	31.2	c. 9	1410-1268 cal BC	MBA

MBA = middle Bronze Age
LBA = late Bronze Age

Table 13: Measurements of the perforated weights and fragments.

The maximum diameter of example SF 239 (Figure 38) was c. 94 mm. In creating the perforation, the entry to it was widened on the artefact's surface, forming a splay 38.4 mm in width. The perforation was sub-circular with a diameter of 18.4 mm and indicates it was made by a thumb being pressed through the clay torus, which was flattened at its surface at that point (Figure 39). The lower portion of the piece with the exiting of the perforation is missing, but it is presumed that the perforation would have been pressed in from either surface producing a wide splayed opening on each. A concave notch was noted at the surface of the perforation formed by the attachment of a warp cord. Parts of the surviving surface appear slightly burnt.

SF 265 (Figure 38) was made similarly to SF 239 but it was slightly larger at c. 103 mm in diameter. However, its perforation is smaller at 13.5 mm by 18 mm. It has a large surface splay measuring 30 mm by 47.7 mm, which was formed, by a finger being pressed through the clay. Given the larger size of this piece than SF 239, it is feasible that the perforation was pushed through either side of the object, producing a slightly off-centre perforation on one surface (Figure 40). The object has lost significant spalls of clay from around its circumference but the least well-preserved end of the perforation indicates that is shape is more oval than rounded. This example may have also been notched by wear from cords as there was an angularity to the shape of the perforation at the surface, but further evidence was missing due to damage. Like the previous example, parts of its surface could have been burnt.

SF 268 (Figure 38) is a surface fragment of a weight which contains the perforation. It is most likely this piece is from a smaller diameter torus than the examples above. The surviving surface around the perforation is slightly domed on one side and has no significant wider opening or noticeable splay. The perforation measures 12.9 mm by 14.5 mm and has a sub-square shape made by a small finger and also by the attachment of warp cords. There was prolonged use of this piece as there are slight notches or concavities at four or five places around the circumference of the perforation.

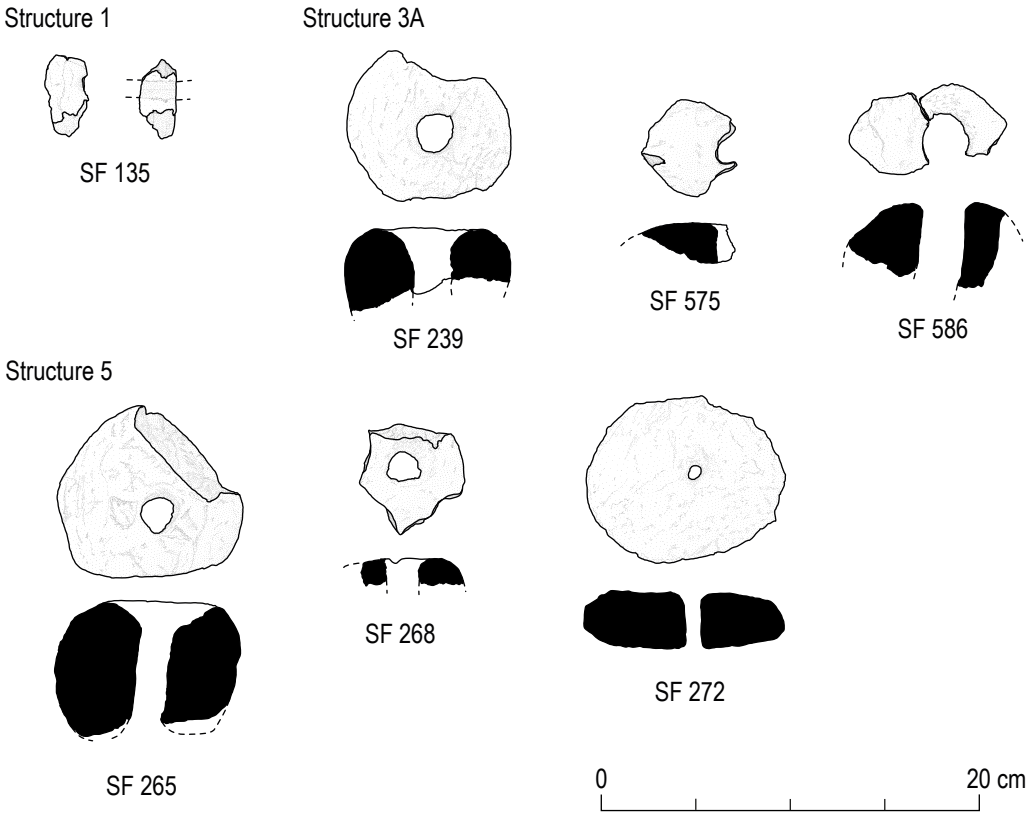

Figure 38: Perforated weights, 135 from S1, SF 239, 575, 586 from S3A and SF 265m 268 and 272 from S5.

Figure 39: Loom weight SF 239.

Figure 40: Loomweight SF 265.

SF 272 (Figure 37) is different from those described above in that it is not a torus but is more lenticular in shape and its surfaces do not survive. Its clay is slightly stonier than the others and its present condition indicates it may have been made with 'lumpy' clay that may not have been well mixed. Its c. 9 mm diameter perforation is off centre and passes obliquely through the clay and suggests it was made by a round stick or a quill from a large bird. There is some wear round the circumference of the perforation on both its surfaces, but further evidence has been lost due to the condition of the piece.

SF 135 was originally classified as a sherd of pottery (Figure 38), but its light weight and lack of apparent mineral or organic temper, suggested it was something else. It survives as an irregularly shaped fragment with one smooth, slightly convex surface. The other side of the artefact is concave and indicates the position of a perforation c. 15-18 mm in width and which has a slightly sub-rounded/angular shape to it. The piece has broken across the perforation. Its attributes indicate that it is not pottery but a highly burnt or fired piece of clay that is a fragment of a perforated weight.

S586 was identified from the processed soil samples and comprised a high number of fragments (see Table 13). The two largest conjoined to form c. 75% of the rim of the perforation (Figures 38 and 41), which was slightly splayed at the surface but measures 20 by 26 mm. This was the largest perforation found in the assemblage, and like that of SF 239 may have been made by a thumb rather than a finger. Two additional, smaller fragments carry evidence of the perforation's smooth concave wall. The edge of the perforation of the largest piece of this loom weight is notched and small areas of concave wear are noted on the adjoining fragment. The surface of the pieces is pitted due to abrasion.

Among the fragments of S575a are two that indicate another loom weight and its perforation. The largest is an irregular fragment with c. 30-40% of the perforation present (Figure 38). Some wear is noted around the perforation and there is a suggestion of a slight notch. The piece also has some polish on its surface from use. S575b is a single fragment of another loom weight. Its identifying characteristic is an 8 mm wide acutely concave notch at the edge of the perforation (Figure 42), which is otherwise missing. The notch continues on to the surface of the piece.

In addition to the loom weights described above, two other samples S549 and S568 are clay fragments from occupation layers in Structure S3A. In comparison with both fragments of daub and other loom weights, these samples are more similar to loom weights but without identifying features. They are therefore included in Table 13.

A sample of raw clay, (weight 26 g) was found in pit (1689) in Structure S5 along with the remains of three loom weights. It is noted here as it is a lightly burnt lump of raw clay without stone or organic temper. It indicates that loom weights were made at the settlement from clay dug from, or brought to, the site.

The evidence that has survived of the use of these artefacts is slight, as unfired clay objects are soft and easily damaged, and as noted above, none of the pieces are complete. For example, both SF 239 and SF 272 show some wear on one surface, possibly from rubbing against other weights. The evidence of wear (a slight concavity to a notch) from around their perforations is, however, more convincing Smoothed rubbed marks from a woollen thread, cord or other materials is noted on several of the pieces. The perforation of SF 268 is worn, so much so that instead of being sub-rounded, it has become more angular in shape with corners over half its surface circumference. Smoothing and enlargement of the other half of the circumference of the splay is quite noticeable. The sides of the perforation are also relatively smooth. In contrast, there do not appear to be wear marks on the surviving surface of the weight made by a cord.

Due to the soft and air-hardened clay of these pieces, clear incisions or impressions from being tied to a wool cord or thread have not survived. If their purpose was to control the tension of a warp thread on an upright loom, many more clay weights would have been required, depending on the width of the loom and that of the material to be woven. It is likely that weights such as these were frequently replaced as they would easily damage, shatter or split if knocked against each other. Being unfired pieces, they were easy to replace.

As none of the pieces were complete, their surviving recorded weights noted in Table 13 do not give a good indication of the how heavy they were intended to be. SF 265, the heaviest at 458 g may infer that they were most likely all over 500 g in weight when made.

Structure S1 appeared to have been altered many times, and the small fragment of SF 135 may simply have found its way into the back-filling of an isolated posthole situated in the south-western arc of the building between the main interior of the roundhouse and its walls. This fragment of a broken weight could have ended up in a fire-pit and then been thrown out with the ashes, only to reappear in backfilling material of another feature.

Figure 41: Loomweight Sample 586.

Figure 42: Loom weight fragment 575b, with notch from wear around the perforation.

The distribution of fragments of loom weights is of more significance in Structure S3a. They were located in a 3 m2 area in the north-east segment of the centre of the building and associated with the fill of posthole (1323), SF 239, samples 575a and 575b, its overlying occupation deposit (1324), sample 568, another closely associated occupation deposit (1311), sample 549, and the fill of a small posthole (1349), sample 586. The location and number of loom weight fragments suggest a loom was in use, possibly positioned between two of the load-bearing posts within the centre of the building.

As can be seen from Table 13, three of the weights, SFs 265, 268 and 272 and raw clay, SF 264, were found together in two different fills of a large pit (1689) that was 55 mm deep and located in the western part of the interior of the roundhouse. The weights were found together with much charcoal and pottery suggesting that they could have been discarded there. They can be interpreted in two ways: as a deliberate act of deposition or they were simply discarded into a convenient pit as damaged pieces.

Discussion

These torus and lenticular shaped clay pieces with perforations are weights, specifically loom weights, used indoors to weight the warp on an upright or warp-weighted loom. Fired clay loom weights are known from Scotland as are perforated stone weights, the latter are probably the most commonly found (see examples of stone weights in SCRAN 2021). Several recently discovered perforated small stone blocks from a middle Bronze Age roundhouse at East Lodge, Ury Estate near Stonehaven, Aberdeenshire have been also considered as loom weights (Lochrie and Holden 2021, 24, Figure 22). However, unfired clay loom weights are rare in Scotland, because of water percolation through features and other taphonomic conditions that have not aided their survival.

Comparative examples of similar clay weights from the Bronze Age are difficult to find but one from Ireland is unusual. A fired-clay, pear-shaped loom-weight was found in a storage pit related to two middle Bronze Age structures identified at Knockgraffon, Co. Tipperary, (Moriarty 2011, McQuade, Molloy and Moriarty 2009). The perforation was very similar to those from Northbar, where a thumb or finger had pushed through the clay to make a hole. The authors cited Needham and Longley (1980) who provided some provisional dates suggested by the shape of the weights: cylindrical-shaped weights being middle Bronze Age, pyramidal weights being late Bronze Age and large triangular weights were Iron Age. The Knockgraffon weight was considered to be very similar to the pyramidal weights of the British later Bronze Age.

In Scotland, a large number of lightly fired clay loom weights were found in a sunken building or near Ratho, Edinburgh, dated to the second half of the first millennium AD (Norton and MacSween 1995, 106-108, illus 20; and Smith 1995, 115-116). Although the sizes and weights of these annular pieces were not dissimilar from those at Northbar, the difference in date between the two sites is considerable.

Other Scottish examples include a conical fired-clay loom weight with a horizontal perforation similar in size to those from Northbar, which was found in a large sub-rectangular pit near Leuchars in Fife (McLaren and Hunter 2007, 12). The authors suggested that the most common forms of clay loom weights from the Bronze Age to the medieval period are bun-shaped, cylindrical, pyramidal, and elongated conical. They cited examples of an elongated clay weight from Traprain Law, of uncertain late Bronze Age date, conical loom weights from Ravensby in Forfar and two sub-oval, but fired-clay loom weights found near Newton of Montblairy, Banffshire, with a similar fragment of uncertain date from Ormiston, Fife.

More recently a fragment of a clay torus-shaped loom weight was found at Guardbridge, Fife, and although unstratified and undated is so similar to the Northbar examples that it is probably of middle Bronze Age date as well (Ballin Smith 2025f, Figure 123). A sample of burnt prepared clay from Rosemarkie contained a large thumbed concavity, suggesting that some of the material was ready to be made into pottery or possibly loom weights (Ballin Smith, 2025i, 113, Figure 4.10).

There appears to be much uncertainty about the shape and dating of clay loom weights in Scotland, simply because of their rarity and their provenance or lack of it. What is certain is that to find unfired examples is highly unusual. The radiocarbon dates from Northbar indicate the currency of these objects was from the beginning of the fifteenth to the beginning of the twelfth centuries BC, spanning the middle Bronze Age and into the beginning of the late Bronze Age.

Across Scotland, what appears to be the most common attribute of loom weights is their variety in shape. Where there was no stone available, clay was used, and the shape of clay loom weights may be a personal one of the weaver rather than a developmental attribute. The important fact concerning loom weights is that they indicate that weaving took place, at a certain time, perhaps in a specific building or place, and that a wooden loom was involved. They can aid our understanding of when warp weighted looms were used and how far back in time they can be traced (Hoffman 1964, 19).

Daub or fired clay

By Beverley Ballin Smith

Fragments of daub or clay burnt accidentally were found during the processing of soil samples from across the project area. As its name suggests, daub 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 in weight and generally does not survive burial conditions, taphonomic processes or the post-excavation processing of samples particularly well. However, the presence of 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.

Although pottery (deliberately fired clay), and clay loom weights (raw clay, some burnt) were found in features across the project area, daub or other clay-like materials is small and limited to generally tiny amounts. A total of 165 pieces and fragments weighing a total of 248.4 g came from a limited number of pits and postholes within structures[6] (Table 14).

6 The pieces were examined with a X6 hand lens and their attributes were compiled in an archivable table devised using Microsoft Excel. The material was analysed according to the revised guidelines of the Prehistoric Ceramics Research Group (2010), and the CIfA's Standards and guidance for the collection, documentation, conservation and research of archaeological materials (2014, revised 2020).

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 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. Locally available clay was 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 and (Graham 2004, 27).

The natural yellowish-brown colour of the subsoil clay at Northbar would have reflected that of the underlying bedrock, but when burnt it often 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. Table 14 indicates the number of pieces from the site and the weight from the different contexts in which this material was found.

The average weight of fired clay pieces is c. 1.5 g indicating that pieces from a pit in Field A, a deposit or posthole in Structure S1, a pit in each of Structure S5 and Structure S7b, and two postholes in Structure S6, are extremely small amounts. Their small size is also a hindrance to their firm identification and some pieces could be burnt subsoil or even degraded rock. However, these tiny amounts may be all that survive to indicate that the wooden structures excavated on the project area are likely to have been accompanied by wattle and hurdle walls or partitions (carbonised fragments of alder, hazel and birch were commonly found on the site, see). None of these pieces were large enough to indicate their connection with withies or wooden panelling, i.e. none were shaped or had impressions of wood surviving.

The finding of the daub pieces in pit and posthole fills is typical, as they were probably swept in with the backfilling of these features from an earlier phase of construction. The pieces from Structure S7B were larger than the majority but again were undiagnostic but they were found in one of the large postholes to the entrance of the building.

SF Nr / Sample	Area/ Structure	Context	Total Nr pieces	Total Weight (g)	Identification
228	Field A	u/s?	1	5.3	Daub
S114	Field A	432 Burnt upper fill of pit 431.	7	2.1	Daub?
S230	S1	522 a deposit or burning activity	1	7.2	Daub
S250	S1	709 fill of posthole 695	*	0.3	Daub?
S733	S5	1675 fill of pit 1676	3	4	Burnt subsoil?
S883	S6	2056 fill of posthole 2055	1*	5.2	Possibly daub
S885	S6	2073 fill of posthole 2072	*	1.8	Daub?
S716	S7B	1640 fill of pit 1639	4	43.4	Daub
287	S9	2157 burnt deposits in pit 2156	1	13.7	Daub
S912	S9	2157 burnt deposits in pit 2156	100	132.3	Hearth base
S918	S9	2190 fill of possible posthole 2187	47*	33.1	Daub/degraded rock
		Totals	165	248.4	

Table 14: List of daub and daub-like materials from the project area.

The largest amount of daub came from two features in Structure S9, pit (2156), possibly the hearth to the building and a nearby posthole. The latter may have been dug for a replacement timber on the west side of the structure and the material found in its fill is not definitely identified as daub and could be degraded rock. The pieces from pit (2156) could equally be a clay-lining to the base of the hearth or from a withy and clay oven constructed there. Hazel nutshell fragments were found in this pit suggesting they were roasted there (Appendix 1, Structure 9).

Discussion

Fired clay pieces are not datable in themselves but the radiocarbon dates from the site suggest periods of occupation from the fourteenth to the twelfth centuries BC spanning the middle and later Bronze Ages (see Table 1). Although the pieces are generally very small and their distribution is largely restricted to the occasional posthole or pit in a few of the wooden roundhouses, their presence suggests that wattle and daub was part of the architecture of Structure S9 and possibly other buildings as well, as wall panelling, partitions or perhaps even a hearth base or oven. The fired clay material has not included shaped pieces as those from the earlier dated structures at Carnoustie, the later periods at Ayr Academy, or from Guardbridge (Ballin Smith 2025c; 2019; 2025f), where fragments of daub from the early Bronze Age were present. It is also notable that from the later Bronze Age and Iron Age structures at Braehead, Glasgow (Ellis 2007) daub pieces or pebbles were not present, suggesting like at Northbar, subsequent uses of the site and taphonomic conditions had a significant bearing on the survival of this constructional material.

Discussion

By Beverley Ballin Smith and John-James Atkinson

Environmental changes at Northbar over time

The analysis of carbonised plant remains offers insights into the natural environmental conditions and agricultural practices that predominated in the area of the Northbar settlement during the early, middle and later Bronze Age periods. Further information on the cultivation and processing of prehistoric grain in this area has been gleaned from artefactual and archaeological interpretations.

Natural resources

The evidence from across the excavated area suggests that the locale during the early Bronze Age was dominated by oak and birch woodland with hazel on its margins. During the progression of the Bronze Age, woodland probably became more open with alder as well as birch being dominant species in the scrubby or damp woodland margins. This picture is reinforced by the pollen analysis from Walls Hill Bog, 9.5 km south-west of Paisley, where during the Bronze Age oak, birch and alder formed the natural woodland and where woodland clearances for pasture were identified (Ramsay 1996, 62).

In the middle Bronze Age, the areas surrounding the excavated area still appeared to comprise mixed deciduous woodland, with oak being the dominant species. Oak wood was used for construction, especially for the load-bearing timbers for the larger roundhouses, with alder and birch used for supplementary or replacement timbers. Oak was also used for fuel, and hazel for its wood and also for its hazel nuts, which were a useful autumn food source. This evidence was noted in Structures S1, S3A, S6 and S8, with alder wood frequently used for construction as well as fuel in Structures S2 and S5.

Other nearby resources exploited by the Northbar inhabitants included heathland areas for turves or peat. These materials could have been used for a variety of purposes, such as roof coverings, fuel and bedding for animals.

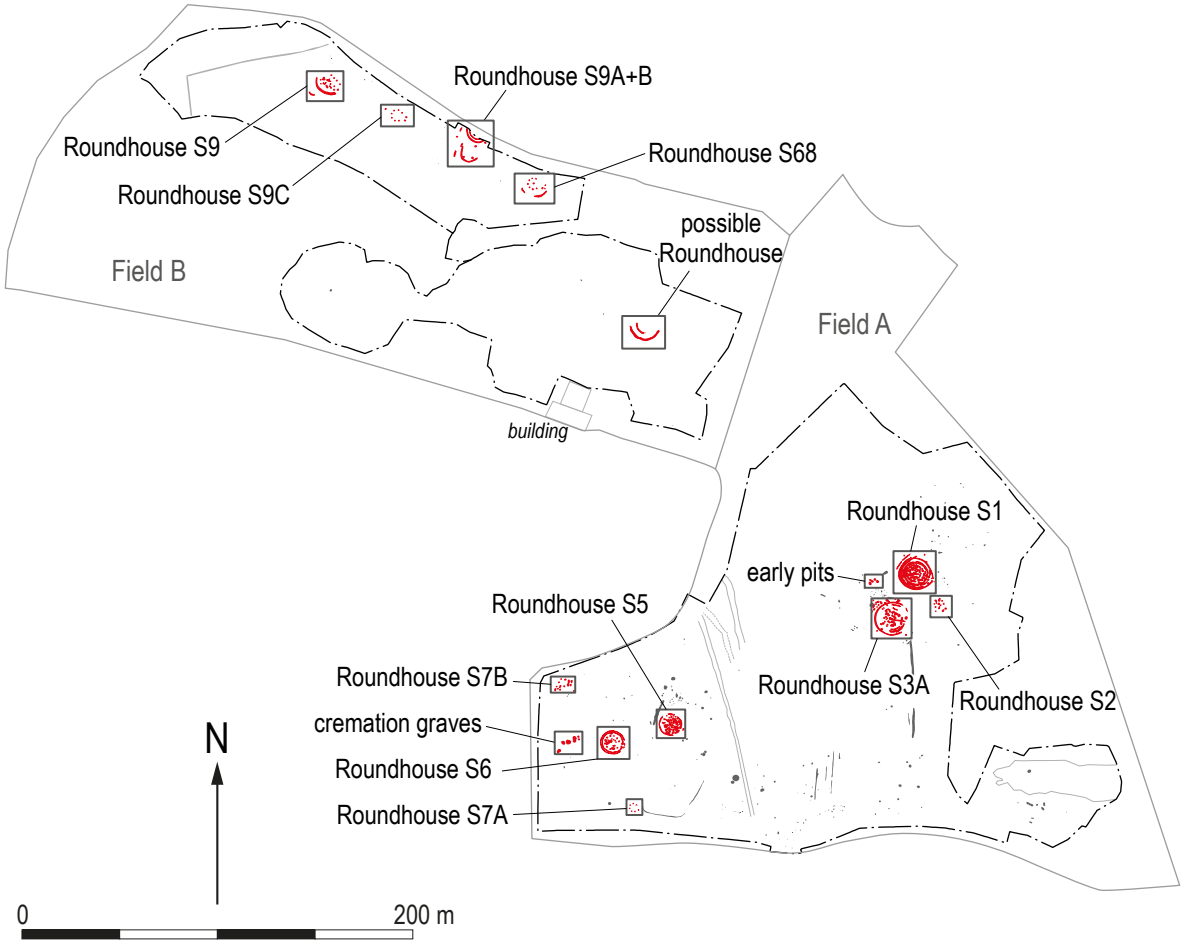

Figure 43: Site plan of Bronze Age Roundhouses and burials at Northbar.

Burnt peat fragments in the interior deposits of Structure S3A were present along with alder, hazel and oak charcoal, indicating that peat was brought into the settlement. Today, the nearest heathland areas are Barochan Moss and Fulwood Moss located c. 5 km to the west of Northbar, but in prehistory there could have been closer wetland areas that have since been drained.

Grain cultivation

The evidence of grain cultivation was widespread across the excavated area with the earliest being from the beginning of the early Bronze Age (Table 1, UBA-49250). Bread wheat was being grown in the vicinity of Structure S3 from which grain found its way into the backfilling of the cremation burials (Figure 43).

The nearby Structure S3A provided a range of grain from the fills of pits and postholes, including bread wheat and spelt wheat, the only building to do so, in addition to copious grains of barley, six-row hulled barley and naked barley. The latter was the main cultivar during the middle Bronze Age in Scotland (Dickson and Dickson 2000, 232) due to its suitability for different soil types (Jones 1981, 105). It may be the case as indicated in the *Carbonised Plant Macrofossils and Charcoal* (above) that these were not crops of a single species but fields or plots of mixed grain, or as is most likely, some wheat cereals were weeds in a main crop of barley. It has not been possible to ascertain the period a particular cereal was grown by radiocarbon dating because of the mixing of different cereal grains found together in contexts.

It should also be noted that cereal straw was a bi-product of harvesting grain and could have been, and most likely was used as general bedding material, and probably as a roof covering for the buildings. Chopped up straw and chaff were also mixed together with raw clay for the domestic pottery production, and also added along with dung for the daubing of light-weight wattle walls of the structures.

Another important observation is that some of the harvested cereals were brought into the buildings for drying, processing and storing, as was the case with Structure S1. The middle and late Bronze Age crops, like modern-day cereal crops in the north and west of Scotland, occasionally needed drying once harvested because of damp or poor weather conditions in the late summer or autumn (Kelly 1998, 241; Monk 1981, 216).

It is possible that the large stone-lined fire-pit (1335) uncovered at the centre of Structure S3A with a large stone lying on top of it, and its associated linear gully (1290) was used to dry grain. The heat from the fire-pit could have dried sheaves placed on the stone above the fire very much like an early kiln. The gully (1290) leading from the fire-pit also contained a reasonable amount of well-preserved grains of spelt wheat, indicating that threshing the dried grain may have also taken place within the building. A large deposit of burnt material (1229) on the building's floor in the northern part of the interior contained naked barley cereal grain and also a few grains of spelt wheat. The former grain was dated to the middle to late Bronze Age (UBA-49255).

The distribution of carbonised barley grain in Structure S1 also provided some insight into grain processing and storage there. A significant amount of barley, 654 grains, in addition to fuel waste was found in a large pit (674) close to the original entrance and the porch extension to the building. This pit was considered a kiln or drying pit for grain during the excavation, but it may have also functioned as a storage pit. To its immediate east, the main posthole (534) to the entrance contained 452 barley grains, which could be considered a deliberate deposition. However, alterations to this pit may have included burnt grain accidentally being incorporated into its backfilling. A large amount of barley, 347 grains of mainly six-row hulled barley, the most common multi-period cereal crop in Scotland (Boyd 1988, 101-10), came from a fire-pit (776) inside the interior of the building situated to the west of the entrance. Over 250 barley grains were also found in the fill of the structural posthole (644) close to the drying pit (674) and between it and the fire-pit. A smaller amount of less than 100 grains were also located in another large pit immediately to the south, between the structural posthole and the drying pit. It is possible to suggest that the area immediately south-west of the original entrance to the building was dedicated to drying, storage and the use of grain, but with much accidental loss in the process, and the incorporation of grain into the structural elements of the building.

Additional high numbers (543) of carbonised barley grains were also located in the floor deposits (522) to the north and north-east of the interior, which may indicate that crops were stored or, indeed dried on the floor of this structure. In drying grain in whatever way possible and its subsequent processing, brought inherent fire risks as noted in the charred floor deposits in Structure S3A and, for example, the loss of a harvest drying around a hearth within the Howe Broch in Orkney during the Iron Age period (Ballin Smith 1994, 134). The processing of the dried grain also created waste products of straw and chaff, which either needed storing or using (see above).

The distribution of cereal grains in both Structures S1 and S3A indicated contemporary agricultural and harvesting activities, but a significant amount of grain was generally distributed across the floors and around structural elements suggesting a relatively high degree of wastage. This was possibly an indication of successful and abundant harvests, but the occurrence of grain throughout the fills of postholes and pits could have been the result of mice and voles caching food during autumn and winter months.

The radiocarbon dates based on barley grains from Structure S1 are all predominantly middle Bronze Age and demonstrate a period of significant cultivation and production associated with that building at that time. Those same activities in Structure S3A carried on longer, into the end of the middle Bronze Age, and into the beginning of the late Bronze Age.

Hazel nuts

While cereals appear to be of particular importance in this settlement area, it is not the only type of food demonstrated in the botanical record. In Structure S5 a large quantity of contemporary hazel nutshells were also

uncovered, suggesting autumnal gathering activities and the storage of wild food resources, possibly in order to sustain the community in the event of a bad grain harvest.

The presence of hazel nutshells dominate the archaeobotanical remains recovered from Structure S5. However, these are of particular interest given the variety of periods evident within that building from the radiocarbon dating record. A posthole (1937) centrally located within the interior of the structure, contained hazel nutshell with indeterminate cereal grains. The secure deposits within this posthole provided the earliest date for the building of the middle Bronze Age (UBA-49289). Similarly, alder wood recovered from a structural post (1679), probably part of the initial phase of construction was also dated to the middle to late Bronze Age (UBA-49276) and indicating that gathering hazel nutshells was an early activity there.

Hazel nutshells recovered from a large pit (1765) in the north-eastern part of the interior of the structure and from a central pit (1910) are typical of the processing of hazel nuts prior to storage. However, radiocarbon dating from the former of these pits indicates its usage to be from the middle Iron Age or Roman/Iron Age period (UBA-49282). Hazel nutshell caches were also uncovered within the structural elements of centre of this roundhouse: a posthole (1790) that comprised part of its remodelled entranceway and another (1676) to the west of the interior contained well-preserved caches of hazel nutshell, together with barley grain. The fill of posthole (1790) was also dated to the Roman/Iron Age (UBA-49284).

Traces of hazel nutshell were found scattered throughout other deposits in Structure S5 and they strongly suggest that this building was used for their seasonal processing and storage from at least the middle to later Bronze Age, and again in the Roman/Iron Age period. Evidence of hazel nutshells and indeterminate cereal from the fill of the building's encircling gully indicate that some date to as late as the medieval period. There are two explanations for this apparent longevity of gathering hazel nuts. The first is that hazel shrubs were probably growing in close proximity to the building's location over a long period of time, and secondly, small rodents could easily be the cause of the caching of some hazel nuts into the soft backfilled deposits of features, including the gully, during all periods.

Livestock

Animal dung or byre sweepings were uncovered in Structures S1 and S5. Burnt peat and vesicular residues from the latter building contained fragments of cereal straw suggesting that these may have been the burnt remains of compacted byre floor material, which included dung. Both structures are considered domestic dwellings due to the presence of cereal grain, hazel nutshells and burnt fuel, including the burnt peat fragments.

Both buildings had several phases of use, but there is the indication that they were also used to house animals as well as people, or that the buildings were later reused as animal byres. It is possible that these structures could have been utilised for seasonal cohabitation of both humans and animals living together under the one roof. The stalling of animals within a cohabitated environment was traditional in byre-houses (Nisly 2020), where the situation was beneficial as it improved the health of animals during the winter months (Reynolds 1988, 18), and kept a valuable asset safe.

The analysis of the burnt animal bone recovered from the site indicates that large mammals, such as cattle, were present on the excavated area but their importance in the local economy of the settlement cannot be considered further. There is also indirect evidence of the keeping of sheep/goats because of the presence of a clay spindle whorl (for the making of woollen twine) and clay loom-weights (for the weaving of woollen cloth) found in the deposits in the buildings.

The presence of cattle and sheep during the middle Bronze Age suggests there was grassland or uncultivated land in addition to fields for cereals close to the buildings or within the 'ownership' of the settlement.

The early Bronze Age – Beakers, human remains and burials

The earliest evidence of human activity on the excavated area occurred at the end of the Neolithic and the beginning of the earliest part of the Bronze Age, from the middle of the 25th century BC to the beginning of the 23rd century BC (Figure 44), when sherds of fourteen separate early Bronze Age Beaker vessels, were deliberately buried or distributed, separately or together between one large pit (840) and three nearby subsidiary pits in the middle of Field A. Some of the vessels had different shapes and a number of different tools were used to decorate them with diverse motifs. They were unique and perhaps personal objects, with some sherds found together with a scale-flaked knife (CAT 14) and slight evidence of bread wheat in pit (840). Questions were posed in the specialist report (see *Prehistoric Pottery* above) as to why the gathering of Beakers and people took place there and why the Beakers were buried.

A possible similar event to the Northbar burial of Beaker sherds seems to have taken place at Eweford West on the A1 (Figure 45), where Sheridan (2007) concluded that sherds of four Beakers and carbonised cereal grain buried together in a single pit could suggest feasting as part of (some other) ritualised activity, such as visiting a burial cairn. Another comparable example located near Portree involved the remains of 39 different Beaker vessels together with lithic artefacts (Johnson 2013, 35-36), but the circumstances of their burial in two pits was not explained.

The evidence of the Northbar Beaker vessels implies that there may have been settlements in the area local to the pits, and that perhaps there was a special place nearby that was visited or celebrated, but that was not in the excavated area. At a time when there was no other evidence of use of the landscape at Northbar, there were visitors that brought pottery vessels and perhaps a flint knife to harvest some grain growing locally. It is speculative to imagine that the vessels represented different people, family groups or clans with their own special designs, but there is no hard evidence to substantiate this. Similar events noted elsewhere in Scotland suggest that gatherings of people to demonstrate beliefs or enact rites of remembrance, celebration or even fertility, were not unique. In addition to this collection of Beaker sherds at Northbar, there were also the scant remains of five other individual solitary Beaker vessels, randomly located across the excavated area that may have represented disturbed burials.

Other ritual activities, concerning the cremation and burial of human remains, took place later and elsewhere across the area. However, all these events occurred within the time frame of the early Bronze Age and could have continued to as late as the first quarter of the 17th century BC. A discrete area in the western part of Field A became the location of a small cist cemetery with the addition of cremation pits (Figure 46). It was not the only burial place, as three other isolated cremation pits with either flecks of burnt bone (1620), or a plain urn, V29 (348), or both cremated bone and a vessel V28 (348) were located across the excavated area.

The cists in the cemetery contained a variety of evidence of their use, and the time periods in which that took place. The earliest cist (1670) contained a Food Vessel (V41) dated to 2137 – 1944 cal BC (UBA-49274) but no human remains. Another cist (1672) was more complex and contained a small Food Vessel (V40), some unidentified animal remains and a piece of a serrated flint blade in addition to the cremated remains of two human adults. One adult was

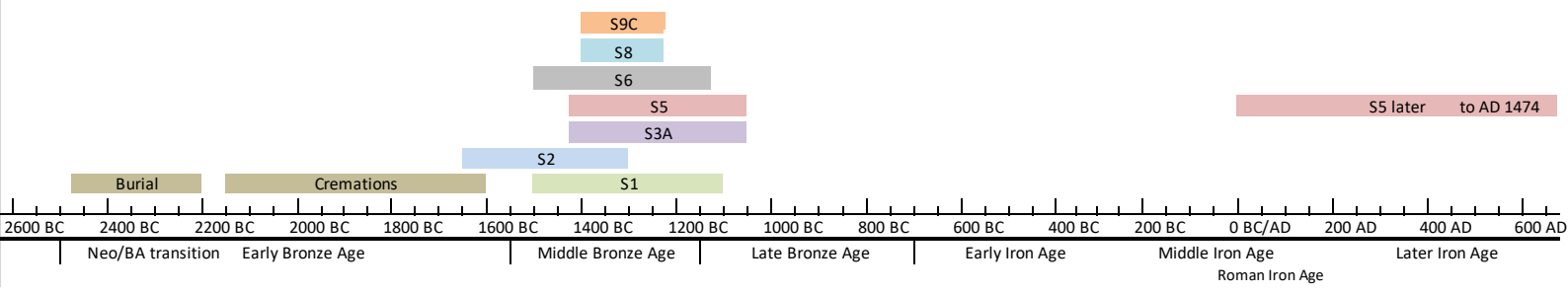

Figure 44: Chronology of Burials and Settlement at Northbar.

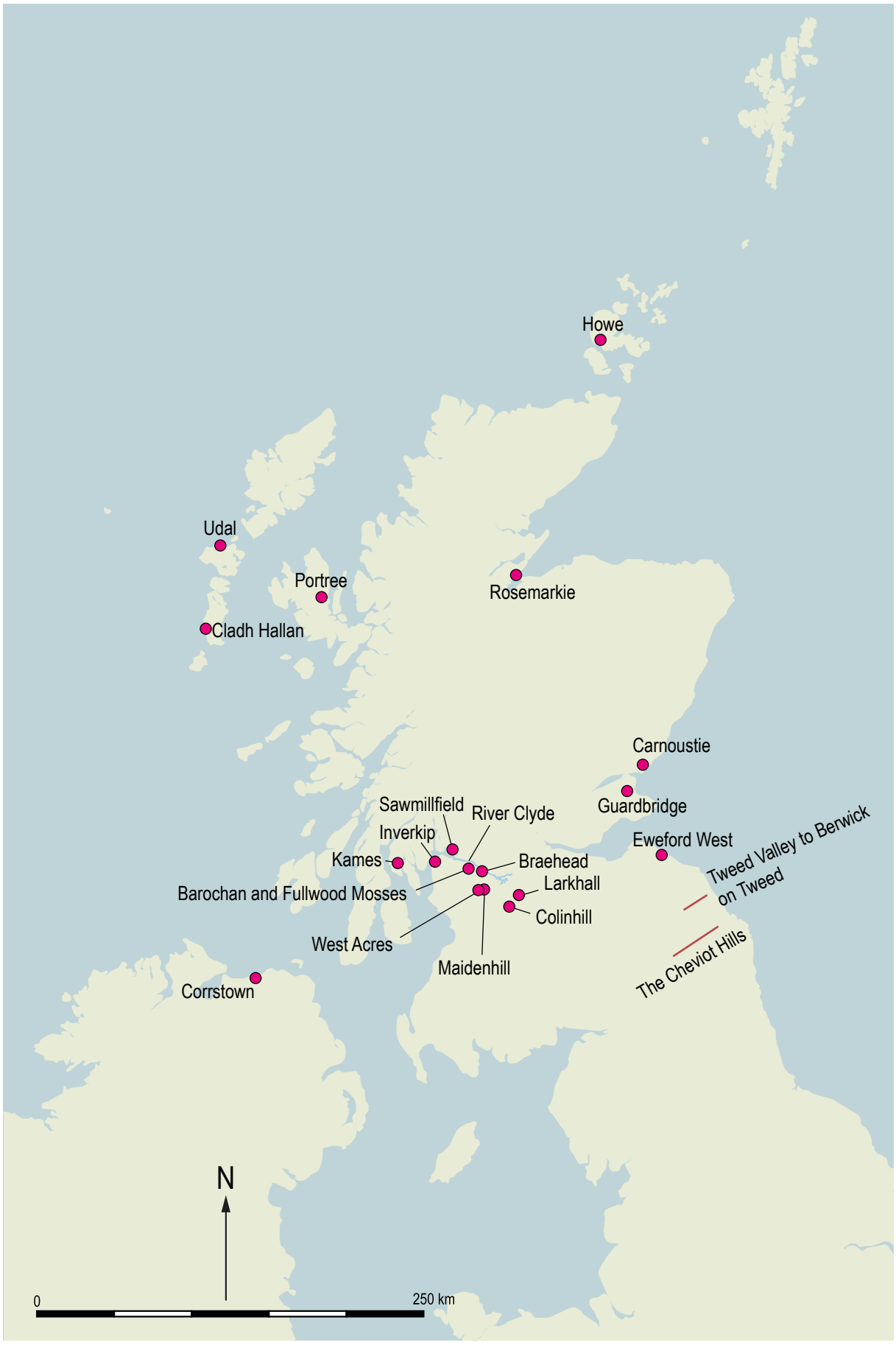

Figure 45: Map of places mentioned in the text.

slightly younger than the other and they were possibly buried together. Their remains suggest that the bodies may have been dried or were without flesh when they were cremated. This cist and its contents were also dated to 1948 – 1770 cal BC (UBA-49302). More or less contemporary with the latter burial was cist (1673) to the immediate north-east, which contained a single sherd of Beaker pottery (V44). The well-defined placement of the cremated remains of one young adult in the cist and the lack of pyre material indicates that the human remains could have been a secondary deposition. The burial in the cist was dated to 1920 – 1746 cal BC (UBA-49298).

A cremation pit (1596) was situated close by but it contained sherds of a decorated Collared Urn (V42), as well as the remains of two adults, one of which was slightly younger than the other. Again these bodies may have also been buried together in the period 1881 to 1647 cal BC (UBA-49299). Another contemporary cremation pit (1598), which was dated to 1880 – 1690 cal BC (UBA-49300), contained burnt bone that could not be identified and some animal bone.

Beyond the cemetery, a pit (643), possibly a cremation pit with human skeletal remains that could not be identified further was located within Structure S1, dating to the middle Bronze Age 1427 – 1288 cal BC (UBA-49301). In addition to this, two further isolated and undated cremation pits (168 and 348), each containing a cremation urn (V28 and V29, respectively) but little in the way of human remains, were also dated to the Middle Bronze Age.

Small cremation cemeteries of the earliest part of the Bronze Age are not uncommon in the lowlands, and an interesting example was excavated at Sawmill Field near Helensburgh (Arabaolaza 2023). The cists were larger than those at Northbar, with the earliest dated to the end of the late Neolithic and the beginning of the Bronze Age, the remaining two were constructed and used much later. They also displayed variations in burial customs as those at Northbar, and they were also accompanied by pit burials during the first half of the second millennium BC when urns rather than cists were used for the cremated remains.

Figure 46: Cist graves during excavation.

As well as the multiple human burials, there was also the inclusion of lithics and perhaps animal remains on the funeral pyre or in the grave. Their related pottery assemblage, which showed three different types of vessel, was used over the time period of the burials. Although early Beaker vessels have been discussed at Northbar (see above), and that they were not necessarily linked to burials, this type of pottery continued into the early Bronze Age as demonstrated by the inclusion of one sherd in cist (1673). There was also the appearance of two decorated Food Vessels, including one in the earliest cist (1670). Fragments of a collared urn from a cremation pit (1596) are present and also plain cremation urns that are dated possibly towards the end of the early Bronze Age. The changes in burial practice from cist to pit are somewhat mirrored by changing fashions or ideology in the use of different pottery vessels. For example, Beakers can be found in both domestic and ritual settings but Food Vessels are typical only of burials and overlap with the use of Beakers. Collared urns come in later, and plain bucket-shaped urns are later still (Sheridan 2004, 261). It is not unreasonable to suggest that at Northbar changes in customs and traditions took place that mirrored what was happening across Scotland and elsewhere due to changes in society, communities and belief systems that were transmitted through the mobility of people (Brodie 2001, 487-97).

Although there were no domestic structures present on the excavated area contemporary with the cist and cremation pit burials, it is likely that there was a direct relationship between a cremation burial (643) and people that lived in the Structure S1 roundhouse. The cremation was buried between the original entrance and the southern gully but its date (see Table 2) overlaps with the first remodelling of the building.

Although we can identify offerings or deposition of pots and other objects within burials, the relationship of deliberate deposits of cultural materials or burials within buildings is less well recognised or understood. Exceptions are objects such as Neolithic stone axeheads (often called ‘thunder stones’) that were considered protective charms when found within structures (see Ballin Smith 2018, 177). One of the excavated middle Bronze Age roundhouses at Colinhill, Strathaven had an early Neolithic pitchstone core in the fill of one of its entrance postholes. This attractive object was considered to be deliberately deposited (Ballin 2019, 24-25), again as a protective charm or foundational deposit. But the understanding of the deposition of human remains within or beneath a building on this site appears less clear-cut. Parker Pearson (1999, 158-159) suggests that the tradition of humans living with the remains of ancestors is a long one and his excavations at Cladh Hallan, South Uist, tended to prove this. The partial mummified remains of several individuals were found beneath the earliest floors of the roundhouses, which were considered as foundational deposits. The relationship of these burials with the family or community is complicated by our lack of understanding of what the past meant to the living and how important the link to the ancestors was (Johnston 2021, 109-110).

The cremation burial in Structure S1 was located in the south-east quadrant of the building in what was probably a transitional or liminal space between the boundaries of the interior activities and the beginning of the exterior ones. The burial may well have been a deliberate foundational deposit.

The settlement

The first confirmed and dated Scottish roundhouses are considered to have developed around 1800 – 1700 cal BC (Ashmore 2004, 133), indicating that the Northbar unenclosed post-built structures constructed on the flatter slopes leading to the River Clyde were not early in the evolution of the building type. However, their size and general architectural arrangements had already been long established with a specific ground plan and design (see Pope 2015, 168-171).

Two large roundhouses were constructed quite close together in the centre of Field A. They were more or less of equal size with Structure S1 being built first and Structure S3A sometime later. After the building of Structure S3A they were occupied simultaneously and the use of the two structures was of long duration, with the main occupation of Structure S1 ending before that of Structure S3A. The much smaller Structure S2, possibly contemporary with Structure S1 was situated to its south-east.

Structures S5 and S6 were built in the western part of Field A and although again of similar size to the other two buildings, they were positioned further apart from each other. Although Structure S6 was earlier, they were partly in use at the same time. Both buildings seemed to have also been contemporary with Structure S3A. Structure S5 mirrored the long usage identified by the radiocarbon dates of both Structures S1 and S3A, i.e. into the early period of the late Bronze Age, but the demise of Structure S6 occurred a little earlier. The smaller and less complex buildings of Structures S7A and S7B were sited some distance to the north-west and the south-east of Structure S6.

The remaining structures S9, S9C, S9A, S9B and Structure S8 were distributed in a linear north-west/south-east alignment in Field B and where they were positioned roughly 40 m apart from each other. The radiocarbon dates from S8 and 9C suggest they too were part of a widespread occupation of the landscape during the middle Bronze Age but they were shorter lived buildings than the large roundhouses. The arrangement of unenclosed roundhouses 'strung out like beads' along the contour has been noted in other areas such as the Cheviots and in the Tweed Valley (Waddington and Passmore 2016, 183), and suggests a different use of the landscape than that of the large roundhouses, perhaps emphasising more social links between the buildings than economic ones.

The architecture of the large roundhouses

The interpretation of these largely middle Bronze Age dated roundhouses is based on the partially surviving and often shallow preservation of their features. Detailed analysis of their pits and postholes suggests the following interpretations of the construction and alterations that the buildings experienced over time. The picture presented here is a simple interpretation based on the surviving evidence, and in actuality it was likely much more complicated from what is suggested.

The larger roundhouses Structures S1, S3A and S5 were similarly constructed using a plan that consisted of a ring of nine load-bearing large oak timbers placed in deep postholes. The original plan of Structure S1 had an internal diameter c. 5.25 m, which was subsequently remodelled and enlarged to c. 7 m. However, Structure S6 had eleven posts, which enclosed an area approximately 7 m in diameter. Further evidence from Structure S1 indicated that a hearth was located in the middle of the circular space demarcated by the oak timbers, and this might have been the case for the other structures. The formalised entrances to these roundhouses were all oriented towards the east or the south-east where the widest gap in the ring of posts was located. This orientation was a long-held practice from at least the late Neolithic when the eastern to southern positioning of ritual monuments (and domestic dwellings) was preferred (see Johnston 2021, 153).

The conical roofs of the buildings were created by long roof timbers that probably rested on a ring beam, or equivalent, supported on the internal load-bearing timbers, and ended close to the ground surface. They proscribed an overall diameter of c. 10 m for the enclosed space of the building. In order to protect the entrance from water ingress from the roof, most of the buildings had a small porch or entranceway, indicated by large postholes forming the termini of the external gully. Waddington and Passmore (2016, 183) suggest the large postholes may have represented an elaborate entrance façade, but that cannot be proven at Northbar. The external walls of the structures would have been wattle and daub panels positioned below the over-hanging roof, and protected by it from the weather. Small fragments of daub indicating its use as a constructional material for the panels were found in all but Structure S3A.

Structure 1 was the largest and most complex of the roundhouses. It was rebuilt, probably quite quickly after its initial construction to enlarge its internal area with an expanded ring of nine new load-bearing posts, with either a new central hearth or more likely a deep posthole for an additional centrally placed load-bearing post. The entrance position was retained but it was remodelled to either side and appeared to be recessed beneath the overhanging roof. The roof would also have been rebuilt to a slightly larger diameter as a new but only partial surviving gully confirmed. It is this initial rebuilding of the roundhouse, and not the original plan of the building that provided the earliest date (UBA-49244, Table 1) for the roundhouse.

The internal area defined by the load-bearing posts was retained during the next rebuilding of Structure S1. The posts may have been replaced or supported by additional timbers in order to remodel the roof, but their spacing and arrangement was maintained. The original entrance was replaced by a slightly wider one and a new porch was built to project beyond the roof. The latter was also replaced and a new gully surrounding the building formed. This was a substantial alteration but it was one that necessitated still further alteration to the roof on the weather side of the building (the western and southern arcs) as it was affected by the prevailing storm winds from the south-west. One to two additional gullies developed there that were not matched on the east side of the building. It is also noticeable from the plan of the internal area that the posts in the western arc of the interior were larger in diameter than those on the east, and that they were reinforced by one or more additional internal supports during the remodelling process.

The outer gully with its large entrance or gateway postholes to the south-east may have been part of the last remodelling of the building as its shape was altered to provide space for the new porch. However, its function may have been that of an enclosure or boundary although no evidence of fencing or plank-work was found there. The partial straight segments of gully to the north-west are not fully understood but they perhaps suggest a lean-to structure there.

Structure S3A is similar in some respects to Structure S1 but appears less complicated in its development. Surrounding the ring of nine internal posts and its central hearth, and linked to its entrance were the remains of a segmented and narrow external gully. At some stage, the entrance was lengthened, and four of the internal load-bearing posts appeared to have been strengthened by the addition of supplementary timbers in the southern quadrant and to the north-west. At this time the original hearth was probably replaced by a large stone-lined fire-pit with a straight flue that was dug into the floor and exited through the new entrance. Part of the entrance area was subsequently lost and it is not known what its final appearance was. The outermost encircling gully probably marked the external limit of the house plot.

As well as the additional timber supports to the load-bearing posts, the central area of the house received additional postholes which housed large timbers possibly intended as further roof supports or the end of partitions. In the southern arc three larger posts were positioned half way between the loadbearing posts and the central stone-lined hearth. Two similar but smaller posts were identified to the north-east, pairing with the load-bearing posts there, and another small post was located towards the north-west. The last recorded alteration included a further insertion of even smaller posts between or besides the new ones. This evidence is likely to indicate that internal buttressing of the roof may have been necessary, similar to that experienced by Structure S1.

The remains of Structure S5 are the most difficult to interpret because of activities of a much later date within the footprint of the original building and because of the loss of original features. This building like the previous two described, had an internal ring of nine posts, a simple entrance with the formation of a gully in a circuit from the entrance postholes that outlined the size of the building. Only six of the original load-bearing postholes were identified, with gaps where the other three would have been. The south-west and western arc of posts were supported or replaced by closely positioned additional timbers, and with two additional smaller posts added to either side of the surviving northern post. Between 1 m and 2 m in front of these timbers and towards the middle of the building a semi-circle of eight smaller postholes survived that could have indicated internal partitions or extra roof supporting timbers. Two to three larger postholes were dug to either side of the entrance and within the area enclosed by the gully, and a shallower pit beyond the entrance may have signified the extent of a porch. These features are all that have been identified as being part of the construction and early alteration of this building.

Structure 6 appears to have been the simplest of the large roundhouses. Its eleven internal posts were graded in size, with the largest postholes to the north-west that were positioned closer together than the smaller timbers used elsewhere. Within the ring of the load-bearing posts was a smaller, discontinuous circle of much smaller postholes. Like the other buildings, their

function was either to hold small posts probably to assist and support the roof construction or to mark the ends of internal partitions. The building had a porched entrance and may have had a larger off-centre fire-pit. Its inner gully identified the extent of the roofed building but the outer example enclosed a wider area beyond the roof and its walls.

The remaining Structures S2, S7A, S7B, S8 and S9C, although exhibiting some of the features of the larger roundhouses; five to seven internal postholes, entrances to the east or south-east, possibly a central fire-pit; are less-well preserved and do not contribute further to the architectural understanding of these buildings.

The rebuilding of roundhouses with in their own footprint seems to have been a common practice in the Bronze Age (Doody 2000, 147) where they are often identified as overlapping circles of features, such as at Corrstown, Northern Ireland (Ginn and Rathbone 2012, 220-223). At Northbar that is not the case. The dimensions of the central area of the houses were predominantly retained along with the entrance alignment, and load-bearing postholes were reused. The reuse of postholes was demonstrated during the rebuilding of roundhouses at Reading Business Park in 1975 (Brossler et al. 2004, 122). However, the rebuilding on the same plot is probably linked to land ownership and perhaps other cultural and intangible attributes. Ginn and Rathbone (2012, 221) suggest there were probably social 'mechanisms' at play rather than architectural ones in maintenance of the house plot.

The movement of gullies outwards from around the central area of the building is important for understanding changes to the structures, whether it was a rebuilding or an alteration. However, the outermost circular gully identified in Structures S1, S3A and S6, with its single opening aligned with the entrance to the buildings, can be interpreted as forming a physical barrier between the house and the outside area. Although the evidence at Northbar is absent, the outer gullies could have contained split wooden planks (Ginn and Rathbone 2012, 216) or more-likely light-weight wattle panels (Ballin Smith 2003, 42). They each could be described as a narrow trench forming a fenced enclosure, but where stone packing was absent. The word 'palisade', which is frequently used in these contexts, has a defensive meaning, but in the present examples 'enclosure' is a more suitable word for their functions.

A similar feature, comprising a double post-built wooden fence without stone supports, was located at the middle to late Bronze Age settlement at Greenside Farm, Rosemarkie. It was called a palisade and it was possibly slightly earlier in date than Roundhouse 1 that was constructed within its enclosed area. This palisade functioned as a formal barrier to visitors and farm animals, but could have also indicated the status of the owner of the roundhouse (Arabaolaza 2025, 192). In comparison, the palisade at West Acres, Newton Mearns was a more substantial feature c. 0.75 m in width and up to 0.4 m deep which contained posts and large packing stones (Toolis 2005, 478).

Evidence for activities within the roundhouses

A result of the excavation of Structure S1 was the identification of the existence of a cremation deposit (SF 141) in a pit (643) close to the remodelled entrance of the building. This feature is interpreted as a structured foundation deposit for the 'new house', although the use of human remains, in various forms, buried in roundhouses may have multiple meanings (see Parker-Pearson et al. 2005, 543-44). Recent work by Cleary in Ireland found that cremated human bone was, in a number of examples, found close to thresholds (Cleary 2018 quoted in Johnston 2021, 108). Structure S1 was the only building on the excavated area where a seemingly dedicated deposit was made that was contemporary with the structure.

Activities associated with both Structure S1 and Structure S3A were that of the drying, processing and storage of crops, predominantly of barley. This has been discussed in some detail (see *Grain cultivation,* above), with features such as a large fire-pit adapted with the use of a large stone for drying grain in Structure S3A, and large storage pit and fire-pit in Structure S1 with an amount of charred grain that was lost in the vicinity within the building. A purpose-built grain drying kiln was not located on the excavated area, but a middle Bronze Age structure with a flue excavated at Kames in Argyll was identified as one (Ellis 2013, 3-4), and it is possible to suggest that in comparison, the grain drying processes within the buildings at Northbar were more haphazard and perhaps on a small-scale.

The most common artefact found in the buildings was pottery, mainly as broken sherds of domestic cooking vessels. Pottery found its way into the filling of postholes for the loadbearing posts and the entrance of Structure S1, in the surviving floor deposits, and in pits associated with them. Sherds of pottery were also found in deposits in the gullies. The alteration of buildings and the movement of deposits of domestic debris to infill postholes, for example, meant that broken sherds of pottery were moved around, with pieces of the same vessel found in different contexts, and this was not an unusual phenomenon on the site. Pottery vessels, used in the cooking of food and in its storage, were likely to have been made in or close to the buildings. Only one vessel, V27 an urn, was found in Structure S6. It seemed to have been the receptacle for a burial that was disturbed during the construction of the building, as fragments of the pot were found distributed within the load-bearing postholes, a small pit and an occupation deposit.

A large pit (1689) in Structure S5 was considered to have been a pottery kiln due to the variety and the large numbers of pottery fragments found in it. It also contained layers of charcoal, which included cereal straw and possibly dung that were used as fuel. In addition to the pottery, three fragments of burnt loom-weights made from raw clay were found in the pit.

Loom weights are good examples of not only domestic activity and cloth production but they also indicate that sheep were being raised for their wool as well as for their meat and milk. A clay loom-weight was found in the south-western occupation deposits in Structure S1. The situation in Structure S3A was a little different, as 76 fragments of another six loom weights were located in the occupation deposits in the north-eastern arc of its interior, in the fill of a pit surrounded by those deposits and in a smaller pit c.1 m to the south. This evidence strongly suggests a loom may have been positioned in this part of the interior of the house (Figure 47) and that this building, as well as Structure S1, were domestic buildings where everyday activities, including spinning wool and weaving, were being undertaken during the middle part of the Bronze Age.

Figure 47: Warp weighted loom with loom weights tensioning the warp threads. ©Beverley Ballin Smith.

Stone artefacts were only sparsely represented within the settlement evidence and they were only found in Structure 6. CAT 16, a thumbnail-scraper was located in its occupation layer in the southern part of the interior, with another, CAT 47, in a posthole in the northern arc. However, the largest stone object was a small saddle quern, SF 284, from a pit or posthole (2116), together with burnt bone and sherds of the urn V27. It was the largest stone object and the only identified quern recovered from the excavated area. The artefacts from the Northbar roundhouses constitute a material culture that was made from local resources with little or no input of goods from more distant areas.

The paucity of artefacts from Bronze Age roundhouses from the central lowlands of Scotland, and further afield, is not unusual. The occupation of two roundhouses at Colinhill, Strathaven (Spence 2019) overlapped in their middle Bronze Age dates with those from Northbar, but they contained very little evidence of material culture that was contemporary with the structures. The remains of a middle to late Bronze Age roundhouse at Inverkip, Inverclyde

(Rennie 2016b, 60-61), produced a very small assemblage which included an insignificant number of sherds of pottery, a minor number of lithic artefacts and two small pieces of daub, which were contemporary with the building. The middle Bronze Age roundhouse at Larkhall, South Lanarkshire (Mooney 2023, 37) had plain contemporary pottery, some daub, one cobble tool and residual lithic artefacts. The same picture emerged at the Phase 2 middle Bronze Age roundhouse at West Acres, Newton Mearns (Toolis 2005, 490-91, Illus 12) where pottery and a few lithic artefacts constituted the material culture assemblage.

The more extensive Bronze Age settlements of Carnoustie in Angus, Guardbridge in Fife and Rosemarkie on the Black Isle, produced more cultural remains. As well as pottery and stone tools they both also had metalwork and metalwork hoards. Interestingly, the higher numbers of cobble stone artefacts, at Carnoustie (Ballin Smith 2025a), Guardbridge (Ballin Smith 2025d) and Rosemarkie (Ballin Smith 2025g) compared with their paucity at Northbar, may not simply be a matter of settlement size and longevity, but possibly due to the lack of metalworking activities. As no metalworking was found at Northbar, the low numbers of stone artefacts were mainly associated with food production and preparation.

Activities between the gullies

The outer gullies of the buildings appeared to demarcate the zone between the enclosed interiors and the exposed exteriors of Structures S1, S3A and S6. If Structure S5 had an outer gully, it was presumably ploughed away as its features were generally shallower than the other buildings. In general, the gullies marked the edge of the roof with a gap of about 1.5 to 2 m for the entrance gateway. The limited area beneath the roof overhang and the building wall could have been used the disposal of waste as a few pits were excavated in the south to western arc immediately outside Structure S1. However, these features could have been of any date, even possibly for timbers propping up a building afflicted from instability from the effects of storm winds. Deposits of domestic debris may have spilled out from the interior of Structure 3A to the west and south-west to the outer gully, but nothing was recorded from Structure S6 concerning the use of that area.

It has been intimated above that the outer gully of Structure S1, and that of Structure S6, may have functioned as a fenced enclosure. This idea is the opposite put forward for the stone and wooden barrier lying in a substantial palisade trench at West Acres, Newton Mearns (Toolis 2005, 478, Illus 13 and 15), where it was suggested that the c. 4 m gap between the house wall and the palisade was used for processing livestock for milking or shearing. The reason for the outer gully and the narrower space around the buildings at Northbar may have been to keep animals out, rather than to keep them in, and to protect the lower parts of the roof covering from browsing cattle or sheep/goats.

Later use of Structure S5

The radiocarbon dates from Structure S5 confirmed the presence of a later building superimposed over the central and eastern half of the roundhouse. A clustering of pits and postholes, but without any structured pattern but with the addition of what appeared to be a windbreak or fence of small postholes to the north and north-east, were identified as later features. They were dated from the first quarter of the first century to as late as the first quarter of the fourth century AD. This period covers the Roman Iron Age in this part of Scotland, but there were no associated Roman or Iron Age artefacts. This structure, a possible short-lived byre, provides no coherent continuation of the story of the middle Bronze Age roundhouses, apart from the fact that it was constructed into earlier deposits. This is a very similar scenario to that at Larkhall in South Lanarkshire where a building also of Roman Iron Age date was inserted into the remains of an earlier roundhouse (Mooney 2023, 17).

A medieval date of the middle of the fifteenth century AD was also returned from the fill of the Structure S5 roundhouse gully. The indeterminate cereal that was dated probably represents an intrusion of much later unrelated activity.

The Bronze Age landscape and setting

The evidence from Northbar of early Bronze Age pits and burials, and the middle Bronze Age structures provides us with some indication of the use of the landscape at these times near the confluence of the River Clyde with the Black Cart Water. The relatively low lying but fertile ground with open views to the east and south with woodland elsewhere, was a suitable place and with sufficient resources for both funerary and later domestic activities. The lack of evidence for activities earlier than the late Neolithic/early Bronze Age is surprising.

A community's right to an area of land in the early Bronze Age may have been supported by the location of burial places and the larger the burial monument and the more visible it was, the more that territory was identified as being 'owned'. At Sawmill Field (Arabaolaza 2023) a cairn of stones with cists fulfilled that function; at Udal, North Uist, the erection of a large kerbed cairn and a standing stone (Ballin Smith (ed.) 2018, 44-63) did the same; and at other places such as Maidenhill, Newton Mearns (Kilpatrick 2021, 9-13) the ownership of the land was made explicit by placing a cemetery on a hill top visible from afar.

There is no evidence of settlement at Northbar during the early Bronze Age but by the middle of the Bronze Age the situation had changed. The first roundhouses were located close enough to the earliest dated pits with their large numbers of Beaker sherds, to suggest that their landscape position was in some way marked and that this was a preferred location to erect three houses, Structures S1, S2 and S3A (Figure 48). A similar relationship is noted with the positioning of Structure S6 close to the small cist cemetery in the west of the field but the location of Structure S5 was further away. Structure S1 was the earliest of the houses and the other three appeared later, but all were occupied from the second half of the fifteenth century to the latter part of the

Figure 48: Reconstructed Bronze Age landscape at Northbar, including Roundhouses 1, 2 and 3A by Eddie Perez Fernandez.

twelfth century or to the first half of the eleventh century BC. The landscape links between these buildings and the smaller structures, S2, S7A and S7B, suggest kinship links with the establishment of dwellings for other members of that society creating a settlement expansion in the landscape. This expansion also required the allocation of resources, such as woodland and farmland/grazing for communal or individual use. Unlike roundhouses in upland areas such as the Cheviots (Waddington and Passmore 2016, 180-182), at Northbar there is no surviving record of field systems, ancillary buildings and animal enclosures.

Whether the settlement of the landscape was continuous or episodic throughout the middle and later Bronze Ages is difficult to determine. Radiocarbon dates imply the continued use of the buildings even though they were rebuilt and refurbished from the sixteenth century BC, with additional structures built and used from the early fifteenth century to the early thirteenth century BC. Although there are no intermediate abandonment deposits, most buildings seem to have come to an end by the middle of the eleventh century BC. In comparison, Guardbridge in Fife became more intensively settled from the mid-thirteenth century BC until the eleventh century BC, when the settlement declined, largely mirroring Northbar. However, the Bronze Age settlement events at Guardbridge were discussed as whether the picture represented an expansion of the settlement or a movement of buildings within the landscape (Muir 2025, 204). Although the roundhouses at Carnoustie and Rosemarkie were well-established by the middle Bronze Age, the picture is of house replacement and expansion, with their settlements continuing into the later Bronze Age until they ceased approximately 800 cal BC (Ballin Smith et al. 2025; Arabaolaza et al. 2025).

Conclusions

The excavation of the large roundhouses at Northbar has provided us with an exceptional and complex picture of their development over time and of their alteration and possible rebuilding in the west central lowlands of Scotland. This complexity of change is not noted at the roundhouses of Colinhill, although one building received a later annex (Spence 2019, 10-16). The roundhouse at Inverkip (Rennie 2016b) had a second gully, which implied some alteration to the building, but the survival of its features was relatively poor.

The location of Northbar near the River Clyde and the large conurbations of Paisley and Glasgow, together with the intensive use of the area have affected the survival of ephemeral archaeological remains. Northbar is an exceptional site, not only in its survival of rare artefactual remains but also those of its structures, from which a more informed picture of life during the Middle Bronze Age has been gleaned.

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Ballin Smith, B 2025g Worked and unworked stone, 93-99, *in* Arabaolaza, I et al. (see above).

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Appendix 1: Environmental results tables - Cremations, Structures 1, 2, 3, 3A, 5, 6, 7, 8, 9, and Field A

Cremations	Context	169	170	170	1599	1599	1599	1599	1599	1599	1599	1599	1599
	Sample	47	58	59	702	702	702	702	702	702	702	702	702
Environmental Results - Cremations	Feature	pit (168)	pit (168)	pit (168)	pit (1598)	pit (1598)	pit (1598)	pit (1598)	pit (1598)	pit (1598)	pit (1598)	pit (1598)	pit (1598)
	Area	crem	crem	crem	Crem	Crem	Crem	Crem	Crem	Crem	Crem	Crem	Crem
	Spit / Quad		Spit 3	Spit 4	Sp.1 QB	Sp.1 QC	Sp.1 QD	Sp.2 QB	Sp.2 QC	Sp.2 QD	Sp.3 QB	Sp.3 QC	Sp.3 QD
	Radiocarbon Y/N	Y ch	Y ch	Y ch	Y ch	Y ch	Y ch	Y ch	Y ch	Y ch	Y ch	Y ch	Y ch
	Sample Volume (litres)	5.5	0.22	0.1	1	1.2	1.5	2	1.2	1.2	2	2	2
	Total CV	30ml	5ml	<2.5ml	15ml	5ml	10ml	30ml	15ml	<2.5ml	45ml	20ml	10ml
	Modern	100ml	<2.5ml	<2.5ml	<2.5ml	<2.5ml	<2.5ml	5ml	0	<2.5ml	5ml	<2.5ml	<2.5ml
Carbonised Cereal Grain	Common Name												
Hordeum vulgare sl.	barley												
Indeterminate cereal grain (+embryo)													
Charcoal													
Corylus	hazel									1 (0.24g)			
Alnus	alder	1 (0.49g)	1 (0.10g)	1 (0.07g)	1 (0.54g)		1 (0.43g)	1 (0.94g)			1 (2.22g)		1 (0.09g)
Betula	birch					1 (0.21g)			1 (2.29g)			1 (0.27g)	
Indeterminate													
Carbonised Wild Resources													
Corylus avellana nutshell	hazel nutshell	1 (0.01g)											

Cremations	Context	1599	1599	1599	1597	1597	1597	1597	1597	1597	1597	1597	1597
	Sample	702	702	702	703	703	703	703	703	703	703	703	703
Environmental Results - Cremations	Feature	pit (1598)	pit (1598)	pit (1598)	pit (1596)	pit (1596)	pit (1596	pit (1596)	pit (1596)	pit (1596	pit (1596)	pit (1596	pit (1596)
	Area	Crem	Crem	Crem	Crem	Crem	Crem	Crem	Crem	Crem	Crem	Crem	Crem
	Spit / Quad	Sp.4 QC	Sp.4 QD	Sp.5 QA	Sp.1 QA	Sp.1 QC	Sp.1 QD	Sp.2 QA	Sp.2 QC	Sp.2 QD	Sp.3 QA	Sp.3 QB	Sp.3 QC
	Radiocarbon Y/N	Y ch	Y ch	Y ch	Y ch	Y ch	Y ch	Y ch	Y ch	Y ch	Y ch	Y hznt	Y ch
	Sample Volume (litres)	2		2	1.2	1.6	2	2	2.1	2	1.5	1.2	2.1
	Total CV	20ml	10ml	10ml	5ml	20ml	20ml	10ml	40ml	50ml	10ml	5ml	30ml
	Modern	<2.5ml	<2.5ml	<2.5ml	<2.5ml	<2.5ml	<2.5ml	<2.5ml	<2.5ml	<2.5ml	<2.5ml	<2.5ml	<2.5ml
Carbonised Cereal Grain	Common Name												
Hordeum vulgare sl.	barley												
Indeterminate cereal grain (+embryo)													
Charcoal													
Corylus	hazel		1 (0.29g)			1 (0.18g)		1 (0.35g)			1 (0.33g)		1 (1.66g)
Alnus	alder	1 (0.50g)		1 (0.39g)	1 (0.13g)		1 (0.84g)		1 (2.35g)	1 (3.43g)			
Betula	birch												
Indeterminate													
Carbonised Wild Resources													
Corylus avellana nutshell	hazel nutshell											2 (0.06g)	

Cremations	Context	1597	1597	1597	1597	1597	1597	1597	1661	1661	1664	1671	170
	Sample	703	703	703	703	703	703	703	729	730	726	732	56
Environmental Results - Cremations	Feature	pit (1596	pit (1596)	pit (1596	pit (1596)	pit (1596	pit (1596)	pit (1596	cist (1672)	cist (1672)	pit (1665)	cist (1670)	pit (168)
	Area	Crem	Crem	Crem	Crem	Crem	Crem	Crem	Crem	Crem	Crem?	Crem	crem
	Spit / Quad	Sp.3 QD	Sp.4 QA	Sp.4 QB	Sp.4 QC	Sp.5 QB	Sp.5 QC	Sp.5 QD					Spit 1
	Radiocarbon Y/N	Y ch	Y ch	Y ch	Y ch	Y ch	Y ch	Y ch	Y hznt	Y ch	Y hznt	Y hznt	N
	Sample Volume (litres)	2	2	4	2	4	3	3.25	66	18	30	24	0.12
	Total CV	20ml	10ml	20ml	10ml	10ml	10ml	20ml	10ml	10ml	20ml	5ml	5ml
	Modern	<2.5ml	<2.5ml	<2.5ml	<2.5ml	<2.5ml	<2.5ml	<2.5ml	10ml	<2.5ml	100ml	<2.5ml	<2.5ml
Carbonised Cereal Grain	Common Name												
Hordeum vulgare sl.	barley									1			
Indeterminate cereal grain (+embryo)									1				
Charcoal													
Corylus	hazel		1 (0.31g)										
Alnus	alder	1 (1.19g)		1 (0.25g)	1 (0.27g)	1 (0.74g)	1 (0.33g)	1 (3.67g)		1 (2.07g)			
Betula	birch												
Indeterminate													1 (0.03g)
Carbonised Wild Resources													
Corylus avellana nutshell	hazel nutshell								1 (0.04g)		1 (0.02g)	2 (0.06g)	

Cremations	Context	1599	1597	1619	1669	1744
	Sample	702	703	709A	727	757
Environmental Results - Cremations	Feature	pit (1598)	pit (1596	pit (1620)	cut (1668)	cist (1672)
	Area	Crem	Crem	Crem	Crem	Crem
	Spit / Quad	Sp.1 QA	Sp.4 QD			
	Radiocarbon Y/N	N	N	N	N	N
	Sample Volume (litres)	2.5	2	5.75	32	29
	Total CV	10ml	10ml	15ml	5ml	10ml
	Modern	<2.5ml	<2.5ml	5ml	100ml	5ml
Carbonised Cereal Grain	Common Name					
Hordeum vulgare sl.	barley				1	
Indeterminate cereal grain (+embryo)						
Charcoal						
Corylus	hazel					
Alnus	alder					
Betula	birch					
Indeterminate		1 (0.13g)	1 (0.31g)	1 (0.13g)		
Carbonised Wild Resources						
Corylus avellana nutshell	hazel nutshell					1 (<0.01g)

Structure 1	Context	455	476	485	492	499	521	522	556	574
	Sample	120	124	187	134	137	152	230	165	182
	Feature	PH (454)	ditch (419)	PH (483)	ditch (415)	ditch (420)	PH (520)	spread	pit (555)	PH (573)
	Area	S1	S1	S1	S1	S1	S1	S1	S1	S1
	Spit / Quad					Slot A				
	Radiocarbon Y/N	Y ch	Y hznt	Y ch, cer	Y ch, hznt	Y ch	Y ch	Y cer, hznt	Y cer	Y cer
	Sample Volume (litres)	7	4	3	32	32	1	32	7	3
	Total CV	10ml	15ml	40ml	5ml	30ml	30ml	350ml	5ml	<2.5ml
	Modern	5ml	5ml	<2.5ml	20ml	10ml	<2.5ml	150ml	5ml	<2.5ml
Carbonised Cereal Grain	Common Name									
Avena sp.	oat									
Hordeum vulgare var. nudum	naked barley			13		5	10	91	3	4
Hordeum vulgare var. vulgare	six row hulled barley									
Hordeum vulgare sl.	barley		1	33	13	10	14	427		7
Indeterminate cereal grain (+embryo)								29		
Other Cultivars										
Pisum / Lathyrus spp.	peas									1
Charcoal										
Quercus	oak		10 (1.10g)	12 (3.96g)		1 (0.29g)		20 (4.61g)		
Corylus	hazel	1 (0.23g)			1 (0.08g)					
Alnus	alder			1 (0.05g)		1 (0.56g)	1 (0.25g)			
Betula	birch									
Indeterminate										
Carbonised Wild Resources										
Corylus avellana nutshell	hazel nutshell		1 (0.08g)		1 (0.03g)	4 (0.05g)		15 (0.35g)		3 (<0.01g)
Prunus spp. fruit stone	cherries									
Burnt peat										
Carbonised Weeds										
Fallopia convolvulus	black bindweed							1		
Other Remains										
Modern seeds					5+					
Earthworm egg capsules						1				1

Structure 1	Context	576	583	600	602	607	614	628A	635	667
	Sample	181	178	188	194	193	203	198	196	218
	Feature	PH (575)	pit (582)	pit (601)	pit (532)	pit (531)	PH (613)	pit (536+630)	pit (634)	pit (535)
	Area	S1	S1	S1	S1	S1	S1	S1	S1	S1
	Spit / Quad									
	Radiocarbon Y/N	Y ch	Y cer	Y ch	Y cer	Y cer	Y cer	Y cer	Y ch, hznt	Y cer
	Sample Volume (litres)	8	6	26	20	5.5	7.5	16	27	8
	Total CV	15ml	5ml	60ml	5ml	5ml	<2.5ml	5ml	300ml	10ml
	Modern	5ml	5ml	20ml	20ml	5ml	10ml	5ml	20ml	10ml
Carbonised Cereal Grain	Common Name									
Avena sp.	oat									
Hordeum vulgare var. nudum	naked barley		3	69	7	5		11	64	
Hordeum vulgare var. vulgare	six row hulled barley									
Hordeum vulgare sl.	barley	2		7		6	4	15	10	4
Indeterminate cereal grain (+embryo)				7					13	
Other Cultivars										
Pisum / Lathyrus spp.	peas									
Charcoal										
Quercus	oak	1 (0.08g)							1 (0.52g)	1 (0.09g)
Corylus	hazel			3 (0.37g)						
Alnus	alder	1 (0.24g)								
Betula	birch								1 (2.41g)	
Indeterminate										
Carbonised Wild Resources										
Corylus avellana nutshell	hazel nutshell								5 (0.23g)	
Prunus spp. fruit stone	cherries									
Burnt peat										
Carbonised Weeds										
Fallopia convolvulus	black bindweed									
Other Remains										
Modern seeds										
Earthworm egg capsules										

Structure 1	Context	668	672	675	686	689	702	704	709	723
	Sample	220	222	228	235	236	234	232	250	246
	Feature	pit (489)	PH (664)	pit (674)	PH (685)	pit (534)	PH (706)	PH (706)	PH (695)	PH (721)
	Area	S1	S1	S1	S1	S1	S1	S1	S1	S1
	Spit / Quad									
	Radiocarbon Y/N	Y ch, cer	Y cer	Y ch, cer, hznt	Y hznt	Y hznt	Y ch	Y ch, cer	Y hznt	Y cer
	Sample Volume (litres)	3	31	25	24	26	23	24	36	20
	Total CV	30ml	30ml	300ml	150ml	60ml	350ml	50ml	620ml	190ml
	Modern	5ml	10ml	50ml	10ml	40ml	50ml	30ml	20ml	50ml
Carbonised Cereal Grain	Common Name									
Avena sp.	oat									
Hordeum vulgare var. nudum	naked barley		77	536	35	122	72	16	34	35
Hordeum vulgare var. vulgare	six row hulled barley									
Hordeum vulgare sl.	barley	8	177	61	16	265	35	29	11	7
Indeterminate cereal grain (+embryo)				57	5	65	15	17	2	2
Other Cultivars										
Pisum / Lathyrus spp.	peas									
Charcoal										
Quercus	oak	20 (1.24g)		20 (3.40g)	8 (1.71g)	3 (0.51g)	8 (2.22g)		8 (2.97g)	1 (0.23g)
Corylus	hazel	1 (0.17g)		1 (0.51g)						
Alnus	alder						1 (4.94g)	4 (1.46g)		
Betula	birch						1 (1.04g)			
Indeterminate										
Carbonised Wild Resources										
Corylus avellana nutshell	hazel nutshell			5 (0.13g)	10 (0.27g)	1 (0.05g)	1 (0.02g)		33 (0.47g)	
Prunus spp. fruit stone	cherries									
Burnt peat										1 (0.25g)
Carbonised Weeds										
Fallopia convolvulus	black bindweed									
Other Remains										
Modern seeds			5+			1				
Earthworm egg capsules										

Structure 1	Context	728	729	730	735	738	746	762	772	775
	Sample	244	245	249	251	252	258	266	270	271
	Feature	PH (727)	PH (727)	fire pit (736)	PH (695)	hearth (737)	PH (744)	PH (761)	PH (770)	pit/PH (774)
	Area	S1	S1	S1	S1	S1	S1	S1	S1	S1
	Spit / Quad									
	Radiocarbon Y/N	Y ch, hznt	Y cer	Y ch, cer	Y ch	Y ch, hznt	Y ch	Y hznt	Y ch	Y cer
	Sample Volume (litres)	36	32	24	2.5	31.5	34	8	26	20
	Total CV	85ml	230ml	4500ml	15ml	275ml	70ml	50ml	850ml	15ml
	Modern	40ml	50ml	<2.5ml	10ml	100ml	10ml	10ml	10ml	15ml
Carbonised Cereal Grain	Common Name									
Avena sp.	oat									
Hordeum vulgare var. nudum	naked barley	16	21		20	28	14	10	11	14
Hordeum vulgare var. vulgare	six row hulled barley			302						
Hordeum vulgare sl.	barley	21	20	16	13	12	2	5	2	7
Indeterminate cereal grain (+embryo)		7	5	29	3	5	3	3		3
Other Cultivars										
Pisum / Lathyrus spp.	peas									
Charcoal										
Quercus	oak	3 (2.05g)	20 (4.53g)	20 (56.67g)			3 (2.13g)		10 (1.91g)	
Corylus	hazel			1 (1.08g)						
Alnus	alder	1 (0.41g)			1 (0.23g)	6 (4.46g)	1 (0.28g)			
Betula	birch								1 (0.24g)	
Indeterminate										
Carbonised Wild Resources										
Corylus avellana nutshell	hazel nutshell	5 (0.10g)	6 (0.02g)		1 (0.03g)	17 (0.33g)		1 (0.03g)		
Prunus spp. fruit stone	cherries	2 (0.02g)	1 (0.05g)			1 (0.07g)				
Burnt peat							1 (0.24g)		4 (11.91g)	
Carbonised Weeds										
Fallopia convolvulus	black bindweed									
Other Remains										
Modern seeds										
Earthworm egg capsules					2					

Structure 1	Context	778	827	935	979	1046	395	435	468	478
	Sample	272	305	400	418	450	100	111	121	125
	Feature	pit (776)	deposit	pit (934)	PH (977)	pit (1045)	ditch (395)	PH (434)	ring ditch (418)	PH (477)
	Area	S1	S1	S1	S1	S1	S1	S1	S1	S1
	Spit / Quad						ring ditch			
	Radiocarbon Y/N	Y ch, cer, hznt	Y cer	Y ch	Y ch, hznt	Y ch	N	N	N	N
	Sample Volume (litres)	21	10.5	23	22	5.5	22.5	3	22	3.75
	Total CV	1600ml	5ml	30ml	380ml	10ml	20ml	<2.5ml	15ml	<2.5ml
	Modern	200ml	10ml	5ml	20ml	10ml	15ml	<2.5ml	10ml	5ml
Carbonised Cereal Grain	Common Name									
Avena sp.	oat							1		
Hordeum vulgare var. nudum	naked barley		5		5					
Hordeum vulgare var. vulgare	six row hulled barley	308		5						
Hordeum vulgare sl.	barley	41	11	16	6		1		3	1
Indeterminate cereal grain (+embryo)		46	9		1					
Other Cultivars										
Pisum / Lathyrus spp.	peas									
Charcoal										
Quercus	oak	10 (18.50g)			6 (2.85g)				2 (0.15g)	
Corylus	hazel					1 (0.73g)				
Alnus	alder	1 (9.02g)								
Betula	birch			2 (0.61g)	1 (0.20g)					
Indeterminate							1 (0.43g)			
Carbonised Wild Resources										
Corylus avellana nutshell	hazel nutshell	8 (0.12g)					1 (<0.01g)			
Prunus spp. fruit stone	cherries									
Burnt peat										
Carbonised Weeds										
Fallopia convolvulus	black bindweed									
Other Remains										
Modern seeds				5+						
Earthworm egg capsules										

Structure 1	Context	532	553	578	632	688	699	760	851	942
	Sample	162	163	183	211	237	302	267	312	364
	Feature	pit (532)	pit (550)	PH (577)	ring ditch (420)	linear (687)	hearth (698)	deposit	pit (850)	PH (941)
	Area	S1	S1	S1	S1	S1	S1	S1	S1	S1
	Spit / Quad									
	Radiocarbon Y/N	N	N	N	N	N	N	N	N	N
	Sample Volume (litres)	12	4	14	4	26	7.5	3	22	8
	Total CV	10ml	<2.5ml	5ml	<2.5ml	15ml	15ml	5ml	160ml	10ml
	Modern	5ml	<2.5ml	10ml	5ml	20ml	5ml	5ml	20ml	10ml
Carbonised Cereal Grain	Common Name	bag mislabel (532)								
Avena sp.	oat									
Hordeum vulgare var. nudum	naked barley						6			
Hordeum vulgare var. vulgare	six row hulled barley									
Hordeum vulgare sl.	barley	6	2	2	1	8	5	2	5	1
Indeterminate cereal grain (+embryo)										
Other Cultivars										
Pisum / Lathyrus spp.	peas									
Charcoal										
Quercus	oak						1 (0.28g)		1 (0.15g)	1 (0.16g)
Corylus	hazel									
Alnus	alder									
Betula	birch									
Indeterminate				2 (0.10g)						
Carbonised Wild Resources										
Corylus avellana nutshell	hazel nutshell			3 (<0.01g)				5 (0.01g)		
Prunus spp. fruit stone	cherries									
Burnt peat									3 (0.70g)	
Carbonised Weeds										
Fallopia convolvulus	black bindweed									
Other Remains										
Modern seeds										
Earthworm egg capsules								1		

Structure 2	Context	544	547	604	606	549	570
	Sample	157	160	191	190	161	174
	Feature	pit (543)	PH (546)	pit (603)	PH (605)	P/SH (548)	pit (569)
	Area	S2	S2	S2	S2	S2	S2
	Spit / Quad						
	Radiocarbon Y/N	Y ch	Y ch	Y ch	Y ch	N	N
	Sample Volume (litres)	12	26	10	19	36	10
	Total CV	130ml	30ml	5ml	20ml	30ml	10ml
	Modern	50ml	20ml	10ml	20ml	20ml	30ml
Carbonised Cereal Grain	Common Name						
Hordeum vulgare sl.	barley		5		1		
Charcoal							
Quercus	oak					1 (0.16g)	
Corylus	hazel	1 (0.35g)			1 (0.13g)		
Alnus	alder			1 (0.10g)			
Betula	birch		3 (0.36g)				
Other Remains							
Clinker							10+
Coal						1	
Modern seeds			5+				
Earthworm egg capsules							1

Structure 3	Context	79	293	545	839	1033	1052	432	443	874	876	1065	1092
	Sample	36	82	158	307	428	439	114	115	326	327	444	460
	Feature	pit (075)	pit (292)	pit (543)	pit (840)	pit (1034)	Void	pit (431)	Voided	pit (875)	pit (877)	pit (1064)	spread
	Area	S3	S3	S3	S3	S3	S3	S3	S3	S3	S3	S3	S3
	Spit / Quad												
	Radiocarbon Y/N	Y ch	Y ch	Y ch, hznt	Y ch	Y hznt	Y hznt	N	N	N	N	N	N
	Sample Volume (litres)	18	15.5	32	53.5	12	11.5	0.5	8	24	26.5	19.5	8
	Total CV	200ml	25ml	2400ml	40ml	15ml	20ml	10ml	5ml	5ml	5ml	10ml	20ml
	Modern	150ml	5ml	50ml	30ml	10ml	10ml	10ml	30ml	10ml	20ml	5ml	10ml
Carbonised Cereal Grain	Common Name												
Avena sp.	oat									1			
Hordeum vulgare sl.	barley					2	3			2			
Triticum aestivum	bread wheat				1								
Charcoal													
Quercus	oak				1 (0.18g)							1 (0.06g)	12 (1.10g)
Corylus	hazel				1 (0.10g)								
Alnus	alder	1 (0.52g)	4 (0.98g)	6 (1.32g)									
Betula	birch				1 (1.41g)								
Indeterminate								2 (0.22g)	2 (0.36g)				
Carbonised Wild Resources													
Corylus avellana nutshell	hazel nutshell	3 (0.01g)	1 (<0.01g)	3 (0.10g)		5 (0.07g)	7 (0.13g)						
Other Remains													
Clinker								5+			5+	1	

Structure 3A	Context	1213	1217	1225	1228	1229	1232	1235	1254	1264	1265
	Sample	516	517	519	520	521	522	523	524	533	534
	Feature	ditch (1216)	occ layer	ditch (1027)	pit (1227)	spread	pit (1230)	pit (1234)	Void	PH (1263)	PH (1263)
	Area	S3A	S3A	S3A	S3A	S3A	S3A	S3A	S3A	S3A	S3A
	Spit / Quad										
	Radiocarbon Y/N	Y hznt	Y cer	Y hznt	Y ch, cer, hznt	Y ch, cer	Y ch	Y hznt	Y ch	Y ch, cer	Y cer
	Sample Volume (litres)	29	27	28	43	26	12	20	30	16	30
	Total CV	15ml	50ml	15ml	2000ml	310ml	30ml	5ml	40ml	350ml	30ml
	Modern	20ml	10ml	10ml	10ml	100ml	10ml	20ml	20ml	20ml	30ml
Carbonised Cereal Grain	Common Name										
Hordeum vulgare var. nudum	naked barley		23	5		19	22	10		16	11
Hordeum vulgare var. vulgare	six row hulled barley				221						
Hordeum vulgare sl.	barley	7	25	20	29	10	3	5		8	5
Triticum spelta	spelt wheat				9	2				2	
Triticum sp.	wheat										
Indeterminate cereal grain (+embryo)			9		26	5	2	2		5	7
Charcoal											
Quercus	oak		5 (1.59g)				1 (0.95g)		2 (0.77g)	11 (2.62g)	3 (0.53g)
Corylus	hazel									1 (1.05g)	
Alnus	alder					1 (0.42g)	1 (0.21g)		1 (0.27g)		
Betula	birch				21 (30.64g)						
Carbonised Wild Resources											
Corylus avellana nutshell	hazel nutshell	13 (0.19g)		2 (0.02g)	6 (0.19g)	3 (0.05g)		2 (0.06g)	2 (0.03g)	1 (0.02g)	
Burnt peat						1 (2.21g)					
Other Remains											
Clinker		1									
Earthworm egg capsules		1									

Structure 3A	Context	1267	1269	1271	1275	1277	1288	1289	1291	1299	1301
	Sample	528	529	530	532	545	540	537	563	551	552
	Feature	pit (1266)	pit (1268)	ditch (1270)	burrow (1274)	PH (1276)	pit (1287)	pit (1287)	linear (1290)	pit (1297)	pit (1300)
	Area	S3A	S3A	S3A	S3A	S3A	S3A	S3A	S3A	S3A	S3A
	Spit / Quad										
	Radiocarbon Y/N	Y cer	Y ch	Y hznt	Y hznt	Y ch	Y hznt	Y hznt	Y hznt	Y ch, cer	Y hznt
	Sample Volume (litres)	12.5	12	11.5	24	15	53	10	22	40	17
	Total CV	10ml	10ml	5ml	10ml	150ml	300ml	10ml	50ml	600ml	30ml
	Modern	20ml	25ml	5ml	30ml	<2.5ml	100ml	10ml	20ml	20ml	5ml
Carbonised Cereal Grain	Common Name							bag mislabel (1287)			
Hordeum vulgare var. nudum	naked barley	12									
Hordeum vulgare var. vulgare	six row hulled barley					4				158	
Hordeum vulgare sl.	barley	9	8	3	8	8	7		11	41	
Triticum spelta	spelt wheat					4			22	4	
Triticum sp.	wheat										
Indeterminate cereal grain (+embryo)		12			2	2	3		8	11	
Charcoal											
Quercus	oak					3 (1.74g)	10 (9.25g)			12 (12.41g)	
Corylus	hazel		1 (0.16g)							1 (0.50g)	
Alnus	alder										
Betula	birch					1 (0.78g)					
Carbonised Wild Resources											
Corylus avellana nutshell	hazel nutshell			1 (0.04g)	5 (0.06g)		9 (0.18g)	8 (0.07g)	5 (0.08g)		3 (0.05g)
Burnt peat											
Other Remains											
Clinker											
Earthworm egg capsules					1						

Structure 3A	Context	1309	1310	1312	1319	1322	1324	1329	1341	1346	1348
	Sample	558	557	561	562	575	568	566	579	576	573
	Feature	PH (1308)	PH (1308)	stone (1292)	stone (1292)	pit (1323)	occ deposit	PH (1328)	pit (1340)	pit (1323)	PH (1347)
	Area	S3A	S3A	S3A	S3A	S3A	S3A	S3A	S3A	S3A	S3A
	Spit / Quad										
	Radiocarbon Y/N	Y cer	Y cer	Y cer	Y cer	Y ch	Y hznt	Y ch, hznt	Y cer	Y cer	Y hznt
	Sample Volume (litres)	34	5	26	28	32	21	30	18	11	2
	Total CV	30ml	55ml	10ml	30ml	110ml	60ml	300ml	40ml	10ml	5ml
	Modern	30ml	10ml	30ml	10ml	20ml	30ml	20ml	20ml	10ml	<2.5ml
Carbonised Cereal Grain	Common Name										
Hordeum vulgare var. nudum	naked barley	6	18	16							
Hordeum vulgare var. vulgare	six row hulled barley										
Hordeum vulgare sl.	barley	5	19	10	7	12	3	7	10	5	
Triticum spelta	spelt wheat			6	7			8	10		
Triticum sp.	wheat										
Indeterminate cereal grain (+embryo)		8	5	7	3	2		2	5		
Charcoal											
Quercus	oak	3 (2.00g)	1 (0.10g)		2 (0.23g)	3 (1.38g)	4 (6.22g)				
Corylus	hazel					1 (1.20g)		1 (0.32g)			
Alnus	alder										
Betula	birch										
Carbonised Wild Resources											
Corylus avellana nutshell	hazel nutshell						2 (0.03g)	5 (0.11g)			3 (0.05g)
Burnt peat											
Other Remains											
Clinker											
Earthworm egg capsules				1							

Structure 3A	Context	1352	1354	1357	1359	1361	1363	1370	1373	1374	1378
	Sample	574	580	582	584	586	577	591	590	587	589
	Feature	PH (1351)	pit (1353+1371)	PH (1355)	pit (1358)	pit (1349)	PH (1362)	spread	spread (1372)	spread	pit (1377)
	Area	S3A	S3A	S3A	S3A	S3A	S3A	S3A	S3A	S3A	S3A
	Spit / Quad										
	Radiocarbon Y/N	Y ch, cer	Y ch, hznt	Y hznt	Y hznt	Y hznt	Y hznt	Y ch	Y cer	Y hznt	Y hznt
	Sample Volume (litres)	32	36	30	13	27	26	28	15	21.5	13
	Total CV	300ml	500ml	600ml	70ml	45ml	60ml	50ml	25ml	45ml	15ml
	Modern	100ml	10ml	50ml	10ml	20ml	10ml	10ml	40ml	30ml	20ml
Carbonised Cereal Grain	Common Name										
Hordeum vulgare var. nudum	naked barley	21		4	6					4	
Hordeum vulgare var. vulgare	six row hulled barley				6	5			7		
Hordeum vulgare sl.	barley	6	13	5	2	3			29	8	1
Triticum spelta	spelt wheat		3	2	1				1		
Triticum sp.	wheat										
Indeterminate cereal grain (+embryo)		5	4	2	2	2	4		4	3	
Charcoal											
Quercus	oak	1 (0.90g)		12 (22.29g)	5 (3.33g)		5 (0.55g)			1 (0.22g)	
Corylus	hazel	1 (1.11g)									
Alnus	alder		26 (29.68g)					1 (1.80g)			
Betula	birch										
Carbonised Wild Resources											
Corylus avellana nutshell	hazel nutshell	2 (0.01g)	6 (0.08g)	4 (0.17g)		5 (0.18g)	2 (0.08g)			5 (0.10g)	4 (0.10g)
Burnt peat					6 (3.35g)	7 (5.33g)					
Other Remains											
Clinker											
Earthworm egg capsules											

Structure 3A	Context	1386	1411	1473	1212	1273	1280	1286	1311	1316	1343	1359	1376
	Sample	599	607	631	535	531	536	539	549	556	570	600	588
	Feature	PH (1384)	pit (1410)	pit (1472)	ditch	ditch (1272)	pit/PH (1279)	PH (1285)	occ layer	pit/PH (1313)	pit (1342)	pit (1358)	PH (1375)
	Area	S3A	S3A	S3A	S3A	S3A	S3A	S3A	S3A	S3A	S3A	S3A	S3A
	Spit / Quad				Slot B								
	Radiocarbon Y/N	Y ch, cer, hznt	Y ch, hznt	Y hznt	N	N	N	N	N	N	N	N	N
	Sample Volume (litres)	26	27	3.5	24	28	10	13	29	11	21.5	32	13
	Total CV	60ml	60ml	<2.5ml	10ml	10ml	<2.5ml	20ml	170ml	5ml	30ml	<2.5ml	10ml
	Modern	40ml	20ml	<2.5ml	30ml	20ml	10ml	20ml	30ml	20ml	10ml	30ml	20ml
Carbonised Cereal Grain	Common Name												
Hordeum vulgare var. nudum	naked barley	31						8					
Hordeum vulgare var. vulgare	six row hulled barley	142							4				
Hordeum vulgare sl.	barley		4		6	5	5	6	12	14	4		
Triticum spelta	spelt wheat	11								2			
Triticum sp.	wheat				1								2
Indeterminate cereal grain (+embryo)		16		2	2	11	1	3		4		6	12
Charcoal													
Quercus	oak								1 (0.16g)				
Corylus	hazel	1 (0.47g)											
Alnus	alder		2 (0.88g)										
Betula	birch												
Carbonised Wild Resources													
Corylus avellana nutshell	hazel nutshell	3 (0.11g)	1 (0.02g)	3 (0.06g)							3 (0.02g)		
Burnt peat													
Other Remains													
Clinker													
Earthworm egg capsules													

Structure 5	Context	1675	1680	1682	1683	1694	1705	1709	1719	1721	1723	1739
	Sample	733	736	734	746	738	749	744	747	748	750	754
	Feature	pit (1676)	PH (1679)	pit (1681)	PH (1684)	pit (1693)	PH (1704)	pit (1689)	pit (1718)	PH (1720)	PH (1722)	pit (1738)
	Area	S5	S5	S5	S5	S5	S5	S5	S5	S5	S5	S5
	Spit / Quad											
	Radiocarbon Y/N	Y hznt	Y ch	Y hznt	Y hznt	Y hznt	Y ch	Y ch	Y hznt	Y hznt	Y ch	Y ch, hznt
	Sample Volume (litres)	19	18	6.5	12.5	24	17	18	8	16	10	20
	Total CV	40ml	15ml	<2.5ml	5ml	300ml	500ml	650ml	5ml	15ml	400ml	15ml
	Modern	5ml	<2.5ml	5ml	<2.5ml	<2.5ml	<2.5ml	<2.5ml	<2.5ml	<2.5ml	<2.5ml	5ml
Carbonised Cereal Grain	Common Name											
Avena sp.	oat											
Hordeum vulgare var. nudum	naked barley					3						
Hordeum vulgare var. vulgare	six row hulled barley											
Hordeum vulgare sl.	barley	5		1								
Triticum aestivum	bread wheat											
Triticum sp.	wheat											
Indeterminate cereal grain (+embryo)			10							11		
Charcoal												
Quercus	oak	1 (0.16g)				3 (2.10g)					20 (13.25g)	
Corylus	hazel											1 (1.94g)
Alnus	alder		1 (1.50g)				1 (1.55g)	1 (3.32g)			1 (0.29g)	
Carbonised Wild Resources												
Corylus avellana nutshell	hazel nutshell	13 (0.38g)	1 (0.01g)	1 (0.02g)	11 (0.22g)	2 (0.09g)			1 (0.05g)	4 (0.09g)		3 (0.07g)
Burnt peat							25 (5.80g)	20 (5.09g)				
Other Remains												
Clinker												
Modern seeds			1									

Structure 5	Context	1748	1766	1768	1770	1785	1788	1791	1805	1807	1809	1819
	Sample	762	769	776	770	773	774	781	777	783	786	788
	Feature	PH (1746)	pit (1765)	pit (1767)	PH (1769)	PH (1782)	PH (1789)	PH (1790)	PH (1804)	pit/PH (1806)	PH (1808)	PH (1818)
	Area	S5	S5	S5	S5	S5	S5	S5	S5	S5	S5	S5
	Spit / Quad											
	Radiocarbon Y/N	Y hznt	Y ch, hznt	Y cer	Y ch	Y hznt	Y hznt	Y cer, hznt	Y hznt	Y hznt	Y ch	Y hznt
	Sample Volume (litres)	8	23	4	5	12	7	24	6	12	6	2
	Total CV	60ml	50ml	5ml	10ml	15ml	10ml	10ml	5ml	10ml	35ml	5ml
	Modern	<2.5ml	<2.5ml	<2.5ml	<2.5ml	<2.5ml	<2.5ml	5ml	<2.5ml	<2.5ml	5ml	<2.5ml
Carbonised Cereal Grain	Common Name											
Avena sp.	oat		1					3				
Hordeum vulgare var. nudum	naked barley											
Hordeum vulgare var. vulgare	six row hulled barley		7	6				7		6		
Hordeum vulgare sl.	barley									4		
Triticum aestivum	bread wheat											
Triticum sp.	wheat											
Indeterminate cereal grain (+embryo)			4	6			4	7				
Charcoal												
Quercus	oak					1 (0.22g)						
Corylus	hazel				1 (0.42g)						1 (0.18g)	
Alnus	alder		1 (3.16g)									
Carbonised Wild Resources												
Corylus avellana nutshell	hazel nutshell	2 (0.06g)	87 (1.40g)			1 (0.02g)	4 (0.05g)	27 (0.35g)	2 (0.03g)	7 (0.11g)		6 (0.10g)
Burnt peat		10 (1.12g)										
Other Remains												
Clinker												
Modern seeds						1						

Structure 5	Context	1891	1896	1907	1911	1925	1936	1962	1965	1975	1993	1997
	Sample	807	809	817	815	826	824	840	841	845	851	853
	Feature	pit (1890)	PH (1895)	ditch (1906)	PH (1910)	PH (1925)	PH (1937)	PH (1963)	PH (1964)	PH (1988)	PH (1992)	PH (1988)
	Area	S5	S5	S5	S5	S5	S5	S5	S5	S5	S5	S5
	Spit / Quad											
	Radiocarbon Y/N	Y hznt	Y hznt	Y hznt	Y hznt	Y hznt	Y hznt	Y hznt	Y ch	Y hznt	Y hznt	Y hznt
	Sample Volume (litres)	5	8	28	7	19	22	7	10	13.5	3.25	5
	Total CV	10ml	10ml	30ml	10ml	20ml	15ml	5ml	220ml	20ml	5ml	10ml
	Modern	<2.5ml	<2.5ml	10ml	<2.5ml	5ml	10ml	<2.5ml	<2.5ml	10ml	<2.5ml	<2.5ml
Carbonised Cereal Grain	Common Name											
Avena sp.	oat											
Hordeum vulgare var. nudum	naked barley											
Hordeum vulgare var. vulgare	six row hulled barley	5				1		15				
Hordeum vulgare sl.	barley							4		1	1	
Triticum aestivum	bread wheat									1		
Triticum sp.	wheat											
Indeterminate cereal grain (+embryo)				4		2	2	3				
Charcoal												
Quercus	oak			4 (1.39g)		1 (0.27g)			16 (4.97g)			
Corylus	hazel											
Alnus	alder								1 (0.71g)			
Carbonised Wild Resources												
Corylus avellana nutshell	hazel nutshell	10 (0.13g)	3 (0.04g)	2 (0.05g)	46 (0.86g)	1 (0.03g)	15 (0.23g)	4 (0.08g)		1 (0.08g)	6 (0.10g)	2 (0.05g)
Burnt peat												
Other Remains												
Clinker												
Modern seeds		1			2							

Structure 5	Context	2007	457	1688	1690	1695	1702	1717	1723	1750	1753
	Sample	856	119	741	740	739	742	756	760	764	766
	Feature	PH (2006)	modern pit	pit (1687)	pit (1689)	pit (1693)	PH (1701)	pit/PH (1716)	PH (1722)	pit (1751)	PH (1754)
	Area	S5	S5	S5	S5	S5	S5	S5	S5	S5	S5
	Spit / Quad										
	Radiocarbon Y/N	Y hznt	N	N	N	N	N	N	N	N	N
	Sample Volume (litres)	3.5	6	8	24	24	7.5	5	8	11	11.5
	Total CV	5ml	<2.5ml	30ml	450ml	40ml	50ml	10ml	20ml	10ml	<2.5ml
	Modern	<2.5ml	10ml	10ml	<2.5ml	10ml	<2.5ml	<2.5ml	<2.5ml	<2.5ml	5ml
Carbonised Cereal Grain	Common Name							bag mislabel (1716)	bag mislabel (1722)		
Avena sp.	oat										
Hordeum vulgare var. nudum	naked barley										
Hordeum vulgare var. vulgare	six row hulled barley										
Hordeum vulgare sl.	barley										1
Triticum aestivum	bread wheat										
Triticum sp.	wheat							1			
Indeterminate cereal grain (+embryo)						1					
Charcoal											
Quercus	oak				5 (1.62g)	3 (0.30g)	6 (0.87g)		3 (0.08g)		
Corylus	hazel										
Alnus	alder										
Carbonised Wild Resources											
Corylus avellana nutshell	hazel nutshell	9 (0.10g)		1 (0.02g)				1 (0.01g)			
Burnt peat					10 (8.22g)					4 (0.28g)	
Other Remains											
Clinker			5+								
Modern seeds		10+									

Structure 5	Context	1759	1764	1777	1793	1909	1920	1947
	Sample	767	768	771	782	818	811	833
	Feature	PH (1760)	PH (1763)	PH (1776)	PH (1792)	pit (1908)	linear (1903)	PH (1949)
	Area	S5	S5	S5	S5	S5	S5	S5
	Spit / Quad						NW	
	Radiocarbon Y/N	N	N	N	N	N	N	N
	Sample Volume (litres)	7	5	15.5	5.75	7.75	26	6
	Total CV	<2.5ml	5ml	150ml	5ml	15ml	20ml	15ml
	Modern	<2.5ml	<2.5ml	<2.5ml	<2.5ml	5ml	5ml	<2.5ml
Carbonised Cereal Grain	Common Name							
Avena sp.	oat	1						
Hordeum vulgare var. nudum	naked barley	2						
Hordeum vulgare var. vulgare	six row hulled barley				2			
Hordeum vulgare sl.	barley					1	7	
Triticum aestivum	bread wheat							
Triticum sp.	wheat	1						
Indeterminate cereal grain (+embryo)							3	
Charcoal								
Quercus	oak			1 (0.35g)			1 (0.30g)	5 (0.76g)
Corylus	hazel							
Alnus	alder							
Carbonised Wild Resources								
Corylus avellana nutshell	hazel nutshell		1 (<0.01g)				1 (0.02g)	
Burnt peat				1 (0.38g)				
Other Remains								
Clinker								
Modern seeds		5+						

Structure 6	Context	2032	2036	2038	2039	2040	2042	2046	2048	2056	2058	2060	2061	2088	2090
	Sample	874	861	864	862	865	867	863	866	883	887	880	875	888	893
	Feature	PH (2034)	PH (2035)	PH (2037)	spread	PH (2041)	PH (2043)	PH (2044)	PH (2047)	PH (2055)	PH (2057)	PH (2059)	pit (2062)	PH (2087)	PH (2089)
	Area	S6	S6	S6	S6	S6	S6	S6	S6	S6	S6	S6	S6	S6	S6
	Spit / Quad														
	Radiocarbon Y/N	Y cer	Y ch	Y cer	Y hznt	Y cer	Y ch	Y ch	Y cer	Y hznt	Y hznt	N	Y cer	Y ch	Y hznt
	Sample Volume (litres)	9	38	19	14	20	18	11	16	30	16	8	16	11	9.5
	Total CV	10ml	270ml	50ml	60ml	30ml	240ml	60ml	40ml	30ml	40ml	<2.5ml	40ml	30ml	10ml
	Modern	5ml	20ml	<2.5ml	20ml	10ml	10ml	<2.5ml	20ml	10ml	20ml	<2.5ml	<2.5ml	10ml	10ml
Carbonised Cereal Grain	Common Name														
Avena sp.	oat														
Hordeum vulgare var. vulgare	six row hulled barley			12	4								16		
Hordeum vulgare sl.	barley	23		11	4	13	8	17	9	6		4		5	
Indeterminate cereal grain (+embryo)		7		5	2	3	2	3	5				3	2	
Charcoal															
Quercus	oak	1 (0.83g)	19 (11.95g)	2 (0.27g)	3 (0.17g)	3 (0.28g)	2 (0.69g)		6 (0.46g)	4 (0.79g)					
Alnus	alder						1 (4.97g)	1 (0.17g)						1 (1.10g)	
Betula	birch		1 (0.32g)												
Carbonised Wild Resources															
Corylus avellana nutshell	hazel nutshell	1 (0.02g)			4 (0.10g)				1 (0.01g)	3 (0.09g)	6 (0.12g)			1 (0.01g)	2 (0.05g)

Structure 6	Context	2117	2050	2063	2064	2068	2073	2074	2084	2086	2095	2101	2111	2122	2123
	Sample	903	886	876	877	884	885	881	890	902	889	892	901	905	906
	Feature	PH (2116)	PH (2049)	pit (2062)	PH (2065)	PH (2055)	PH (2072)	PH (2076)	ditch (2083)	ditch (2085)	pit (2094)	term (2091)	PH (2110)	PH (2124)	PH (2124)
	Area	S6	S6	S6	S6	S6	S6	S6	S6	S6	S6	S6	S6	S6	S6
	Spit / Quad														
	Radiocarbon Y/N	Y ch	N	N	N	N	N	N	N	N	N	N	N	N	N
	Sample Volume (litres)	46	11.75	2	2	25	8	9.5	34	18	7	20	2	12.5	19
	Total CV	30ml	70ml	15ml	<2.5ml	10ml	15ml	<2.5ml	35ml	10ml	10ml	30ml	<2.5ml	70ml	10ml
	Modern	20ml	<2.5ml	<2.5ml	<2.5ml	10ml	20ml	5ml	5ml	20ml	5ml	20ml	<2.5ml	10ml	<2.5ml
Carbonised Cereal Grain	Common Name														
Avena sp.	oat												1		
Hordeum vulgare var. vulgare	six row hulled barley				1										
Hordeum vulgare sl.	barley			1			7								
Indeterminate cereal grain (+embryo)						4	3			1	4				
Charcoal															
Quercus	oak		20 (5.75g)						14 (3.73g)			5 (1.14g)		4 (1.13g)	1 (0.83g)
Alnus	alder	1 (0.23g)													
Betula	birch														
Carbonised Wild Resources															
Corylus avellana nutshell	hazel nutshell							1 (0.01g)	1 (0.01g)						

Structure 7	Context	1490	1562	1618	1628	1641	1646	1622	1660
	Sample	677	692	714	708	717	718	715	724
	Feature	pit (1489)	pit (1561)	pit (1617)	pit (1627)	PH (1642)	pit (1645)	pit (1621)	stone hole (1659)
	Area	S7	S7	S7B	S7	S7B	S7B	S7B	S7
	Spit / Quad								
	Radiocarbon Y/N	Y ch	Y hznt	Y hznt	Y ch	Y hznt	Y hznt	N	N
	Sample Volume (litres)	29	25.5	11	8	8	32	23	7.5
	Total CV	50ml	25ml	20ml	30ml	10ml	5ml	10ml	30ml
	Modern	<2.5ml	5ml	20ml	20ml	30ml	50ml	30ml	20ml
Carbonised Cereal Grain	Common Name								
Hordeum vulgare sl.	barley				1				
Charcoal									
Quercus	oak								3 (0.34g)
Alnus	alder	1 (0.26g)			1 (0.36g)				
Indeterminate								1 (0.09g)	
Carbonised Wild Resources									
Corylus avellana nutshell	hazel nutshell		1 (0.02g)	2 (0.05g)	1 (0.02g)	4 (0.07g)	3 (0.08g)		

Structure 8	Context	914	921	926	929	931	938	940	956	917	919	928
	Sample	342	343	347	346	350	352	354	366	349	341	345
	Feature	PH (915)	PH (920)	PH (925)	pit (927)	fire pit (930)	PH (936)	PH (939)	pit (954)	pit (916)	PH (918)	pit (927)
	Area	S8	S8	S8	S8	S8	S8	S8	S8	S8	S8	S8
	Spit / Quad											
	Radiocarbon Y/N	Y cer	Y ch	Y ch	Y cer	Y ch	Y ch	Y ch	Y ch	N	N	N
	Sample Volume (litres)	9.5	3.5	28	1	28	2	22	32	4.5	21.5	6
	Total CV	260ml	270ml	280ml	10ml	25ml	105ml	20ml	5ml	10ml	40ml	<2.5ml
	Modern	50ml	<2.5ml	25ml	<2.5ml	30ml	5ml	30ml	15ml	5ml	200ml	5ml
Carbonised Cereal Grain	Common Name			bag mislabel (925)					bag mislabel (954)			
Hordeum vulgare var. nudum	naked barley			6								
Hordeum vulgare var. vulgare	six row hulled barley	7									3	
Hordeum vulgare sl.	barley	15		22	8		15			2	4	
Indeterminate cereal grain (+embryo)		8			10							1
Charcoal												
Quercus	oak	20 (8.39g)	30 (13.27g)	6 (0.58g)	6 (0.68g)		10 (3.02g)			8 (0.55g)	5 (1.31g)	
Corylus	hazel							1 (0.40g)				
Alnus	alder		1 (0.46g)	1 (1.65g)		1 (0.16g)						
Betula	birch						1 (0.33g)	1 (0.26g)	1 (0.10g)			

Structure 9	Context	1879	2157	2163	2190	2242	2245	2266	2271	2138	2145
	Sample	799	912	916	918	930	931	933	936	911	910
	Feature	PH (1878)	spread (2156)	ring ditch (2162)	PH (2187)	pit (2243)	ditch (2244)	ditch (2265)	ditch (2244)	ditch (2137)	pit (2144)
	Area	S9C	S9	S9	S9	S9B	S9A	S9A	S9A	S9	S9
	Spit / Quad							inner	outer		
	Radiocarbon Y/N	Y cer	Y hznt	Y hznt	Y hznt	Y hznt	Y hznt	Y hznt	Y ch	N	N
	Sample Volume (litres)	5	10	11.75	21	22	32	23	22	12	2.5
	Total CV	5ml	40ml	5ml	10ml	5ml	10ml	10ml	150ml	5ml	<2.5ml
	Modern	5ml	20ml	20ml	20ml	600ml	500ml	200ml	500ml	10ml	5ml
Carbonised Cereal Grain	Common Name									bag mislabel (2137)	
Hordeum vulgare sl.	barley	11									
Indeterminate cereal grain (+embryo)										3	6
Charcoal											
Corylus	hazel								1 (0.66g)		
Carbonised Wild Resources											
Corylus avellana nutshell	hazel nutshell		14 (0.58g)	2 (0.17g)	1 (0.03g)	4 (0.10g)	2 (0.07g)	3 (0.09g)			
Other Remains											
Modern seeds		1									

Field A	Context	225	195	195
	Sample	69	67	65
	Feature	pit (226)	pit (164)	pit (164)
	Area	field A	field A	field A
	Spit / Quad	Well Strip	SE Well	SE Well
	Radiocarbon Y/N	Y ch	N	N
	Sample Volume (litres)	20.5	8	2
	Total CV	500ml	3800ml	1500ml
	Modern	20ml	<2.5ml	<2.5ml
Charcoal				
Quercus	oak		53 (71.91g)	56 (31.56g)
Corylus	hazel	6 (1.81g)		
Carbonised Wild Resources				
Corylus avellana nutshell	hazel nutshell	2 (0.02g)		
Prunus spp. fruit stone	cherries	4 (0.04g)		

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