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ARO59: A Neolithic Monument, Iron Age Homesteads and Early Medieval Kilns: excavations at the Curragh, Girvan

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ARO59: A Neolithic Monument, Iron Age Homesteads and Early Medieval Kilns: excavations at the Curragh, Girvan

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Summary

In 2020, GUARD Archaeology Ltd conducted excavations in advance of development at Girvan Distillery, Girvan. The site lay around 5 km to the north-east of Girvan, South Ayrshire, with views out towards the island of Ailsa Craig and the Irish Sea to the west. Excavations encountered two substantial concentrations of archaeological features: one on top of a rocky plateau to the east, and another around 50 m to the west of the plateau.

To the west of the plateau was an enclosure of monumental scale, identified by pits and postholes, radiocarbon dated to the early Neolithic period. The enclosure was rectilinear in form and was constructed from substantial oak posts, and appears to fall into an early Neolithic tradition of large, linear timber monuments. From these postholes and pits were recovered several fragmentary Carinated Bowls which appear to have been cooking vessels. Within the enclosure was a cluster of seven four-post structures, possibly used as granaries. Two were radiocarbon dated and they are considered contemporary with the enclosure.

The features on the plateau included an unenclosed later Bronze Age/early Iron Age roundhouse (Structure 3), with a similar dated (c. 1550 – c. 600 BC) four-post structure (Structure 4), and an Iron Age roundhouse (Structure 1) enclosed within a palisade and also an associated four-post structure (Structure 5) of similar early centuries AD date. The Structure 1 roundhouse was altered during its use and constituted the final phase of Iron Age occupation. Its surrounding palisade had a substantial gateway defined by posts: suggesting access to the roundhouse or to the area within the palisade was restricted. Architectural styles also changed over time, with the earlier Structure 3 featuring a porched entranceway to the west, while the entrance to Structure 1 faced east. However, Structure 1 probably also had another less formal entrance to the west.

Although Iron Age material culture proved to be sparse, a copper-alloy brooch of Roman origin was recovered from the Structure 1 palisade, adding to the growing corpus of Roman-derived material culture recovered from native Iron Age settlements of the early centuries AD.

Though no definitive metalworking structures were encountered, a small amount of vitrified material, evidence of ironworking, was recovered mainly from in and around roundhouse Structure 3. Iron Age crops included mainly barley with some emmer wheat and possibly oats. Animal remains from secure contexts were notably scarce, though tentative evidence for the exploitation of wild game in the form of a fragment of deer antler was recovered.

Occupation in the early Neolithic period was also demonstrated through radiocarbon dating and the recovery of several Carinated Bowls, a pitchstone flake, and a polished stone axehead from ephemeral deposits in amongst the features constituting the roundhouses.

The latest archaeologically significant features were three similar grain drying kilns, one of which was radiocarbon dated to the early medieval period.

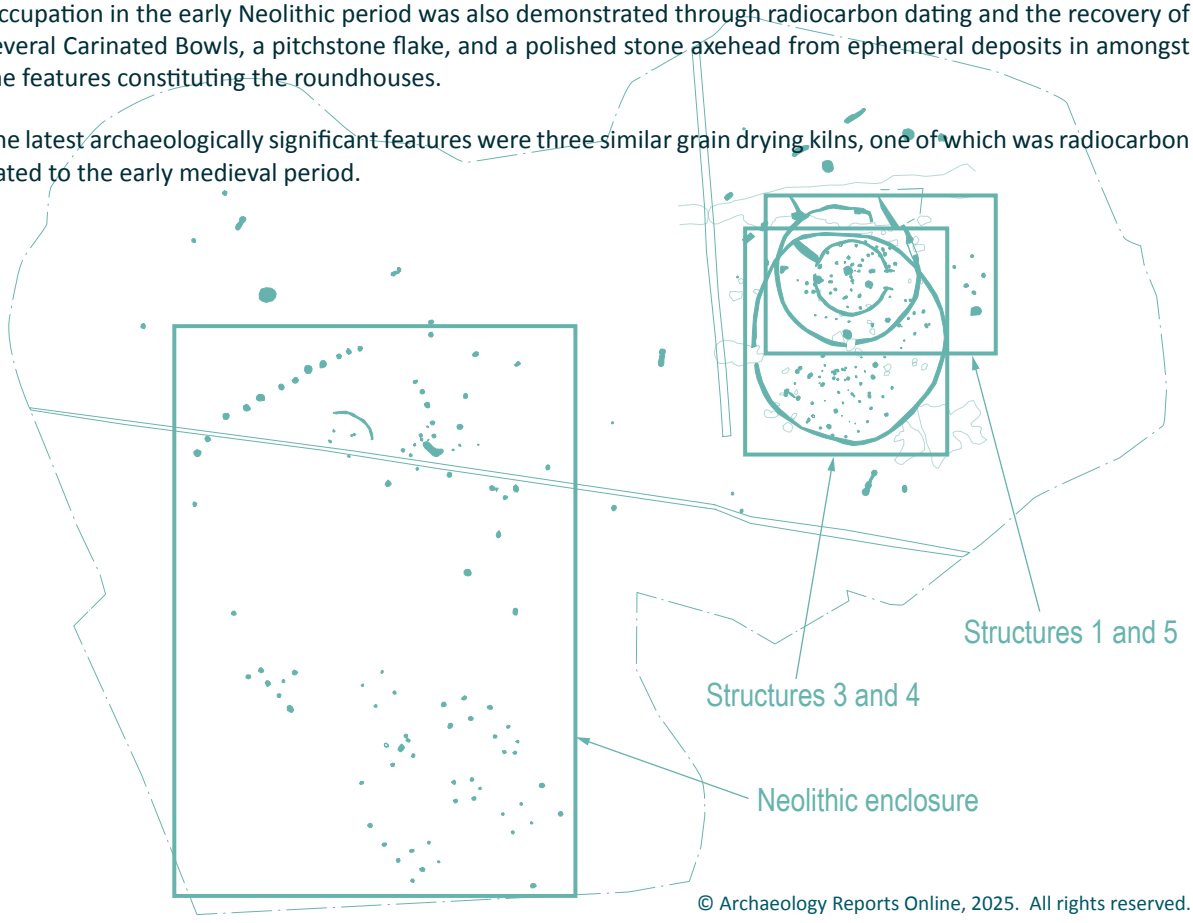

Figure 1: Location of the investigated area.

Introduction

Between July and December 2020 GUARD Archaeology Ltd, on behalf of William Grant and Sons (Distillers) Ltd, undertook an archaeological excavation in advance of development at Area 5 of the Curragh, South Ayrshire. An initial trenching evaluation indicated the presence of several archaeologically significant features, including postholes, a ring ditch, and a likely fire-pit (McNicol 2019). Subsequent to evaluation, a topsoil strip of the development site was conducted that uncovered three discrete areas, Areas 3, 4 and 5 in the western half of the development area. Area 5 to the south-west revealed a wide range of archaeological remains that dated from the early Neolithic through to the early medieval periods and is the main area discussed here.

Site location and topography

The development site (Figure 1) was located approximately 5 km to the north-east of Girvan, South Ayrshire, and is centred at NGR: NS 20723 01058. It was bounded to the west by William Grant and Sons (Distillers) Ltd warehousing, and to the north, east and south by a mixture of pasture and arable fields. The site has views to the west out towards the island of Ailsa Craig and the Irish Sea. Topographically, the site is located at the mouth of a valley through which flows the Water of Girvan, around 1.3 km to the south.

The eastern half of the site featured a plateau which has several bedrock outcrops. The plateau slopes steeply downwards to the north, from 57 m OD to 53 m OD, with significantly more gentle slopes to the west, south, and east. The western half of the site sits at 55 m OD, and slopes down gradually towards the north, south and west.

Archaeological background

The potential for archaeological remains was highlighted by several earlier phases of archaeological work carried out in advance of development on land to the immediate north-west of the site. These works recorded prehistoric remains including an alignment of Neolithic postholes/pits, a late Bronze Age to an early Iron Age palisaded roundhouse, and several burnt mounds (Spence and Kilpatrick 2013; Spence 2015). Further remains were encountered through subsequent excavations to the north-west, including several burnt mounts and a pit from which was recovered a polished stone axehead (McNicol 2017).

Fieldwork results

The early Neolithic

The earliest remains encountered at Curragh 5 are dated to the early Neolithic period and were recorded on top of the plateau, with other features located around 50 m to the west. Tentative evidence of a possible earlier visitation to the area is suggested by the recovery of a single late Mesolithic backed bladelet, though no further Mesolithic remains were encountered during the excavation.

Pit alignments

In the western part of Area 5, four alignments of pits and postholes were encountered which comprise the most substantial early Neolithic remains within the excavated site (Figure 2). The alignment to the north comprised a series of twelve pits and postholes oriented north-east/south-west (045, 047, 049, 055, 057, 160, 167, 170, 172, 175, 309 and 311); the alignment to the east was of seven pits and postholes oriented north-west/south-east (020, 313, 331, 351, 353, 359 and 391); and another of ten pits and postholes oriented north-west/south-east formed a broken line to the west (209, 217, 224, 245, 256, 265, 286, 288, 295 and 324). A line of four other postholes (231, 249, 267 and 282) were also identified that was situated further to the south-east but in a north-west/south-east alignment that lay parallel to the western ones. Another posthole (071) may represent a continuation of the east alignment.

The northern pit/posthole alignment was approximately 30 m in length and the eastern and western pit alignments seemed to extend from the termini of it. The western pit alignment is discontinuous, with pits and postholes towards the south-east separated by large gaps. However, taking this alignment together it measured at least 70 m in length and perhaps extended beyond the excavated area. The eastern alignment measured c.15 m in length and the offset and widely spaced alignment of four possibly related postholes was c. 20 m in length.

It is uncertain whether these discontinuous lines of pits and postholes or the gaps between them are representative of a complete structure, or whether there has been a significant level of truncation resulting in the loss of a large number of its features. The latter appears to be highly likely as the site had been subject to ploughing over the last three centuries (Shearer and Sneddon 2007). Later prehistoric structures adjacent to the pit alignments also have clear evidence of substantial truncation likely caused by ploughing (see Structure 13, below). Furthermore, it was noted during the excavation that the pits of the

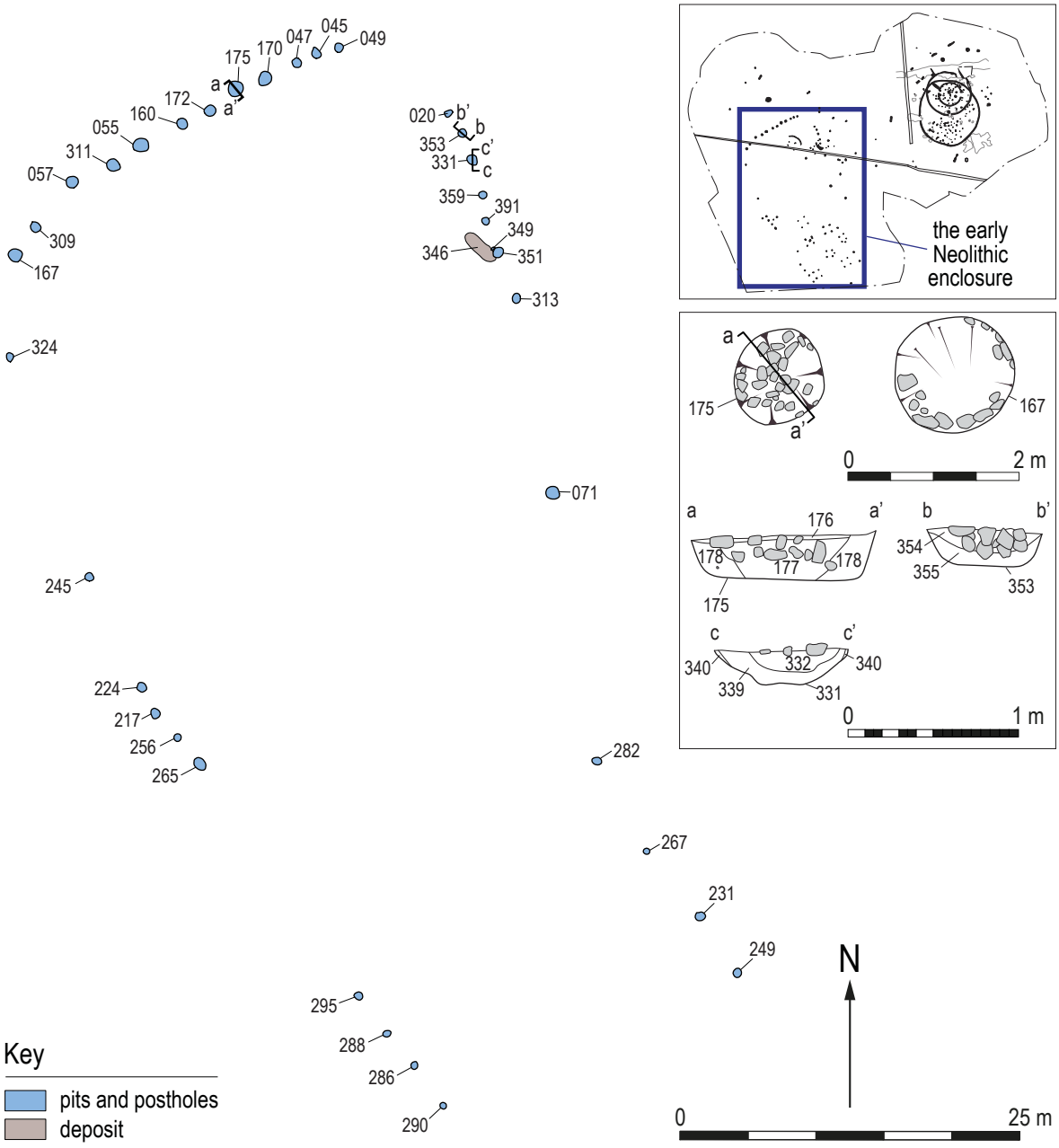

Figure 2: The early Neolithic enclosure.

enclosure were difficult to locate, with those in the eastern arm only located through differential drying patterns after a chance episode of heavy rain. It is possible that further features existed that were indiscernible during the excavation.

The sub-circular postholes constituting these alignments were on average 0.7 m in diameter and were generally steep-sided although only between 0.2 and 0.3 m in depth. They contained similar fills of clayey silt, with several of them having large amounts of stones that are likely to have been packing for timber posts. Archaeobotanical analysis identified a substantial quantity of oak charcoal within the fills of posthole (055), and lesser amounts of it within the fills of postholes (217, 224, 313 and 359), indicating that oak posts were present.

Significant quantities of pottery were recovered from the fills of several of the features within the alignments. Pits/postholes (217, 256 and 265) were adjacent within the western alignment, and each contained the incomplete remains of a single vessel (Vessels 1, 2 and 3 respectively). Sherds representing an additional pottery vessel (Vessel 9) were also recovered from pit/posthole (391) in the eastern alignment. Analysis of the pottery suggests that these vessels are early Neolithic carinated bowls.

Archaeobotanical analysis also identified carbonised hazel nutshells within the fills of several of the features with degraded examples recovered from pits (313 and 359). A well-preserved and substantial amount of hazel nutshell from pit/posthole (217), along with significant quantities of hazel and oak charcoal found in a carbonised layer was indicative of in-situ burning. This evidence indicated that the feature was later used as a fire-pit for the roasting and processing of hazelnuts.

A total of six radiocarbon dates were obtained for these features (Table 1). These relatively tight date ranges suggest that the postholes and pit alignments were broadly contemporary and may have constituted a single structure. Along with the pottery remains recovered from their fills, they provide good evidence that these features date from the early Neolithic period.

As mentioned above, an alignment of four similar postholes (231, 249, 267 and 282) was encountered on the east side that was roughly parallel to the western alignment. Three of these (231, 249 and 267) contained packing stones for posts, whilst archaeobotanical analysis recovered a substantial quantity of oak charcoal from posthole (282). Radiocarbon dating of the charcoal provided an early Neolithic date (Table 1).

Immediately to the west of pit (359) were a number of features that suggested a contemporary use with the eastern arm of the enclosure, especially as three sherds of Vessel 10 (early Neolithic Carinated Bowl pottery) were found in the fill of posthole (371). Further analysis and dating of deposits from this area indicated that the features were likely to be the remains of a middle to late Bronze Age structure (see Structure 14, below), and the Neolithic pottery intrusive.

Four post-structures 6 to 12

A group of seven four-post structures (6-12) (Figure 3) were located within the south-eastern arms of the early Neolithic pit alignment. Most were aligned north-east/south-west. Most of these structures were broadly similar in size, from the smallest at 2.6 m by 2.4 m to the largest at 3.5 m by 3.5 m. Posthole diameters varied from 0.33 m to 0.65 m with depths between 0.14 m to 0.64 m, but all contained packing stones in a sandy or clayey silt matrix. The shallower postholes were probably due to the height of the bedrock, especially in Structure 12. Only Structure 10 varied from the norm of four postholes as a fifth (187) was noted just to the east of the four-post arrangement. It was smaller and shallower than the others and it contained no packing stones, but is considered to have performed a structural function.

The structures were remarkable for their lack of cultural and environmental evidence but only a fragment of hazel nutshell was recovered from posthole (226) of Structure 7, and a single degraded grain of barley from the fill of posthole (273) of Structure 8, neither of which were suitable for radiocarbon dating.

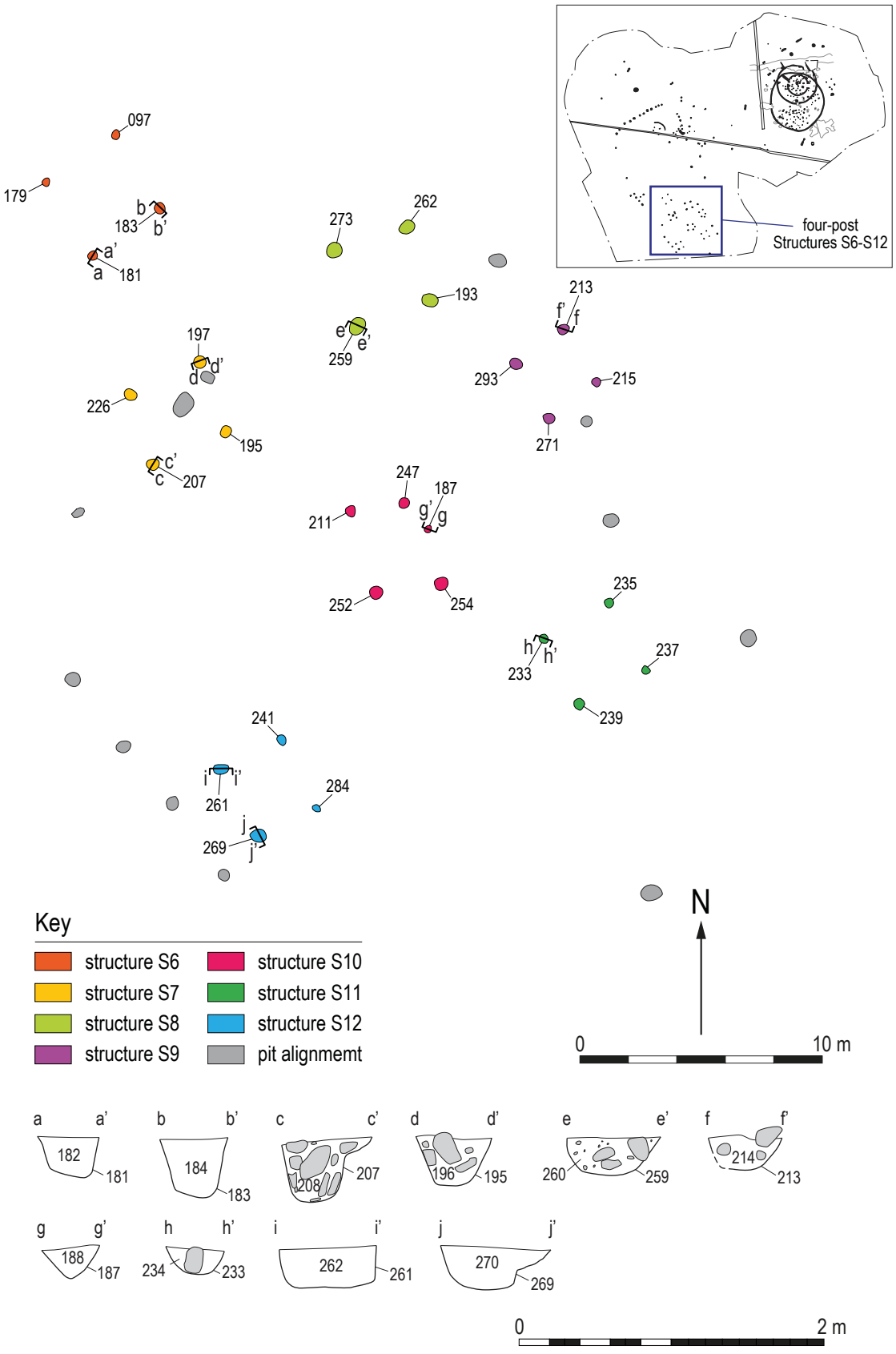

Figure 3: Four-post structures 6-12.

Other features

In addition to the pit alignments further evidence of Neolithic inhabitation was encountered on top of the plateau (Figure 4). Two ephemeral deposits containing Neolithic pottery were excavated there: deposit (725), measuring 0.3 m by 0.2 m by only 30 mm in depth. It was located between two natural stone outcrops and the remains of an early Neolithic carinated bowl, Vessel 12 were recovered from it. A second shallow deposit (413) measured roughly 0.65 m by 0.65 m, and 30 mm in depth, contained the remains of a middle Neolithic Impressed Ware bowl, Vessel 11. It appears that the stone outcrops had protected the vessels from later phases of prehistoric construction in the area and from truncation through ploughing.

In addition to these pottery vessels, two examples of stone artefacts likely date to the Neolithic were recovered. A struck flake of Arran pitchstone (CAT 9) was recovered from pit (559) that measured 1.7 m by 1.3 m, with a depth of only 0.15 m. Although material from this pit was not radiocarbon dated, the distribution of pitchstone from its source on the Isle of Arran is believed to be a predominantly an early Neolithic phenomenon (Ballin 2009, 38). Approximately 2 m to the north was pit (545) that measured 0.67 m by 0.58 m by 0.12 m, from which was recovered a near-intact ground and polished flint axe-head SF 038. Ground and polished axes are characteristic of the Neolithic period in the British Isles (Malone 2001, 227).

Bronze Age/early Iron Age structures

Several structures were identified as falling into the time period of the middle Bronze Age to the early Iron Age. They are described in numerical order.

Structure 3 – roundhouse

This building (Figure 5) comprised a simple ring c. 8.6 m in diameter of fourteen postholes (416, 418, 421, 423, 425, 427, 431, 433, 435, 449, 451, 453/455 and 488) positioned approximately 1.6 m apart. The postholes measured on average 0.4 m in diameter and between 0.15 and 0.3 m in depth, and enclosed an internal space c. 8 m in diameter (c. 58.6 m²). Each posthole was filled with clayey silt and several contained packing stones for posts (418, 423, 431, 449 and 451). Small amounts of oak charcoal were recovered from posthole (416), a small amount of oak and hazel charcoal from posthole (433), alder charcoal from posthole (449) and a single carbonised grain of oat (*Avena* sp) oat from posthole (431). No evidence was encountered of a drip gully surrounding the building.

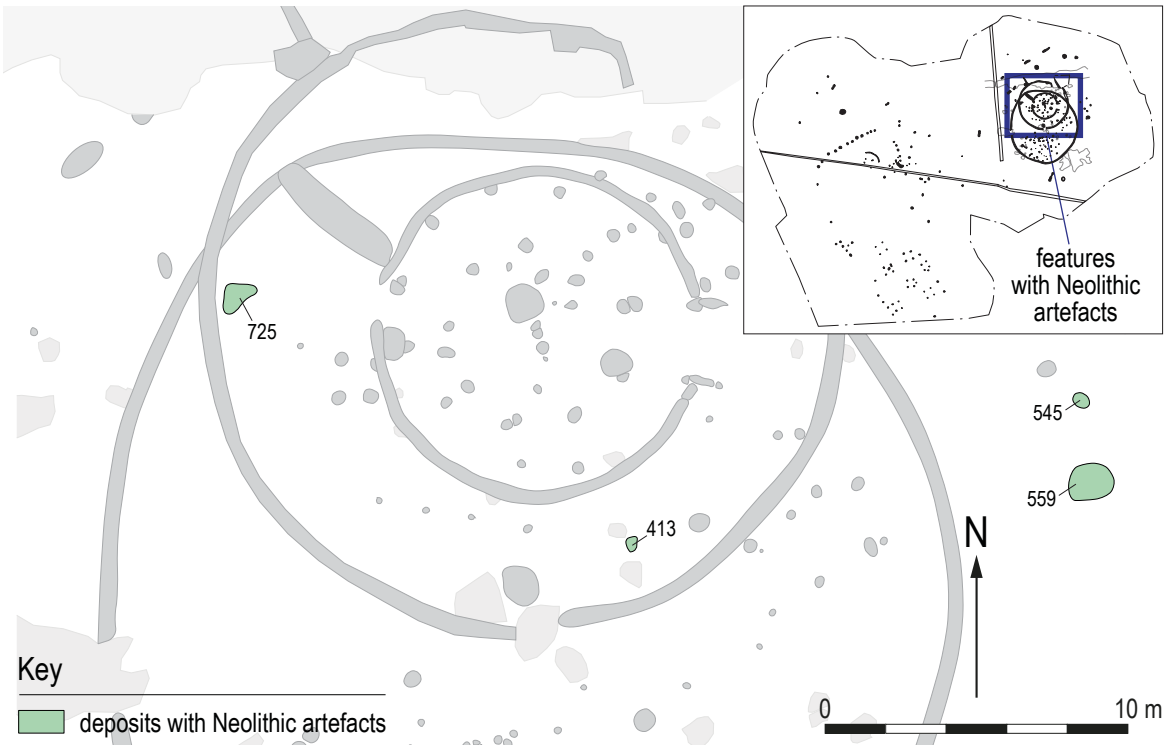

Figure 4: Features with Neolithic artefacts.

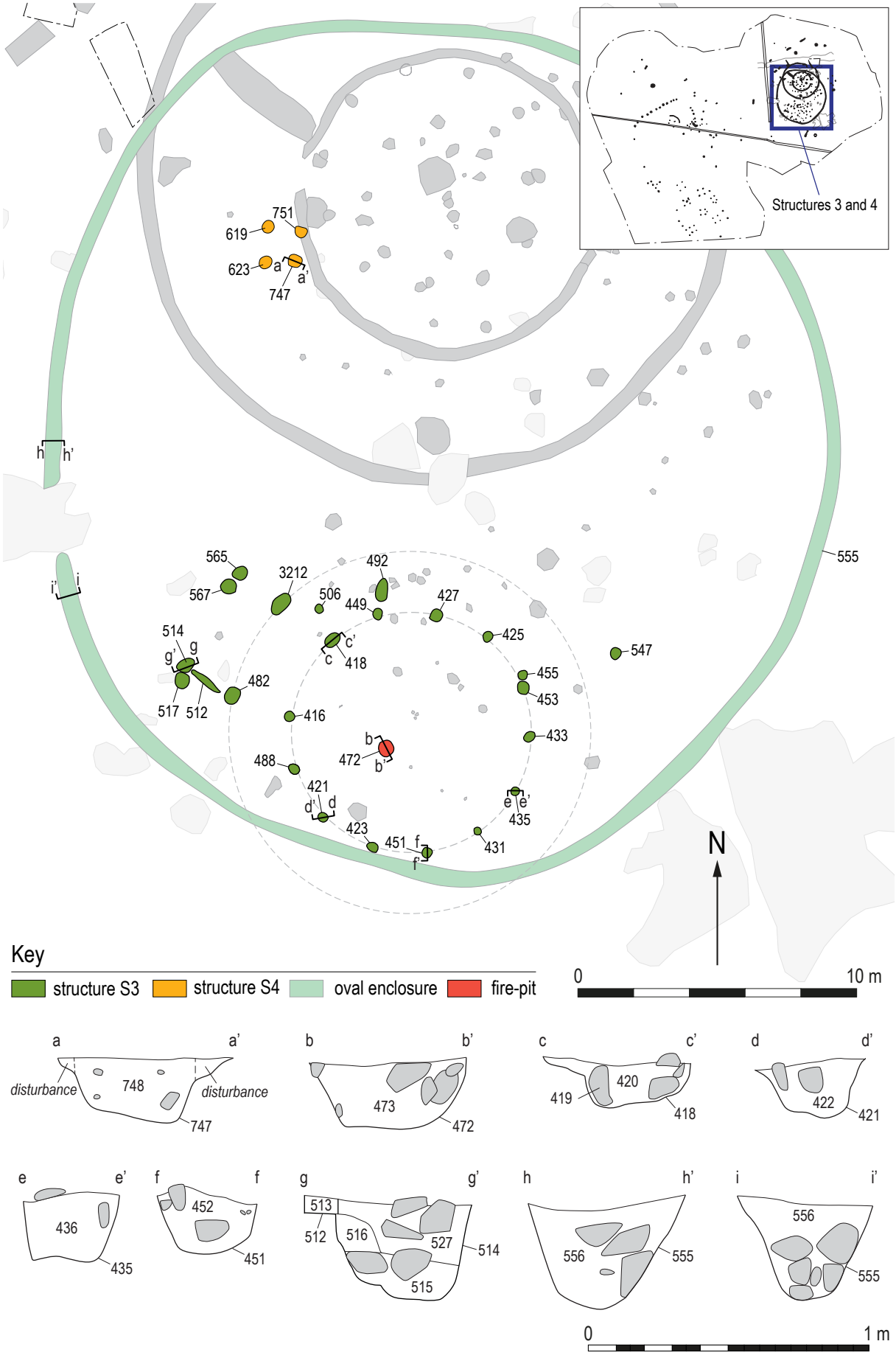

Figure 5: Plan of Structures 3 and 4 and the enclosure (555).

A feature, interpreted as a porch or entranceway, extended 4 m outwards to the north-west from the post-ring. It included a pair of postholes (482 and 3212) linked to other two pairs of near-vertical sided postholes (514 and 517, and 565 and 567), creating a passageway 2.9 m in width. The postholes contained clayey silt deposits and apart from posthole (565), all contained packing stones. The survival of shallow linear feature (512) linking the south-western pairs of posts indicated that the feature had, at least, one timber side wall. The pairing of the four outermost postholes suggested they had either an architectural function or they were evidence of repair or rearrangement of the entranceway. Small amounts of oak charcoal were recovered from posthole (514), a mixture of oak and hazel charcoal from (517), and hazel charcoal from (565).

A pit (472), c. 0.6 m diameter and with a surviving depth of 0.28 m, was located off-centre within the interior of the structure. It was filled with silty sand and contained hazel charcoal, a few fragments of hazel nutshell, a single grain likely to be barley and several small fragments of unidentified mammal bone. This evidence suggests that it was a fire-pit as it was utilised for cooking and hazel charcoal from it was dated between 756 – 606 cal BC (UBA-51577).

Three other radiocarbon dates were obtained from postholes (418, 433 and 449) forming the post ring of Structure 3. Hazel nutshell from (418) provided the earliest date from within the middle Bronze Age between 1399-1217 cal BC (UBA-51575). Hazel charcoal from (433) provided a date range of 899 – 769 cal BC (UBA-52332) and alder charcoal from (449) provided a range of 743 – 404 cal BC (UBA-52333), both indicating dates the end of the late Bronze Age and within the early Iron Age period. The date range obtained was, unfortunately, fairly wide, spanning nearly 1000 years. Given that two dates indicate an Iron Age date, it is plausible that the hazelnut shell, being a notably resistant and enduring material (see Ballin 2022), is intrusive and early. Structure 3 is therefore deemed to date the end of the late Bronze Age and into the early Iron Age.

Structure 4 – four-poster

This structure is located c. 13 m to the north of Structure 3 and on the west side of Structure 1, consisted of four postholes (619, 623, 747 and 751) at the corners of a square structure (Figure 5). It measured roughly 1 m by 1 m with postholes c. 0.5 m in diameter and 0.25 m in depth. Each posthole contained packing stones for a post and each was filled with clayey silt. Posthole (751) was truncated by the gully (660) of Structure 1.

The two radiocarbon dates obtained from the fills of the postholes provided a wide date range for the structure. A carbonised hazelnut shell from posthole (747) was dated to 1187 – 928 cal BC (UBA-52340), whilst hazel charcoal from posthole (619) provided a date range of 756 – 417 cal BC (UBA-52334). These dates overlap with those obtained from Structure 3, and suggest the contemporaneity of the two structures.

Structure 13 - truncated roundhouse

To the west of the plateau a partial gully (023) with a possible central ring of five postholes (326, 329, 401, 403 and 405) indicated another possible roundhouse, Structure 13 (Figure 6). Only an 8 m length of the gully survived as features in this area were heavily truncated by ploughing. A later straight field boundary ditch (3802) ran east/west through the middle of the structure and added to its disturbance and the loss of features. The gully was 0.35 m in width but truncation had left it only 10 mm in depth. It contained a homogenous deposit of clayey silt with no post or stakeholes or packing stones but two fragments of daub were recovered. It is estimated that the gully would have had a diameter of roughly 8.9 m.

The postholes lying within the arc of the gully were also highly truncated. They were on average 0.35 m in diameter, with depths of only c. 0.15 m. All were filled with clayey silt and no finds were recovered from them, except (023). Radiocarbon dates were not obtained and therefore the phasing of the structure is uncertain.

Structure 14 - another possible roundhouse and surrounding pits

Approximately 10 m east of Structure 13, and overlying the north-east arm of the Neolithic enclosure, were the remains of another possibly circular structure, Structure 14 (Figures 6 and 7). It consisted of the western arc of a ring of posts, with four surviving postholes (307, 342, 335 and 369) set approximately 1.3 m apart from each other. It would have had a diameter of 5.5 m had it been complete. Disturbance by a field boundary ditch (3802) and modern agricultural activity removed evidence of the southern-eastern arc of this structure. The postholes were all sub-circular in shape, measuring on average 0.4 m in diameter but were only between 0.1 m and 0.22 m deep. Fragments of pottery, SFs 21, 26, and Vessel 13, considered later Bronze Age, were recovered respectively from the fills of postholes (307, 342, and 369).

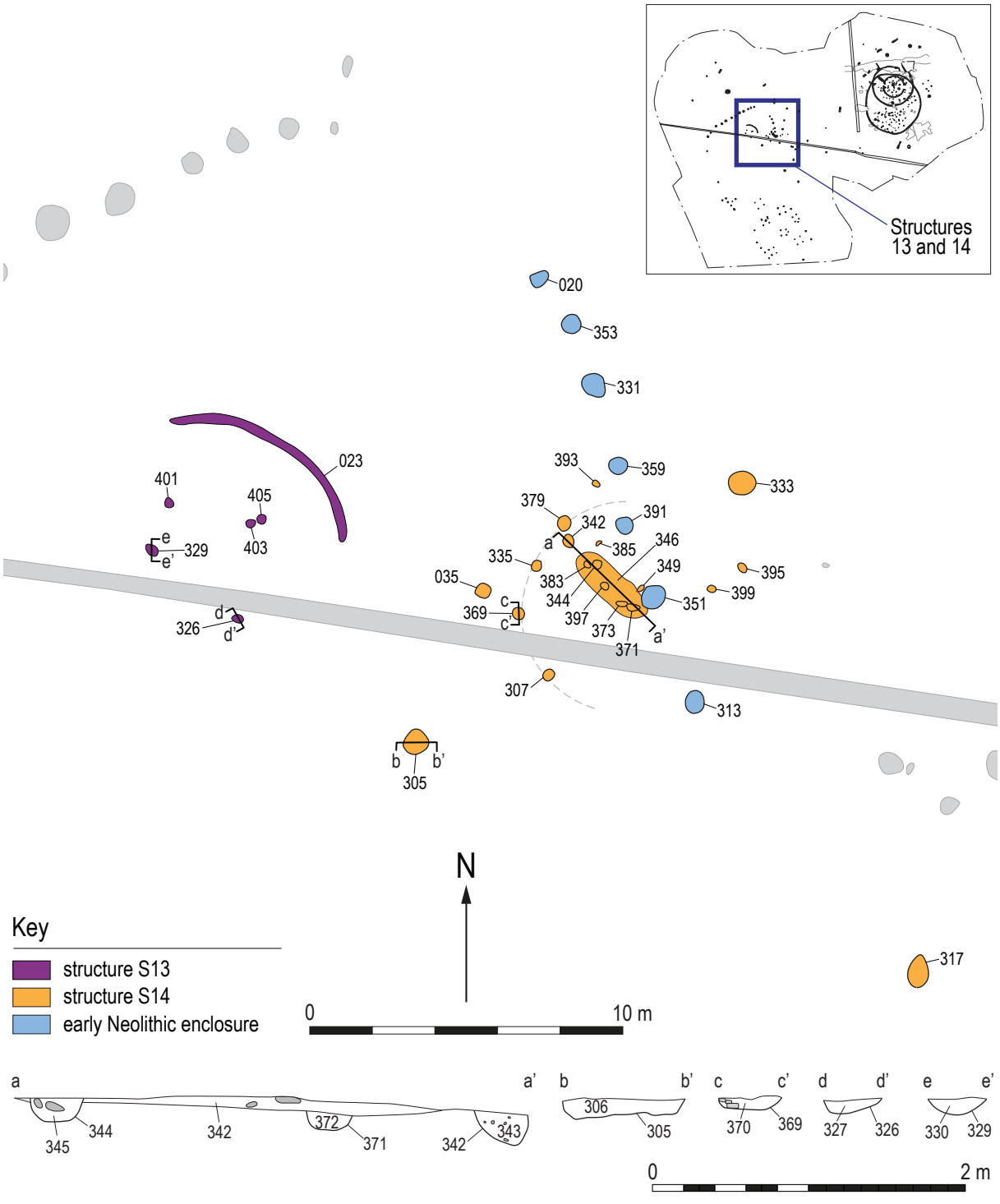

Figure 6: Plan of Structures 13 and 14.

Figure 7: Structure 14 beside the large postholes of the early Neolithic enclosure.

Within the northern half of Structure 14, a shallow deposit (346), possibly an occupation layer, sealed five small pits or postholes (344, 371, 373, 383 and 397). The latter were all sub-circular in shape, between 0.23 m and 0.43 m in diameter but averaged only c. 0.1 m in depth. A range of carbonised wood fragments were recovered from them, including: oak charcoal from pits (371 and 373); willow or poplar charcoal from pits (373 and 397), and alder charcoal from (383). Three sherds of a later early Neolithic Carinated Bowl, Vessel 10, were recovered from the fill of pit (371), and sherds SF 031 provisionally dated to the Bronze Age, was recovered from posthole (397). A further two small pits (349 and 385) measuring c. 0.24 m in diameter with depths between 0.17 m and 90 mm, were located directly east of the deposit (346).

Two external pits (035 and 379) were located immediately west and north-west of the structure. They were both sub-circular with diameters of 0.6 m and 0.45 m, and depths of 0.25 m and 0.12 m respectively. Fragments of Bronze Age pottery, Vessels 4 and 5, were found in the fill of (035) suggesting they may have been closely related to the activities of Structure 14. Pit (035) also contained fragments of oak and hazel charcoal, along with a single degraded grain of barley.

Situated 2.8 m to the north-east was a larger a pit (333) at 0.9 m by 0.75 m by 0.1 m. It contained no material cultural evidence or evidence of in-situ burning to interpret its function.

Approximately 12 m to the south-east was a second cluster of small pits, again with no discernible pattern (299, 301, 319 and 337). Sherds from at least four vessels were recovered from these pits: Vessels 5, 7 and 8 from pit (301); and Vessel 6 from pit (319). All of them were Bronze Age in date. Fragments of Vessel 5 were also found in the fill of pit (035). It is suggested that these sherds were likely incorporated within these pits as waste sweepings, rather than as deliberate depositions.

The enclosure

The large sub-circular/oval enclosure, comprising a ditch (555) that measured 30 m by 27 m and encompassing an area of c. 650 m², was the largest single structure excavated (Figure 5). The ditch averaged 0.5 m in width and it survived 0.4 m deep. It was filled with homogenous brown silty sand (556), and contained abundant scattered stones which likely represent packing stones but no post or stakeholes were noted within it. The slight deviation of its south-eastern arc suggests that its course was altered to avoid an outcrop of bedrock to the immediate south-east. No

definite entranceway features were encountered, but the ditch abutted a bedrock outcrop in the west. Noticeable wear across the 2.7 m wide outcrop at this point suggests it was utilised as an access or entranceway into the enclosure. Little material cultural or environmental evidence was recovered from the fill (556) of the ditch except small amounts of prehistoric pottery, but sherd SF 046 was identified as being Bronze Age in date. The enclosure was not radiocarbon dated but it is earlier than both Structure 1 and Structure 3. A fire-pit (615) was located to the immediate exterior of the intersection of the enclosure ditch with the palisade ditch in the west. The relevance of the fire-pit to either feature is not known.

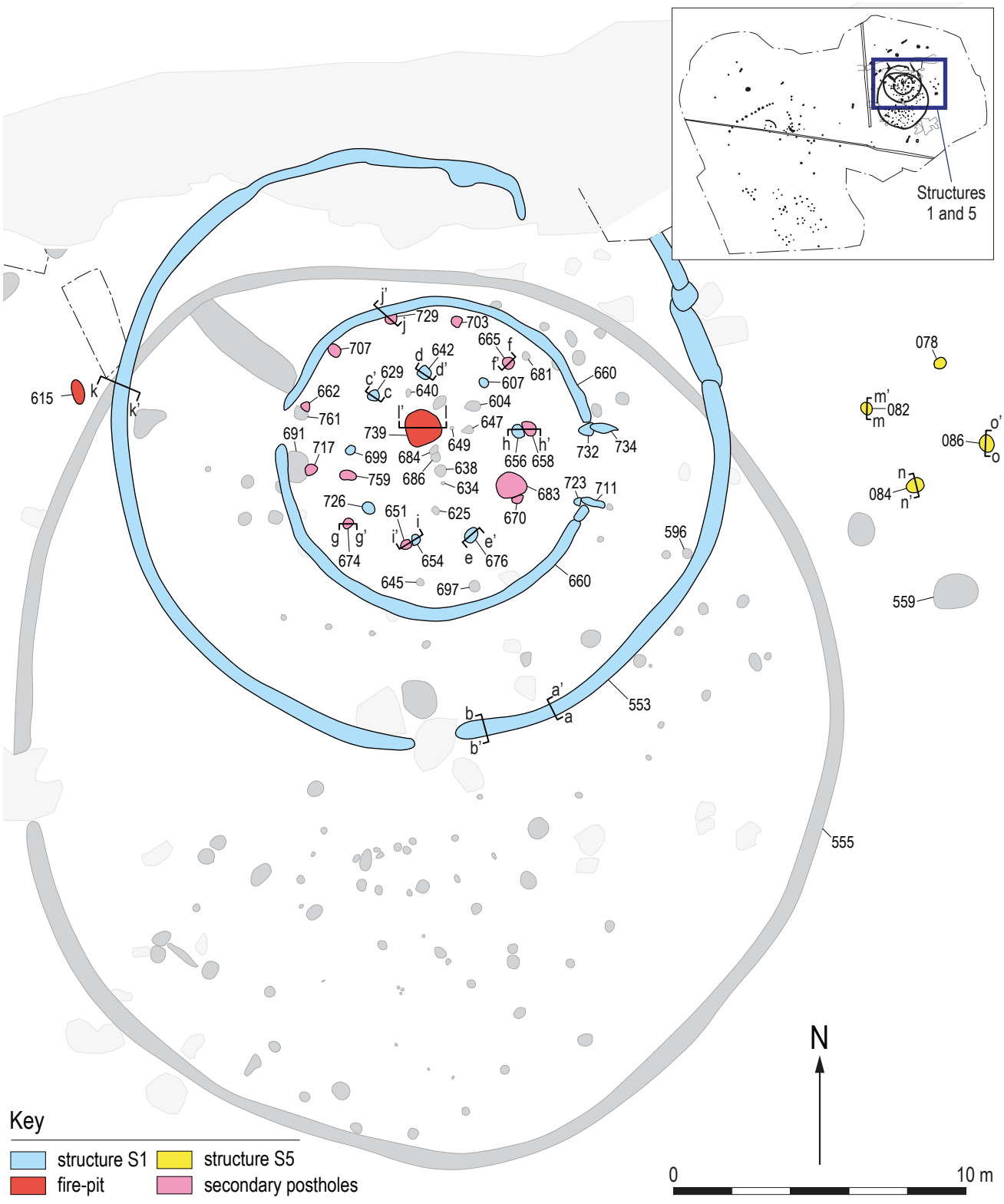

Figure 8: Structures 1 the palisaded roundhouse and Structure 5 a four-post building.

Iron Age roundhouses and four-post structure

This phase of activity is represented by Structure 1, an Iron Age roundhouse with a palisade and another four-post structure, Structure 5.

Structure 1 – original features of the roundhouse

The roundhouse comprised two distinct features: a central ring of postholes and a surrounding shallow gully (Figure 8), which was located within 1 m of the northern arc of the enclosure ditch (see above). The juxtaposition of the two perhaps indicates the (earlier) enclosure was no longer a viable structure and was replaced by a deep outer ditch representing the remains of a palisade designed to encircle the roundhouse (see below).

Figure 9: South-east facing section of posthole (676) during excavation.

The ring of ten postholes (607, 629, 642, 651, 656, 676, 683, 701, 726 and 759) identified the interior of the building that had a diameter of 5.7 m. Their main function was to hold substantial posts that would take the weight of the conical roof construction. The postholes were on average 0.45 m in diameter and survived between 0.2 m and 0.45 m in depth with near-vertical sides (Figure 9). They contained fills of dark greyish or orangey brown sandy silt, and several had stones used as packing or supports for their wooden post. Posthole (683) was over twice the size of the others at 1 m by 0.8 m and deeper at 0.55 m. Its location and size suggests that was linked to the eastern entrance, where extra internal structural support may have been required. Radiocarbon dating of hazel charcoal recovered from posthole (651) provided a date range of 86 - 237 cal AD (UBA-51580), the middle Iron Age, and a date range of 129 – 326 cal AD (UBA-52338) was calibrated from hazel charcoal recovered from posthole (676). However, an anomalous date was recovered from the fill of posthole (607) where a carbonised hazelnut produced a date range of 3340 - 3031 cal BC (UBA-51579).

A sub-circular fire-pit (739) was identified lying to the north of centre within the interior of the roundhouse (Figure 10). It was the largest feature there measuring 1.3 m by 1.02 m and had a depth of 0.6 m. It contained several charcoal-rich *in-situ* burnt deposits, from which were recovered trace amounts of hazel nutshell and a single grain of six-row hulled barley.

A 0.45 m wide and shallow gully (660), surviving no deeper than 0.2 m (Figure 10) surrounded the interior of the building at a distance of approximately 2 m from the ring of posts and enclosed a space of c. 10.2 m in diameter. It was filled with dark clayey silt (661) with some stones perhaps to stop erosion, fragments of burnt bone, charcoal and a sherd of possible Iron Age pottery, SF 056. This feature is likely to have formed from the rainwater running off the steeply pitched conical roof of the roundhouse, and the gully indicates the extent of the roof (see Ballin Smith forthcoming).

Two opposed entranceways were visible to the east and west forming gaps in the gully circuit. The eastern entranceway was approximately 2 m wide, with circular postholes (723 and 732) located at the termini of the gully with two elongated pits (711 and 734), running from them towards the east. These four features formed (part of) a 1.3 m long porch or entranceway. The postholes measured 0.3 m to 0.45 m in diameter by c. 0.22 m in depth, while the elongated pits were c. 1 m by 0.35 m by 0.18 m. Oval pit (711) truncated a possible posthole (709) to its immediate east, which may have formerly marked the end of the entranceway/porch. A single piece of possibly worked flint SF 055 came from its sand fill (710). The western entranceway was represented by a 1.1 m gap within the gully (660) but there were no additional features to suggest there was a formalised entranceway or porch. Radiocarbon dating of one sample of

hazel charcoal recovered from the fill of the gully provided a calibrated range of 126 – 245 cal AD (UBA-52335), while another produced a much earlier date range of 3774 – 3644 cal BC (UBA-51581).

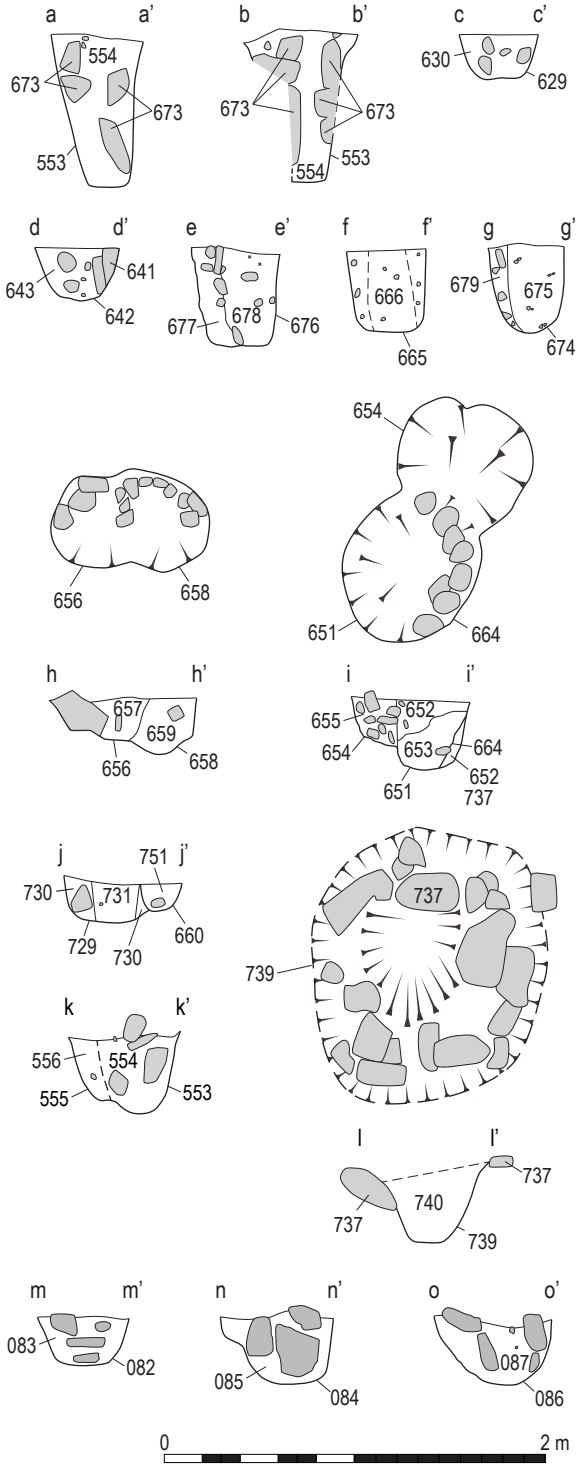

Figure 10: Plans and sections through Structure 1 features.

Several small pits and postholes were excavated within the interior demarcated by the ring of posts (604, 625, 634, 638, 640, 647, 649, 684 and 686), lying centrally and south of the fire-pit, and north-east of it. Carbonised hazel nutshell was recovered from pit (638) indicating possible fuel waste sweepings from the fire-pit (739) or from the floor of the building. Oak charcoal from pit/posthole (647) could have a similar origin but it is not inconceivable that it may have derived from a wooden screen along with posthole (604). that protected the fire-pit from the main entrance (see below). The alignment of possible postholes (686, 638 and 686) along with (634) also suggests a partition or screen, lying south of the fire-pit (739) and between the two entrances. Burnt Neolithic pottery, Vessel 14, found in the fill of pit (604) may indicate disturbance of earlier features in the vicinity.

Between the inner ring of posts and the gully (660) were the occasional pit. Pits (645 and 697) in the south were unremarkable, but the fill of pit (681) contained some stones. Pit (691) was more informative. At 1.15 m in diameter and with a depth of 0.38 m, it contained frequent burnt stone, burnt bone and single piece of worked flint SF 054, suggesting it may have been an earlier fire-pit as it was overlain by the roundhouse gully (660). Besides the west entrance and near the northern terminal of the gully, pit (761) contained fragments of middle Neolithic pottery SF 061.

Interior alterations

Structural alterations are noted in the interior of the roundhouse concerning its ring of posts. The alterations comprised an additional off-centre ring of ten postholes (654, 658, 662, 665, 670, 674, 703, 707, 717 and 729), that were closely paired with existing postholes in the south-eastern half of the building, or lay c. 1 m to the exterior of postholes (607 and 726), or in the north-western part of the structure were situated close to the gully's inner edge (Figure 8). The distribution of these posts suggest that the replacement or reinforcing of posts took place in the south-east part of the building (651/654 and 656/658) (Figure 10), but in the north-western arc their function appeared to buttress existing posts. Original posthole (676) may have been reinforced earlier as it was deeper and contained stone packing. Although similar in size to the original postholes, these secondary features

indicated that their wooden posts were put deeper into the ground. The reasoning behind these alterations forms part of the discussion (below).

Possibly coinciding with these changes, a large flattish capping stone (736) surrounded by wedge stones had been placed on top of the original fire-pit (739) sealing its contents (Figure 11). The alterations would have affected the roof and may have necessitated an extra wooden post in the centre of the building, supported on the capping stone (736).

Figure 11: The large stone capping to fire-pit (739).

The palisade

The ditch (553) encircling the roundhouse measured 20.4 m in diameter, 0.6 m in width, with an average depth of 0.8 m. It enclosed a total area of 326m². It had a flat base and near vertical sides, which were lined with abundant large packing stones that left a central space of roughly 0.2 m between the packing (Figure 12). No postholes were encountered at the base of the ditch, although the packing stones suggest that it once contained some form of wooden fence, perhaps upright timber or posts, and therefore acted as a palisade. Small amounts of alder (*Alnus*) charcoal were recovered, which may suggest the use of alder in the construction. The alder charcoal provided a radiocarbon date range of 126 – 304 cal AD (UBA-51578). A small fragment of possible deer antler was also recovered from the ditch fill (see Animal Bone, below).

Figure 12: The palisade (553) during excavation.

The space between the packing stones in the ditch was filled with dark clayey silt (554). Tumbled stones were observed throughout its fill, particularly along the interior edges of the ditch. However, along its outer edge the stone packing appeared to be largely intact, close fitting and *in-situ*. At its northern extent, the palisade ditch was only 0.15 m deep where it cut through an outcrop of bedrock and it contained none of the packing stones encountered elsewhere. Beyond this outcrop to the north, the plateau drops sharply into a small valley, and it may be suggested that the topography provided a natural barrier that reduced the need for a substantial palisade in this area.

In the north-eastern arc of the palisade ditch was an entranceway, roughly 2 m wide, and flanked by two large postholes (763 and 764), 0.8-0.9 m in diameter, which were 0.5 m in depth and contained *in-situ* packing stones and

probably substantial timber posts, possibly for a gate. A small amount of oak (*Quercus*) charcoal was found in the fill of posthole (763), which potentially indicates the use of oak timber, at the gateway. Radiocarbon dating of the oak charcoal from this posthole provided a date range of 124 – 309 cal AD (UBA-52341), whilst hazel charcoal recovered from the fill of the companion posthole (764) provided a similar date range of 123 – 237 cal AD (UBA-51582).

Features between the gully and the palisade

Specialist analysis recovered a small quantity of material, a pair of conjoined slag spheres, from the fill of the gully (660) that are thought to be associated with ironworking in the vicinity of the roundhouse. Hammerscale, another by-product of working iron, was recovered from pit (596), located close to the palisade ditch (553) in the east. The same pit also contained a pumice pebble SF 181, possibly a burnisher for pottery.

Material culture evidence from Structure 1 was sparse, although a copper-alloy enamelled plate brooch SF 057 (see The Roman Brooch below) was recovered from the middle of the fill of the south-western arc of palisade ditch (553). As described above, the identification of pottery recovered from within Structures 1 was complicated by the existence of significantly earlier features within and around the structure.

Structure 5 – four-post structure

This four-post structure was located 4 m to the east of the Structure 1 entranceway and its palisade ditch (553) (Figures 8 and 13). The structure measured c. 3.2 m by 3.2 m, and comprised four sub-circular postholes (078, 082, 084 and 086), each averaging 0.5 m in diameter and between 0.36 and 0.46 m deep. Each posthole contained packing stones in deposits of silt.

Archaeobotanical analysis of the posthole fills identified a few degraded grains of emmer wheat (*Triticum dicoccum*) from posthole (082), whilst posthole (084) contained hazel nutshells mixed with fragments of clinker possibly derived from peat burning. Radiocarbon dating of alder (*Alnus*) charcoal from posthole (082) provided a date range of 197 - 3 cal BC (UBA-52326), whilst a carbonised hazelnut shell from posthole (084) provided a calibrated date range of 81 – 230 cal AD (UBA-52327). The former is earlier than the dates obtained from Structure 1 but the latter date suggests contemporaneity with the roundhouse.

Kilns

Three large kilns for drying grain likely to date to the Romano-British to early medieval period were excavated across the area. Only Kiln 1 was radiocarbon dated.

Figure 13: Structure 5 viewed from the east.

Kiln 1

This feature was located in the east, to the immediate south of the rocky plateau but cut into a bedrock outcrop (Figure 14). It was oriented north-east to south-west, measured c. 4 m in length and 1 m in width and comprised four distinct chambers (437, 439, 442 and 444)

Feature (442) was probably a stoking pit, designed to allow access to and direct airflow into the second chamber (444). This (444), with its ample evidence of in-situ burning events, was a flue, and where a fire would have been lit. Pit (439) probably constituted the kiln's drying chamber and it contained a large concentration of stones within its upper fill (440). These may have represented an above-ground stone-built element, which subsequently collapsed into the chamber. Aside from this, no evidence of a superstructure was encountered. The function of the conjoining pit (437) is uncertain. Its sloped base, leading downwards into the chamber in a similar fashion to pit (442) may suggest an air flow function.

A single sample was recovered from the basal fill of pit (439) that provided a date of 422 – 547 cal AD (UBA-51576). Unfortunately, the presence of abundant modern plant detritus with the sample was highlighted by the archaeobotanical specialist, which may suggest some level of modern disturbance that could potentially have affected the results. However, given the relatively tight date range provided, it seems likely that a Romano-British/early medieval date can be attributed.

Kiln 2

This kiln (039) was located towards the centre of the site, around 14 m to the west of the oval enclosure (555). It was oriented roughly north/south and comprised two distinct chambers: a circular pit to the north, measuring roughly 0.85 m by 0.85 m with a depth of 0.45 m; and an adjoining sub-rectangular pit to the south, measuring 1.75 m by 0.7 m and with a depth of 0.4 m (Figure 14). These likely represent a drying chamber and flue chamber respectively.

The sub-rectangular chamber had a concave, U-shaped profile with near-vertical sides but with a more gradual slope at its southern terminus and was probably a flue chamber and stoking pit. The base of the chamber sloped downwards gradually towards the north before sharply dropping into the circular chamber. The base of the latter was lined with several rough flat flagstones (040), which indicated that they were probably an *in-situ* lining rather than infill. Several large stones were scattered within the fill of the circular chamber at the northern end of the kiln, which may suggest the collapse of a stone-built superstructure around the drying chamber of the kiln.

Kiln 3

This feature (158) was located c. 22 m to the north of the early Neolithic enclosure. The kiln was roughly dumbbell-shaped, oriented north-east to south-west, and measured 2.14 m by 0.87 m (Figure 14). It comprised three distinct chambers, which probably represent its stoking, flue and drying chambers. Large stones were scattered throughout the fill within each chamber that possibly represented the collapsed remains of the kiln superstructure.

Neither Kiln 2 nor 3 was radiocarbon dated and as such their exact phasing is unknown, though their similarity in form may suggest that they too date to the same period as Kiln 1.

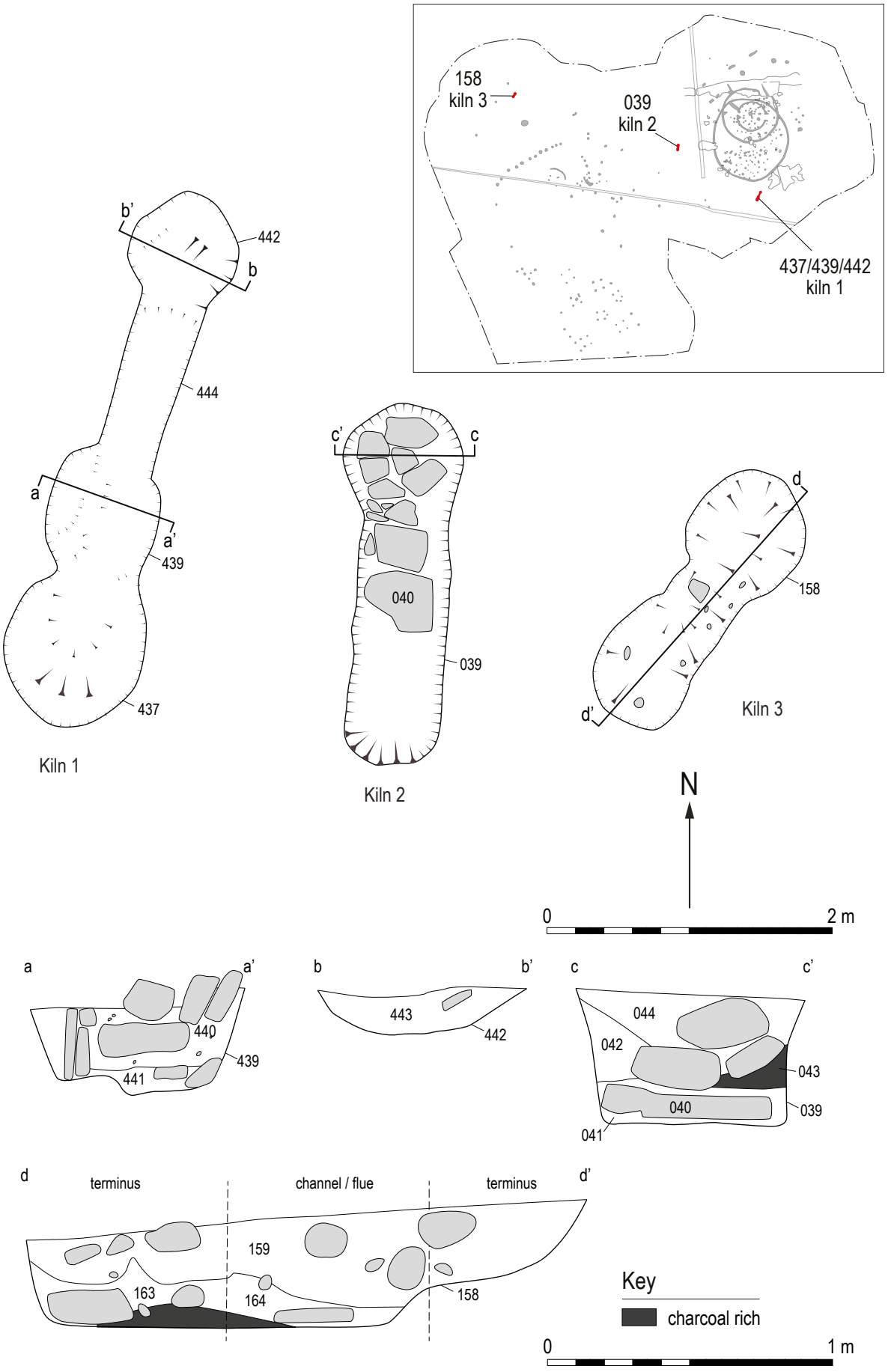

Figure 14: Kilns 1, 2 and 3 plans and sections.

Radiocarbon dates

The radiocarbon dates returned for the structures and features that could be dated are found in Table 1.

UB No	Sample No.	Context	Material	Radiocarbon Age BP	Calibrated 1-sigma (68.3% probability)	Calibrated 2-sigma (95.4% probability)
UBA-51568	42	177 fill of posthole 175 in enclosure	Querus charcoal	5044 ± 31	3943 – 3859 cal BC 3815 – 3788 cal BC	3953 – 3765 cal BC 3727 – 3715 cal BC
UBA-51569	58	221 fill of large posthole 217 in enclosure	Corylus charcoal	4930 ± 32	3754 – 3748 cal BC 3711 – 3648 cal BC	3773 – 3644 cal BC
UBA-51570	78	283 fill of posthole 282 near Structure 8	Quercus charcoal	5026 ± 35	3942 – 3865 cal BC 3811 – 3766 cal BC 3724 – 3715 cal BC	3946 – 3711 cal BC
UBA-51571	95	325 fill of shallow pit 324 in enclosure	Corylus avellana nutshell	4883 ± 33	3703 – 3680 cal BC 3656 – 3637 cal BC	3763 – 3737 cal BC 3713 – 3630 cal BC 3555 – 3539 cal BC
UBA-51572	97	334 fill of fire-pit 333 External to Structure 14	Corylus charcoal	4482 ± 37	3331 – 3216 cal BC 3187 – 3151 cal BC 3126 – 3098 cal BC	3348 – 3080 cal BC 3062 – 3028 cal BC
UBA-51573	106	370 fill of pit 369, Structure 14	Corylus charcoal	2877 ± 28	1111 – 1090 cal BC 1087 – 1063 cal BC 1059 – 1010 cal BC	1192 – 1176 cal BC 1158 – 1146 cal BC 1128 – 972 cal BC 956 – 933 cal BC
UBA-51574	105	360 basal fill of posthole 359 in enclosure	Corylus charcoal	4872 ± 32	3701 – 3684 cal BC 3655 – 3635 cal BC	3755 – 3745 cal BC 3711 – 3627 cal BC 3561 – 3534 cal BC
UBA-51575	120	420 fill of posthole 418, Structure 3	Corylus avellana nutshell	3040 ± 28	1381 – 1342 cal BC 1308 – 1259 cal BC 1242 – 1234 cal BC	1399 – 1331 cal BC 1328 – 1217 cal BC
UBA-51576	129	441 basal fill of hearth 439, external to Structure 3	Corylus avellana nutshell	1584 ± 26	cal AD 434 – 466 cal AD 474 – 501 cal AD 506 – 517 cal AD 529 – 538	cal AD 422 – 547
UBA-51577	143	473 fill of central fire-pit 472, Structure 3	Corylus charcoal	2460 ± 26	749 – 685 cal BC 666 – 637 cal BC 588 – 580 cal BC 570 – 514 cal BC 500 – 486 cal BC	756 – 680 cal BC 670 – 606 cal BC
UBA-51578	252	554 fill of ditch 553 part of palisade, Structure 1	Alnus charcoal	1840 ± 25	cal AD 132 – 138 cal AD 165 – 188 cal AD 202 – 241	cal AD 126 – 247 cal AD 299 – 304
UBA-51579	187	608 fill of posthole 607 part of post ring, Structure 1	Corylus avellana nutshell	4479 ± 28	3329 – 3219 cal BC 3185 – 3154 cal BC 3118 – 3097 cal BC	3340 – 3087 cal BC 3057 – 3031 cal BC
UBA-51580	205	653 fill of posthole 651 in post ring, Structure 1	Corylus charcoal	1869 ± 28	cal AD 129 – 145 cal AD 153 – 195 cal AD 198 – 212	cal AD 86 – 93 cal AD 119 – 237
UBA-51581	242	661 fill of 660, Structure 1	Corylus charcoal	4931 ± 33	3756 – 3746 cal BC 3711 – 3648 cal BC	3774 – 3644 cal BC
UBA-51582	253	757 fill of post-pipe in entrance posthole 764, Structure 1	Corylus charcoal		cal AD 129 – 144 cal AD 154 – 194 cal AD 198 – 217	cal AD 123 – 237
UBA-52326	15	083 fill of posthole 082 Structure 5 four poster	Alnus charcoal	2099 ± 28	153 – 91 cal BC 78 – 54 cal BC	197 – 183 cal BC 179 – 42 cal BC 7 – 3 cal BC

Table 1: Curragh radiocarbon dates.

UB No	Sample No.	Context	Material	Radiocarbon Age BP	Calibrated 1-sigma (68.3% probability)	Calibrated 2-sigma (95.4% probability)
UBA-52327	18	085 fill of posthole 084 Structure 5 four poster	Corylus cf avellana nutshell	1887 ± 26	cal AD 126 – 171 cal AD 183 – 204	cal AD 81 – 98 cal AD 111 – 230
UBA-52328	64	225 inner fill of posthole 224 in enclosure	Querus charcoal	4929 ± 33	3755 – 3747 cal BC 3711 – 3647 cal BC	3773 – 3644 cal BC
UBA-52329	82	294 fill of posthole 293 Structure 9 four poster	Querus charcoal	5017 ± 32	3934 – 3875 cal BC 3805 – 3764 cal BC 3734 – 3714 cal BC	3946 – 3853 cal BC 3849 – 3829 cal BC 3821 – 3707 cal BC 3668 – 3661 cal BC
UBA-52330	100	343 fill of posthole 342 Structure 14	Alnus charcoal	2877 ± 28	1111 – 1090 cal BC 1087 – 1063 cal BC 1059 – 1010 cal BC	1192 – 1176 cal BC 1158 – 1146 cal BC 1128 – 972 cal BC 956 – 933 cal BC
UBA-52331	103	352 fill of large posthole 351 in enclosure	Corylus cf avellana nutshell	4922 ± 33	3709 – 3646 cal BC	3769 – 3642 cal BC
UBA-52332	128	434 fill of posthole 433 Structure 3 roundhouse	Corylus charcoal	2672 ± 26	888 – 885 cal BC 832 – 803 cal BC	899 – 859 cal BC 844 – 796 cal BC
UBA-52333	132	450 fill of posthole 449 Structure 3 roundhouse	Alnus charcoal	2423 ± 25	539 – 528 cal BC 520 – 415 cal BC	743 – 691 cal BC 664 – 646 cal BC 549 – 404 cal BC
UBA-52334	193	620 fill of posthole 619 Structure 4 four poster	Corylus charcoal	2461 ± 26	750 – 685 cal BC 666 – 636 cal BC 589 – 579 cal BC 571 – 514 cal BC 499 – 488 cal BC	756 – 680 cal BC 671 – 605 cal BC 597 – 457 cal BC 442 – 417 cal BC
UBA-52335	254	661 fill of gully 660 Structure 1 roundhouse	Corylus charcoal	1844 ± 28	cal AD 132 – 138 cal AD 165 – 188 cal AD 202 – 239	cal AD 126 – 245
UBA-52336	211	667 central fill of posthole 665 Structure 1 roundhouse	Corylus charcoal	1876 ± 27	cal AD 129 – 146 cal AD 153 – 195 cal AD 198 – 208	cal AD 85 – 94 cal AD 118 – 234
UBA-52337	217	671 fill of posthole 670 Structure 1 roundhouse	Corylus charcoal	1855 ± 23	cal AD 131 – 139 cal AD 159 – 189 cal AD 201 – 232	cal AD 127 – 236
UBA-52338	215	678 fill of posthole 676 Structure 1 roundhouse	Corylus charcoal	1821 ± 30	cal AD 205 – 252 cal AD 291 – 317	cal AD 129 – 147 cal AD 152 – 256 cal AD 284 – 326
UBA-52339	237	719 lower fill of posthole 717 Structure 1 roundhouse	Corylus charcoal	1856 ± 35	cal AD 130 – 143 cal AD 156 – 193 cal AD 199 – 232	cal AD 83 – 96 cal AD 114 – 249 cal AD 296 – 308
UBA-52340	247	748 fill of posthole 747 Structure 4 four poster	Corylus cf avellana nutshell	2868 ± 31	1111 – 1002 cal BC	1187 – 1180 cal BC 1154 – 1148 cal BC 1126 – 928 cal BC
UBA-52341	256	758 fill of postpipe in palisade entrance posthole 763 Structure 1 roundhouse	Querus charcoal	1840 ± 29	cal AD 132 – 139 cal AD 162 – 189 cal AD 201 – 241	cal AD 124 – 250 cal AD 295 – 309

Table 1 (continued): Curragh radiocarbon dates.

Environmental results

Carbonised plant macrofossils and charcoal

By Diane Alldritt

Introduction

In total 208 environmental samples taken during the archaeological excavation were fully analysed for carbonised plant macrofossils and charcoal. Material sorted from the sample retents was also examined for the presence of any identifiable charred remains. The excavation revealed a number of archaeologically significant features of potentially prehistoric date all of which were extensively sampled for the retrieval of carbonised remains. Concentrated volumes of carbonised remains consisting of charcoal, hazel nutshell fragments and discrete deposits of well-preserved cereal grain were recovered from the samples. The remains represented significant phases of burning activity of prehistoric origin, and indicated multi-period use of the landscape for resource gathering, farming and settlement.

Previous archaeobotanical work undertaken in the Curragh area involved the analysis of carbonised remains from five burnt mounds as well as from a series of pit, posthole and linear features, during Curragh Phase 3. Significant volumes of charcoal were recovered particularly from the late Neolithic/early Bronze Age and late Bronze Age burnt mound deposits with a mixture of oak, alder, birch and hazel present, whilst concentrations of hazel nutshell were recovered from the Neolithic pits. Curragh 3 produced only trace evidence for cereal grain in these earlier prehistoric deposits (Alldritt 2017). Plant remains from the excavations at the nearby site of Ladywell also provided evidence for significant prehistoric burning activity, again producing substantial deposits of charcoal together with a number of early – middle Neolithic dated hazel nut roasting pits. The cereal caches at Ladywell consisted of oat and barley and were radiocarbon dated to the post-Roman period, with only trace evidence for any earlier agricultural activity taking place (Alldritt 2015). Interestingly, the elongated hearths/ovens excavated at Curragh 5 were possibly remains of corn drying kilns, similar in construction to 'key-hole' hearths, consisting of a stoke pit, flue and a firing chamber, and could be late Iron Age/Romano-British in origin. Hearths of this type may have also had an industrial use in the Roman period for pottery manufacture or lime production. Analysis of the hearth samples from Curragh 5 together with a program of radiocarbon dating will enable further comparison with similar features from other sites.

Methodology

Bulk environmental samples were processed by GUARD Archaeology Ltd. using a Siraf style water flotation system (French 1971). The samples were from 0.5 litres up to 20 litres in volume. The flots were dried before examination under a low power binocular microscope typically at x10 magnification. All identified plant remains including charcoal were removed and bagged separately by type.

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). The term 'seed' is used in the broadest sense to include achenes, nutlets and so forth.

Results

The environmental samples produced small to moderate amounts of carbonised material <2.5 ml up to 400 ml in volume with the majority of recovery at the lower end. The remains consisted of charcoal fragments <0.5 cm up to 3 cm in size together with hazel nutshell and discrete concentrations of well-preserved cereal grain in amongst crushed charred detritus below the level of identification. Modern material was present <2.5 ml to 500 ml mostly root detritus with occasional finds of modern seeds and earthworm egg capsules indicating bioturbation was occurring. Crushed fragments of clinker were found in nineteen samples and probably originated from post-medieval activity and disturbance. The results are given in Table 1 in the site archive, but are discussed below.

Discussion

Neolithic enclosure

Samples from pits (055 and 175) formed part of the northern alignment of twelve pits and postholes produced substantial deposits of charcoal and were possibly a sequence of fire-pits or large postholes. Stone-lined posthole (055/fills 056 and 160) contained all oak charcoal possibly from a substantial oak post burnt *in situ*. Posthole (175/177) had only a few fragments of oak and *Maloideae* type, possibly residual or general trace background waste.

The eastern alignment consisting of pits and postholes (313, 353 and 359). Pit (313/fills 314 and 321) contained a mixture of oak and hazel charcoal with degraded fragments of hazel nutshell also present. Pit (353/354) had a small amount of hazel nutshell, whilst pit (359/360) had a mixture of oak and hazel charcoal with trace degraded nutshell. The latter also produced pottery of possible late Bronze Age date

The alignment to the south-west with features (217, 224 and 265), were likely to have been prehistoric fire-pits, with (217/221) being used for roasting and processing hazel nuts. Pit (217) contained a significant deposit of hazel and oak charcoal together with a well-preserved cache of hazel nutshell fragments. Pit (224/225) contained oak charcoal probably fuel waste whilst the charcoal in (265/266) was too poorly preserved to identify. Large pit 071 fill (072) contained a trace fragment of birch charcoal, possibly residual in the deposit. Posthole (282/283) had a large deposit of oak charcoal and may have been a post burnt *in situ* or remains of a fire-pit.

Other features

Fire-pit (142/143) produced deposits of oak charcoal and hazel nutshell and was probably a prehistoric fire- or roasting-pit. Similarly pits (301/302 and 319/320) contained substantial deposits of hazel nutshell mixed with hazel charcoal, whilst shallow pit (324/325) contained *Maloideae* type charcoal along with degraded hazel nutshell: both were probably truncated features.

Located outside enclosure ditch (555) was fire-pit (615). This feature produced a small cache of cereal grain consisting of *Hordeum vulgare* var. *vulgare* (six row hulled barley), as well as indeterminate cereal grain. Hazel charcoal was present and likely to be fuel waste, along with a few fragments of hazel nutshell. This feature may be contemporary with the elongated hearths or kilns discussed below.

Roundhouses

The gully (660/661) to the Structure 1 roundhouse produced a small amount of *Corylus* (hazel) charcoal as did structural posthole (676/678) and posthole/pit (670/671) interpreted as possible fuel waste sweepings or remains of burnt structural elements. In the centre of the roundhouse, pits (684/685, 691/692 and 699/700) produced small deposits of *Corylus avellana* (hazel) nutshell likely to represent food processing waste. The palisade ditch (553/554) contained a small amount of *Alnus* (alder) charcoal, whilst between the gully and the palisade pits (596/597 and 598/599) had small amounts of hazel charcoal, representing possibly domestic fuel waste or structural remains. Entrance posthole (763 with post-pipe fill 758) contained a small amount of *Quercus* (oak) charcoal and this was potentially structural material.

A series of secondary postholes contained carbonised remains likely to be hearth sweepings from nearby burning. Posthole (658/658) had a small deposit of hazel nutshell and alder charcoal. Posthole (662/663) contained well-preserved six row hulled barley, hazel nutshell and hazel charcoal suggesting waste from domestic activity. Posthole (703/704) also had hazel nutshell, a single barley grain and *Prunoideae* (cherries) type charcoal whilst postholes (707/708 and 717/718 and 719) contained caches of hazel nutshell, small amounts of hazel charcoal with a single barley grain in fill (719). Posthole (665/667) had hazel charcoal and posthole (674/675) had alder, perhaps burnt structural remains or fuel waste sweepings.

Pit (638/639) in the centre of the building contained a small amount of hazel charcoal together with hazel nutshell. Pit (684/685) had a trace amount of hazel nutshell, whilst pit (647/650) had oak charcoal. Fire-pit (739/738) in the centre of the building produced a single grain of six row hulled barley in good condition from fill (738), with trace hazel nutshell present in fills

(738 and 744), likely to be *in situ* preservation of domestic cooking waste, albeit limited in quantity.

Structure 3 produced small quantities of degraded charcoal from some of the postholes with oak recovered from (416/417), indeterminate fragments in (418/420) and (423/424), a mixture of oak and hazel charcoal in (433/434) and alder in (449/450). Posthole (431/432) contained a single degraded grain of *Avena* sp. (oat), the only find of this type of cereal in the deposits. These remains were likely to be waste sweepings and trample from central fire-pit (472) and from other domestic burning activities taking place within the structure. Fire-pit (472/473) contained a small concentration of hazel charcoal fuel waste, a few fragments of hazel nutshell and a single degraded indeterminate cereal grain, which was probably barley type. Parallel pit/postholes (514/515, 517/518, 565/566 and 567/568) may have formed an entrance porch, oak charcoal was found in (514), hazel in (517 and 565), and trace charred detritus in (567).

Structure 14 consisted of a group of pits/postholes containing charcoal remains, possibly fuel waste or remains of posts burnt in situ. Posthole (371/372) contained oak charcoal, (373, fills 374 and 376) also had oak charcoal with some willow/poplar present, (383/384) contained alder charcoal and (397/398) also had willow/poplar. These remains may have formed part of a wattle fenced structure destroyed by fire. To the west of Structure 14 pit (035/036) produced a small deposit of oak and hazel charcoal together with a single degraded grain of barley, and was probably a prehistoric fire or waste pit.

Four-post structures

Structure 5 postholes (078/079 and 086/087), Structure 7 postholes (195/196, 197/198 and 207/208), Structure 8 posthole (259/260), Structure 10 postholes (211/212, 247/248, 252/253 and 254/255) and Structure 12 postholes (241/242 and 284/285) contained trace charred detritus with nothing identifiable, likely to be general background trample and residual waste from nearby burning activity. Two posthole fills from Structure 5 produced small quantities of carbonised remains. Posthole (082/083) contained a few degraded grains of *Triticum dicoccum* (emmer wheat) together with alder charcoal, whilst posthole (084/085) contained hazel nutshell mixed with clinker remains which were possibly derived from burnt peat, suggesting domestic activity, perhaps cereal drying/food processing took place within Structure 5.

Structure 7 posthole (226/227) contained a single crushed fragment of hazel nutshell, whilst Structure 8 posthole (273/274) had a single degraded grain of barley, possibly residual remains given the condition. There was no strong evidence for domestic burning activity such as cereal processing or cooking taking place within structures 7, 8, 10 or 12 and these may have been simply used as temporary shelters or storage areas.

Kilns

Three elongated kilns were sampled. The most significant of the features, Kiln 3 (158, fills 163 and 164) produced concentrated deposits of cereal grain together with charcoal fragments. The cereal grain was well-preserved with six row hulled barley forming the main constituent of the assemblage together with more degraded barley and indeterminate grains. The charcoal was mostly identified as hazel with a small amount of oak and alder also present, mostly probably fuel waste although some may have been part of organic structural elements to the feature. The upper fill (159) contained a concentration of hazel charcoal but no cereal grain suggesting this was all fuel waste possibly lying in the stoking pit or flue area.

Kiln 2 (039/222) contained fewer remains but with similar material identified mainly oak and hazel charcoal with a few grains of barley present (Figure 15). Kiln 1 (439) had possibly been truncated or damaged by later activity with basal pit fill (441) found to contain abundant modern plant detritus along with trace finds of oak charcoal, degraded hazel nutshell and two indeterminate cereal grains. The charcoal from flue (444/445) was in better condition with a small cache of hazel charcoal fuel waste recovered from here.

Kilns 2 and 3 were probably the remains of corn drying kilns and could be late Iron Age/Romano-British or Roman in date. Kiln 1 was probably of similar origin but had been heavily damaged particularly in its central pit leaving little evidence for its primary use.

Conclusion

The environmental samples produced concentrated deposits of charcoal and hazel nutshell with discrete recovery of caches of well-preserved cereal grain. The pit and posthole alignments and some of the isolated pits produced significant quantities of charcoal and hazel nutshell representing a potentially early prehistoric phase of activity, in particular pits 011, 142, 148, 217, 277 and 301.

The settlement phases produced burnt domestic waste deposits in particular from structures 1, 2, 3 and to the west of enclosure ditch (555). Structure 1 was possibly constructed using hazel and alder posts. Structure 14 may have been a stockade or similar enclosure made from willow and oak timbers, whilst structures 1 and 3 were more likely to be domestic living areas. Small amounts of barley cereal grain were recovered mainly from Structure 1 with a single grain of oat found in Structure 3, together with hearth fuel waste. Square post Structure 5 may have been used for cereal drying with grains of emmer wheat and a small amount of alder charcoal recorded here, hinting at possible Iron Age farming activity, whilst Structure 8 produced a single trace find of barley grain, perhaps residual.

Elongated kilns 1, 2 and 3 were interesting and potentially of later date, perhaps late Iron Age/ Romano-British or Roman, similar in form to key-hole hearths, and were probably remains of corn drying kilns. Kiln 3 (158) produced the most substantial evidence for grain drying with *in situ* remains of barley grain and hazel charcoal, Kiln 2 (039) contained fewer cereal remains whilst Kiln 1 (439) was probably heavily truncated or disturbed by more recent agricultural activity. The flue (444) of Kiln 1 contained a substantial amount of hazel fuel waste so this was probably also a kiln or oven but its use is uncertain. Lying outside ditch (555), fire-pit (615) produced similar material to kiln 3 and may have been contemporary with the other external fire-pits.

Figure 15: Kiln 2 during excavation viewed from the NNE.

Animal bone

By Catherine Smith

Introduction

A small assemblage of cremated mammalian bone was recovered by bulk retrieval and by soil sampling and sieving. No unburnt bone was recovered. Fragment size was generally very small and the bone was in a poor and friable condition.

Species recovered

Bone fragments were identified as cattle, cf cattle, large ungulate, sheep/goat, cf small ungulate and possible deer species but the majority of the fragments could be categorized only as indeterminate mammal. A catalogue of fragments by context is forms part of the site archive.

Features containing animal bone

The types of features from which bone fragments were recovered were pit fills and fire-pit fills, although some are considered of recent origin.

Small indeterminate mammal fragments were retrieved from a shallow fire-pit (472/473) in Structure 3 roundhouse, BS 143; (McNicol 2021, 22) and may represent disposal of food remains. The central fill of the palisade ditch (553), Structure 1, probably representing backfill after posts were removed (*ibid* 14), contained some indeterminate mammal fragments and possibly a piece of burnt deer antler in a deposit of charcoal. This fragment was identified on the basis of a characteristic rippled outer surface and a fine porous structure on its inner surface, BS 252. The fill of a pit (584/585) within the oval enclosure at the eastern edge of the site contained a piece of proximal epiphysis of a cattle femur, SF 049. Another pit (590/591) also within this oval enclosure contained a fragment of rib shaft, possibly from a small ungulate, i.e. probably sheep/goat; SF 050.

An elongated feature with kiln 1 (439/441) containing cremated bone fragments including possible fragments of large ungulate vertebra and smaller indeterminate mammal fragments may represent remains of cooked food or disposal of food remains in the fire, SF 041 and BS 129) (McNicol 2021, 27). The fill of pit (088/089), possibly a recent feature, contained a fragment of sheep/goat distal humerus, SF 013. A fragmentary cattle molar, thought by excavators to be also of fairly recent date, was recovered from pit (411/412), SF 033 (*ibid*, 32).

Discussion

The condition of an animal bone assemblage recovered from a medieval moated enclosure previously excavated at Grants of Girvan (Smith 2008) was equally poor and many fragments were, as at the current site, burnt or calcined (all organic material burned away, leaving only the inorganic component). It seems likely that acidic soil conditions identified there did not favour bone preservation and it is therefore no surprise that bones from the current site have not survived well. At the nearby medieval site, only cattle and large ungulate bones were identified. At the current site, as well as cattle, there was evidence that sheep/goats were also present. There was no evidence of pigs, although the small sample size is likely to have influenced the range of species recovered. It is possible they had been present, but bones of this and other domestic species have not survived.

A probable small piece of antler is of interest as it indicates the exploitation of wild animals. Being only a small fragment, it was not possible to determine whether the antler was brought in as part of a carcass, or as part of a raw cast antler intended to be used in artefact manufacture, or indeed as a part of an existing artefact.

The recovery of bone fragments from a fire-pit may represent the remains of food preparation. Bones could be conveniently disposed of in the fire (although prehistoric culinary disaster cannot be ruled out). There is also a possibility that bones were actively used as fuel in the kiln.

The material culture

The lithic assemblage

by Torben Bjarke Ballin

Introduction

The purpose of this brief report is to characterize the project's lithic finds, with special reference to raw-materials and typo-technological attributes. From this characterization, it is sought to date and discuss the finds to the degree this is possible. The evaluation of the lithic material is based upon a detailed catalogue (supplied as an Excel database) of the lithic finds from Curragh 5, and in the present report the artefacts are referred to by their number (CAT no.) in this catalogue. The lithic assemblage was recovered from Areas G/H and J now Area 5 and Area I now Area 4.

The assemblage

From the excavations at Curragh 5, 93 lithic artefacts were recovered. They are listed in Table 2. In total, 95% of this assemblage is debitage, whereas 4% is cores and 1% tools. The artefacts are classified according to Ballin (2021). GD = Greatest dimension.

	Area 4 (I)	Western half of Area 5 (G/H)	Eastern half of Area 5 (J)	Total
Debitage				
Chips	4	18	47	69
Flakes	1	8	6	15
Blades		1	2	3
Indeterminate pieces			1	1
Total debitage	5	27	56	88
Cores				
Irregular cores		1		1
Bipolar cores		2	1	3
Total cores		3	1	4
Tools				
Backed bladelets		1		1
Total tools		1		1
Totals	5	31	57	93

Table 2: General artefacts list.

Characterisation

Apart from one chip of chert (CAT 71), and one flake (CAT 9) and four chips (CAT 67, 86, 91-2) of aphyric, black pitchstone, all lithics are of flint. It is thought that the chert and the flint are local raw materials (Smith 1880; Paterson and Ward 2013), whereas the pitchstone must have been procured from eastern Arran (Ballin 2009).

The 88 pieces of debitage include 69 minuscule chips (mostly measuring a few millimetres across), 15 flakes, three blades and one indeterminate piece. One blade is intact (CAT 12), measuring 23 by 11 by 5 mm, and all three blades and blade fragments have widths of 11-12 mm, i.e. they are broad blades. The two blade fragments are from regular, probably quite long blades. Where the flakes are generally hard-hammer blanks, the blades are all soft-hammer specimens.

The four cores include one irregular core and three bipolar cores. The irregular core (CAT 2) is quite small and has a GD of only 22 mm. It has been knapped from at least three directions. The three bipolar cores are all quite large, with GDs of 24-36 mm. Two of the bipolar cores are bifacial specimens with one reduction axis (one set of opposed terminals), whereas one is unifacial with one reduction axis.

Only one tool was recovered during the excavation, namely a backed bladelet (CAT 35). This piece measures 15.7 mm by 3.9 mm by 2.2 mm, and it is based on a regular, soft-percussion microblade blank.

Discussion

As explained in the DSR (McNicol 2021), some of the main features are thought to date to the Iron Age (roundhouses Structure 1 and also Structure 13), whereas others may be datable to the Bronze Age (Structure 2, Structure 3 and Structure 14). Three pit alignments may date to the Bronze Age period, whereas nine four-post structures may date to any part of the Neolithic-Iron Age period. The date of three kilns is considered medieval or later.

The backed bladelet is clearly datable to the late Mesolithic period (8400-4000 cal BC) (e.g., Ballin 2019; 2021), whereas the three broad blades are more likely to be Neolithic, and probably middle or late Neolithic rather than early Neolithic (Ballin 2006; 2011). However, the systematic exchange in Arran pitchstone in southern and eastern Scotland is more likely to have been an early Neolithic phenomenon (Ballin 2015; 2017a; Ballin *et al.* 2018). The date of the three bipolar cores is uncertain, but as bipolar technique was rarely used during the Mesolithic period in southern and eastern Scotland (e.g., Ballin 2019; 2021), these pieces may be datable to the Neolithic or Bronze Age periods.

The only 'spectacular' find in the assemblage is pitchstone flake CAT 9 from large pit (559) which may represent a deliberate deposition (*ibid*), but all the other finds are most likely to be residual pieces which ended up in the site's features and contexts with the back-fill, during the extensive construction work taking place in the Bronze and Iron Age periods, when pits, postholes and ditches were dug through existing Mesolithic and Neolithic knapping floors. Although pitchstone was clearly a 'special' and highly valued raw material (Ballin 2009), the four minuscule pitchstone chips probably also represent knapping taking place at the site in the early Neolithic and probably also represent residuality, and it is thought that only the pitchstone flake may represent deliberate deposition. The suggestion that most of the site's lithics may be residual knapping waste is supported by the fact that 75% of the lithics are tiny chips, simple waste flakes make up 16%, and exhausted cores 5%.

In summary, the research potential of this assemblage is limited, and the pitchstone flake from pit (559) may be the only piece of some interest to lithics specialists and researchers of the Scotland's earliest prehistory.

The coarse stone

By Beverley Ballin Smith

Introduction

A small number of stone artefacts were found during the archaeological interventions at Curragh 5 and of those the most important is an axe dated to the Neolithic. A spindle whorl roughout is probably prehistoric as is a hammerstone, but a hone or whetstone is likely to be of more recent date.

The stones were brushed or washed before examination. They were also weighed and measured. Their attributes and statistics were compiled in an archivable database devised using Microsoft Excel. Unworked stone was separated out of the worked collection and discarded. The most interesting worked pieces were photographed and catalogued. The collection was analysed according CIfA's *Standards and Guidance for the collection, documentation, conservation and research of archaeological materials* (2014, revised 2020).

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 four artefacts or tools are described further.

The results

SF 038 Axe

The raw material of this artefact is greywacke probably derived from the Southern Uplands of Scotland identified as Petrology Group XXVII (Fenton 1988, 99-104). The piece is broken across its butt end, but the cutting edge is complete. The latter is curved and appears very slightly used from one broad side as there is some blunting with tiny chips visible across part of the edge. The broken butt end is, however, rhomboid-shaped in section. The stone used for the axe is irregular in shape this may be partly due to the diametrically opposed knapping seams and to the natural banding of the greywacke. Flaking scars have not removed by the polishing of the piece as they can be seen down both lateral

edges of one broad side and the natural flaws and scaring in other places may be the result of the natural banding of the stone. There is slight evidence of narrow facets towards the butt end on both lateral sides otherwise the narrow lateral sides are smooth, slightly rounded and irregular in shape. In spite of its flaws and the inconsistent shape of its shaft, the piece was highly polished all over (Figure 16). On one broad face towards the butt end there is a secondary pitted hollow probably from using the piece as a small anvil for flint pebbles during bipolar production. A smaller area of pitting is also noted towards the butt end on the other broad side.

Figure 16: Polished stone axe head SF 038.

The axe was found in the fill of a pit (545/546) to the east of Structure 1 and the oval enclosure (553). The pit was situated immediately south of a small group of large pits identified as Structure 5. The piece weighs 152 g, it measures 101.4 mm in length, 52.5 mm in width and 23.3 mm in thickness. The piece is from the Neolithic but cannot be defined more precisely.

Another polished stone axe head was found during the Phases 3 and 4 construction at the Curragh in 2016 (McNicol 2017). It is a smaller example than SF 038 and it is made of Cumbrian tuff from the Great Langdale (Ballin 2017b).

Greywacke is found in the upland areas of Southern Scotland and was used for a limited range of tools including axe hammers and shaft-hole adzes (Fenton 1988) and the manufacture of axe SF 038 in greywacke appears to be rare. The petrology of stone axes in Scotland has been researched by Ritchie and Scott (1988, 87) where the commonest axes found in Ayrshire and the south-west were made from the raw materials of tuff from the Great Langdale area of the Lake District and porcellanite from Rathlin Island, Co. Antrim. None at the date of publication were identified across Scotland as being made from greywacke, which suggests SF 038 is an anomaly.

SF 043 Spindle whorl roughout

This sandstone disc is an unfinished spindle whorl (Figure 17). The sides of the piece have been roughly smoothed although there is some angularity between areas of smoothing. One surface has been roughly pecked flat, while the opposed surface has been partly smoothed in places, some more than others, and the beginnings of a ground perforation c. 2 mm deep in its centre have been made, with some damage on one edge.

The piece was found in the fill of a posthole (453/454) associated with Structure 3. The piece weighs 37 g and measures 44.9 mm to 45.9 mm in diameter and is 14 mm thick.

Sandstone is a common stone throughout central-west Scotland and the plain spindle whorl roughout can be of any date from the Bronze Age through to medieval or later times. The fact that it was found in a posthole intimately associated with the construction of Structure 3 suggests it was a contemporary or near contemporary artefact.

Figure 17: Spindlewhorl roughout SF 043.

SF 051 Hone

This heavy cobble is probably of basalt. The cobble is dense, hard, fine-grained and elongated with one flake detached. The flake is fresh suggesting it was a recent occurrence. Although other marks on the stone are faint, there is an elongated patch of dark polish on its shaft and on one edge where it is likely to have been used opportunistically to put an edge on a sharp ferrous blade, such as a knife or scythe. It may have been used during the post-medieval or modern times.

The stone was found in a deposit of topsoil (415) over the oval enclosure and Structure 3. It weighs 427 g and measures 140 mm in length, 53.4 mm in width and 36.6 mm in thickness.

SF 053 Hammerstone

This is a granite cobble with light pecking or hammer marks at the broad end, with the addition of a more severe blow removing a 10 by 10 mm irregular piece of the surface. Light scaring at the narrower end of the cobble indicates both ends of the piece were used for hammering. There are slight marks or nicks on the shaft, but these may be the expected result from the piece being used as post-packing.

The cobble was found in the fill of posthole (642) with other stones used as packing for the post that was erected there. The posthole was one of several in a ring housing the load-bearing posts supporting the roof of the Structure 1 roundhouse. The tool weighs 369 g and is 109.3 mm in length, 64.1 mm in width and 35 mm in thickness. Given its provenance, the hammerstone was used during the middle Iron Age.

With the location of Curragh being close to waterways and the coast, it is highly likely that both these cobble pieces were derived locally from stream beds or stony beach deposits. The cobbles were relatively easy to acquire, they fitted unmodified into the hand, and were unsophisticated and lightly used pieces. These tools were needed for simple jobs, their modification took place during use and they were discarded once they were no longer needed. Cobble tools are not usually found before the Bronze Age in Scotland, and even then they can be relatively rare, but they are much more commonly found in Iron Age contexts where a variety of sophisticated tools were used (Ballin Smith 1994, Clarke 2006, 43). Although there have been a large number of archaeological excavations in the region, stone tools are not the commonest of artefacts found, but a number of cobble tools have been recently published from Dunragit in the south-west of Scotland (Ballin Smith 2021) from both Bronze Age and Iron Age dated sites.

SF 181 Pumice tool

A small piece of shaped stone SF 181 was found in a pit (596/597) beside the palisade enclosure perimeter of the Structure 1 roundhouse. The stone is identified as a dark grey pebble of vesicular pumice that weighs 7.7g and measures 37.5 mm in length, 24 mm in width and 15.7 mm in maximum thickness. The piece is not a pebble, but a fragment of one. It is slightly wedge-shaped with a narrower coarser end (the 'handle') and a broader flatter (working) end (Figures 18a and b).

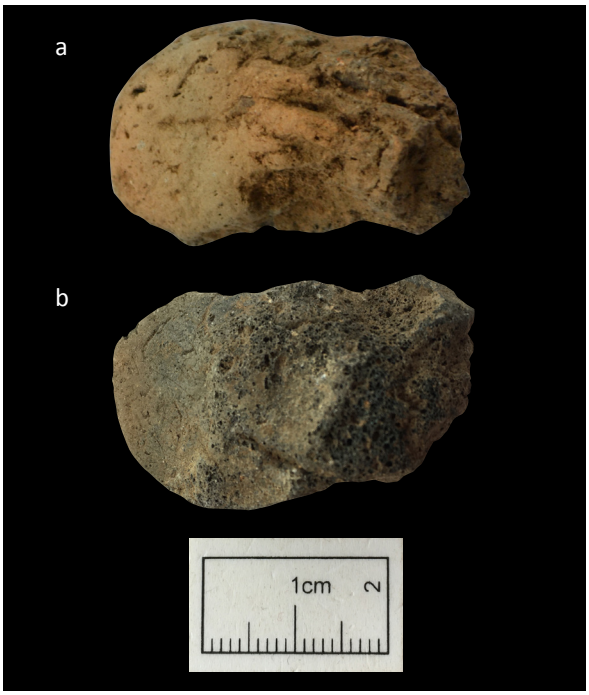

Figure 18: Pumice artefact SF 181, a) with clay, b) the reverse side.

Part of one surface of the pumice appears to be coated in clay that has completely filled in its cavities. Although not investigated further, this surface deposit could be 2-3 mm or more in thickness and it appears to be slightly burnt. This deposit also contained organic matter and small fragments of stone, possibly quartz. The opposite surface of the piece is also interesting in that the

working end is gently rounded, duck-bill in shape that is exceptionally smooth, and measures 15.1 by 22.5 mm in area. Again the pumice vesicles are not visible on this surface because of use and later scratch marks are noted.

Finding pumice on the west coast of Ayrshire is not unknown as the mapping of pumice transported from Iceland on ocean currents to land on beaches around Scotland and Northern Ireland has been undertaken by Newton (1999, Figure 2.8). Addition material has been added since, such as the dark grey pumice from the Applecross area (Newton 2009). What is interesting is the finding of a fragment of worked pumice in an archaeological context in west-central Scotland, lying in a context that could be related to an Iron Age building.

Although pumice pebbles have been picked up and used like sandpaper, for the smoothing of wood, bone and skins since the Neolithic period, only a small number of pieces have been identified from Scotland that have, or likely to have been used in pottery making. SF 181 is a small tool that has been shaped by use, and its surface deposits of clay indicate it was used to smooth the surfaces of leather-hard pottery vessels. Pumice in an unaltered state can be too coarse a material for this purpose, but as SF 181 indicates, the visible worked surface is has been smoothed, and therefore it would have been an ideal tool for the job.

During the excavation of a late Bronze Age/ early Iron Age oval stone house at Mavis Grind in Shetland, a number of pumice pebbles were found. Catalogue No 77 (SF 2428) was a tabular piece with two hollowed surfaces both of which had adhering micaceous clay (Smith 1983, 29, Figure 18). The object was interpreted at the time as a pottery burnisher. Pumice pebbles identified as burnishers had been found on the site of the pottery workshop at Eilean an Tighe, North Uist early in the 20th century by Erskine Beveridge and later examined by Lindsay Scott (1953). The hollowing of the pieces was considered to be due to smoothing the pottery vessel surfaces and the grooves were a result of smoothing the edges of their rims (ibid, 12).

The Curragh 5 piece is rare, but demonstrates one of the less available stone resources that were effectively used in the manufacture of pottery on the site.

The prehistoric pottery

By Beverley Ballin Smith

Introduction

This assemblage comprises a total of 14 vessels from Curragh 5. The earliest three are associated with an Neolithic enclosure in the south of the area; eight vessels came from Structure 14, another pit/posthole alignment and related pits in the central-western part of Area 3 the excavated area, and three vessels only were associated with the Structure 1 roundhouse and the earlier enclosure. The majority of vessels are domestic but three possible urns from the later part of the early Bronze Age indicate burial activities. One vessel may be indicative of later Bronze Age use of the area, but this is uncertain.

For the size of the area covered by the excavation and the number of structures located, this assemblage of 311 pieces appears to be quite small. Those identified vessels associated with, for example Structure 1, are earlier in date than it and the small numbers of sherds intimately associated with the structure are undiagnostic. Isolated sherds were found in Structure 3 within the oval enclosure, but these are small in number and size, and also undiagnostic of any particular type of vessel or period of use. One of the most interesting areas is that within the Neolithic enclosure, where early Neolithic vessels are found close together but overlain by Bronze Age activity, and with an outlying area to the south-east which was possibly set aside for later early Bronze Age burials.

Analysis and description of the pieces

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

Almost all the pottery was recovered by hand, with two groups of sherds, Vessel 9 and Vessel 11, thought to have been the remains of two near complete pots. An additional small number of sherds often small and abraded, and crumbs, were located in soil samples. The composition of the assemblage is displayed in Table 3, where the largest numbers of diagnostic sherds were rims and carinations.

The total weight of the assemblage, 4228 g is recorded in Table 4. All vessels are incomplete, and therefore the recorded weights are only those of the sherds that survived. The most complete vessel (from the number of conjoining rim sherds) was Vessel 11, which was the heaviest surviving pot, but probably less than one half of it remained. It is noticeable from the table that the earliest vessels from the early Neolithic are those that have low average wall-thicknesses and therefore were the lightest vessels. The middle Neolithic Impressed Ware bowl and the early Bronze Age urns were heavy and thick-walled, as noted from their average wall-thicknesses.

Vessels	Total no. sherds	Rims	Carinations	Bases	Bodies	Crumbs
1	12	2			10	*
2	11				11	*
3	19		?		19	*
4	1	1				*
5	5	1			4	*
6	3	1			2	
7	14	2			12	*
8	5	1			4	*
9	74	7	8		59	*
10	3	1			2	
11	58	7		3	48	*
12	7	5			2	*
13	13	3			10	*
14	2				2	
	84		1	1	88	*
Totals	311	31	9	4	267	

Table 3: Sherd compostion.

Vessels	Vessel type	Total sherd Nos	Total weight (g)	Average wall thickness (mm)
1	EN Carinated Bowl	12	67.7	7.7
2	EN Carinated Bowl	11	87.7	10.5
3	EN Carinated Bowl	19	96.8	14
4	Late BA? vessel	1	43.8	11
5	BA unclassified	5	28.9	12
6	Late EBA flat-rimmed urn	3	377.7	14
7	Late EBA flat-rimmed urn	14	275.9	16.4
8	Late EBA urn	5	115.1	13.8
9	EN Carinated Bowl	74	346.6	6.7
10	Late EN Bowl	3	90.5	14.4
11	MN Impressed Ware Bowl	58	1599.7	25.4
12	EN Carinated Bowl	7	61	5.7
13	BA cooking pot	13	145.5	12
14	EN? unclassified	2	15.1	7
	Non-vessel sherds	84	912.4	not applicable
Totals		311	4227.9	

Table 4: Sherd/vessel thickness and weight.

The wall thicknesses and weights of these vessels were largely determined by the size and amount of stone temper added by the potter to the clay (see below). Some individual pieces of rock temper were large and were therefore responsible for the weights of some pots, their thick walls, and the visible temper showing through the vessel's surfaces.

Post-depositional changes

There do not appear to be any significant post-depositional changes. Fragmentation due to water percolation though the burial context compounded by poor initial firing of the pots, and root infiltration from those vessels nearer the base of the topsoil are noticeable. Fragmentation and surface abrasion leading to loss of detail of sherds is as much a product of use as of post-depositional changes.

Manufacture of the pottery

Although the composition of rock temper added to the raw clay was similar across all vessels where it could be recorded, some of the larger and heavier mineral pieces were coarse to very coarse in size up to 8 mm by 8 mm. Generally, it included angular or irregular fragments of diorite and quartz, with some quartz sand. The vast majority of the mineral temper was not identified, but in all likelihood came from a locally available resource, such as the stream bed or sides of the Water of Girvan, or a nearby tributary. Finer raw materials, such as quartz, mica and quartz sand were used in the earlier Neolithic vessels, accounting for their light-weight sherds and thin walls, but they too could have come from gravel beds in waterways.

All the sherds provided evidence that prior to manufacture, organic material in the form of chopped dried straw or grasses was added to the raw clay. The latter was most likely dug from the subsoil or stream sides, and the organic material made it more pliable. Mineral temper was added to give strength to both the clay and the vessel, and it reduced the thermal shock to the pot during firing and use of the vessel on the hearth.

It is likely that all the vessels began with the potter opening up a lump of prepared clay by using the thumb-pot method. Once the lower part of the vessel took form, coils made from more prepared clay were added to give height and shape to the pot. In this assemblage the joins between the coils were generally not noted.

A variety of different types and shapes of vessels were manufactured. It was not possible to provide a rim diameter for the earliest – early Neolithic Carinated Bowls, but most of these would have had a well formed rounded rim, a straight neck to a carination (or shoulder) and then a rounded belly and base to the vessel. The middle Neolithic Impressed Ware bowl V11, was large with a c. 360-380 mm rim diameter. The bowl tapered from its elaborate rim to a base that can be described as verging on being flat. Two urns, V6 and V7 had rim diameters of c. 240 mm, suggesting these were predominantly tall cylindrical vessels with a flat base and a flat-topped rim. V5 is most likely a Bronze Age cooking pot with a rim diameter of c. 190 mm and it would have had a flat base. The final vessel that provided a rough rim diameter was V4, with a thin out-turned rim that suggested a diameter of c. 320 mm. From the form of the rim, the vessel was probably a bulbous pot.

Firing

The firing of these vessels is not easy to gauge but the early Neolithic Carinated Bowls were well manufactured and evenly fired. Sooty patches, on the exterior of the urns (V6-8) may be a product of firing or use, but these were reasonably well-fired. The middle Neolithic Impressed Ware Bowl V11 provided evidence of more variation. While the components of the clay in the rim and upper parts of the vessel were generally well integrated by the firing process, the thick base of the pot had not been sufficiently fired through. The base is very fragile and its clay and stone temper are not fused as they tend to separate and fall apart from each other.

Vessel descriptions

Early Neolithic carinated bowls

There are five definite carinated bowls that belonging to the early Neolithic - V1, V2, V3, V9 and V12. Only V1 and V12 produced the typical rolled and everted rim to a straight neck (Figure 19), and that of V12 is particularly fine.

The survival of carinated sherds was particularly rare with the suggestion of one in V3 and a more definite one in V9. Burnt sherds from V1 were probably part of its base. The burnished (high quality polish) was present on sherds from V1 and V3 and given the smooth surfaces of the sherds from V12, it is likely that this vessel was also burnished, as would be typical for carinated bowls. The use of the vessels as cooking pots was identified by the presence of carbonised food remains or sooting, for example, on V1, on what is probably the lower part of V2, and sherds of V9 and V12. One of the body sherds of V12, below the neck and carination, had a 3.5 mm diameter perforation drilled though it at an oblique angle after firing, suggesting a repair or change of function.

Two other groups of sherds, V10 and V14, are also likely to be early Neolithic in date. V10 is slightly unusual and appears to be a later dated heavier piece, perhaps from near the end of the early Neolithic. It has a straight rim with a slight concavity below it but is without a true carination. A bevel to the interior indicates that it was a plain open bowl (Figure 19).

Two remaining sherds from V14 are burnt orange/red in colour, well-made and thin walled, and are likely to be parts of an early Neolithic carinated bowl. What distinguishes one of the sherds is its interior surface carries seven parallel, slightly ridged and curved impressions c. 6 mm long. They could be made with a small tool wrapped round with fine wool or fibres reminiscent of the early Bronze Age 'maggot' impression found on Food Vessels, for example.

Middle Neolithic impressed ware bowl

A large number of sherds (Tables 3 and 4) were part of the highly decorated V11 (Figure 19). Several of the rim sherds conjoined to indicate the shape of this vessel. Its wide rim is slightly everted with a moulded concavity below it externally where it and its wide decorated interior bevel are attached to the body. The rim bevel is 40 mm wide and slightly convex, and is fully decorated from the plain rim edge to the bevel base by eight horizontal and parallel impressions of fine cord. Only parts of the rim are well preserved as abrasion and loss of surface detail is common. The interior of the vessel is plain but there are concavities where large grits have been lost from the fabric. The exterior of the rim and the body is decorated almost all over by 25-30 mm wide horizontal bands of closely positioned incised curves most probably made by a finger nail pressed in the clay and moved/swerved from left to right to make the intense design. Three pieces of plain base up to 35 mm in thickness conjoin.

With its highly decorated exterior and prominent rim bevel and its smooth interior, this would have been an impressive vessel. It may have been intended as a serving dish, as it was too ornate for being used on the hearth.

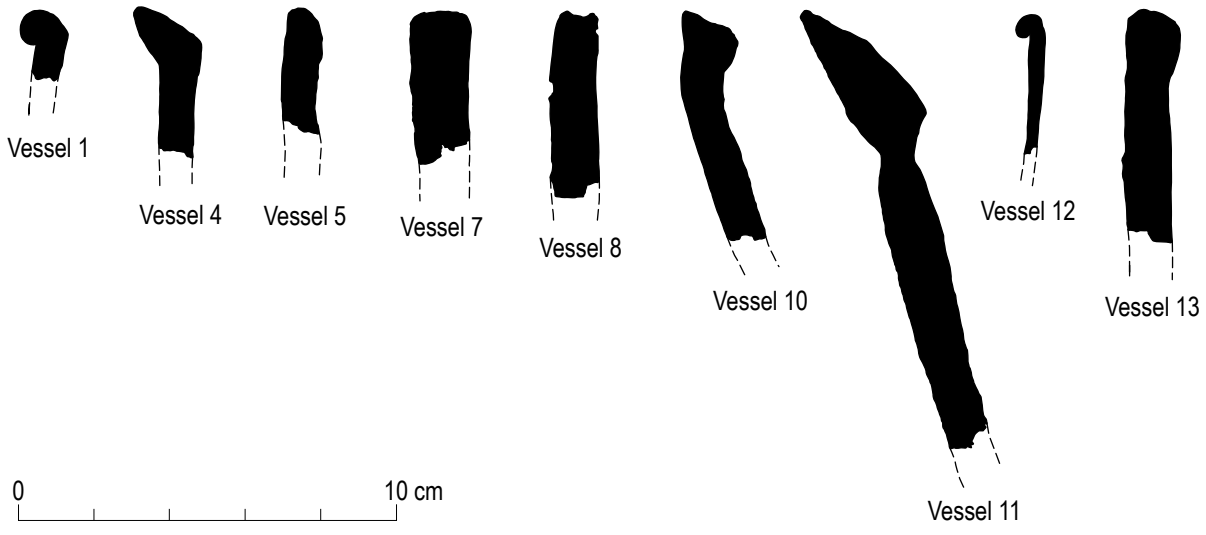

Figure 19: Plans of the pottery V1, V4-5, V7-8, V10-13.

Later Bronze Age flat-rimmed urns

It is likely that V6, V7 and V8 (all Figure 19) are the remains of plain, almost cylindrical burial urns and are all very similar, but with V6 having a large rim and body sherd surviving. They all have rims, which are slightly inturned and flat on the top, with those from V6 and V7 being similar, but the rim of V7 is wider than and not as flat as that of V6. The interior join of the rim coil to the body of V8 is noticeable and was originally thought to have been decorated with a short line of cord impression. The regular indentations are however, more likely to have been made by the loss of small pieces of grit from the clay. The coarse to very coarse stone grits added to the clay during manufacture are clearly visible protruding through the surfaces of these vessels, and caused cracking of the clay around them. Sooting is visible around their rim sherds, and finger moulding marks have not been removed and are prominent throughout. There was an attempt to smooth the exterior surfaces of the vessels, in spite of the protruding grits, prior to firing. All vessels have suffered from abrasion.

Unclassified Bronze Age vessels

These two vessels, V5 and V13 (both Figure 19) are very similar to each other and also the urns. They have slightly inturned but rounded-topped rims, which are poorly moulded, so much so that the V5 rim is slightly concave on top. Both have coarse grits protruding prominently through the surfaces of the rims and of surviving body sherds. These vessels could have had straight(ish) sides with finger moulding marks prominent and carbonised food deposits around the rims and on their interiors.

The method of construction and their general appearance suggests they were made when the flat-rimmed urns were in currency and could have been domestic pots.

Later Bronze Age vessel

V4 (Figure 19) is unusual as it comprises a flaring everted rim with a narrow short neck to a bulbous body. Its composition and manufacture suggest it belongs in the Bronze Age with its coarse grits and poor surface finishes, but its rim form suggests is late in the Bronze Age. The sherd is burnt and much abraded, but it retains carbonised food deposits on its surfaces indicating it was a cooking pot.

Vessel distribution

Neolithic enclosure

Early Neolithic Carinated Bowls V1, V2 and V3 were each found in three adjacent pits/postholes (217, 256, 265 respectively) forming a north-west/south-east alignment with a fourth pit in the south-western part of the site. The location of the pottery in these features suggests deliberate deposition or disposal (Table 5).

Vessels	Vessel type	Associated Feature
1	EN Carinated Bowl	Neolithic enclosure
2	EN Carinated Bowl	Neolithic enclosure
3	EN Carinated Bowl	Neolithic enclosure
9	EN Carinated Bowl	East arm of Neolithic enclosure
12	EN Carinated Bowl	Structure 1
10	Late EN Bowl	Structure 14
14	EN? unclassified	Structure 1
11	MN Impressed Ware Bowl	Structure 1
6	Late EBA flat-rimmed urn	East of Neolithic enclosure
7	Late EBA flat-rimmed urn	East of Neolithic enclosure
8	Late EBA urn	East of Neolithic enclosure
13	BA cooking pot	Structure 14
5	BA unclassified	Structure 14/east of Neolithic enclosure
4	Late BA? vessel	Structure 14
	Non-vessel sherds	

Table 5: Location of vessels.

East arm of Neolithic enclosure and Structure 14

A further early Neolithic Carinated Bowl V9 was located in the middle of a row of seven pits/postholes forming a NNW/SSE alignment in the western central part of Area 5. A group of four sherds not assigned to a vessel were found in pit (391) to the immediate south, and are also likely to be part of an early Neolithic Carinated Bowl.

Immediately west of the east arm of the enclosure was Structure 14, whose pits contained V4, parts of V5 (pit 035), and V13 (pit 369), all Bronze Age in date (Table 5). In addition, sherds with no diagnostic features were found in pits (307, 342 and 379), and are also likely to be Bronze Age in date. Another group of smaller pits between Structure 14 and the enclosure contained sherds of V10 (pit 371) a later early Neolithic Carinated Bowl, and a small body sherd came from pit (344\0.

East of Neolithic enclosure

Further to the south-east and a few metres east of the enclosure was a group of pits that contained sherds of pottery. A small pit (301) contained additional sherds of the Bronze Age vessel V5, as well as V7 and V8, two flat-rimmed urns from the late early Bronze Age. V6 another similar urn came from pit (319) a few metres away but within the same pit group. Pit (337) contained two sherds of abraded pottery and pit (317) had a small collection of mainly body sherds of both early Neolithic and Bronze Age date. None of these sherds were diagnostic.

Structure 1

In two pits located in the area between the Bronze Age roundhouse and its enclosing palisade were sherds of pottery from the Neolithic. V12, an early Neolithic Carinated Bowl was located close to the western arc of the palisade ditch in large pit (725). All the sherds from the middle Neolithic Impressed Ware bowl were located in pit (413) close to the south-eastern arc of the palisade (Table 5). A tiny fragment of pottery was also located in feature (636).

Within the interior of the roundhouse V14 (two sherds of possibly early Neolithic date) came from pit (604), with a small sherd of unidentifiable pottery from pit (701). Most of the pottery was found in pit (761), inside the western entrance, where the remains of a plain pot identifiable only to the Bronze Age were located. Although there were no diagnostic attributes, it is possibly contemporary with activities within the building.

A small number of other plain body sherds or fragments, possibly all Bronze Age were found south of Structure 1 within the oval enclosure among the features of Structure 3. They derived from contexts (418, 433, 472, 482, 514, 565 and 567) but do not add to the interpretation of features there.

Comparison with other sites and chronology

The pottery assemblage from this site, although small has derived from a number of different features and several parts of the site where ritual and domestic activities from various historical periods have tended to overlap.

The earliest pottery, that of the early Neolithic, is frequently discovered in the region due to modern developments, and is commonly found in pits or groups of pits, from for example, Snabe Quarry, South Lanarkshire (Ballin Smith 2015a, 13-20), including early and later modified bowls from Hillhouse Farm, East Ayrshire (Sheridan 2021, 14-20), further modified bowls from Colinhill, Strathaven South Lanarkshire (Ballin Smith 2019b, 28-29), and Laigh Newton, East Ayrshire (Ballin Smith 2011, 20-24).

Some of the pits in the Neolithic enclosure at Curragh 5 included early Neolithic Carinated Bowls in their backfilling material. It suggests that the pits, which possibly formed a large rectangular enclosure are also likely to be of early Neolithic date c. 3800 to c. 3500 BC (defined by ScARF Neolithic Panel Report). This assumes the pottery is contemporary with use of the structure/pits, and that the vessels were deposited as part of the activities and rituals that took place there. More recent work indicates that rectangular timber enclosures, such as the remains of one found at Curragh 5 could be as late as 2600 cal BC (Millican 2016, 150).

The story of the site and of its assemblage becomes more interesting along the surviving north-eastern arm of the Neolithic enclosure

where another early Neolithic Carinated Bowl was found in one of its pits and a second, possibly later bowl was deposited or buried close by in one of a number of pits separate from, but closely associated with the enclosure. Whether this pottery was disturbed from its original place of deposition or whether it indicated activities carried on within the space enclosed by the enclosure is not known. However, this specific area also became the focus of later activities during the Bronze Age, centred on a number of closely positioned pits where there seems to have been a domestic element to events. A few metres to the south-east a number of pits produced later early Bronze Age flat-rimmed urns as well as some sherds from V5 located to the north-west. The site was visited and mostly likely used for both domestic and ritual activities during the latter part of the early Bronze Age c. 1750-1550 BC (defined by ScARF Bronze Age Panel Report), and may suggest that much of the later activity in this area is contemporary.

Early Neolithic activities had also been part of the landscape history in the north-western part of the excavation as two pits, with pottery, later became incorporated within the area demarcated by the construction of an Iron Age roundhouse and its circular palisade. It seems likely that both pits were undisturbed by the construction of the building and the pottery survived in a reasonable condition. Another part of historical record of this particular structure includes the survival of a significant part of a middle Neolithic Impressed Ware bowl (V11). The bowl had been deposited, possibly whole, into a pit, in what became the southern part of the Bronze Age enclosure around the house. The vessel's elaborate rim decoration is mirrored to some extent by a contemporary bowl found at Colinhill, Strathaven even though the exterior decoration and shape of the vessel was different. (Ballin Smith 2019b Vessel 5, Figure 10). Another pot with a similar rim bevel with cord impressions came from a pit at Ayr Academy (Ballin Smith 2019a, Figure 8). Again this vessel had a different form and exterior decoration. Middle Neolithic Impressed Ware vessels were also found within pits at Monkton, South Ayrshire (Ballin Smith 2015b, 13-20, Figure 6) where different vessel shapes and decoration was again noted. The currency of these vessels lay within a 500 year period from c. 3500 to c. 3000 BC and within that time there was reuse of decorative motifs but also experimentation in the manufacture of pots as well as with other forms of decoration.

The only pottery that is likely to be contemporary with the early use of the roundhouse is SF 061 from pit (761) to the interior of the building's drip gully on its western side. There were no diagnostic sherds but the pottery has characteristics (thick-walled, large mineral temper, poorly made and abraded) that indicate it is probably later Bronze Age. Undated but similar pottery was also found within some of the features of the Colinhill roundhouse Structure B, mostly without rims or base sherds, and what survived was small in size and often highly abraded (Ballin Smith 2019b). Plain Bronze Age pottery in a domestic setting was largely used for functional vessels such as cooking pots, and compared to vessels from earlier periods was not aesthetically pleasing.

A similar situation of the survival of small, undifferentiated sherds in small numbers was fund in pits in Structure 3 within the oval enclosure to the south of the roundhouse. Most of these can be grouped together as being most likely Bronze Age in date. The pottery has not survived well to assist in the interpretation and dating of the activities associated with the buildings.

Vitrified material

By Gemma Cruickshanks

Summary

Around 60 g of vitrified material was retrieved during sample processing (Table 6). It is material that can be produced during a wide range of high-temperature processes, from domestic hearths to specialist craft activity. The material recovered here includes hammerscale flakes and slag spheres diagnostic of blacksmithing, along with a range of undiagnostic material which could have formed during a variety of processes. Most of the material was retrieved from the fill of features within the oval enclosure (553) and in the vicinity of the Iron Age roundhouses Structure 1 and Structure 3.

The assemblage

The material was visually examined and classified using common terminology (e.g. Crew and Rehren 2002; Lucas and Paynter 2010; McDonnell and Milns 2015) based upon characteristics such as size, morphology and density. The assemblage is summarised below and a full catalogue is in the archive.

Blacksmithing debris: hammerscale and slag spheres

Fragments of hammerscale were retrieved from three pit fills: 547/548 (Sample 166) and 492/493 (S.148), both in the south-east area of the oval enclosure and 596/597 (S.181) between the gully and the palisade of Structure 1. A pair of slag spheres stuck together (S.242) were found in the fill of the gully (660/661) surrounding Structure 1. Hammerscale and slag spheres form when tiny magnetic flakes of slag fly from hot iron as it is being hammered by a blacksmith, the latter often associated with welding rather than simple forging. Large quantities of such debris can therefore be a good indication of where a blacksmith's anvil was situated in the workshop, but small quantities, as here, often became dispersed across sites through time.

Undiagnostic iron slag

Small fragments of iron slag were also recovered from the same three contexts the hammerscale flakes were from. The fragments are too small to be diagnostic of a particular stage of the ironworking process but, given the presence of diagnostic blacksmithing debris in the same contexts, a smithing origin is likely. The hammerscale, slag spheres and undiagnostic iron slag fragments have a combined weight of 56.8 g.

Sample	Context	Context summary	Weight (g)	ID	Notes
226	707/708	Fill of posthole in Structure 1	1	Fuel ash slag	Small pale grey/ white slag fragments
196	627/628	Fil of pit between the gully and palisade Structure 1	0.1	Cinder	Small black, porous, shiny fragment
181	596/597	Fil of pit between the gully and palisade Structure 1	0.2	Hammerscale and undiagnostic ironworking slag	Some magnetic hammerscale flakes and other small magnetic fragments
242	660/661	Fill of gully in Structure 1	<0.1	Slag spheres?	Small droplet, looks like two 1-2mm slag spheres stuck together
151	506/507	Fill of posthole within oval enclosure By Structure 3	0.1	Fuel ash slag/ cinder	Two very small black fragments
166	547/548	Fill of conical pit within oval enclosure. By Structure 3	<0.1	Hammerscale and undiagnostic ironworking slag	One small flake of magnetic hammerscale and a tiny magnetic slag fragment
148	492/493	Fill of pit within oval enclosure By Structure 3	56.6	Hammerscale and undiagnostic ironworking slag	Mix of small orange/ brown iron slag fragments and hammerscale flakes (c. 50)
91	317/318	Fill of shallow, isolated pit. Prehistoric pottery also present.	0.4	Fuel ash slag/ cinder	Two small black porous fragments

Table 6: Metalwork catalogue.

Fuel ash slag and cinder

Small fragments (1.6 g in total) of lightweight, porous, black vitrified material (Samples 91, 151 and 196) and small pale grey porous fragments (S.226) share characteristics with both fuel ash slag and cinder. Fuel ash slag forms during the high-temperature reaction between fuel ash and silicates such as sand and clay, whereas cinder is partly combusted fuel. Both can form during a range of activities involving burning and are not diagnostic of a particular process.

Discussion

Hammerscale flakes and slag spheres are rarely noticed in the field and tend to only be identified during post-excavation sample processing work. This assemblage perfectly demonstrates the importance of checking sample retents with a magnet to recover such material since no other vitrified material was retrieved during excavation; the fragments from samples are the only evidence blacksmithing took place here.

No *in situ* ironworking features, such as a blacksmith's hearth, were identified, so it is not known where exactly this activity took place. The features producing ironworking debris are in the vicinity of the oval enclosure but mainly the Iron Age Structure 1 and Structure 3. The association of ironworking with roundhouse settlements is well-attested in Iron Age Scotland, particularly in the Moray Firth area, where iron smelting and blacksmithing were taking place in the heart of wealthy settlements (Cruickshanks 2017, 165). Far less is known about Iron Age ironworking in Ayrshire, making this a significant find.

The Roman brooch

By Fraser Hunter

The excavations produced an unusual, visually striking Roman enamelled plate brooch, SF 057, a rare type for Scotland which came ultimately from eastern Gaul or the Rhineland, most likely via military connections (Figure 20). It has a complex enamelling pattern, with two concentric circles set into fields cast into the disc. Each field was a composite construction. The outer one has alternating roundels decorated with concentric circles set within a blue background; the inner one has a bedding layer of white enamel with a thin and poorly preserved layer of slices of millefiori enamel over the top. A central raised knob, made separately and riveted in place, has an enamelled centre, now decayed but seemingly another different colour.

Mackreth's study of brooches in Britain allows it to be identified as a continental import (CONT 9a in his typology; 2011, 173-4, pl 116; no 14363 provides a parallel for the loop, 11041 for the circular motifs). The British examples of the general type that he quotes come mostly from the second century; a few are very late in the first century, and they continue into the third.

Turning to continental studies, Feugère dated the type to the late second century AD and gave the continental distribution as primarily in eastern Gaul, Switzerland and the Rhineland (1985, 185, 368-72, type 27b1). It also extends along the Danube, as Ettlinger noted (1973, 121-3 type

Figure 20: The Roman brooch SF 057.

45.3, pl 28 nos 2-3, map 23). Riha (1979, 188-9, pl 61 nos 1607-9, 1611) placed it in her type 7.13, observing that examples with inset circles were less common than those with trapezoidal alternating fields. She noted its widespread distribution but with concentrations in northern Gaul, Switzerland, and the forts of the Rhine and Danube frontier. For instance, similar examples come from the Saalburg fort on the Taunus stretch of the Rhine frontier (Böhme 1972, pl 26 nos 993-8), while Exner's study of Rhineland enamelled brooches illustrates the diversity of the type in terms of their enamelled decoration (Exner 1939, 62-3, pl 5 type III.26). He shows no precise parallels for the enamelling but there are plentiful instances with millefiori and with a single loop fitting (*ibid*, pl 13.8-9, 14.1-2).

It is likely the Curragh brooch came to the northern frontier from military connections, perhaps on the clothing of a mobile soldier as the type is too infrequent in the area to suggest any regular supply. Some similar brooches are known from Scottish Roman forts, though few have seen full study. A related enamelled disc brooch comprising a ring of enamel with open centre and lobed outer edge (Riha 1979, 188, type 7.12) comes from Newstead (Curle 1911, pl 89 no 11). A second example from the site, a fieldwalking find, is of type 7.13 but differs in detail, with concentric rings of millefiori enamel but no central knob (Elliot and Hunter 2011). From Birrens (Dumfries & Galloway) comes an enamelled disc brooch with dots and a raised centre (Dumfries Museum, DUMFM 1985.15.3), while two examples from Castledykes, South Lanarkshire are related (Hunterian Museum, F.1954.91, F.1988.186).

Disc brooches only rarely reached Iron Age contexts; there is an example with millefiori enamel from Birnie (Moray) and another of a different type from Aberlady (E Lothian; Hunter 2007, Hunter 2009). The spectrum of Roman brooches reaching Iron Age sites is notably selective, with a clear preference for trumpet and headstud brooches (argued to fit local aesthetic preferences), and for fancy, flashy brooches (Hunter 1996; 2013); the Curragh brooch fits nicely into the latter category.

The findspot, in the palisade around a roundhouse, suggests deliberate deposition, and there are good parallels for Roman brooches in such boundary locations, with at least nine further examples (Hunter 2019, 71-2 table 7). For instance, a dolphin brooch was found in a palisade trench around a house at Seafield West, Inverness, Highland, while the entrance post of a roundhouse at Carronbridge, Dumfries & Galloway, produced an unusual intact trumpet brooch. This fits a wider pattern of significant objects being deliberately placed in boundary positions on construction or abandonment of Iron Age houses, most plausibly as offerings (evidence summarised in Hunter 2019, 69-74).

The likely immediate source of the brooch is unclear as the Roman presence in south Ayrshire is poorly known. The temporary camps adjacent to the Curragh are thought to be Flavian, too early for this brooch, and although a permanent installation in the area is plausible it is hypothetical. But Roman finds are known from other sites in the area, such as Lochlee (near Tarbolton) and Lochspouts (near Maybole; Curle 1932); as in other parts of Scotland, Roman material moved to Iron Age sites in areas both near and far from military presence. Such brooches could have fitted readily into local traditions of displaying status or other identities through jewellery (e.g. Hunter 2001).

Catalogue

SF 057 is an enamelled copper-alloy disc brooch with central knob, the margins mostly recently lost. Integrally-cast broken loop on the edge adjacent to the spring, designed originally to hold a chain to fasten it to a paired brooch. Sprung pin held in a single integrally-cast loop by the three-coil spring with internal chord, retained by a solid cylindrical copper-alloy axis, the ends burred. The catchplate return is broken and most of the pin lost, but the brooch was deposited intact. A shallow flat rib on the reverse tapers from the spring to the catchplate, with filemarks to either side from finishing.

The front has a champlevé enamelled design in two concentric fields, each containing complex enamel inlays. The outer one is an opaque mid-

blue that surrounds a series of eight concentric circles alternating between white/'black'/white and white/red/yellow. On one fractured edge it can be seen that the blue and the roundels both rest on the base. The roundels are not set into the blue; rather, they have been positioned and the blue was fired around them, presumably from a powder. The roundels would have been made as rods that were then cut into slices. One is sectioned in a facture, and here the middle circle of 'black' does not run as a cylinder from top to bottom, but curves under the central white dot; this suggests it was the end of a rod. The 'black' is a translucent deep olive green that appears black.

The inner circle was once inlaid with millefiori enamel, now mostly lost or distorted; the pattern is unclear, but may have been a blue/white chequerboard. It was laid as thin slices c. 1 mm thick onto a base layer of pale enamel, now surviving white. These were inlaid as rows of solid squares. In the centre of the design is a raised cup, separately cast with a central tang burred in the rear to hold it in place; it holds discoloured pale green enamel. Maximum length 32 mm; diameter 29.5 mm; diameter of outer zone 27 mm, inner zone 16.5 mm; central reserved area diameter 9 mm; central cup diameter 4.5 mm, height 3.7 mm; overall height 10.5 mm; spring width 8 mm. Context (553/554), fill of palisade ditch structure 1.

General discussion

The landscape setting

The relatively open landscape at Curragh noted today is a product of human and animal intervention over 5000 years. The excavated plateau area on higher ground with more elevated terrain to the north and east had an open aspect with views from the south-east to almost the north-west. It overlooked the raised beach and the coast c. 1.5 km to the west and also Ailsa Craig. Its attributes also included fresh water streams flowing down to the sea, mature woodland, fish, fowl and mammals, and the natural resources for pottery making and stone tool/lithic manufacture.

The woodland cover across the landscape included mature oak, the main timber identified during the Neolithic, with predominantly hazel shrubs on the woodland margins. It is quite likely that as repeated visits by small groups of people or more collective gatherings took place during the early part of the Neolithic, the landscape began to open up. Trees were cleared using stone axes, woodland margins were pushed back, and browsing cattle and sheep/goats played their part in hindering regeneration of shrubs and trees. A more sparsely wooded landscape allowed better access to the plateau for the construction of the early Neolithic enclosure. Seen from afar the enclosure may have seemed monumental – the first permanent structure in the landscape – and a focal point of activities.

By allowing more light to reach the ground deforestation would have benefited hazel shrubs, and other tree species such as willow and alder could have established themselves on damp or wetter ground. It also allowed clearings to be planted with cereals, both wheat and barley during the first half of the Neolithic.

During the middle Neolithic (c. 3500 – c. .3000 BC) there appears to be a break in the evidence of human activity across the landscape until the middle or later Bronze Age and early Iron Age (c. 1550 – c. 600 BC), when domestic structures were built. Although oak was still available, its use in construction was more limited than during the early Neolithic, suggesting mature trees had long gone, and reliance was put on timber

from alder and hazel, with some willow and also *Prunoidae* species. Oak, hazel and alder were used frequently in fire-pits, suggesting what woodland there was, was shrubby and immature. The presence of barley and a single oat grain indicate there were fields and crops in the vicinity of the roundhouses. However, the surviving evidence is too sparse to lead to a more detailed examination of the relationship between cereal crops and animal husbandry and their role in the economy of the Iron Age settlement in particular.

The Neolithic

The earliest dated occupation of the plateau was in the early Neolithic period where there was clear but limited evidence of several ephemeral deposits and a few pits as well as the enclosure. It is plausible that further evidence for Neolithic use of the landscape has been destroyed by subsequent prehistoric and later activities, as the occasional early artefact and radiocarbon dates in later structures indicates. During the Phase 2 development at the Curragh (Figure 1), pits dated to the Neolithic were revealed. Further information about them is awaiting their publication (Spence and Kilpatrick 2013).

The early Neolithic enclosure

The enclosure appears to belong to an early Neolithic tradition of linear timber monuments, which include structures characterised as timber halls (Brophy 2007) and timber cursus monuments (Brophy 1999; Millican 2016). The structure at Curragh 5 is too large and irregular to have been roofed, and as such comparisons to timber halls can be excluded from consideration. Rather, these postholes appear to represent the fragmentary remains of a large, roughly rectilinear enclosure defined by posts.

The ultimate form of the Curragh enclosure is uncertain. If the four possibly related postholes to the east constitute part of an eastern post alignment, then the enclosure would appear to have a somewhat irregular form: narrowing towards the south from the wider northern extent (Figure 2). Why this might be is uncertain, though Brophy (1999, 126) suggests that unevenness in alignments at similar sites may be indicative of a 'segmented' construction, with the enclosure being built over several distinct phases. Radiocarbon date ranges from the postholes overlap to the extent that more detailed phasing is impossible, though the irregularity in its form may suggest at least two phases of construction (Figure 21).

The majority of the Neolithic enclosures are known only from cropmarks, though several have been excavated. The closest excavated parallels appear to be with two similar enclosures excavated at Bannockburn, Stirling (Rideout 1997). Bannockburn 2 was rectilinear in form, measured 27.5 m in width and at least 90 m in length, and comprised a series of postholes for wooden posts. A second rectilinear enclosure, Bannockburn 1, was directly adjacent, and measured 33 m in width and at least 35 m in length. Similar to the enclosure excavated at Curragh 5, sherds of early Neolithic Carinated vessels were recovered from the postholes of the Bannockburn 1 enclosure (Figure 22), with fewer Carinated Vessel sherds recovered from Bannockburn 2. Another example of a rectilinear enclosure defined by postholes and dating to the early Neolithic period was fully excavated at Douglasmuir in Angus (Kendrick 1995). It measured 20 m in width and 65 m in length, although it was unlike the Curragh 5 example as it featured a division of the enclosure by a

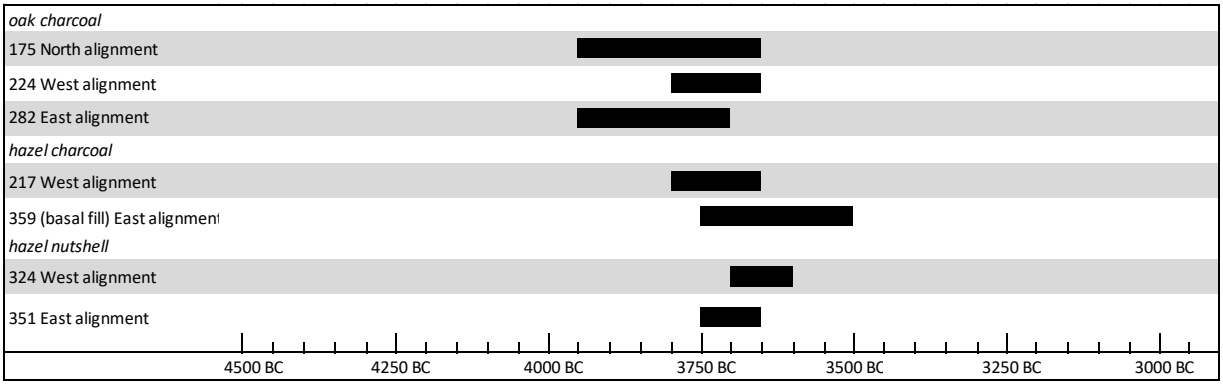

Figure 21: Radiocarbon dates from the pits and postholes forming the enclosure.

Figure 22: Map of sites mentioned in the text.

transverse series of postholes in its centre. No artefactual remains were recovered from the postholes of the Douglasmuir enclosure, though archaeobotanical analysis identified carbonised *Quercus* fragments, suggesting that oak posts were probably used to form the enclosure, as is also suggested for the Curragh 5 enclosure.

Previous excavations in the immediate area of the Curragh 5 site have also identified similar posthole alignments dated to the early Neolithic period. Spence (2015) recorded a curvilinear arrangement of 23 postholes c. 1 km to the NNW of the Curragh 5 site. The possible enclosure was of a similar date to that found at Curragh 5, providing a radiocarbon date range of 3954-3766 cal BC, and many of the postholes contained evidence of packing stones for oak posts. A second alignment c. 0.5 km to the NNW of the Curragh 5 site was recorded by Maguire (2008). This alignment was L-shaped in form, and consisted of nineteen postholes in a north-west/south-east alignment, and with a further alignment of nine postholes extending at a right angle from the south and oriented north-east/south-west. These were similarly interpreted as postholes. The alignments were undated, but their similarity to those encountered nearby may suggest an early Neolithic date.

Millican's (2016, 142) review of these early Neolithic monumental timber enclosures suggests that there were two distinct episodes of timber monument building in northern Britain: an earlier episode between c. 4,000 cal BC and 3,300 cal BC defined by monuments of broadly rectilinear form; and a later episode after 3,300 cal BC defined by monuments of mostly curvilinear form. The suite of radiocarbon dates obtained from Curragh 5 enclosure allows us to add it to the corpus of earlier rectilinear timber monuments.

The precise function of these enclosures is disputed, though some form of ceremonial function has often been proposed, with their linearity in particular suggesting their use in guiding movement along pre-appointed pathways (e.g. Brophy 1999, 128). Some commonalities have been highlighted by Millican (2016, 145), including: their linear nature; their construction in oak; and the high frequency of burning observed. The enclosure at Curragh 5 also appears to have been constructed from oak posts, and tentative evidence of posts being burned in-situ was observed in several of its postholes. The large posts and their spatial distribution suggest a more monumental function than, for example, an animal corral.

The previous discovery of two similar enclosures near Curragh 5 perhaps hints at the emergence of a wider monumental landscape in the area during the early Neolithic. This development would have taken place during woodland clearance and the establishment of agriculture, and that crop husbandry would have required marking out and defining space (land ownership) within the landscape. The clearance of woodland and the erection of monumental architecture in timber was perhaps also a product of territorial marking. The recovery of a Neolithic polished stone axe head (Figure 16) to the east of the enclosure, hints at changes to the woodland cover in the vicinity and also to other ritual activities. A previously discovered polished stone axe head (McNicol 2017) from Phase 3 of the Curragh, suggests woodland use was a widespread activity.

Clues to specific activities taking place within the enclosure can possibly be found in the pottery assemblage recovered from its postholes. Pits that contained sherds from an individual vessel may suggest deliberate deposition, whereas a more diverse assemblage of sherds might be expected in the case of random incorporation of waste sherds during digging and infilling. This may suggest that the Carinated Bowls were not deposited as complete vessels, but were already broken. Remnants of carbonised food or soot on some of the sherds indicate that their function was for cooking. Whether deliberately deposited within the postholes or not after use, the incorporation of cooking vessels indicated more utilitarian activities occurring in association with the enclosure, though the potential for ritualisation and ceremony surrounding cooking and feasting is so well attested that it would be unwise to rule out a ceremonious function.

The four-post structures

The specific functions of four-post structures are currently unclear. Traditional interpretations of these structures tend towards assigning them a granary function: the postholes being interpreted as the supports for a raised, square

or rectangular platform structure which would allow for the storage of grain and provide it some protection from vermin (Gent 1983). Instances of large quantities of carbonised grain recovered from the postholes of several four-post structures at Douglasmuir, Angus (Kendrick 1995, 64) and Micklefield, Yorkshire (Brown *et al.* 2007) would seemingly support a granary interpretation (Figure 22). At the Curragh 5 site, deposits associated with these structures yielded only small amounts of grain, with Structure 5 yielding only a few grains of emmer wheat and Structure 8 within the Neolithic enclosure yielding only a single grain of barley.

Alternative explanations have proposed a defensive function as watchtowers (see Ellison and Drewet 1976 for discussion). The position of Structure 5 on top of the plateau could indicate this sort of function, although the clustering of similar structures at the lower elevations to the south-west of the plateau mitigates against this.

The radiocarbon dates of the structures vary across the site. However, Structures 8 and 9 within the cluster of four-post structures within the Neolithic enclosure were the only ones to return radiocarbon dates from the early Neolithic, from oak charcoal. This suggests they these two in particular were quite likely contemporary structures with the enclosure. The fact that each structure in this cluster appears to respect the location of the others, and that they are similarly orientated, and positioned c. 5 m apart from each other, hints at contemporaneity or succession within the early Neolithic timespan. If this was the case and they were granaries (Figure 3), their density in relation to the enclosure is notable, and would suggest the storage of substantial quantities of grain over time. If some of these four-post structures were contemporary with the enclosure as the radiocarbon dating suggests, the use of the enclosure could well have been for seasonal gatherings where food was prepared and eaten.

The picture concerning the remaining two four-post structures 4 and 5 is different. Both are associated with roundhouses in the eastern part of the excavated area. Structure 4 and the smaller roundhouse, Structure 3, are located within and over the oval enclosure (553). The radiocarbon dates from the former span the 12th to 5th centuries BC, and those from Structure 3 are similar in part, suggesting a possible connection in time and space. Structure 4 is overlain by the larger roundhouse Structure 1, which reinforces a connection during the later Bronze Age/early Iron Age between Structure 3 (domestic dwelling) and the four-post Structure 4 (granary).

Structure 5 was located east of the entrance through the palisade that encircled Structure 1, at the top of the plateau. Its radiocarbon dates place it firmly between the 2nd century BC to the 3rd century AD along with Structure 1. Fragments of clinker thought to be derived from the burning of peat were recovered from one of the postholes forming Structure 5. Although tentative, it was suggested that the structure was utilised in a grain drying capacity, with peat being used as fuel for a fire (see *Carbonised Plant Macrofossils and Charcoal*, above), but no fire-pits or burning layers were found beside the structure to substantiate this interpretation. However, a similar clustering of four-post structures with Iron Age roundhouse settlements at Micklefield, Yorkshire (Brown *et al.* 2007) and Grimthorpe, Yorkshire (Stead 1968), suggest that the isolated structures 4 and 5 were possibly related to the roundhouses at Curragh.

Other Neolithic landscape uses

The recovery of a pitchstone flake and a polished stone axe head located in close proximity on the eastern side of the excavation (Figure 4). suggests that the early Neolithic enclosure, with its evidence of pottery sherds representing four early Neolithic carinated bowls, and another from Structure 14 besides the interior of the enclosure, was not the only centre of activities on the plateau. The additional occurrence of possibly two early Neolithic and one middle Neolithic pottery vessels within the limits of the Structure 1 roundhouse indicate that there was potentially widespread use of the plateau during the Neolithic.

The recovery of pitchstone is particularly notable, as Arran is the nearest source of the stone. Whether this artefact represents direct contact with the inhabitants of Arran is not known but the relatively close proximity of the island, and that of Curragh to the sea, suggests the ease of trade and exchange across the Firth of Clyde (see

Ballin 2009, 70-72 for further discussion). Flints were also found at Ladywell in the near vicinity to Curragh 5 in 1997 (Shearer and Sneddon 2007, 11).

After 3000 BC there was a break in activity until the middle Bronze Age, c. 1550 BC. No funerary monuments are recorded, and surprisingly there is no evidence of Beaker pottery from within the excavated area. There is no easy explanation for this – perhaps evidence of these periods exists beyond the extent of the excavated area or that people simply moved elsewhere, allowing both the land and woodland to regenerate, before reoccupation during the middle/late Bronze Age.

The Bronze Age and into the Iron Age

A number of structures fall into this time bracket. The earliest, Structures 13 and 14 are only fragmentary (Figure 6), and the roundhouse of Structure 13 is undated. The later use of unclassified Structure 14, which had some wattle/fencing and several pits and postholes, was dated to the middle to late Bronze Age, and indicates that occupation and use of the landscape was well underway during this time. Another undated and enigmatic structure is the oval enclosure identified by its ditch (Figure 5). It was proven stratigraphically earlier than the Structure 1 roundhouse, and by analogy the Structure 3 roundhouse was probably constructed over the top of it, but it is stratigraphically unproven. The enclosure may have therefore been redundant by the time of the construction of the roundhouses but its setting and possible evidence of its existence may have influenced their location.

Structure 3

This roundhouse, along with the four-post Structure 4, was constructed at some time during the latter part of the late Bronze Age and the beginning of the earlier Iron Age (Figure 23), where their radiocarbon date-ranges overlap. This does not necessarily mean that they were contemporary buildings, but they could have been. Initial interpretations had also assumed contemporaneity between Structure 3 and the ditch of the oval enclosure (McNicol 2021) but their juxtaposition was awkward and further analysis allows us to conclude that the oval enclosure was most likely earlier (see above).

Structure 3 was defined by its ring of postholes and a porch, but the gully demarcating the extent of the building roof did not survive (Figure 5). The unusual aspect of this arrangement was that the porch opened to the north-west rather than the more traditional south-east. Similar architectural arrangements in later prehistoric wooden roundhouses have been encountered during excavations at Dunragit (Bailie 2021, 341) and Kintore, Aberdeenshire and the Upper Forth Crossing, Kincardine (see Pope 2015, 17-19), but there is debate as to the exact form this type of structure took and the surviving remains may not be reflective of the true scale and form of the built roundhouse.

Some excavated examples of post-built dwellings with similar porch elements appear to demonstrate that: rather than projecting outwards from the external walls of the structure, these features could demarcate an entrance passage *through* the outer walls of the roundhouse, which would have extended from the end of the porch, as seen at East Woodburn, Northumberland (Gates 2009).

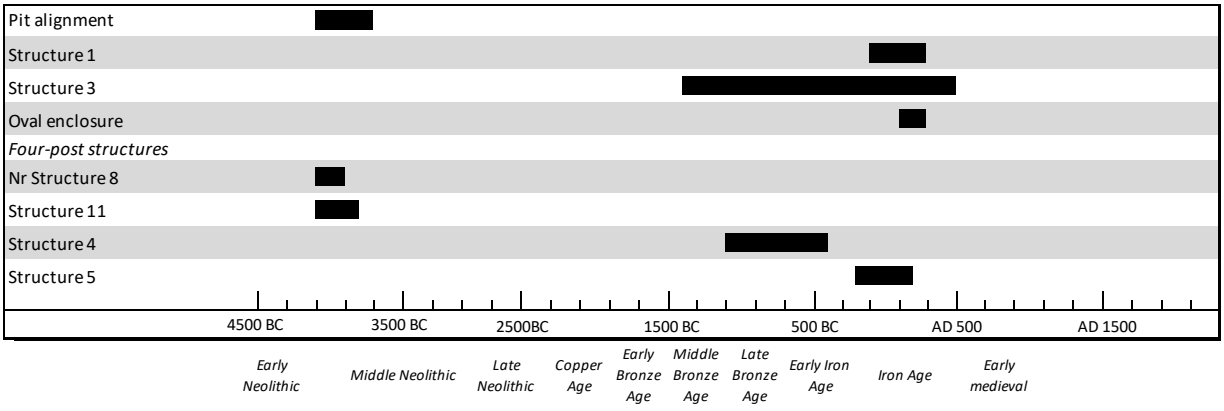

Figure 23: Radiocarbon date ranges of the structures.

If this was the case, the interior postholes of Structure 3 contained substantial wooden posts that supported the roof of the roundhouse. The extent of the building was indicated by the postholes of the inner part of the porch. The walls of the building were presumably light-weight non-loadbearing wattle and daub panels protected by the overhanging roof, but no evidence of them has survived. Gates (2009) suggested that the Woodburn building walls could also have been made from organic material such as turf, a material that was equally unlikely to survive. The roundhouse is thus potentially substantially larger than the surviving foundation elements would suggest. The double postholes indicating the outer portion of the porch or entranceway, could also suggest a gate with an encircling fence to the building.

The evidence for alteration to this building is sparse apart from a possible reinforcement of structural postholes 453 and 455. The location of the off-centre fire-pit indicates that it was not in direct line with the entrance, but positioned to one side to protect it from the direct effects of air flowing into the building.

Previous work in the vicinity, at the site of the Areas 1 and 2 development at the Curragh in 2012, exposed the pits and postholes of late Bronze Age/early Iron Age roundhouse, with a longer entrance porch or passage to the west (Spence and Kilpatrick 2013; Spence 2015). In addition it had a contemporary sub-circular enclosure, also with a western gateway. As with Structure 3, the evidence for the Curragh 1 building was limited to its internal ring of posts, an off-centre fire-pit, and the deeper postholes and linear arrangement of its entrance passage.

Structure 1

The architectural elements of Structure 1 mirror that of Structure 3 but alterations made it a more complex building (Figure 8). Structure 1 replaced Structure 3 as it dated much later to the early centuries AD (Figure 23). Structure 3 was larger with 12 original load-bearing postholes and Structure 1 originally may have had only nine, and thereby a correspondingly smaller interior diameter.

As well as a 180° change in the orientation of the main entrance from that of Structure 3, Structure 1 seemed to have had an opposed west entrance without any porch or formal arrangement where there was a gap in the drip gully. Although not recorded during the excavation, it could be argued that bedrock lying just beneath the surface may have prevented a full circuit of the gully and the break in it suggested an entrance rather than there actually was one.

However, a similar example of an Iron Age roundhouse with two-entrances was excavated at Hayknowes Farm, Dumfriesshire featuring a substantial post-flanked entranceway oriented roughly to the east, with a narrower entranceway to the west demarcated only by the terminations of the roundhouse's gully (Gregory 2001, 36-37). Another example, also from Dumfriesshire, was excavated at Carronbridge. It featured a short porched main entrance oriented towards the east but its western entrance was flanked by two shallow postholes, perhaps indicating a similar primary/secondary entrance arrangement (Johnson 1994, 245). The corpus of Iron Age roundhouses suggests that eastern oriented entranceways are particularly common, and it would thus appear that there was a deliberate order to this placement. Their orientation in the direction of the rising sun led Oswald (1997) to suggest a cosmological significance centred on veneration of the sun. More prosaic interpretations have suggested that this orientation simply fulfils a functional role of allowing light into the roundhouse (Pope 2007, 213). In Structure 1, a functional interpretation to having the two entrances could make sense, as the opposed orientations would maximise the amount of sunlight and ventilation coming into the roundhouse, by capturing light from both the rising and the setting sun.

The load-bearing postholes of the roundhouse indicate a number of changes. Their equally spaced timbers seem to have gained another post (759) within the circuit on the western arc at an early stage. Although supported by stone packing the posts may have only rested in shallow postholes as their surviving profiles indicate. It has been noted in middle Bronze Age roundhouses recently excavated near Erskine on the River Clyde (Atkinson and Ballin Smith forthcoming) that the prevailing south-westerly (storm) winds created problems that were only resolved by additional internal timber supports

and in some cases reroofing. The same problems are noted in Structure 1 with the addition of extra postholes in the interior of the building. In some instances the original posts had another added beside it or they were located close by, but along the western arc of the building additional posts were positioned by the walls of the building where they probably acted as buttresses. These reinforcing posts had deeper postholes, supported by stone packing. This alteration to the original plan of the building may in part be due to the lack of mature oak trees in the vicinity, and the use of less substantial timber such as from hazel and alder (the most common species identified). Another change was the original fire-pit (739) was capped by a large flattish stone of conglomerate, perhaps to take an off-centre post to support the roof timbers. Another possible explanation for the capping of the fire-pit could have been the symbolic decommissioning/ abandonment of it (Webley 2007). The closure of the fire-pit may have been enacted as part of a ritualised ending to the structure as a home: with the warmth and light from the fire symbolically as well as physically extinguished.

The walls of the roundhouse were most probably wattle and daub panels, with hazel withies being the main wood used. Small fragments of daub were also found, to indicate that the panels were filled in (daubed) with clay and organic material, but no posts or stakeholes survived of their arrangement to the interior of the gully beneath the building roof.

The palisade ditch surrounding the roundhouse with its formal, wide entrance to the north-east is a significant feature of the building (Figure 8). The stone found in the ditch suggests it had an upright fence, but its deep postholes at its entrance suggest it had a gate. The worn area between the entrance posts may indicate that it had a wooden panel or timber gate that was drawn across between them.

Palisaded roundhouses

Structure 1 is notable that it is an example of enclosed single roundhouse: an Iron Age settlement site type which Steer (1956) termed *homesteads*. Similar structures have been excavated at Ravelrig Quarry, Edinburgh (Rennie 2013) and Seafield West, Inverness (Cressy and Anderson 2011). Like those at Curragh 5, the Ravelrig and Seafield West sites featured single Iron Age roundhouses within a palisaded enclosure, and Seafield West's Structure B in particular mirroring the form of the palisade enclosure around Structure 1. In closer proximity was another roundhouse excavated at Girvan, around 0.45 km to the south-west of Curragh 5. This example featured a single post-built roundhouse located within a circular significantly large palisade enclosure enclosing an area of c. 800 m² (Spence and Kilpatrick 2013; Spence 2015). Radiocarbon dating of charcoal from the enclosure and one of the postholes of the interior of the roundhouse provided a date range of 788 – 472 cal BC, earlier than Structure 1, but more in keeping with the date of the unenclosed Structure 3.

A variety of functions have been proposed for palisaded enclosures, from the penning of cattle, as defensive structures, and for conspicuous display of power. The earlier oval enclosure, predating the Structure 1 and Structure 3 enclosed a large area but its ditch was a relatively insubstantial barrier but it may have had a stock penning function. The palisade ditch encountered around Structure 1 created a narrow space of only c. 4 m between the palisade and the outer walls of the roundhouse. It also yielded only small amounts of alder charcoal, although it could have supported posts, possibly lashed together to form a solid barrier.

The relatively constrained space of between the roundhouse and the palisade may have had a different function than stock penning. The inhabitants of Structure 1 would have wanted to protect their roof, possibly thatched with reed or straw, from browsing cattle or sheep/goats, and part of the function of the palisade and the gate, may have been to keep domestic animals away from the roundhouse. However, the palisade and its gate may also have had another defensive function - to keep would-be intruders out and to deny access to the interior of the building.

An example of a large roundhouse with substantial defences was excavated at Aldclune, Perth and Kinross (Hingley 1997), suggesting that the occurrence of defences associated with a single household is not unprecedented. Though the Aldclune example featured a series of surrounding earthen banks rather than a simple

palisade wall or fence, its similar raised position on a higher topographically feature is somewhat similar to the situation of the Structure 1 roundhouse.

Although a late Bronze Age/early Iron Age roundhouse and enclosure was identified during archaeological work on the Curragh Area 1 and 2 (Spence and Kilpatrick 2013, Spence 2015), understanding its significance and relationship to the structures and artefacts of the Iron Age of Curragh 5 await publication.

Subsistence and economy

Archaeobotanical and faunal analysis gives us some evidence for the subsistence economy of Iron Age Curragh. Barley and hazel nuts appear to constitute the majority of edible plant remains that have survived, with a single example of oat also recovered. This small sample of botanical material recovered from the more secure contexts within the structures entirely conforms to the suite of cultivated crops observed across the corpus of sites from Iron Age Scotland, with barley consistently forming the dominant crop and with lesser elements of emmer wheat and perhaps also cultivated oats (ScARF 2012). The gathering of wild plants for consumption also took place, with the recovery of several examples of hazel nutshells. Again, this is a pattern that conforms to that seen in other Iron Age sites across Scotland (ibid). The identification of hazel nutshells and a single grain of barley from the fire-pits of structures 1 and 3 provide the most reliable evidence of plant preparation – of roasting nuts and seeds for grinding into flour.

The identification of two post-built rectangular structures (Structures 4 and 5), possibly contemporary with Structure 3 and 1 respectively, suggests continuity in a form of structure that functioned successfully as granary. Their occurrence suggests harvest of barley were sufficiently productive to need protection and cover as an important food resource.

Faunal remains were more limited in quantity, due to bone degradation within the typically acidic Scottish soils. The most convincing evidence for the preparation of mammalian meat for consumption was recovered from the fire-pit of roundhouse Structure 3, but most of the faunal remains comprised only undiagnostic fragments. The highest concentration of identifiable animal bone, a cow and a sheep/goat, came from an unphased cluster of pits within the palisade of Structure 1 and also externally to it to the immediate south-east. It is uncertain whether these features relate directly to the Iron Age structures, or are earlier or later than them, and as such provide only tentative evidence for general animal husbandry in the area. Evidence for the exploitation of wild animals was also tentative, with the recovery of a small fragment of likely deer antler from the fill of the palisade ditch (Structure 1) suggesting that the diet of the inhabitants may have been supplemented by hunting wild game.

Evidence of ironworking was recovered from within and around Structure 1 and Structure 3, with approximately 60g of metalworking by-products (slag and hammerscale) and vitrified material recovered. This material came from several random pits and postholes in association with Structures 1 (four features) and 3 (three features), but there were no specific structures identified for working iron. However, 56.6g of hammerscale and undiagnostic ironworking slag (Table 6) came from Structure 3, from the fill of a pit (492/493) in the interior between the ring of postholes and where the gully was - indicating smithing took place there.

This small assemblage is indicative of small-scale domestic ironworking associated with the roundhouses, and from which small amounts of by-products were distributed across the excavated area. This is perhaps significant as metalworking was not confined to specialist structures, but may have taken place in more domestic contexts. However, the excavation did not reveal any significant slag or the base of a furnace or ironworking hearth the absence of which may have been due to the truncation of the site by ploughing.

The artefacts

The artefact assemblage that can be directly associated with the Iron Age roundhouses is sparse, though this relative paucity of material culture is not a particularly unusual feature of timber Iron Age roundhouses from south-west Scotland (Banks 2002), and indeed Scotland in

general (Harding 2017, 107). Pottery in particular tends to be low in quantity and undiagnostic in type, and the small, undifferentiated sherds recovered from Structures 1 and 3 largely reflect this trend. However, the recovery of a probable pottery-smoothing tool likely associated with Structure 1 provides some insight into Iron Age pottery manufacture. Often said to be of relatively poor and utilitarian quality in comparison to vessels of the preceding periods, the discovery of a potter's tool perhaps indicates a greater level of care in the manufacture and finish of vessels than typically noted in the literature.

The Roman copper-alloy enamelled plate brooch recovered from the fill of the Structure 1 palisade ditch constitutes the site's most remarkable find (Figure 20). As described by Hunter (*The Roman Brooch,* above), the brooch is of a style typically dating to the second century AD and was probably a continental import. Its distribution within Britain, northern and eastern Gaul, and along the Rhine suggests that the type was popular along the Roman frontier in north-western Europe. Roman-derived material culture in Scotland tends to be recovered from domestic contexts, and the corpus of finds displays a notable selectivity. Drinking vessels and items of personal adornment appear to form the bulk of the Roman-derived material, and brooches in particular are argued to have been sought out by native populations (Harding 2017, 141), suggesting the Curragh 5 brooch was a prized possession.

This single find represents the only Roman-derived material recovered from within the roundhouse, and there is limited potential for a more detailed account of cultural connections between the native inhabitants and the Roman presence in Scotland. The brooch's apparent military connotations suggest that it possibly arrived in the area along with legionaries garrisoning the northern-most frontier of the empire. Little is known about Roman infiltration into south-west Scotland, but marching camps from Agricola's campaign have been found at Girvan and Ayr (Arabaolaza 2019), and it is not inconceivable that the brooch was acquired locally or found after soldiers marched between Girvan and Ayr, rather than obtained from a more formalised or longer distance trading network.

The possession of the brooch, may have given status to its native owner and/or the settlement and therefore the finding of the brooch within the palisade ditch could possibly suggest deliberate deposition, possibly as an element of ritualised abandonment, as has been posited for other sites where brooches have been discovered within similar palisade enclosures associated with Iron Age roundhouses (Cressy and Anderson 2011; Johnson 1994). Clear evidence as to the form of the abandonment of Structure 1 did not survive, although the scattering of packing stones along the interior edge of the palisade ditch could suggest the removal of posts and the backfilling of the trench. This being the case, and also taking into account the lack of other Roman material within the roundhouse, the brooch's deliberate deposition is plausible.

The early medieval kilns

As no burnt clay or pottery waste was recovered from within the kilns, it is unlikely that they represent pottery kilns. However, carbonised six-row barley grains were recovered from the fills of Kiln 2 and 3, and a small quantity of indeterminate grains also recovered from Kiln 1. As such, archaeobotanical analysis would suggest that these kilns were utilised as grain drying ovens.

Two likely grain-drying kilns of similar date have been excavated in Scotland at Gogar Mains, Edinburgh (Will and James 2017, 15-18). The remains of these kilns were of somewhat less complex form than those excavated at the Curragh 5 site, consisting simply of two ovular pits, through the recovery of substantial amounts of carbonised grain suggests their function.

Radiocarbon dating suggests that the kilns post-date the occupation of the plateau by at least a century to sometime between the early fifth and mid sixth centuries AD and therefore they do not appear to be related to it (Figure 14). However, the kilns allow us to infer something of the character of later occupation in the wider area. The drying of grain in small quantities was likely achieved quite easily using only a household hearth, and as such, the use of dedicated kilns to dry grain plausibly suggests a greater scale of crop processing, beyond that of the domestic (van der Veen 1989, 315).

Conclusion

The excavations at Curragh 5 revealed a long time span of occupation and use. Early Neolithic remains comprised an enclosure of apparently monumental character, with no strong evidence of domestic structures within it. The prior discovery of similar early Neolithic posthole alignments from the Girvan site to the north may suggest a monumental landscape along the Ayrshire coast during the Neolithic period. This is perhaps significant in that known wooden-post enclosures have appeared to cluster on the eastern coast of Scotland, and the excavation of one on the west coast allows us to expand their distribution across Scotland.

After a break of two millennia, occupation resumed on the plateau, but its character was noticeably different. This comprised unenclosed roundhouses from sometime between the sixteenth - sixth century BC, followed by a final single roundhouse enclosed by a timber palisade during the early centuries AD.

Later prehistoric settlement at Curragh appears to have comprised a single roundhouse at any one time. Taken together with the single palisaded roundhouse recorded nearby at Girvan, a pattern of dispersed Iron Age settlement across the landscape is beginning to emerge. Discoveries of single roundhouses dating to the Iron Age are not particularly unusual, though this pattern does stand in contrast to multiple household settlements such as Dunragit to the south (Toolis 2021, 348-353).

The final evidence of occupation were three grain-drying kilns, one of which yielded dating evidence from the early fifth-mid sixth centuries AD, representing another shift in character to the archaeology encountered here.

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Archive

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

Bibliography

All links were active at the date of publication.

Alldritt, D M 2015 Carbonised plant remains and charcoal from Ladywell, Girvan, South Ayrshire. Project 3902 unpublished Specialist Report, GUARD Archaeology Ltd.

Alldritt, D M 2017 Carbonised plant remains and charcoal from Curragh Phase 3, Girvan, South Ayrshire. Project 4594 unpublished Specialist Report, GUARD Archaeology Ltd.

Arabaolaza, I 2019 New evidence uncovered: A Roman Marching Camp in Ayr, *Archaeology Scotland Magazine* 36, 18-20.

Atkinson, J-J and Ballin Smith, B forthcoming Discussion, *in* Atkinson J-J and NcNicol, D Bronze Age ritual monuments and domestic occupation at Northbar, Erskine. *Archaeology Reports Online.*

Bailie, W 2021 Iron Age Structural Traits in Bailie W (ed) *Dunragit: The Prehistoric Heart of Galloway*, 341-346. Glasgow: GUARD Archaeology Ltd.

Ballin, T B 2006 Re-examination of the Early Neolithic pitchstone-bearing assemblage from Auchategan, Argyll, Scotland, *Lithics* 27, 12-32.

Ballin, T B 2009 *Archaeological Pitchstone in Northern Britain. Characterization and interpretation of an important prehistoric source*. British Archaeological Reports British Series 476. Oxford: Archaeopress.

Ballin, T B 2011 *Overhowden and Airhouse, Scottish Borders. Characterization and interpretation of two spectacular lithic assemblages from sites near the Overhowden Henge*. British Archaeological Reports British Series 539. Oxford: Archaeopress.

Ballin, T B 2015 Arran pitchstone (Scottish volcanic glass): New dating evidence. *Journal of Lithic Studies* 2(1), 5-16. Available from: http://journals.ed.ac.uk/lithicstudies/article/view/1166

Ballin, T B 2017a Pitchstone from radiocarbon-dated pits – an update, *PAST* 87, 14-15.

Ballin, T B 2017b The lithic artefacts from Curragh Phase 3. Unpublished specialist report for GUARD Archaeology Ltd.

Ballin, T B 2019 [Lithic] Materials synthesis [the Standingstones site], 212-220, *in* Dingwall, K, Ginnever, M R, Tipping, R, van Wessel J and Wilson, D *The land was forever: 15,000 years in north-east Scotland. Excavations on the Aberdeen Western Peripheral Route/Balmedie-Tiperty*. Oxford: Oxbow Books.

Ballin, T B 2021 *Classification of Lithic Artefacts from the British Late Glacial and Holocene Periods*. Oxford: Archaeopress Publishing Ltd.

Ballin, T B 2021 The Lithic Assemblages, *in* Bailie, W *Dunragit. The Prehistoric Heart of Galloway*. Appendix 12 (158 pages + full catalogue). Oxford: Archaeopress Publishing Ltd. Available from: https://www.guard-archaeology.co.uk/DunragitMonographAppendices/Appendix12.pdf

Ballin, T B 2022 Radiocarbon-dating – is the humble hazelnut shell archaeology's 'silver bullet' (or not)? *CIfA Scottish Group Newsletter*, Spring 2022.

Ballin, T B, Ellis, C, and Bailie, W 2018 Arran pitchstone – different forms of exchange at different times? *CIfA Scottish Group Newsletter*, Spring 2018.

Ballin Smith, B 1994 Stone artefacts, 185-212, *in* Ballin Smith, B (ed.) *Howe, four millennia of Orkney prehistory*. Edinburgh: Society of Antiquaries of Scotland.

Ballin Smith, B 2011 The Pottery Assemblage, 20-24, *in* Toolis, R 2011 *Neolithic domesticity and other prehistoric anomalies: excavations at Laigh Newton, East Ayrshire*. Scottish Internet Reports 49: Society of Antiquaries of Scotland/Council for British Archaeology/Historic Scotland. Available from: https://journals.socantscot.org/index.php/sair/issue/view/79

Ballin Smith, B 2015a Prehistoric pottery, 13-20, *in* Kilpatrick, M C Pits with Precious Goods: ritual deposition in the early Neolithic, Snabe Quarry, Drumclog, South Lanarkshire, 2008-2012. *Archaeological Reports Online* 18. Available from: https://www.archaeologyreportsonline.com/reports/2015/ARO18.html

Ballin Smith, B 2015b Prehistoric pottery, 13-20, *in* Rennie, C Pits, pots and pitchstone: excavation of a multi-phase site at Main Street, Monkton. *Archaeological Reports Online* 14. Available from: https://www.archaeologyreportsonline.com/reports/2015/ARO14.html

Ballin Smith, B 2019a Prehistoric pottery, 18-27, *in* Arabolaza, I Beside the River Ayr in prehistoric times: excavations at Ayr Academy, *Archaeology Reports Online* 33. Available from: https://www.archaeologyreportsonline.com/reports/2019/ARO33.html

Ballin Smith, B 2019b Prehistoric pottery, *in* Spence, B Neolithic pits and Bronze Age settlement at Colinhill, Strathaven, *Archaeology Reports Online* 35, 27-33. Available from: https://www.archaeologyreportsonline.com/reports/2019/ARO35.html

Ballin Smith, B 2021 Appendix 14: The Coarse Stone, *in* Bailie, W *Dunragit the Prehistoric Heart of Galloway.* Available from: https://www.guard-archaeology.co.uk/DunragitMonographAppendices/Appendix14_CoarseStone.pdf

Banks, I 2002 Always the Bridesmaid: The Iron Age of South-West Scotland, 27-34, *in* Ballin Smith, B and Banks, I (eds.) *In the Shadow of the Brochs: The Iron Age in Scotland*. Stroud: Tempus Publishing Ltd.

Böhme, A 1972 Die Fibeln der Kastelle Saalburg und Zugmantel, *Saalburg Jahrbuch* 29, 5-112.

British Geological Survey 2024 Geology of Britain Viewer. Available from: https://bgs.ac.uk/geologyofbritain/home.html

Brophy, K 1999 The Cursus Monuments of Scotland, 119-29, *in* Darling, A and Harding J (eds.) *Pathways and Ceremonies: The Cursus Monuments of Britain and Ireland*. Neolithic Studies Group Seminar Papers 4.

Brophy, K 2007 From Big Houses to Cult Houses: Early Neolithic Timber Halls in Scotland, *Proceedings of the Prehistoric Society*, 73, 75-96.

Brown, F 2007 *The Archaeology of the A1 (M) Darrington to Dishforth DBFO Road Scheme*. Oxford: Oxford Archaeology North.

Burrow, S 2021 Corn Drying Kilns in Wales: a Review of the Evidence, *Archaeologia Cambrensis*, 170, 111-149.

Chartered Institute for Archaeologists (CIfA) 2014 (revised 2020) *Standard and guidance for the collection, documentation, conservation and research of archaeological materials*. Reading: CIfA. Available from: http://www.archaeologists.net/sites/default/files/CIfAS&GFinds_1.pdf

Clarke. A 2006 *Stone Tools and the Prehistory of the Northern Isles.* BAR British Series 406. Oxford: Archaeopress.

Cressy, M and Anderson, S 2011 A Later Prehistoric Settlement and Metalworking Site at Seafield West, near Inverness, Highland, *Scottish Archaeological Internet Report* 47. Available from: https://journals.socantscot.org/index.php/sair/issue/view/77

Crew, P and Rehren, T 2002 High temperature workshop residues from Tara: iron, bronze and glass, 83-102, *in* Roche, H (ed.) *Excavations at Ráith na Ríg, Tara, Co Meath, 1997*. Dublin: Royal Irish Academy, Discovery Programme Reports 6.

Crone, A *et al.* 2018 Nasty, Brutish and Short?: The Life Cycle of an Iron Age Roundhouse at Black Loch of Myrton, SW Scotland, *Journal of Wetland Archaeology*, 18, Issue 2, 138-162.

Cruickshanks, G 2017 *Iron in Iron Age Scotland: a long-term case study of production and use c.800 BC to AD 800*. Edinburgh University: Unpublished PhD Thesis.

Curle, J 1932a An inventory of objects of Roman and provincial Roman origin found on sites in Scotland not definitely associated with Roman constructions, *Proceedings of the Society of Antiquaries of Scotland* 66 (1931–1932), 277-397.

Elliot, W and Hunter, F 2012 Gleaned from the soil: fieldwalking Trimontium, 181-211, *in* Hunter, F and Keppie, L (eds.) *A Roman frontier post and its people: Newstead 1911-2011*. Edinburgh: National Museums Scotland.

Ellison, A and Drewett, P 1976 Pits, and post-holes of the British Early Iron Age: some alternative explanations, *Proceedings of the Prehistoric Society* 87, 183-94.

Ettlinger, E 1973 *Die römischen Fibeln in der Schweiz*. Bern: Francke Verlag.

Exner, K 1939 Die provinzialrömischen Emailfibeln der Rheinlande', *Bericht der Römisch-Germanischen Kommission* 29, 31-121.

Fenton, M B 1988 The petrological identification of stone battle-axes and axe hammers, 92-132, *in* McK Clough, T H and Cummins, W A *Stone Axe Studies Volume 2 The petrology of prehistoric stone implements from the British Isles*. London: CBA.

Feugère, M 1985 *Les fibules en Gaule méridionale de la conquête à la fin du Ve siècle après J-C* (Revue archéologique de Narbonnaise 12). Paris: CNRS.

French, D H 1971 An experiment in water sieving, *Anatolian Studies* 21, 59-64.

Gates, T 2009 Excavation of a late second/early first millennium BC unenclosed roundhouse at Halls Hill near East Woodburn, Northumberland, *Archaeologia Aeliana* 38, 43-85.

Gent H 1983 Centralized storage in later prehistoric Britain, *Proceedings of the Prehistoric Society* 49, Issue 1, 243-267.

Gregory, R 2001 Excavation at Hayknowes Farm, Annan, Dumfriesshire, *Transactions of the Dumfriesshire and Galloway Natural History and Antiquarian Society* 75, 26-46.

Harding, D W. 2017 *The Iron Age in Northern Britain*. Oxford: Routledge.

Hingley, R *et al.* 1997 The Excavation of Two Later Iron Age Fortified Homesteads at Aldclune, Blair Atholl, Perth & Kinross, *Proceedings of the Society of Antiquaries of Scotland* 127, 407-466.

Hunter, F 1996 Recent Roman Iron Age metalwork finds from Fife and Tayside, *Tayside & Fife Archaeolgical Journal* 2, 113-125.

Hunter, F 2001 Roman and native in Scotland: new approaches, *Journal of Roman Archaeology* 14, 289-309.

Hunter, F 2007 *Beyond the Edge of the Empire: Caledonians, Picts and Romans*. Rosemarkie.

Hunter, F 2009 Recent work on 'stray finds' of Roman objects in East Lothian, 259-265, *in* Haselgrove, C *The Traprain Law Environs Project: Fieldwork and Excavations 2000-2004*. Edinburgh: Society of Antiquaries of Scotland.

Hunter, F 2013 Roman brooches around and across the British limes, 269-280, *in* Grabherr, G, Kainrath B and Schierl, T (eds.) *Verwandte in der Fremde. Fibeln und Bestandteile der Bekleidung als Mittel zur Rekonstruktion von interregionalem Austausch und zur Abgrenzung von Gruppen vom Ausgreifen Roms während des 1. Punischen Krieg bis zum Ende des Weströmischen Reiches. Akten des Internationalen Kolloquiums Innsbruck 27. bis 29. April 2011*. Innsbruck: Innsbruck University Press (Ikarus 8).

Hunter, F 2019 *The carnyx in Iron Age Europe: the Deskford carnyx in its European context*. Mainz: Römisch-Germanisches Zentralmuseum.

Johnson, D A 1994 Carronbridge, Dumfries and Galloway: the excavation of Bronze Age cremations, Iron Age settlements and a Roman camp, *Proceedings of the Society of Antiquaries of Scotland* 124, 233-291.

Kendrick, J 1995 Excavation of a Neolithic enclosure and an Iron Age settlement at Douglasmuir, Angus, *Proceedings of the Society of Antiquaries of Scotland* 125, 29-67.

Lucas, V A and Paynter, S 2010 *Whitby Cliff, Whitby, North Yorkshire – an assessment of metalworking debris from the Whitby Cliff Excavations.* English Heritage Research Department Report Series no 31-2010.

Mackreth, D F 2011 *Brooches in late Iron Age and Roman Britain*. Oxford: Oxbow Books.

Maguire, D 2008 William Grant & Sons Distillers Ltd, Girvan, The Curragh, Archaeological Evaluation. Unpublished Data Structure Report, GUARD, University of Glasgow.

Malone, C 2001 *Neolithic Britain and Ireland*. Stroud: Tempus Publishing Ltd.

McDonnell, J G and Milns, J 2015 Ferrous and non-ferrous metalworking, 392-428, *in* Dockrill, S, Bond, J, Turner, V, Brown, L, Bashford, D, Cussans, J and Nicholson, R *Excavations at Old Scatness, Shetland Volume 2: The Broch and Iron Age Village*. Lerwick: Shetland Amenity Trust.

McNicol, D 2017 Curragh, Girvan – Phases 3 & 4. Unpublished Data Structure Report. GUARD Archaeology Ltd.

McNicol, D 2019 Curragh, Phase 5, Girvan, South Ayrshire: Archaeological Evaluation. Unpublished Data Structure Report, GUARD Archaeology Ltd.

McNicol, D 2021 Curragh, Phase 5, Girvan, South Ayrshire: Archaeological Strip, Map & Sample -. Unpublished Data Structure Report, GUARD Archaeology Ltd.

Millican, K 2016 Seeing the Wood in the Trees: The Timber Monuments of Neolithic Scotland, 139-168, *in* Brophy, K *et al.* (eds.) *The Neolithic of Mainland Scotland*. Edinburgh University Press, Edinburgh.

Newton, A 1999 Ocean-transported pumice in the North Atlantic. Unpublished PhD thesis, University of Edinburgh.

Newton, A 2009 Report on Pumice-Like Material from the Applecross Area, *Scottish Archaeological Internet Reports* 31, 461-65. Available from: https://journals.socantscot.org/index.php/sair/issue/view/52

Oswald, A 1997 A doorway on the past: practical and mystic concerns in the orientation of roundhouse doorways, 87-95, *in* Gwilt, A and Haselgrove, C (eds.) *Reconstructing Iron Age Societies.* Oxbow Monograph 71. Oxford: Oxbow Books.

Paterson, I and Ward, T 2013 The Lithology of Biggar Archaeology Group's Prehistoric Projects. Available from: https://biggararchaeology.org.uk/all-of-the-archaeology-reports-from-biggar-archaeology-group/

Pope, R 2007 Ritual and Roundhouse: A critique of recent ideas on the use of domestic space in later British prehistory, 204-228, *in* Haselgrove, C and Pope, R (eds.) *The Earlier Iron Age in Britain and the Near Continent*. Oxbow: Oxford Books.

Pope, R 2015 Bronze Age architectural traditions: dates and landscapes, 159-184, *in* Hunter, F and Ralston, I (eds.) *Scotland in Later Prehistoric Europe*. Edinburgh: Society of Antiquaries of Scotland.

Prehistoric Ceramics Research Group 2010 *The Study of Prehistoric Pottery. General Policies and Guidelines for Analysis and Publication*, PCRG Occasional Papers 1 and 2 (3rd edition), Salisbury: Wessex Archaeology.

Rennie, C 2013 A Room with a View: excavations at Ravelrig Quarry, *Proceedings of the Society of Antiquaries of Scotland* 143, 137-156.

Ricket, R 2021 *Post-Roman and Medieval Drying Kilns*. Oxford: Archaeopress Publishing Ltd.

Rideout, J S 1997 Excavation of Neolithic enclosures at Cowie Road, Bannockburn, Stirling, 1984-5, *Proceedings of the Society of Antiquaries of Scotland* 127, 29-68.

Riha, E 1979 *Die römischen Fibeln aus Augst und Kaiseraugst* (Forschungen in Augst 3). Augst: Amt für Museen und Archäologie des Kantons Basel-Landschaft.

Ritchie, P R and Scott J G 1988 The petrological identification of stone axes from Scotland, 85-91, *in* McK Clough, T H and Cummins, W A *Stone Axe Studies Volume 2 The petrology of prehistoric stone implements from the British Isles*. London: CBA.

ScARF 2012 Farming and Feeding, *in* Hunter, F and Carruthers, M (eds.) *Iron Age Panel Report* Scottish Archaeological Research Framework: Society of Antiquaries of Scotland. Available from: https://scarf.scot/national/iron-age-panel-report/4-land-as-resource/4-2-farming-and-feeding/

Schweingruber, F H 1990 *Anatomy of European Woods*. Berne and Stuttgart: Paul Haupt Publishers.

Scott, L 1953 Eilean an Tighe: A pottery workshop of the second millennium BC, *Proceedings of the Society of Antiquaries of Scotland* 85, 1-37.

Shearer, I and Sneddon, D 2007 Project 2488 The Curragh, Girvan. Unpublished Evaluation DSR Report. GUARD, University of Glasgow.

Sheridan, A 2021 The early Neolithic pottery, *in* Green, K *et al*. Exceptional pots: the early Neolithic of Hillhouse Farm, Kilmarnock, East Ayrshire, *Archaeology Reports Online* 44, 14-20. Available from: https://www.archaeologyreportsonline.com/reports/2021/ARO44.html

Smith, J 1880 On the occurrence of flint nodules and worked flints in the post-Tertiary Sands of the Ayrshire Coast between Saltcoats and Troon, *Transactions of the Geological Society of Glasgow* VI (1876-1880), 185-191.

Smith, B 1983 Discussion of the finds, 27-33, *in* Cracknell, S and Smith B, Archaeological investigations at Mavis Grind, Shetland, *Glasgow Archaeological Journal* 10, 13-39.

Smith, C 2008 Animal bone 29-30, *in* Banks, I, Duffy, P and MacGregor, G *Archaeology of Landscape Change in South-West Scotland 6000 BC – AD 1400. Excavations at William Grant and Sons Distillery, Girvan.* Scottish Archaeological Internet Reports, SAIR 32. Available from: https://journals.socantscot.org/index.php/sair/issue/view/54

Sneddon, D and Shearer, I 2007 2488The Curragh, Girvan. Unpublished Desk Based Assessment. GUARD University of Glasgow.

Spence, B and Kilpatrick, M 2013 Phase 1 Curragh (Warehouses 4-9) Archaeological Strip, Map And Sample Excavation. Unpublished Data Structure Report, GUARD Archaeology Ltd.

Spence, B 2015 Curragh, Girvan – Phase 2. Unpublished Data Structure Report, GUARD Archaeology Ltd.

Stace, C 1997 *New Flora of the British Isles*. 2nd Edition. Cambridge: Cambridge University Press.

Stead, I M 1968 An Iron Age hill-fort at Grimthorpe, Yorkshire, England, *Proceedings of the Prehistoric Society* 34, 148-190.

Steer, K A 1956 The Early Iron Age Homestead at West Plean, *Proceedings of the Society of Antiquaries of Scotland* 89, 227-251.

Toolis, R 2021 Dunragit Iron Age Settlement in Context, 347-356, *in* Bailie, W (ed.) *Dunragit: The Prehistoric Heart of Galloway*. Glasgow: GUARD Archaeology Ltd.

Van der Veen, M 1989 Charred grain assemblages from Roman-Period corn dryers in Britain, *Archaeological Journal* 146, 302-319.

Webley, L 2007 Using and abandoning roundhouses: a reinterpretation of the evidence from Late Bronze Age-Early Iron Age Southern England, *Oxford Journal of Archaeology* 26, Issue 2, 127-144.

Will, B and James, H 2017 Excavations to the West of Gogar Mains, Edinburgh, *Scottish Archaeological Internet Reports* 72. Available from: https://journals.socantscot.org/index.php/sair/issue/view/101

Zohary, D and Hopf, M 2000 *Domestication of Plants in the Old World*. 3rd Edition. Oxford: Oxford University Press.

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