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A Later Prehistoric Settlement and Early Medieval Reuse at Loak Farm, Bankfoot, Perth and Kinross

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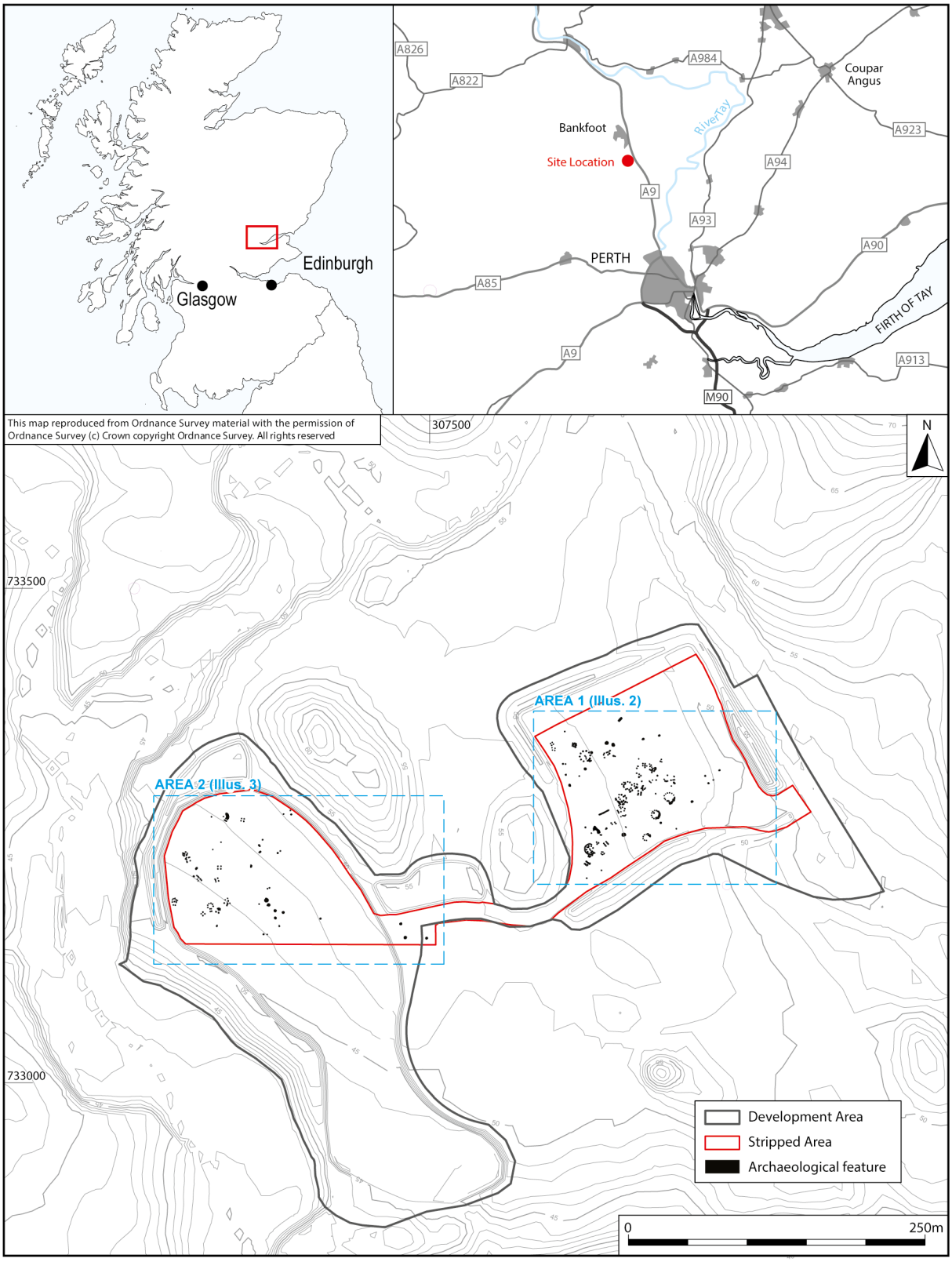
1. ABSTRACT

An open area excavation was undertaken at Loak Farm, Bankfoot, Perth and Kinross in 2019 in advance of a borrow pit being opened to supply stone for work on the A9 dualling project. The excavation uncovered seven roundhouses, eight four-post structures, two six-post structures, two ring ditches, an oval post-built structure, a lightweight post-built structure, a post- and post-trench structure, and numerous isolated pits and groups of pits. Radiocarbon dating places the majority of these features in the Late Bronze Age and Iron Age, indicating that the site was a fairly extensive settlement of later prehistoric date. A small assemblage of pottery and coarse stone tools was recovered; the stone tools indicated some limited craftworking activities were taking place at the site.

Several features, including a corn-drying kiln and possible field oven, and pits containing ironsmithing evidence, returned dates in the very early medieval period, indicating some reuse of the settlement into the second half of the first millennium AD.

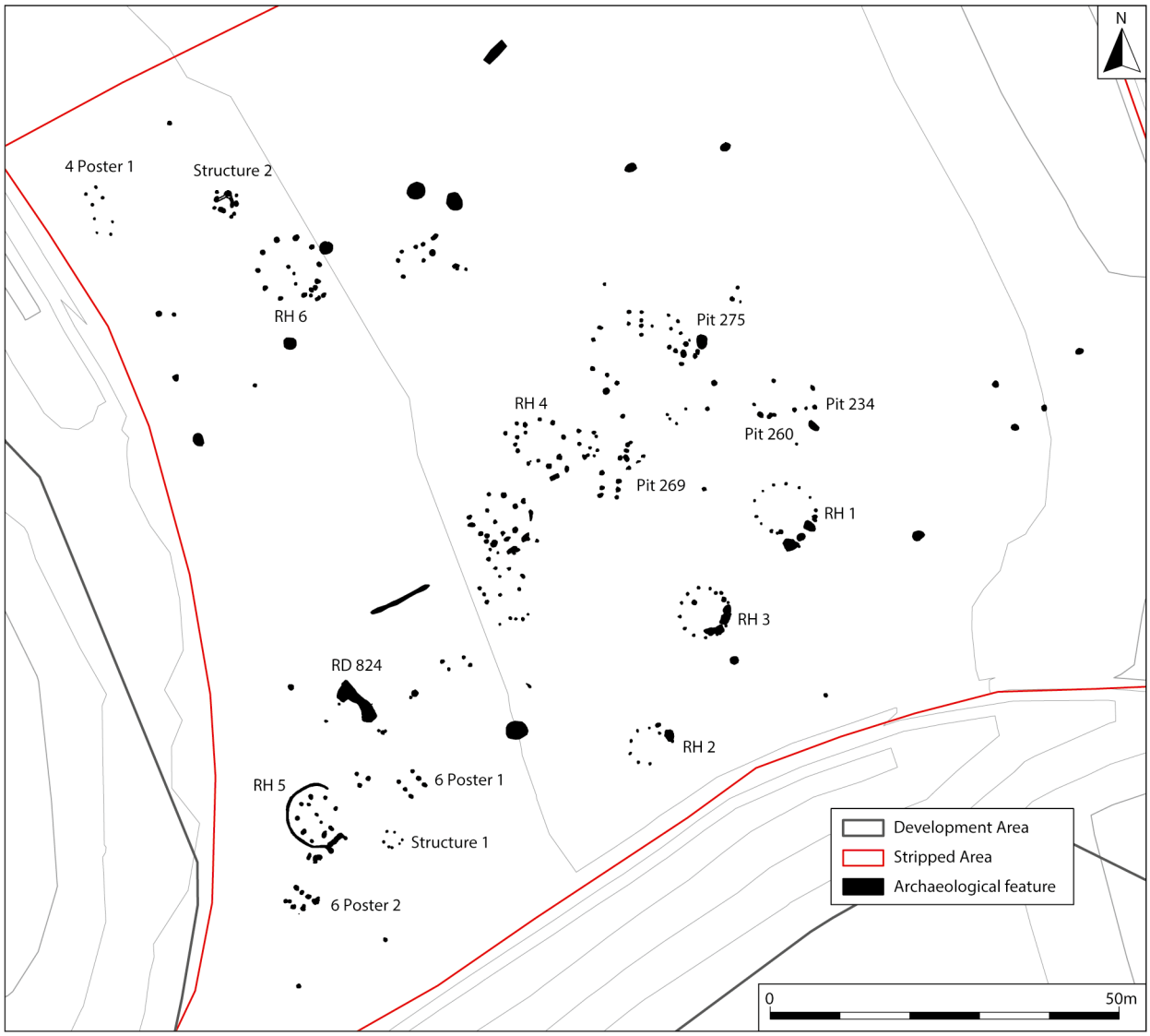


Illus 1 Site location map

2. INTRODUCTION

In March 2019, CFA Archaeology Ltd (CFA) was commissioned by RPS Group Ltd (formerly CgMs Consulting) on behalf of Breedon Trading Ltd to undertake a monitored topsoil strip for a borrow pit supplying aggregate materials for the dualling of the Luncarty to Birnam section of the A9 trunk road. The site lay to the south of Loak Farm, between Bankfoot and Newmill, Perth and Kinross (Illus 1) within an area of gently undulating improved farmland at an altitude of *c* 50m above OD (NGR: NO 07400 33200). It was situated on free-draining sands and gravels within close proximity to the Ordie Burn, and had extensive panoramic views of the surrounding countryside. Cropmarks identified on aerial photographs suggested that there were two pit alignments of possible prehistoric date (NHRE ID: 27032 and NHRE ID: 92608) within the borrow pit area. Further significant prehistoric features within the immediate vicinity included the Loak standing stone (NRHE ID: 27014) and Court Hill barrow (NRHE ID: 27025). Consequently, this area was considered to have excellent archaeological potential for the discovery of features of prehistoric date.

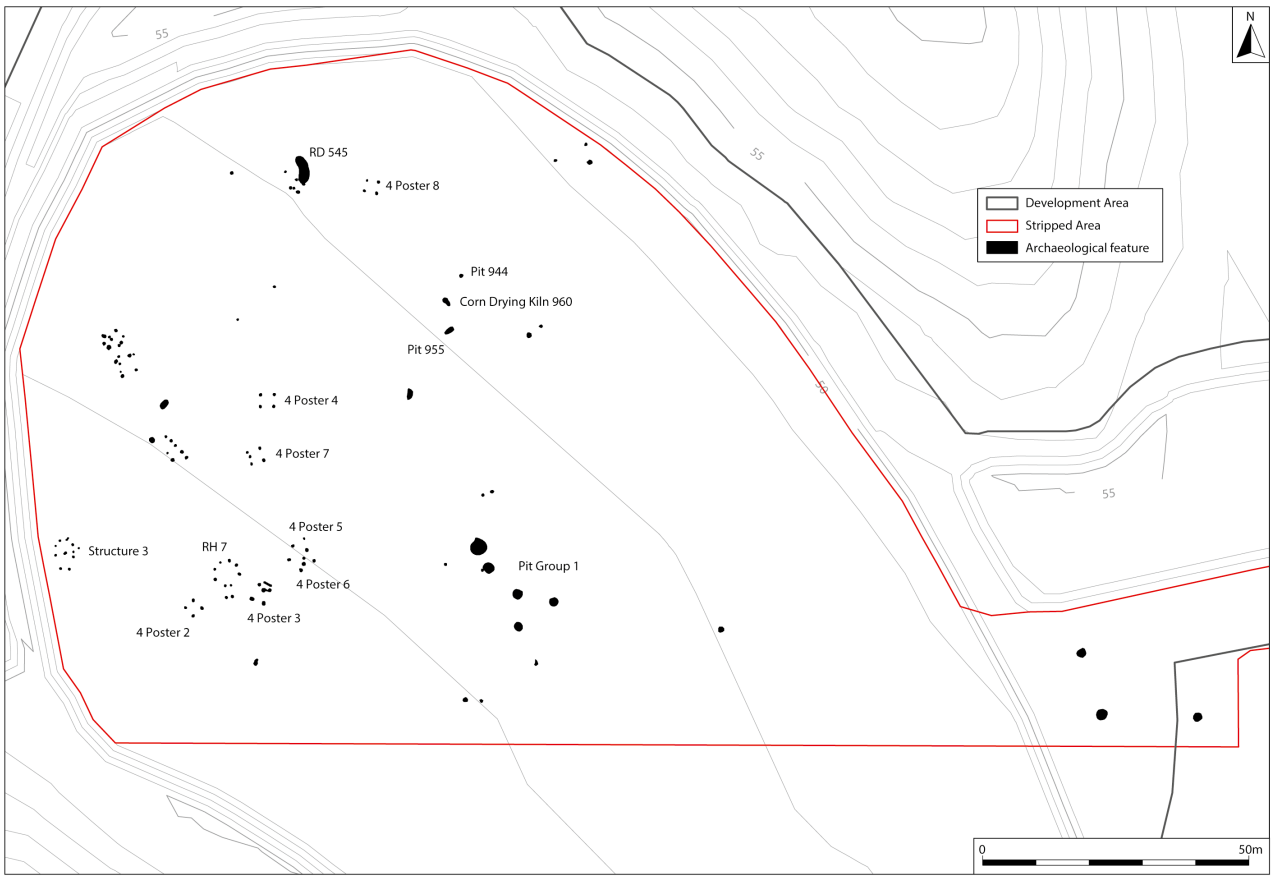
The monitored topsoil strip was carried out within two conjoined areas (Area 1 and Area 2, Illus 2 and 3 respectively) and led to the identification of numerous archaeological features within both areas (NHRE ID: 370116). Mitigation measures agreed with Perth and Kinross Heritage Trust (PKHT)



Illus 2 Plan of Area 1

required all of these features to be excavated, and the monitored topsoil strip proceeded directly into an open area excavation. The site was found to consist of seven roundhouses, eight four-post structures, two six-post structures, two ring ditches, an oval post-built structure, a lightweight post-built structure, a post- and post-trench structure, and numerous isolated pits and groups of pits. All of these features, and the associated radiocarbon dating, are consistent with this having been a fairly extensive settlement of later prehistoric date. In addition, several features, including a kiln, returned dates in the very early medieval period, indicating some continuity of settlement into the second half of the first millennium AD.

Additional work at the borrow pit, to the immediate south of Area 2 discussed in this paper, was undertaken in 2019 and 2020–21 by AOC Archaeology Group (MacIver & Demay 2025). This work uncovered Neolithic, Bronze Age, early Iron Age and early medieval features, alongside several 12th–15th-century corn-drying kilns, indicating that the extent of archaeological features extended beyond the areas monitored by CFA.



Illus 3 Plan of Area 2

3. BACKGROUND

The site at Loak Farm was situated on the edge of Lowland Perthshire immediately to the south of the Highland Boundary Fault. This is a particularly fertile area within the lower catchment area of the River Tay, with a good, reliable source of fresh water running down from the higher ground to the north and west and, as such, would have been particularly attractive for prehistoric settlement.

The topography of the area was generally flat. Across the majority of the area, the substrate consisted of orange-brown sands and gravels, and wet clays were seen at the base of a steep bank at the east end of Area 1. Overlying the substrate was 0.3m–0.5m of grey-brown silty-sand topsoil. The depth of this overlying deposit would have left the archaeological features vulnerable to deep ploughing, and it is reasonable to infer that a degree of truncation would have taken place.

Within the wider area there have been numerous sites of archaeological potential identified as cropmarks visible on aerial photographs. In addition to the two pit alignments within the borrow pit area (NHRE IDs: 27032 and 92608) these include: an unenclosed settlement at Loakmill (NHRE ID: 286021); a pit alignment at the nearby Court Hill (NHRE ID: 82087); possible pits and souterrain at Jackstone (NHRE ID: 306003); an unenclosed settlement consisting of roundhouses and a possible souterrain at Gellybanks (NHRE ID: 286018); a pit alignment at Tophead (NHRE ID: 27031); a ring ditch at Tophead (27034); a settlement and possible souterrain at Black Hill (NHRE ID: 27028); a pit alignment at Northleys (NHRE ID: 239548); and a significant concentration of features around Newmill/Newmill Cottages including roundhouses, pits, pit alignments, a ring ditch, unenclosed settlements, a palisaded enclosure and souterrains (NHRE IDs: 27006, 27024, 27030, 77387, 77388, 82075, 82082, 82085, 82116, 360414 and 360415).

Evidence of prehistoric ritual activity is also apparent within the surrounding area. Lying adjacent to the borrow pit is the Loak standing stone (NHRE ID: 27014) and Loak Court Hill barrow (NHRE ID: 27025), while sites within the more general area include a standing stone and former stone circle at Pitsundry (NHRE ID: 27038), a cup-marked rock at Scot's Wood (NHRE ID: 293617), standing stones at Gellybanks (NHRE ID: 27039), and a standing stone topped by a more recent sundial at Over Benchil (NHRE ID: 27002). A prehistoric barrow is recorded at Gauls (NHRE ID: 27009), but a recent evaluation (Cachart 2018) suggests that it is a natural glacial feature.

Although evidence of confirmed subsurface archaeology within this general area is rather more limited, a souterrain (NHRE ID: 27007) was identified at Newmill towards the summit of a low, flat-topped knoll. When this was excavated, a small area of associated settlement was also identified (Watkins 1981). This consisted of a roundhouse, numerous pits and post holes (some of which were thought to represent fence lines), and a much earlier Beaker burial at the centre of what was probably a penannular ring ditch (Watkins & Shepherd 1981).

More recent work within the general area has consisted of a programme of trial trenching associated with the dualling of the A9. Trenching at Newmill unenclosed settlement (NHRE ID: 27006), on the opposite side of the A9 to the souterrain excavated by Watkins, identified a concentration of features including pits, post holes, linear features and burnt spreads (AOC Field No.6.5; Paton et al 2018). Probable Grooved Ware pottery recovered from these features would suggest a Neolithic date rather than the later prehistoric date of the souterrain and settlement, but the limited scope of this programme of works means that a multi-period date for this part of the settlement cannot be precluded.

Trial trenching also identified features within the vicinity of the cropmarks recorded as Ladner unenclosed settlement (NHRE ID: 27030) and Marlehall enclosure and souterrain (NHRE ID: 82075) (AOC Fields 6.2 and 6.3; Paton et al 2018), but no artefacts were recovered, and their date is uncertain. Further to the south, a number of features were identified during groundworks for the section of the Logierait gas pipeline between Pitcairngreen and Watermill (Gray & Kirby 2009; Kirby 2010). These sites consisted of small pit groups, one of which may have represented a structure, and ranged in date from Middle Neolithic to Iron Age. The examples above demonstrate that this area of Perthshire was heavily settled throughout prehistory from at least the Neolithic period onwards.

4. ARCHAEOLOGICAL FEATURES IN AREA 1

Area 1 contained six roundhouses (Roundhouses 1–6), a ring ditch (Ring Ditch 824), two six-post structures (Six-post Structures 1 and 2), a lightweight post-built structure (Structure 1), a post- and post-trench structure (Structure 2), a four-post structure (Four-post Structure 1), and numerous other isolated pits and groups of pits (Other features).

4.1 Roundhouse 1

Roundhouse 1 (Illus 4) consisted of a post ring of thirteen post holes (Contexts 128, 126, 120, 118, 116, 114, 078, 076, 074, 072, 068, 062 and 070), and two larger pits (066 and 136). The post ring measured 10.8m east to west by 8.4m north to south. The post holes measured between 0.22m (078) and 0.7m (128) in diameter and between 0.07m (114) and 0.25m (062) in depth, while Pits 066 and 136 measured 0.9m by 0.7m by 0.06m deep and 1.2m by 1.15m by 0.15m deep respectively.

Beyond the post ring there were an additional two pits (132 and 134) and one post hole (154) located on the south-eastern side. Pits 132 and 134 measured 2.67m by 2.06m by 0.19m deep and 1.5m by 1.1m by 0.11m deep respectively, while Post Hole 154 measured 0.3m by 0.23m by 0.08m deep. Two body sherds of later prehistoric pottery were recovered from Pit 132. A small quantity of alder and birch charcoal and hazelnut shell was recovered from Post Holes 074 and 128, and Pits 132 and 136.

4.2 Roundhouse 2

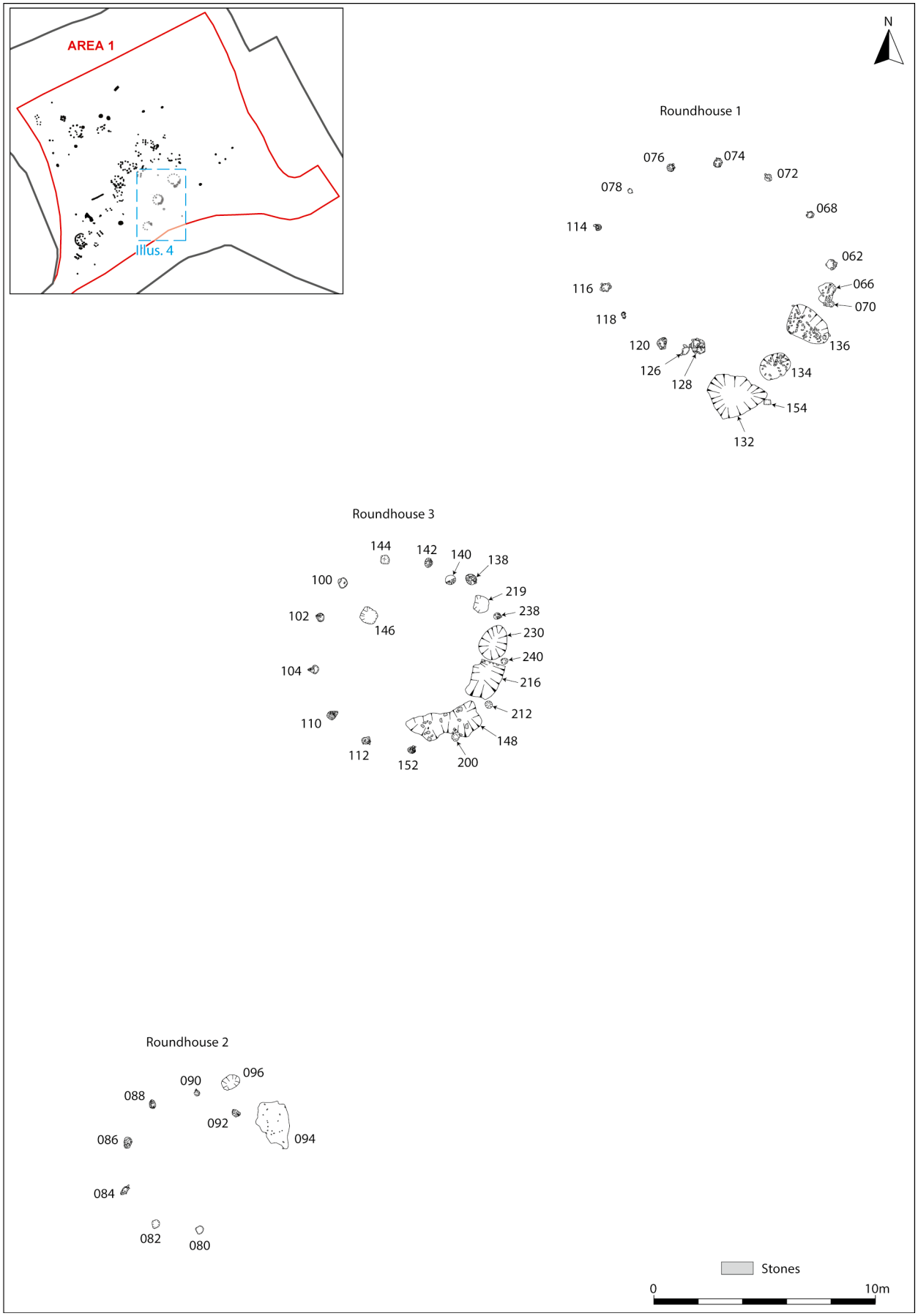
Roundhouse 2 (Illus 4) comprised a partial post ring consisting of seven post holes (080, 082, 084, 086, 088, 090 and 092). This post ring had a diameter of 6.4m. The post holes measured 0.26m (090) to 0.45m (084) in diameter and had depths of 0.08m (084 and 092) to 0.2m (082). Outside the post ring there were two pits (094 and 096) measuring 2.36m by 1.3m by 0.16m deep and 0.91m by 0.63m by 0.15m respectively. There was no evidence of any kind of entrance structure, but a modern test pit close to the south-eastern edge may have removed all trace of this. Trace amounts of degraded charred remains and indeterminate cereal grain were found in Post Holes 082 and 096, with a single fragment of hazelnut shell from 096.

4.3 Roundhouse 3

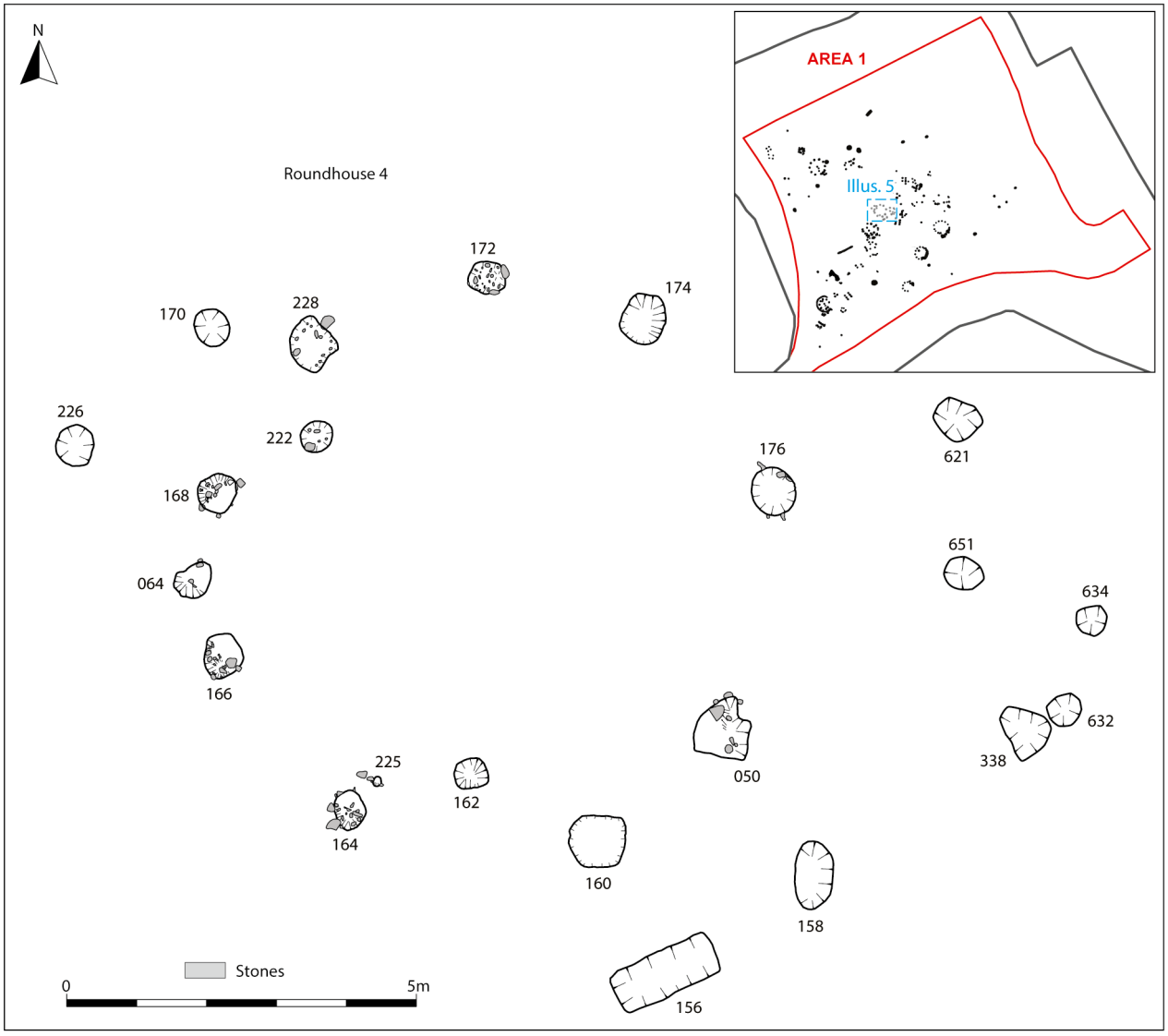
Roundhouse 3 (Illus 4) consisted of a post ring of thirteen post holes (152, 112, 110, 104, 102, 100, 144, 142, 138, 238, 240, 212 and 200). This post ring had a diameter of 8.4m. The post holes typically measured 0.4m in diameter by 0.15m deep, varying between 0.3m (238) and 0.5m (138 and 212) in diameter and 0.09m (152) to 0.24m (200) deep. Post Hole 140, situated just outside the line of the post ring between Post Holes 138 and 142, was of the same dimensions as the other post holes and is thought to represent a replacement for Post Hole 138. Between Post Holes 138 and 238 there was a larger shallow pit (219) measuring 0.78m by 0.7m by 0.1m deep. Finds from the roundhouse included undiagnostic later prehistoric pottery from Post Holes 100 and 104, and these two features also produced a few grains of barley and emmer wheat along with oak charcoal and hazelnut shell. Post Holes 138 and 144 contained some charred hazelnut shell and the former also included some barley grain.

Three shallow pits (148, 216 and 230) were situated just on the inside of the post ring on its south-eastern side. These are possibly the remains of a ring ditch or entrance structure. Pit 148 was radiocarbon dated to the Late Bronze Age (1220–1000 cal BC, 95% probability; 2923±22 BP SUERC-99178, 2894±24 BP SUERC-99179), and contained thirteen sherds of undiagnostic later prehistoric pottery as well as a deposit of hazelnut shell, along with small amounts of barley grain. Pit 216 also produced a concentration of well-preserved hazelnut shell, as well as alder and birch charcoal and a scatter of barley grains, along with a coarse stone pounder/grinder and a hammerstone, while Pit 230 also contained alder charcoal and hazelnut shell.

A sub-square pit (146) was located in the north-west of the interior, containing fire-cracked stone, hazelnut shell and alder charcoal, indicating possible use as a fire pit.



Illus 4 Plans of Roundhouses 1, 2 and 3



Illus 5 Plan of Roundhouse 4

4.4 Roundhouse 4

Roundhouse 4 (Illus 5) consisted of a post ring of ten post holes (160, 164, 166, 064, 168, 228, 172, 174, 176 and 050). This post ring had a diameter of 9m. The post holes measured between 0.44m by 0.5m (162) and 0.61m by 0.72m (160), and had depths ranging between 0.06m (228) and 0.21m (064 and 160). A small stake hole (225) situated adjacent to Post Hole 164 may also have been associated with this post ring. The stake hole measured 0.1m in diameter and had a depth of 0.09m. A possible porch structure forming an entrance on the south-east side may have been formed by Pits 156 and 158 along with Post Holes 160 and 050.

Internally, there were two pits or post holes (162 and 222). These measured 0.5m by 0.44m by 0.16m deep and 0.55m by 0.37m by 0.17m deep respectively. Three sherds of undiagnostic later prehistoric pottery were recovered from the fill (C223) of Pit 222.

Iron slag and five body sherds of later prehistoric pottery were recovered from Post Hole 050, and three body sherds of later prehistoric pottery were recovered from Post Hole 160. The discovery of iron slag indicates evidence of possible metalworking within the vicinity of this roundhouse. A saddle quern was recovered from the topsoil overlying this roundhouse during the soil-stripping phase of works. A concentration of hazel charcoal, oak charcoal and a cache of mixed cereal waste including grain and chaff from emmer wheat, spelt wheat

and barley grain was recovered from Post Hole 160. Radiocarbon dates from Post Hole 160 dated to the Late Bronze Age (910–800 cal BC, 95% probability; 2705±26 BP SUERC-99869, 2713±26 BP SUERC-99870).

Outside the post ring to the north-west were a subcircular pit (226), measuring 0.59m by 0.52m by 0.27m deep, and a circular post hole (170), measuring 0.45m in diameter by 0.7m deep. Three sherds of later prehistoric pottery, including a base, were recovered from the fill of Post Hole 170 along with trace amounts of charred remains, and one shoulder sherd of later prehistoric pottery was recovered from Pit 226. A further five pits were recorded to the east of the roundhouse (621, 651, 634, 632, 338).

4.5 Roundhouse 5

Roundhouse 5 (Illus 6–8) consisted of a post ring of eight post holes (694, 696, 698, 700, 702, 706, 708 and 710) and the partial remains of a ring groove (C731). The post ring had a diameter of *c* 6.5m, while the post holes measured between *c* 0.5m diameter (694) and 1.1m by 0.66m (706) and had depths ranging between 0.13m (706) and 0.26m (700) (Illus 7). The elongated shape of some of these post holes in plan suggests that they were replaced during the lifetime of the roundhouse, however, there was no evidence for this in the fills. One of the fills (697) of Post Hole 696 contained one body sherd of later prehistoric pottery along with degraded charred grain.

Within the post ring there was a line of three internal posts (C727, 729 and 735), which likely would have supported the roof. These measured up to 0.54m by 0.34m and had a maximum depth of 0.2m. A later prehistoric base sherd was recovered from Post Hole 729 along with degraded charred grain.

The purpose of a ninth post hole (C704) within the circumference of the ring groove was unclear as it lay outside the post ring. It was generally smaller and shallower than the post ring post holes, with a diameter of 0.5m and a depth of 0.09m.

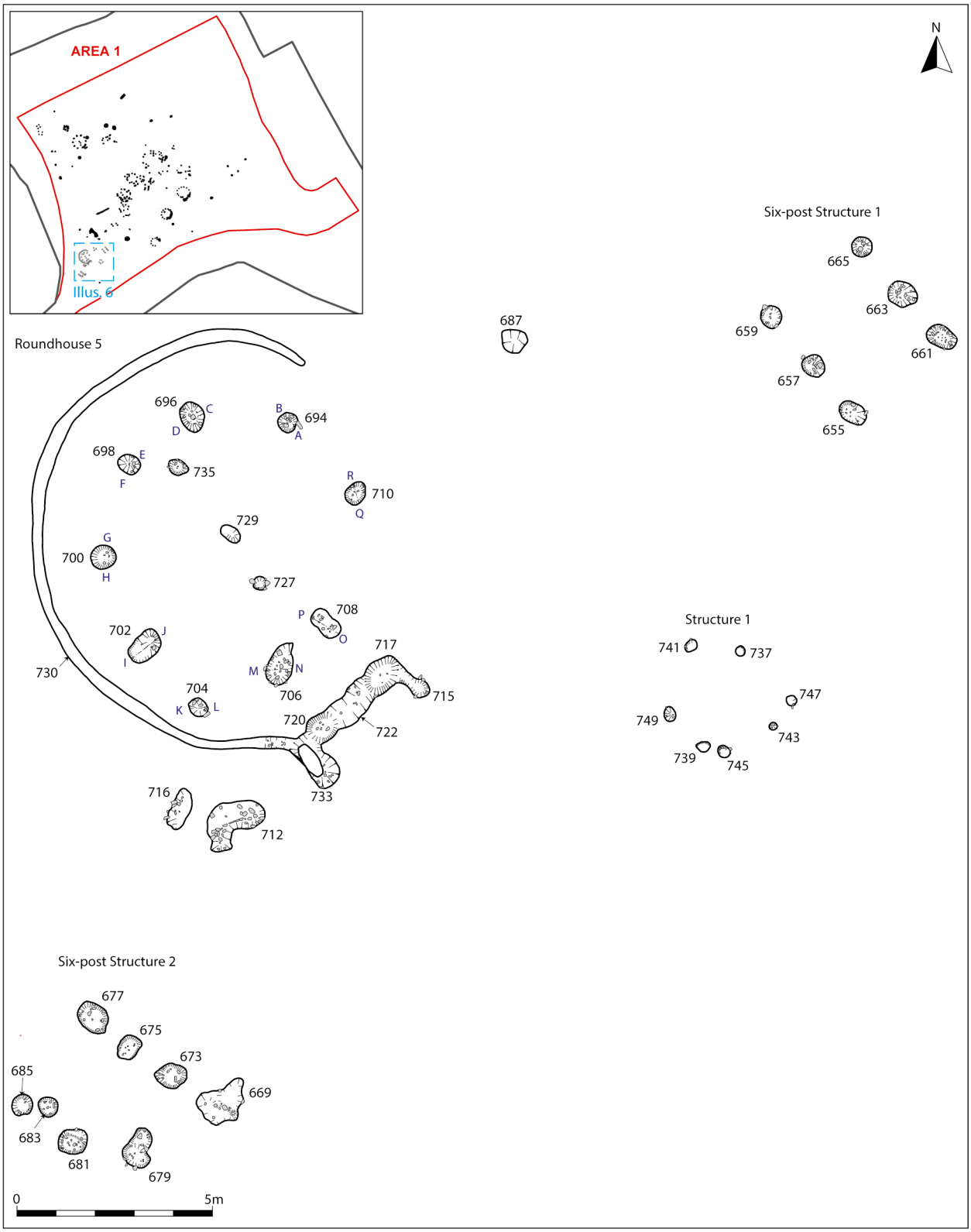
The ring groove had a width of up to 0.4m but survived intermittently to a depth of only *c* 0.03m. It curved around the western and northern edge of the post ring but was not present along its eastern edge. Along its southern edge it broadened out into a deeper ditch (C722) thought to represent the remains of the entrance structure; Ditch 722 contained a few fragments of oak and hazel charcoal. The remains of the ring groove would suggest that the roundhouse had an overall diameter in the region of 10m.

Ditch 722 measured 2.9m long by 0.7m wide by 0.17m deep and had a post hole located at either end (Post Holes 717 and 720). Post Hole 717 measured 1m by 0.8m by 0.28m deep, while Post Hole 720 measured 0.8m by 0.7m by 0.29m deep. The gap between these posts would indicate that the entrance was within the region of 1.3m in width. Two linear pits (C715 and 733) set perpendicular to Ditch 722 appear to form some kind of porch around the entranceway. These measured 0.9m long by 0.45m wide by 0.18m deep and 1.46m long by 0.72m wide by 0.14m deep respectively. Post Holes 706 and 708 could also relate to the entrance structure.

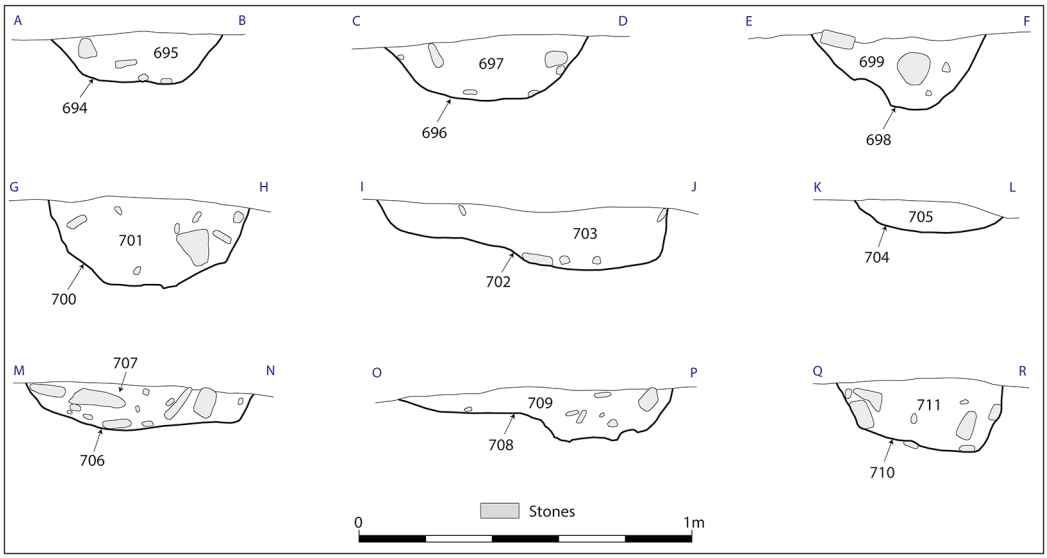
4.6 Roundhouse 6

Roundhouse 6 (Illus 9 and 10) consisted of a post ring of ten evenly spaced post holes (776, 761, 769, 755, 751, 757, 774, 771, 767 and 769) situated *c* 2m apart, with three additional post holes (795, 783 and 793) located between Post Holes 769 and 776, which are thought to represent part of an entrance structure. This post ring had a diameter of 11.2m. Radiocarbon dates from Post Holes 776 and 751 date to the Late Bronze Age (930–800 cal BC, 95% probability; 2687±22 BP SUERC-99190, 2731±24 BP SUERC-99191: 1060–840 cal BC, 95% probability; 2830±26 BP SUERC-100358, 2801±26 BP SUERC-100359). A single body sherd of later prehistoric pottery was found in Post Hole 776. Small quantities of hazelnut shell, barley and emmer wheat were recovered.

The post holes forming the post ring varied in size from 0.7m by 0.6m (C771) up to 1.11m by 0.81m (C774) and had depths varying between 0.25m (C769) and 0.48m (C774) (Illus 13). Clear evidence of packing stones and a post pipe were identified within Post Holes 751 (Illus 11) and 757. The post pipe (C752) in Post Hole 751 measured 0.52m by 0.48m by 0.38m deep, while the post pipe (C758) in Post Hole 757 measured 0.4m by 0.3m by 0.4m deep. Charcoal within the post holes

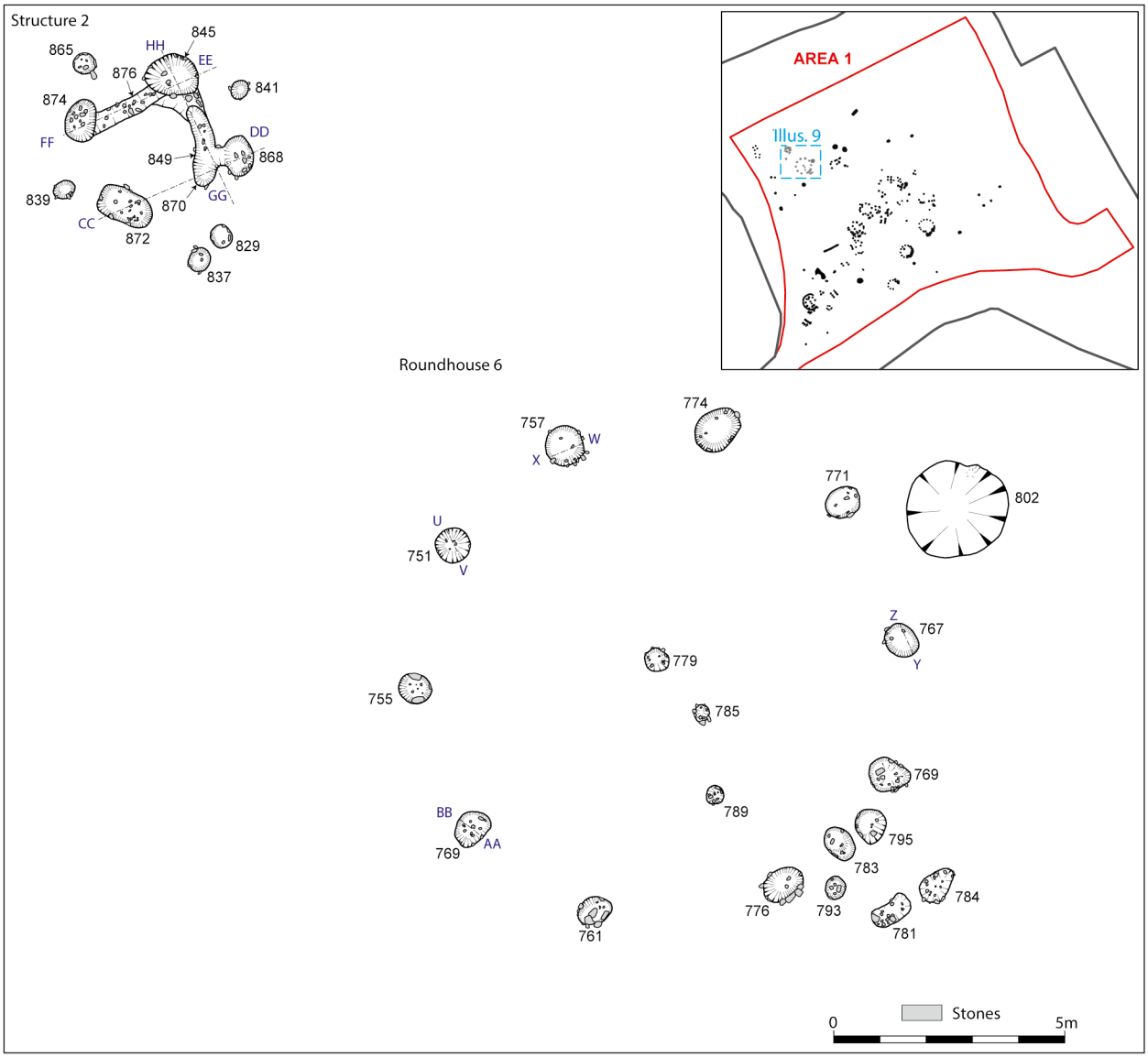


Illus 6 Plan of Roundhouse 5, Six-post Structures 1 and 2, and Structure 1



Illus 7 Roundhouse 5, sections of post holes forming post ring

Illus 8 Roundhouse 5 pre-excavation



Illus 9 Plan of Roundhouse 6 and Structure 2

may indicate a burning event. Three body sherds of later prehistoric pottery were recovered from Post Hole 783.

Three additional post holes (C781, 784 and 793) were located outside the ring ditch on its south-eastern side. Along with Post Holes 783 and 795, these post holes are thought to represent the remains of an entrance structure. The surviving remains suggest that the entrance structure would have measured 1.6m by 1.6m.

Internally, there were three post holes (C779, 785 and 789) identified. Post Hole 779, measuring 0.6m by 0.5m by 0.15m deep, was located within the centre of the post ring and may indicate that the structure had a large central post. The remaining two post holes (C785 and 789) were roughly in line with the central post extending in a south-easterly direction. They measured 0.32m in diameter by 0.1m deep and 0.38m in diameter by 0.09m deep respectively.

4.7 Six-post Structure 1

Six-post Structure 1 (Illus 6 and 12) (Post Holes 655, 657, 659, 661, 663 and 665) measured 3.8m–3.95m north-west to south-east and 3.5m–3.6m south-west to north-east. The post holes measured between 0.5m by 0.45m (C665) and 0.8m by 0.63m (C663) and had depths ranging between 0.14m (C655) and 0.18m (C663). Four sherds of later prehistoric pottery, including one everted rim, were recovered from Post Hole 657, along with barley

Illus 10 Roundhouse 6 post-excavation

Illus 11 Packing stones in Post Hole 751

and wheat grains and oak charcoal; radiocarbon dates from this feature produced a Late Bronze Age date (920–800 cal BC, 95% probability; 2726±24 BP SUERC-99188, 2694±24 BP SUERC-99189). Traces of cereal remains were also present in Post Hole 665.

4.8 Six-post Structure 2

Six-post Structure 2 (Illus 6) consisted of Post Holes 673, 675, 677, 679, 681 and 683 or 685. Overall, it measured 3.3m–3.6m south-east to north-west and 3.5m–3.6m south-west to north-east. The post holes measured between 0.68m by 0.36m (C675) and 1.1m by 0.79m (C679) and had depths varying between 0.15m (C683) and 0.34m (C673).

It is unclear if irregular Pit 669 identified immediately to the south-east was associated with this six-post structure, making it an eight-post structure if both Post Holes 683 and 685 are also included as part of this structure.

Twenty-three sherds of later prehistoric pottery, including one base, were recovered from Post Hole 673, three sherds, including a rim, were recovered from Post Hole 677, seven sherds of later prehistoric pottery were recovered from Post Hole 679, and seven sherds, including a base, were recovered from Post Hole 681. A small quantity of oak charcoal was recorded.

4.9 Structure 1

The outline of this lightweight post-built structure (Illus 6) was defined by Post Holes 745, 739, 749, 741, 737, 747 and 743. This structure measured 3.2m north-west to south-east by 2.8m south-west to north-east. All of these post holes were very small, varying in size from 0.23m diameter (C737) up to 0.43m by 0.4m (C745), and with depths ranging from 0.06m (C743) up to 0.29m (C745). This would suggest that it was a fairly lightweight structure. Its proximity to Roundhouse 5 suggests that it may have been an outbuilding associated with that structure.

Illus 12 Six-post Structure 1 post-excavation

4.10 Structure 2

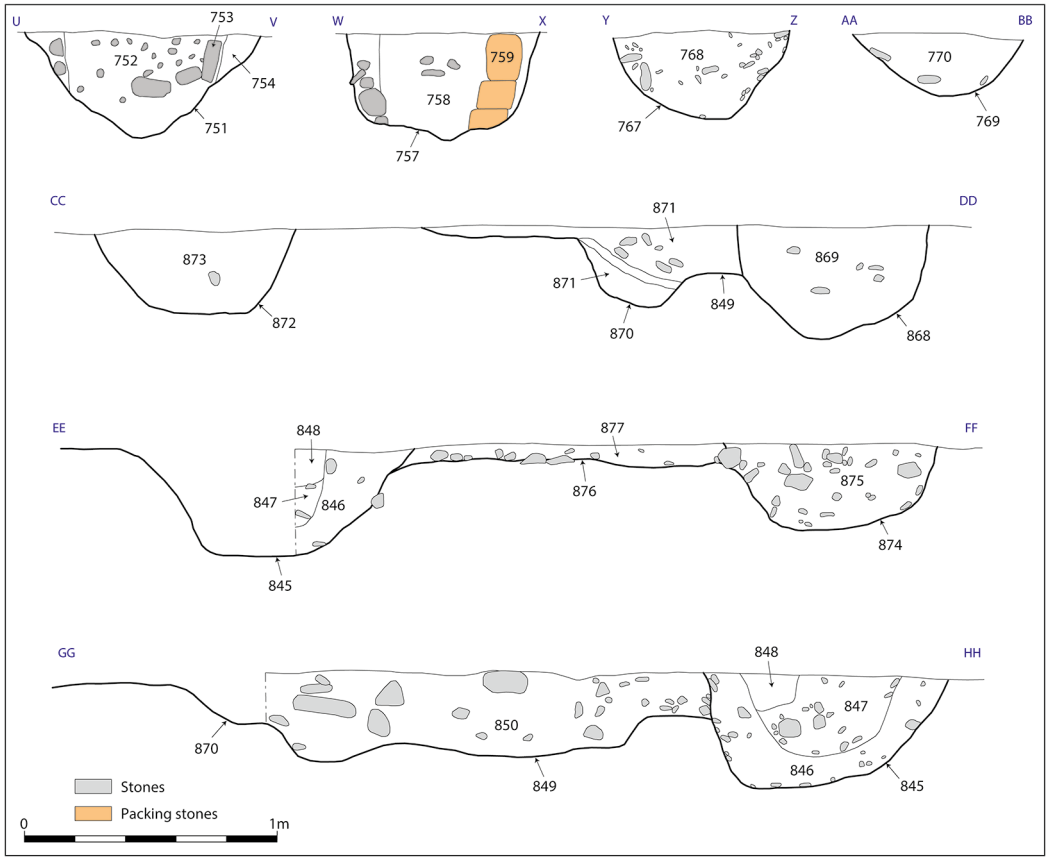
This post and post-trench structure (Illus 9, 13 and 14) consisted of four large corner posts (C845, 868, 872 and 874), with two possible post trenches (C849 and 876) running between Post Holes 874 and 845, and 845 and 868 respectively. It measured 3.1–3.6m south-west to north-east by 3.1m south-east to north-west. The post holes measured between 0.85m by 0.6m (C868) up to 1.2m by 0.9m (C845) and had depths ranging between 0.32m (C872) and 0.45m (C845) (Illus 13). Evidence of a possible post pipe was identified within Post Hole 845, but the remaining post holes contained only a single fill.

Post Trench 849 measured 1.6m by 0.4m and had a maximum depth of 0.36m. A large quantity of oak charcoal was recovered from this feature. A slightly deeper hollow (C870) at the southern end of this feature suggests that there had been a post in this location. Post Hole 870/Post Trench 849 were cut by Post Hole 868, suggesting that the latter was a replacement for the former.

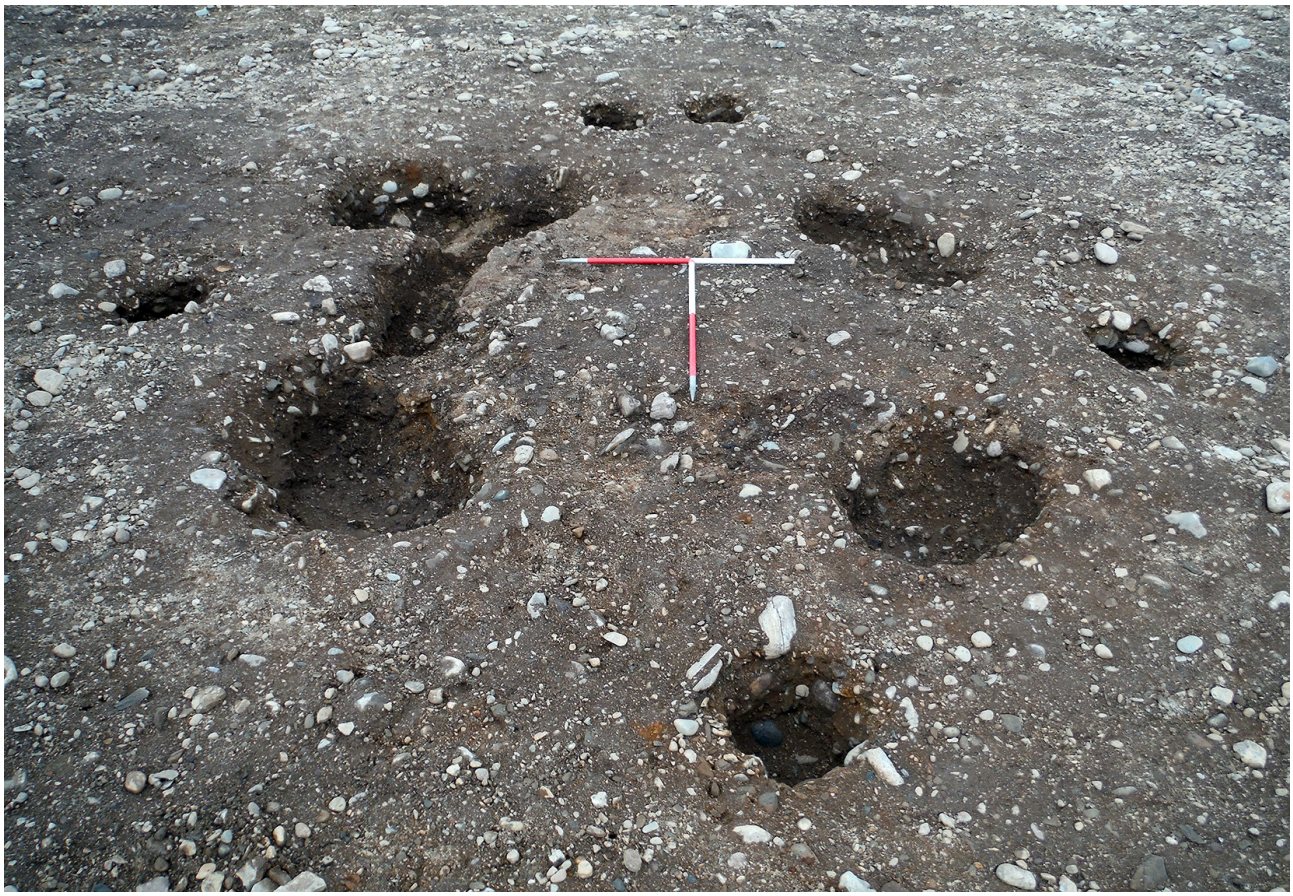
Post Trench 876 was shallow, measuring 1.8m long by 0.4m wide by only 0.05m deep. Single post holes (C839, 841 and 865) were identified outside the south-west, north-west and north-east sides of this structure respectively, while twinned Post Holes 829 and 837 were identified outside the south-eastern side. These post holes measured between 0.35m in diameter (C841) up to 0.55m by 0.45m (C829) and had depths ranging between 0.3m (C841 and 865) up to 0.52m (C839). It is thought that these posts may have been reinforcing members associated with the structure. There were no finds from this structure.

4.11 Ring Ditch 824

Ring Ditch 824 (Illus 15) is thought to represent the surviving remains of a roundhouse. It appeared broadly crescent-shaped in plan, although its exact shape at the north-western end could not be determined because it had been cut by a modern test pit (C791). Overall, it measured 8.7m north-west



Illus 13 Selected sections of Roundhouse 6 and Structure 2



Illus 14 Structure 2 post-excavation

to south-east by 3.05m south-west to north-east and had a maximum depth of 0.25m. A perforated cobble was recovered from the fill of this feature. A large deposit of crushed charcoal and hazelnut shell along with a small amount of barley cereal grain was recovered. Two samples from the fill were radiocarbon dated to the Middle Iron Age (200–40 cal BC, 95% probability; 2104±24 BP SUERC-99192, 2105±22 BP SUERC-99193).

Two possible post holes (C887 and 893) which may be associated with this ring ditch were identified. These were subcircular or oval in plan and measured 0.34m by 0.32m by 0.18m deep and 0.29 by 0.26m by 0.13m deep respectively.

Due to the survival of this roundhouse being confined to the features mentioned above, the original overall dimensions of this structure could not be determined.

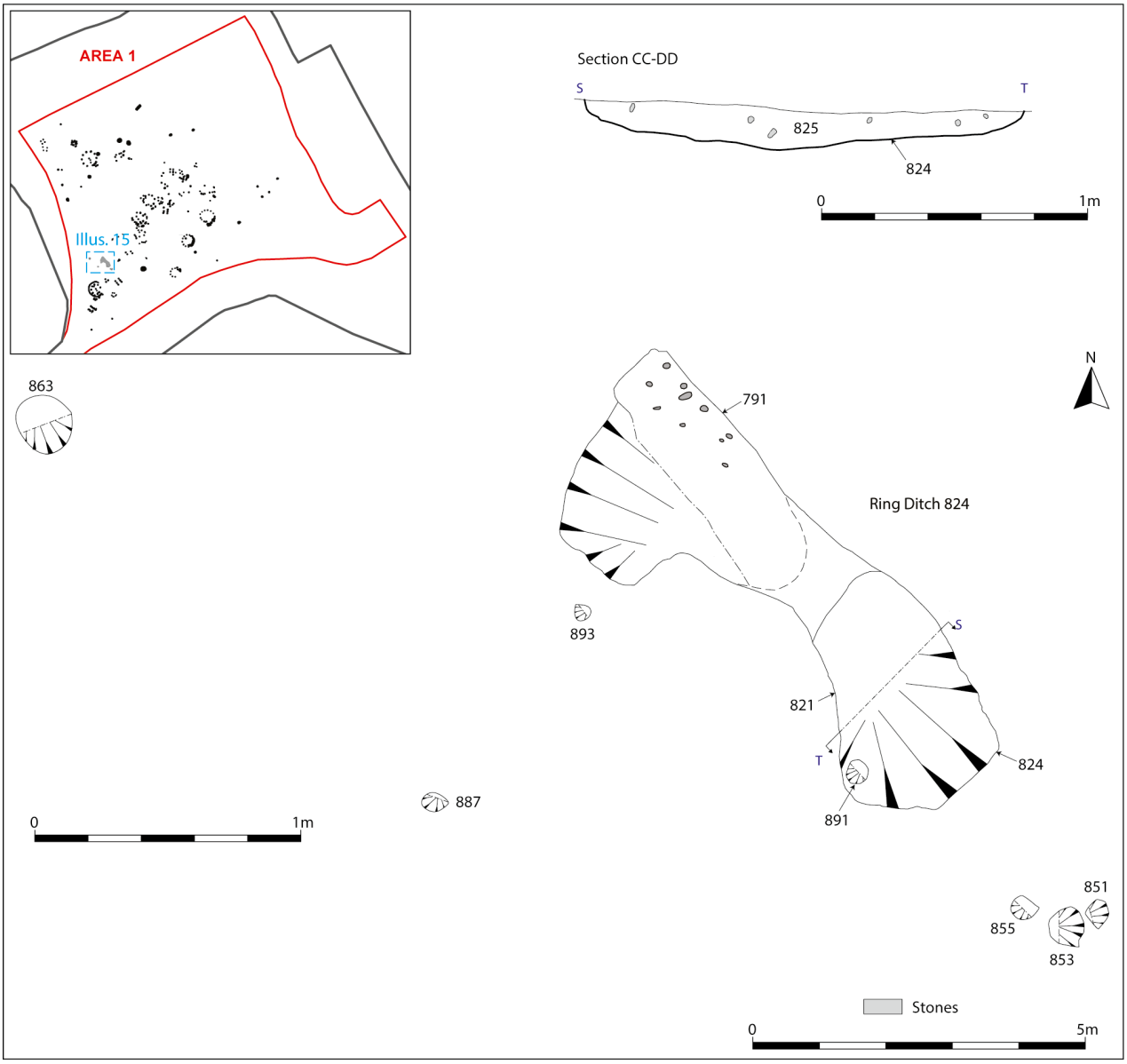
4.12 Four-post Structure 1

Four-post Structure 1 consisted of Post Holes 007, 014, 016 and 018 and measured *c* 2.5m south-east to north-west by 2.3m–2.5m south-west to north-east (C016 to 014 and 007 to 018 respectively) (Illus 22). All the post holes had a diameter of *c* 0.4m, with depths ranging between 0.25m and 0.45m. There were no internal features and no finds from this structure apart from traces of degraded hazelnut shell.

4.13 Other features in Area 1

Numerous isolated pits, post holes and groups of pits were identified within Area 1. Detailed plans of these features are available in the site data structure report (Kirby 2019, Figs 2e and 2d). The features were particularly concentrated towards the centre of the area, around Roundhouse 4 and to the north of Roundhouse 1. It is possible that other post-built structures are present in these pit groupings which cannot be readily identified.

The majority of these pits tended to be fairly small and shallow, suggesting that they had been heavily truncated. Three larger pits (C802, 831 and 835) (Illus 16) were identified to the north-east of Roundhouse



Illus 15 Plan and section of Ring Ditch 824

6 and one (C826) immediately to the south of Roundhouse 6. The largest of these (C835) measured 3.2m by 2.84m by 0.8m deep. Another very large pit (C867) was identified approximately mid-way between Six-post Structure 1 and Roundhouse 2. This pit measured 3.6m by 3.17m by 0.63m. A linear feature (C214) measuring 10.88m WSW to NNE by up to 0.52m wide by up to 0.15m deep was identified to the north-east of Ring Ditch 824, and evidence of in situ burning was identified within a number of pits throughout the area. Although some of the pits and post holes do appear to align with one another, none of these pit groupings displayed any clear evidence of having been structural remains.

A number of finds were recovered from pits within this area. Iron slag indicating possible metalworking was recovered from Pits 234 and 260 to the north of Roundhouse 1, both dating to the early medieval period, and Pit 260 also contained rye, hulled barley and oat: radiocarbon dates from Pit 234 were 770–1000 cal AD (95% probability; 1121±26 BP SUERC-100342, 1189±26 BP SUERC-100343) while grain from Pit 260 was 770–1000 cal AD (95% probability; 1140±24 BP SUERC-99180, 1111±22 BP SUERC-99181).

Later prehistoric pottery was recovered from Pits 028, 038, 170, 230, 271, 338, 380, 626, 636, 639 and 643. Pairs of radiocarbon dates from Pit 271 and

Illus 16 Pit 831, south-west-facing section

Pit 380 all dated to the Late Bronze Age (910–810 BC, 95% probability; 2692±22 BP SUERC-99182, 2701±24 BP SUERC-99183, 2706±24 BP SUERC-99184, 2697±26 BP SUERC-99871). Charred remains included oak charcoal, naked and hulled barley with spelt chaff in Pit 271 and barley in Pit 380. Possible anvil stones/rests were recovered from Pits 264 and 880, burnt animal bone was recovered from Pit 108, and a perforated cobble was recovered from Pit 399, which cut Pit 384.

Two additional features which contained no finds were dated during post-excavation analysis. A post hole (C273) from the cluster of features immediately north-east of Roundhouse 4 was radiocarbon dated to 780–480 cal BC (95% probability, 2501±26 BP SUERC-100347, 2481±26 BP SUERC-100348), and a small round pit (C649) was dated to 790–470 cal BC (95% probability, 2475±26 BP SUERC-100353, 2522±26 BP SUERC-100357), placing both within the Early Iron Age.

5. ARCHAEOLOGICAL FEATURES IN AREA 2

Area 2 contained a group of five large pits (Pit Group 1: 390, 406, 418, 423 and 478), seven four-post structures (Four-post Structures 2–8), a roundhouse (Roundhouse 7), an oval post-built structure (Structure 3), a ring ditch (Ring Ditch 545) and numerous other isolated pits and groups of pits (Other features).

5.1 Roundhouse 7

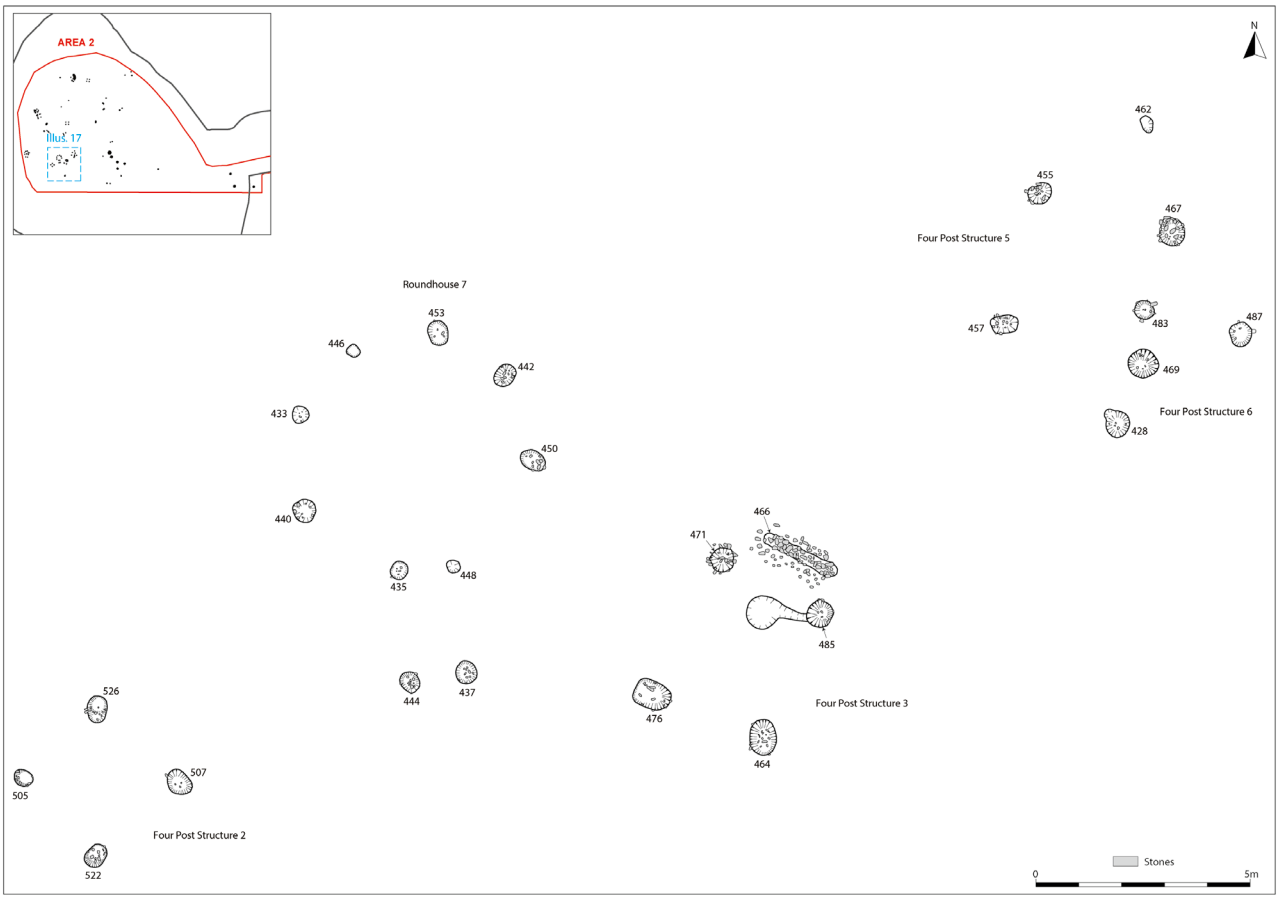
Roundhouse 7 (Illus 17) appears to have been part of a small complex of buildings along with Four-post Structures 2, 3 and 5. It consisted of a post ring of eight post holes (435, 440, 433, 446, 453, 442, 450 and 448). This post ring had a diameter of 5.6m. The post holes measured from 0.3m by 0.27m by 0.05m deep (C446) up to 0.63m by 0.5m by 0.27m deep (C442). A single fragment of hazel charcoal was found in Post Hole 450.

Outside the post ring there were two additional post holes (437 and 444) on the southern side which, along with Post Holes 435 and 448, are thought to represent the remains of an entrance structure. These post holes were located *c* 1.2m apart and 2.4m out from the post ring.

5.2 Structure 3

The outline of this oval post-built structure was defined by Post Holes 520, 533, 517, 537, 543, 511, 515, 529 and 524 (Illus 18). This structure measured 6.8m north to south by 4.4m east to west. The post holes measured between 0.2m by 0.26m (C543) and 0.45m by 0.4m (C533) and had depths between 0.09m (C537) and 0.3m (C520). Post Holes 539 and 541 located just outside the outline of this structure are thought to represent replacements or strengthening members for Post Hole 543.

Internally, there was a single post hole (C531) situated in the centre of this structure. This measured 0.76m by 0.46m and had a depth of 0.18m, and may imply that the structure had a large central post to support some form of roofing. Two fragments of degraded hazelnut shell were found in it.



Illus 17 Plan of Roundhouse 7 and associated four-post structures

Illus 18 Plan of Structure 3

5.3 Ring Ditch 545

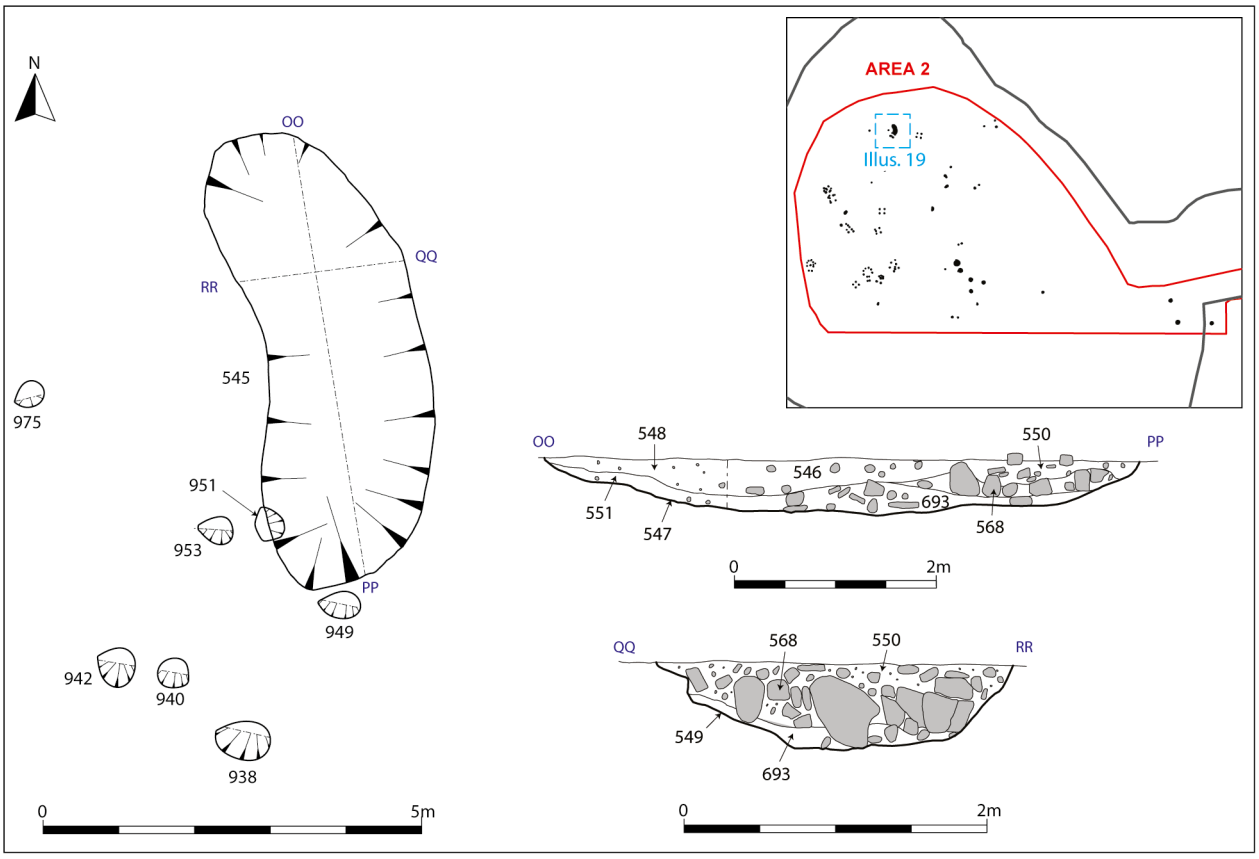
Ring Ditch 545 (Illus 19–21) is thought to have been part of a roundhouse. It is crescent-shaped in plan, measuring 6.08m north to south by 2.08m east to west by 0.46m deep. The fill (C546) contained numerous rounded stones and boulders. There were no finds associated with this ring ditch, but it contained hazel charcoal which has been radiocarbon dated to the Late Bronze Age/Early Iron Age (780–400 cal BC, 95% probability; 2503±26 BP SUERC-100351, 2414±26 BP SUERC-100352).

There were seven post holes (938, 940, 942, 949, 951, 953 and 975) located within close proximity to this ring ditch. One of these post holes (C951) had been cut into the upper edge of the ring ditch. The remaining post holes appear rather randomly placed (although Post Holes 938, 942, 949 and 953 could possibly be interpreted as a four-post structure) and measured between 0.45m in diameter by 0.11m deep (C975) and 0.7m by 0.56m by 0.34m deep (C938). Post Holes 951 and 953 contained oak charcoal.

Due to the survival of this probable roundhouse being confined to the features described above, the original overall dimensions of this structure could not be determined.

5.4 Four-post Structure 2

Four-post Structure 2 (Illus 22) consisted of Post Holes 505, 510, 522 and 526, and measured 3.1–3.2m south-east to north-west by 3m–3.2m south-west to north-east. Both of the north-eastern post holes (C510 and 526) showed evidence of having been re-cut (C507 and 535 respectively).



Illus 19 Plan and sections of Ring Ditch 545

Illus 20 Ring Ditch 545 pre-excavation

Illus 21 Ring Ditch 545, north-facing section

The post holes forming this structure measured between 0.46m long by 0.4m wide by 0.22m deep (C505) and 0.68m long by 0.5m wide by 0.22m deep (C510), with the re-cut post holes having the larger dimensions. Three sherds of prehistoric pottery, including a base, were recovered from Post Hole 522.

5.5 Four-post Structure 3

Four-post Structure 3 (Illus 22 and 23) had slightly irregularly spaced post holes (C464, 471, 476 and 485) measuring 3.95m–4.25m north-east to south-west by 3.2m–3.6m south-east to north-west. The two southern post holes (C464 and 476) were both oval in plan and had very similar measurements of 0.86m long by 0.64m wide by 0.39m deep and 0.88m long by 0.68m wide by 0.35m deep respectively. Likewise, Post Holes 471 and 485 were very similar, both being circular in plan, with diameters of *c* 0.58m and 0.6m and depths of 0.26m and 0.19m respectively. A trough quern was recovered from Post Hole 471.

Immediately to the north-east of this structure there was a shallow depression measuring 2.1m long by up to 0.48m wide containing numerous tightly packed cobbles (C466). This may have been some kind of entrance surface or working area associated with the usage of this structure.

5.6. Four-post Structure 4

Four-post Structure 4 (Illus 22) (Post Holes 552, 563, 895 and 901) measured 3.2m north to south, and 3.5m–3.6m east to west. The post holes measured between 0.5m (C901) and 0.6m (C895) in diameter and had depths ranging between 0.28m (C895 and 901) and 0.38m (C552). Post Hole 552 contained evidence of a possible post pipe and packing stones.

Illus 22 Four- and six-post structures

Illus 23 Four-post Structure 3 post-excavation

5.7 Four-post Structure 5

Four-post Structure 5 (Illus 22) (Post Holes 455, 457, 467 and 469) measured 3.8–3.85m NNE to SSW by 3.85m–4.1m WNW to ESE. The post holes measured from 0.5m by 0.48m by 0.28m deep (C457) up to 0.72m by 0.68m by 0.44m deep (C455). There were no finds from this feature. Four-post Structure 5 partially overlay or was partially overlain by Four-post Structure 6, suggesting two phases of construction.

5.8 Four-post Structure 6

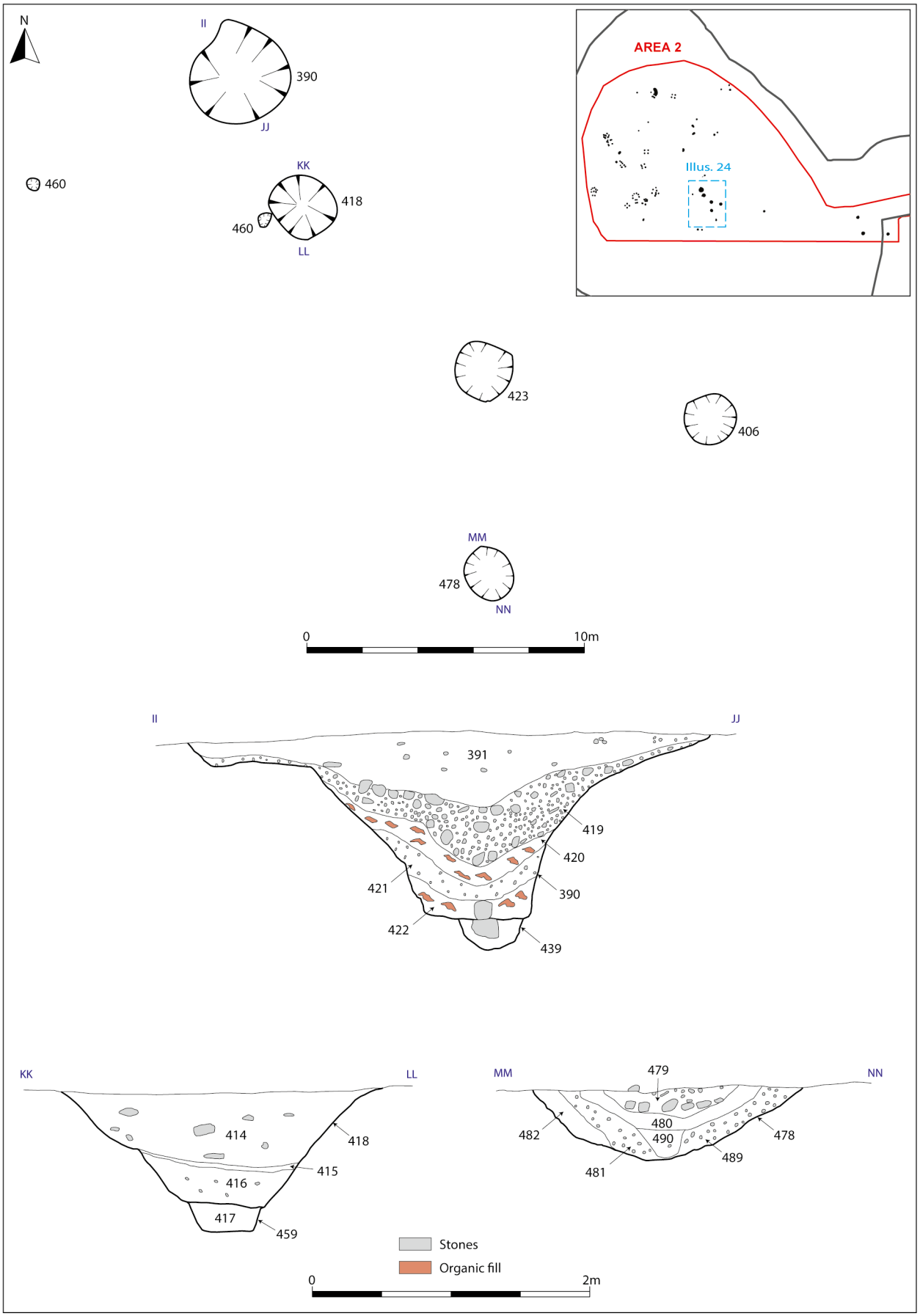
Only three post holes (C428, 483 and 487) associated with Four-post Structure 6 (Illus 22) were identified, with a possible fourth post hole surviving only as a vague hollow within the correct location. This structure measured 2.8m WNW to ESE by 3.35m NNE to SSW. The post holes measured between 0.47m by 0.41m (C483) and 0.6m in diameter (C428) and had depths between 0.15m (C428) and 0.21m (C487). There were no finds from this feature. Four-post Structure 6 partially overlay or was partially overlain by Four-post Structure 5, suggesting two phases of construction.

5.9 Four-post Structure 7

Four-post Structure 7 consisted of Post Holes 493, 496, 498 and 503 (Illus 22) and measured 3.25m–3.45m NNW to SSE by 3.3m–3.4m WSW to ENE. The post holes measured between 0.44m long by 0.4m wide by 0.17m deep (C498) and 0.62m long by 0.54m wide by 0.34m deep (C496). It is unclear if a fifth pit/post hole (C501) between C498 and C503 was part of this structure.

5.10 Four-post Structure 8

Four-post Structure 8 (Illus 22) (Post Holes 926, 928, 930 and 932) measured 2.8m–3.1m north to south, and 3m–3.3m east to west. The post holes measured from 0.3m in diameter (C928) up to 0.6m by 0.55m (C926 and 930) and had depths of between 0.1m (C928) and 0.18m (C926 and 930).



Illus 24 Plan of Pit Groups 390, 406, 418, 423 and 478 and sections of pits with evidence of posts

Illus 25 Pit Group 1 (390, 406, 418, 423 and 478) pre-excavation

5.11 Pit Group 1

A group of five large pits (C390, 406, 418, 423 and 478) (Illus 24 and 25) was identified *c* 50m to the east of Roundhouse 7. These measured between 3.77m and 1.95m across by 0.67m to 1.4m deep. They contained charcoal with trace finds of hazelnut shell. Pits 390 and 418 were of particular note because they both had a post hole (C439 and 459 respectively) cut into the base of them (Illus 26 and 27). These post holes measured 0.75m by 0.45m by 0.25m (C439) and 0.6m by 0.6m by 0.21m deep (C459). Evidence of these pits having contained posts was also identified within Pit 478, which contained a possible post pipe (C490). The purpose of these posts is unclear, but the size of these pits would indicate that they held substantial timber uprights. Pits 390 and 418 showed no evidence of a post pipe within the fill deposits, suggesting that the pits may have been re-excavated for the removal of the posts so that they could be reutilised elsewhere or, on the basis of the charcoal assemblage, they could have been fire pits.

5.12 Early medieval features

Two features interpreted as a corn-drying kiln and possible field oven were located to the south-east of Four-post Structure 8 (C955 and 960). Both contained charcoal (hazel, alder, willow/poplar) and carbonised cereal grain (hulled barley, naked barley and oat) along with weed seeds indicating in situ burning.

Kiln 960 was roughly keyhole-shaped in plan, measuring 2.1m north-west to south-east by 1.1m south-west to north-east by 0.24m deep. It had a rounded shallow bowl at the north-western end and a steeper-sided channel (possible flue) to the south-eastern end, suggesting that it may have been a kiln.

Pit 955 was an irregular linear pit measuring 2.14m long by 0.22m deep. Its upper fill (957) contained frequent fire-cracked stone and has been interpreted as a possible field oven.

Radiocarbon dates from charred grain from the possible flue of Kiln 960 were dated to the very early medieval period (540–660 cal AD, 95% probability; 1428±24 BP SUERC-99194, 1493±24

Illus 26 Pit 390, west-facing section

Illus 27 Pit 418 post-excavation

BP SUERC-99198). Dates from Pit 955 were a little earlier, calibrating to 250–540 cal AD (95% probability; 1666±26 BP SUERC-100362, 1631±26 BP SUERC-100363).

5.13 Other features in Area 2

Numerous isolated pits and groups of pits were also identified within Area 2. It is possible that other structures are present in these pit groupings which cannot be readily identified.

Three large pits (C317, 319 and 376) were recorded at the eastern end of this area. The largest of these (C317) measured 2.4m by 2.25m by 0.79m deep, and Pit 319 contained large quantities of fire-cracked stone and oak charcoal, indicating in situ burning.

A line of five pits (C577, 579, 581, 583 and 585) was identified to the west of Four-post Structure 7. These sat opposite a further three erratically located pits (C569, 571 and 587). Three sherds of later prehistoric pottery, including a rim, were recovered from Pit 587. Pit 577 contained oak charcoal and was perhaps a fire or waste pit. A larger group of seventeen pits to the north-west had two pits (C905 and 920) containing later prehistoric pottery, including rims.

Pit 944, located with two other undated small round pits close to Kiln 960, is the only feature from the site to be dated to the Middle Neolithic, with radiocarbon samples from oak and hazel charcoal returning a date range of 3360–3090 cal BC (95% probability; 4516±26 BP SUERC-100360, 4498±26 BP SUERC-100361).

6. ENVIRONMENTAL REMAINS

6.1 Animal bone

Hannah Britton

Small quantities of animal remains, comprising mammal bone (790 fragments, 15g), were recovered. A full methodology is provided in the site archive.

In total 790 small fragments were recovered, all of which came from small to large mammals. No fish, bird or micromammal remains were retrieved. No fragments were identifiable to species but were categorised according to size of mammal, ranging from small (rabbit/squirrel-sized) to large (horse/cattle-sized). Fragmentation was extensive throughout the assemblage, with much of the material being smaller than 4mm, and all specimens were burnt. This, alongside very minimal hand recovery of animal bone during excavation, suggests that unburnt animal bone may not have survived well in the soil conditions on site and burning increased the likelihood of preservation. No evidence of butchery, gnawing or pathology was identified on the remains, and no sexing or ageing was able to be conducted.

Due to the poor condition of the bone, these animal remains provide little evidence regarding human–animal relationships at the site, however, the presence of burnt bone may indicate waste disposal from food consumption.

6.2 Archaeobotany and charcoal

Diane Alldritt

Ninety-six environmental sample flots, and material sorted from the sample retents, were examined for carbonised plant macrofossils and charcoal. The flots were dried before being examined under a low-power binocular microscope typically at ×10 magnification. Wood charcoal was examined using a high-powered Vickers M10 metallurgical microscope at magnifications up to ×200. 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 & Hopf (2000).

The environmental samples produced generally low recovery of carbonised plant remains, with only 16 of the samples producing greater concentrations of charred material. The assemblage consisted of charcoal fragments, mixtures of well-preserved cereal grain and weed seeds, and sporadic finds of hazelnut shell amongst crushed detritus below the level of identification. Full results of the analysis are given in Table 1 (Area 1) and Table 2 (Area 2).

6.2.1 Results: Area 1

Roundhouse 1

A small quantity of charcoal was recovered with *Alnus* sp. (alder) and *Betula* sp. (birch) identified from Post Hole 074 (probably hearth fuel waste sweepings), together with a few trace fragments of *Corylus avellana* (hazel) nutshell recorded from C074, Post Hole 128, Pit 136 and Pit/Post Hole 132. Minimal burning appears to have taken place within this structure, other than fuel used for general domestic heating purposes, and the lack of waste accumulation suggests the roundhouse may have been regularly cleaned out or had only sporadic occupation.

Roundhouse 2

Samples produced trace amounts of degraded charred remains with indeterminate cereal grain found in Post Holes 082 and 096 and a single fragment of hazelnut shell also in C096. The remains suggest some low-level burning activity, perhaps domestic cooking, taking place within a largely sterile structure, which may have had episodic occupation or periods of abandonment.

Roundhouse 3

Concentrated deposits of hazelnut shell were recorded from some of the pit and post hole features, suggesting potential areas where processing and roasting of hazelnuts prior to storage and consumption may have been taking place, particularly in Pit 148, which also contained a small amount of *Hordeum vulgare* sl. (barley) cereal grain (nutshell from this feature was dated to 1220–1000 BC at 95% probability (2923±22 BP, SUERC-99178 and 2894±24 BP, SUERC-99179), Table 3). Circular feature 216 similarly produced a significant concentration of well-preserved hazelnut shell along with alder and birch charcoal and a scatter of barley grains. Slightly lesser quantities of hazelnut shell were found in Post Hole 144 and Pits 146 and 230, along with alder charcoal in C146 and C230, where

Table 1 Carbonised plant remains from Area 1

	Context	019	029	051	063	075	083	087	097	101	105	117	125	129	131	133	137	139	145	147	149	161	171	177	201	203	207	217	223	227	231	235	258	261	272	274	278
Carbonised Cereal Grain and Chaff	Common Name																																				
Avena sp.	oat			3																												3		5			
Triticum dicoccum	emmer wheat										1											2															
Triticum dicoccum spikelet forks / glume frags	emmer wheat chaff																					73															
Triticum spelta	spelt wheat																					3															
Triticum spelta glume bases	spelt wheat chaff																					13													13		
Triticum sp.	wheat																																				
Triticum sp. internodes	wheat chaff																					3												3			
Hordeum vulgare var. *vulgare*	six row hulled barley										2											7						2						5	3		
Hordeum vulgare var. *nudum*	naked barley														1																				19		
Hordeum vulgare sl.	barley			6						4					1			2			6						5			2	2			24		
Secale cereale	rye																														1		21			
Indeterminate cereal grain (+embryo)		1		2			1		1		2				3							11	1								2		112	106	1	
Charcoal																																					
Quercus	oak		2	3						5			1		3							2													6		1
Corylus	hazel																					6						1			1	2	5				
Alnus	alder					1							1		8					5								1								5	1
Betula	birch					1																															
Indeterminate							1																														
Carbonised Wild Resources																																					
Corylus avellana nutshell	hazel nutshell	3	1	5		4			1	4	8			2		1	1	10	18	61	165	10	1			1		106			52	9	1	10		2	3
Calluna stems	heather									1																											
Rhizomes																						2															
Carbonised Weeds																																					
Persicaria maculosa	redshank																					1													1		
Persicaria lapathifolia	pale persicaria																					1															
Fallopia convolvulus	black-bindweed																																		1		
Pisum / *Lathyrus* spp.	peas									1																											

Table 1 *cont (a)*

	Context	019	029	051	063	075	083	087	097	101	105	117	125	129	131	133	137	139	145	147	149	161	171	177	201	203	207	217	223	227	231	235	258	261	272	274	278
Galeopsis tetrahit	common hemp-nettle			3											1							1															
Galium aparine	cleavers																																	1			
Chrysanthemum segetum	corn marigold																																	1			
Carex sp.	sedges																					1													1		
Bromus sp.	bromes																					1															
Indeterminate weed				1																														1			

Table 1 *cont (b)*

	Context	337	348	349	356	381	627	637	640	644	658	666	674	678	680	682	697	723	730	754	777	784	822	823	825	830	850	873	877
Carbonised Cereal Grain and Chaff	Common Name																												
Triticum dicoccum	emmer wheat				2																7								
Triticum spelta	spelt wheat																												
Triticum spelta glume bases	spelt wheat chaff																								1				
Triticum sp.	wheat					1					5	1										2							
Hordeum vulgare var. *vulgare*	six row hulled barley					4															7								
Hordeum vulgare var. *nudum*	naked barley					16													1		14	2							
Hordeum vulgare sl.	barley			1	10						6														21				
Cerealia stem frags	cereal chaff																			1									
Indeterminate cereal grain (+embryo)			1	5	5	24					28	1				3	1	3			37	1			14				
Charcoal																													
Quercus	oak										2					3		2									20		
Corylus	hazel																	3		5									
Alnus	Alder			5	10																								
Indeterminate												1																	
Carbonised Wild Resources																													
Corylus avellana nutshell	hazel nutshell		1	1						1		1				1	3	1			3	4			32				
Indeterminate fruit stone / nut																				1									
Carbonised Weeds																													
Polygonaceae	Knotweed family				1																				1				
Rumex sp.	docks																				1								
Pisum / *Lathyrus* spp.	peas																						1						
Bromus sp.	bromes					1															3								

the good preservation suggested the fragments may have been burnt in situ or had not been moved far from the source of burning. Some of these features were perhaps small scoop hearths or fire pits used for roasting hazelnuts and other food preparation activity.

Trace finds of cereal grain and a small amount of hazelnut shell and charcoal were found in some of the other deposits and were probably general domestic waste sweepings radiating out from the more focused areas of burning activity. Post Hole 100 contained a few grains of barley together with *Quercus* sp. (oak) charcoal, hazelnut shell and a single piece of *Calluna* sp. (heather) stem, possibly waste from peat burning. Post Hole 104 contained trace grains of *Triticum dicoccum* (emmer wheat) and well-preserved *Hordeum vulgare* var. *vulgare* (six-row hulled barley) along with hazelnut shell, while Post Hole 138 also contained barley together with a slighter larger amount of nutshell.

The presence of large concentrations of hazelnut shell in Roundhouse 3 is interesting, considering its radiocarbon dates in the Late Bronze Age (1220–1000 cal BC, 95% probability; 2923±22 BP, SUERC-99178 and 2894±24 BP, SUERC-99179). The hazelnut shell possibly shows a continuation of earlier prehistoric gathering practices taking place in conjunction with well-developed cereal agriculture at the site. This has similarities with material identified from the Iron Age souterrain at Inverboyndie, Banff, where abundant hazelnut shell was recorded along with hulled barley (Alldritt 2021). Bishop et al (2009) demonstrated gathering of wild resources as a long-standing and consistent feature of earlier Scottish prehistory, throughout the Mesolithic and into the Late Neolithic/Early Bronze Age in some areas. The radiocarbon dating results from Roundhouse 3 in the Late Bronze Age therefore have potential to show further continuation of these themes.

Roundhouse 4

A significant concentration of well-preserved carbonised remains was recovered from Post Hole 160, suggesting this feature may have been a fire pit or hearth area rather than a post hole (charred barley grain from this feature was dated to 910–800 cal BC, 95% probability; 2705±26 BP, SUERC-99869 and 2713±26 BP, SUERC-99870). The deposit consisted primarily of charcoal, mostly *Corylus* sp. (hazel) type with a small amount of oak, present together with a cache of mixed cereal waste including grain and chaff from emmer wheat and *Triticum spelta* (spelt wheat) and a small amount of barley grain. A thin scattering of weeds of cultivated/disturbed ground species was also present, including *Persicaria lapathifolia* (pale persicaria), *P. maculosa* (redshank) and *Galeopsis tetrahit* (common hemp-nettle). Two fragments of burnt peat from the deposit suggested peat was possibly also being used in addition to charcoal for fuel for domestic purposes, such as cereal drying or cooking, and Roundhouse 4 was perhaps a focal location for these activities.

Post Hole 160 also contained small hammerscale/slag fragments, suggesting industrial burning was taking place in Roundhouse 4, perhaps smithing activity. The structure might therefore have been seasonally multi-purpose, with both domestic and industrial processes taking place at various times. The waste material from cereal processing including glume wheat chaff and weeds could have been simply discarded on the fire or combined with sweepings from cereal parching/drying and recycled as kindling for other burning purposes around the settlement, following depositional pathways suggested by Hillman (1981), van der Veen (1992) and with comparison to Buckland et al (1993). Significantly, van der Veen (1989: 305) pointed to the use of chaff and peat or wood as a fuel for grain drying, which could further distort the evidence, in particular in deposits where chaff outnumbers grain, as it does in C160, as the chaff may well be waste material that was recycled as fuel.

Four other deposits from Roundhouse 4, including Pits 050, 222 and Post Holes 170 and 176, contained only trace amounts of charred remains with scarce finds of grain, charcoal and hazelnut shell. Overall, the types of cereal grains identified from Roundhouse 4 suggested probable Late Bronze Age or Iron Age agricultural activity.

Roundhouse 5

Roundhouse 5 contained low levels of charred remains with degraded indeterminate grain in Post Holes 696, 729 and Ditch 722. Ditch 722 also contained a few fragments of oak and hazel charcoal, which was probably fuel waste from the roundhouse.

Roundhouse 6

Roundhouse 6 produced a few finds of hazelnut shell and cereal grain, mostly barley types. This included

Hordeum vulgare var. *nudum* (naked barley) and a small amount of emmer wheat, primarily from Post Hole 776, which suggests a hearth or cooking area is likely to have been nearby, but no evidence of one has survived in the roundhouse (dated to 930–800 cal BC, 95% probability; 2687±22 BP, SUERC-99190 and 2731±24 BP, SUERC-99191).

Six-post Structure 1
A small cache of degraded cereal grain, mostly indeterminate but including a few barley and wheat grains, was found in Post Hole 657 (radiocarbon dated to the Late Bronze Age; 920–800 cal BC, 95% probability; 2726±24 BP SUERC-99188 and 2694±24 BP SUERC-99189), along with oak charcoal. Trace cereal finds were present in C665. The remains were likely to be general background or residual material from activities taking place around the settlement, and this structure was possibly a storage area or farm outbuilding with little evidence for any major burning activity taking place within.

Six-post Structure 2
Pit 681 produced a small amount of crushed oak charcoal fragments.

Structure 2
A large concentration of oak charcoal was recovered from Post Trench 849, which could perhaps represent remains of structural timbers burnt in situ.

Ring Ditch 824
Ditch 824 contained a large deposit of crushed charcoal and hazelnut shell along with a small amount of barley cereal grain, which probably represents discarded domestic hearth waste.

Four-post Structure 1
A trace scatter of degraded hazelnut shell was recovered from Post Hole 018, which probably represents trampled, wind-blown or swept remains.

Pits
A number of pit features produced finds of charcoal and cereal grain and were probably being used as waste pits for general domestic refuse from the settlement. Pits 260, 271 and 380 produced notable concentrations of cereal grain comprising mostly degraded and indeterminate remains but including finds of *Secale cereale* (rye), hulled barley and oat in Pit 260, naked and hulled barley with spelt chaff in C271 and similar barley in Pit 380. The main constituent of the pits overall was charcoal, probably all fuel waste. Oak charcoal was found in Pits 028, 271 and 277, while concentrations of birch were recorded from 350 and 355, and alder from Pit 259. Radiocarbon dates from Pits 271, 350 and 380 were all Late Bronze Age while those from Pit 260 were early medieval (Table 3).

6.2.2 Results: Area 2

Roundhouse 7
Roundhouse 7 was largely sterile of identifiable carbonised remains, with only a single fragment of hazel charcoal found in Pit/Post Hole 450 and trace charred detritus elsewhere. This indicated very low levels of burning activity occurring here, and perhaps that this was a structure that was used intermittently or regularly swept clean.

Structure 3
Two fragments of degraded hazelnut shell were found in Post Hole 531, which were likely to be residual remains.

Ring Ditch 545
Fill 551 produced hazel charcoal (samples dated to 780–400 cal BC, 95% probability; 2503±26 BP, SUERC-100351 and 2414±26 BP, SUERC-100352), Post Hole 953 had a large amount of oak, and Post Hole 951 had a small amount of oak charcoal. This probably represented fuel waste or remains of structural timbers burnt in situ.

Four-post Structure 3
Pit/Post Hole 464 contained a degraded fragment of hazelnut shell, which was possibly residual material and not particularly significant.

Pit Group 1
The pits in Pit Group 1 were likely to be fire pits and contained mainly charcoal with trace finds of hazelnut shell. A large concentration of oak charcoal was recorded from the fill of Pit 390, along with well-preserved fragments of *Salix/Populus* sp. (willow/poplar) and a single seed of degraded carbonised cf. *Linum usitatissimum* (flax), but this was possibly intrusive given the condition.

Table 2 Carbonised plant remains from Area 2

	Context	336	349	407	415	417	420	422	451	454	463	465	468	480	490	494	523	532	551	564	578	589	906	921	931	939	945	952	954	956	961	964
Carbonised Cereal Grain and Chaff	Common Name																															
Avena sp.	oat																	1													4	
Triticum sp. internodes	wheat chaff																															1
Hordeum vulgare var. *vulgare*	six row hulled barley																													28	57	216
Hordeum vulgare var. *nudum*	naked barley																															18
Hordeum vulgare sl.	barley																													18	69	127
Cerealia stem frags	cereal chaff																															3
Indeterminate cereal grain (+embryo)																						2						1	1	79	79	35
Charcoal																																
Quercus	oak	20					15														20							3	10			
Corylus	hazel		6						1										5								6			8	3	2
Alnus	alder																										2			4	2	1
Salix / *Populus*	willow / poplar							4																							3	3
Carbonised Wild Resources																																
Corylus avellana nutshell	hazel nutshell			3			1				1	1						2			2									3	14	
Rhizomes																															1	1
Indeterminate fruit stone / nut								2																								
Carbonised Weeds																																
Chenopodiaceae	Goosefoot family																															1
Stellaria media	chickweed																															4
Polygonaceae	Knotweed family																															1
Persicaria maculosa	redshank																														5	5
Persicaria lapathifolia	pale persicaria																														2	

Table 2 *cont*

Context		336	349	407	415	417	420	422	451	454	463	465	468	480	490	494	523	532	551	564	578	589	906	921	931	939	945	952	954	956	961	964
Fallopia convolvulus	black-bindweed																														1	
Rumex sp.	docks																														2	
Rubus fruticosus	bramble					1																										
Vicia sp.	vetches																													7		
Pisum / Lathyrus spp.	peas	1			1	14	2						3																			
cf. *Linum usitatissimum*	cf. flax							1																								
Plantago lanceolata	ribwort plantain																													1		
Danthonia decumbens	heath-grass																													1	2	
Indeterminate weed																														3	2	
Other Remains																																
Vitis vinifera (non-carb pip)	grape-vine																										1					

Other features

A kiln and possible field oven kilns (955 and 960) produced three significant deposits of cereal grain and charcoal primarily recovered from the bowl fill (C964) and flue fill (C961) of Kiln 960 (dating to 540–660 cal AD, 95% probability; 1428±24 BP, SUERC-99194 and 1493±24 BP, SUERC-99198). Grain and charcoal were also recorded in Pit 955. The grain from Kiln 960 and Pit 955 consisted mainly of well-preserved hulled barley with a small amount of naked barley and oat also present. The charcoal was a mixture of hazel and alder with some nicely preserved willow/poplar also recorded and a few fragments of rhizome, suggesting peat or heathy turves may also have been used as fuel in the kiln. Weeds of cultivated/disturbed ground included redshank, pale persicaria, *Stellaria media* (chickweed) and *Fallopia convolvulus* (black bindweed), which probably arrived with the cereal harvest and were not screened out by sieving. *Rumex* sp. (docks), *Plantago lanceolata* (ribwort plantain) and *Danthonia decumbens* (heath grass) may have come in from grassy fields or with peat fuel.

Pit 577 contained a large deposit of oak charcoal and was perhaps a fire or waste pit.

Pit 944 contained a large deposit of oak and hazel charcoal (dated to the Middle Neolithic) and was possibly a fire pit.

Two isolated pit features were potentially prehistoric fire pits and contained material burnt in situ. Pit 319 produced a large deposit of oak charcoal, while Pit 350 contained hazel. No cereal grain was present in either pit. Pit 350 was radiocarbon dated to the Late Bronze Age (1010–810 cal BC, 95% probability; 2788±26 BP SUERC-100349 and 2715±26 BP SUERC-100350).

6.2.3 Conclusion

The environmental samples produced several well-preserved caches of carbonised cereal grain and charcoal from this later prehistoric, probably Late Bronze Age/Iron Age farming settlement. The cereal grain confirms an agricultural economy largely reliant on the cultivation of barley types and wheat, including emmer and spelt, with small amounts of oat also present. Rye grain was recorded from a limited number of deposits, mostly in Pit

260, which dated to the early medieval period, representing a later phase of activity.

The cereal and chaff remains suggested crop processing and corn-drying activity taking place at the site, with recovery of burnt waste remains in Area 1, comprising wheat chaff and grain primarily focused in Roundhouse 4, indicating that this structure was potentially being used for agricultural processing activity or that cereal waste was being reused as domestic fuel here. In Area 2, Kiln 960 was being employed for the drying of large amounts of barley in the early medieval period, with the assemblage dominated by hulled barley and a few naked grains present.

Scatters of residual trace grain and charcoal were found across the site, reflecting typical settlement waste, including background burnt detritus from cereal processing and drying activity, cooking and fuel waste. The six-post and four-post structures produced very few carbonised remains other than probable residual material, which is not uncommon for this type of feature. It suggests they may have been raised storage structures for unprocessed grain or other materials (Cook 2016; Dunwell & Ralston 2008).

The concentration of hazelnut shell in Roundhouse 3 is notable, given the results from radiocarbon dating. As the hazelnut shell is contemporary with the agricultural material, it shows that large-scale gathering and over-winter storage of wild resources was continuing into later prehistory, perhaps as an insurance policy against failed arable harvests.

The carbonised plant remains included cereal grain, chaff, weed seeds, wood charcoal, burnt peat and other heathland/peatland material from multi-period settlement activity from the Late Bronze Age to the Iron Age, and into the first millennium AD. As such, the assemblage has both local and regional significance to our understanding of changes in the economy and environment at this time.

6.3 Radiocarbon dates

Eighteen pairs of environmental data were submitted for radiocarbon dating to SUERC. Detailed descriptions of the methods employed by the SUERC Radiocarbon Laboratory can be found in Dunbar et al (2016). The results are presented in Table 3 below using the conventions outlined in Millard 2014, and have been calibrated using OxCal v4.4.2 (Bronk Ramsey 2009) and the IntCal20 atmospheric calibration curve (Reimer et al 2020); calibrated dates have been rounded outwards to the nearest decade.

The environmental assemblage available for radiocarbon dating was relatively poor, due to the low recovery of carbonised plant remains and the often degraded condition. Material derived from oak was excluded from dating selection due to that species' longevity. Many of the deposits within features were sterile, which limited the choice of what could be targeted for dating. A small number of features contained richer assemblages. The majority of the samples submitted for dating were single-entity grain or nutshell fragments, with a small number of contexts reliant upon wood charcoal; where possible, different species were dated from the same context but in some instances the material was too poor and the same species was used for both dates in the pair, with potential issues arising from this selection due to the same entity possibly being dated as two different samples.

The dates indicate a range of periods of activity on the site, from the Middle Neolithic to the Early Medieval. The evidence does not suggest continuous occupation throughout this time span but does indicate episodes of reoccupation within the same area over a long time period.

The earliest date comes from Pit 944 in Area 2, where charcoal samples dated to the Middle Neolithic (3360–3100 cal BC, 95% probability; 4516±26 BP, SUERC-100360 and 3350–3090 cal BC, 4498±26 BP, SUERC-100361).

Roundhouse 3 (Pit 148) in Area 1 contained charred hazelnut shell dating to the last two centuries of the second millennium BC (1220–1020 cal BC, 95% probability; 2923±22 BP, SUERC-99178 and 1200–1000 cal BC, 95% probability; 2894±24 BP, SUERC-99179), a slightly earlier date than the majority of the Late Bronze Age settlement evidence.

A very consistent set of dates was produced from Six-post Structure 1, Roundhouse 4, Roundhouse 6 and a number of the scattered pits in Area 1, all dating to the very latest Bronze Age, *c* 1050–800 BC (95% probability; 2830±26 BP, SUERC-100358; 2801±26 BP SUERC-100359; 2726±24 BP, SUERC-99188; 2694±24 BP, SUERC-99189; 2687±22 BP, SUERC-99190; 2731±24, BP SUERC-

99191; 2705±26 BP, SUERC-99869; and 2713±26 BP, SUERC-99870). Ring Ditch 545 in Area 2 was a little later, extending from the Late Bronze Age into the Early Iron Age (780–400 BC, 95% probability; 2503±26 BP, SUERC-100351 and 2414±26 BP, SUERC-100352).

A later date was produced from Ring Ditch 824 in Area 1, in the last two centuries of the first millennium BC, into the Middle Iron Age (200–40 cal BC, 95% probability; 2104±24 BP, SUERC-99192 and 200–40 cal BC, 95% probability; 2105±22 BP, SUERC-99193).

Two features in Area 1 produced dates in the 8th–10th centuries AD; Pits 234 and 260, to the north of Roundhouse 1 (Pit 234, 770–1000 cal AD, 1121±26 BP, SUERC-100342 and 770–950 cal AD, 1189±26 BP, SUERC-100343; Pit 260, 770–990 cal AD, 1140±24 BP, SUERC-99180 and 890–1000 cal AD, 1111±22 BP, SUERC-99181, all 95% probability). In Area 2, a further two features produced dates within the first millennium AD, Pit 955 (250–540 cal AD, 95% probability; SUERC-100362, 1666±26 BP and SUERC-100363, 1631±26 BP) and Kiln 960 (540–660 cal AD, 95% probability; SUERC-99194, 1428±24 BP and SUERC-99198, 1493±24 BP), located to the south-east of Four-post Structure 8. The dates from these features fell into the early medieval period, indicating some reuse of settlement through the first millennium AD, while also suggesting that industrial activity perhaps represented by the kiln is a later manifestation.

Table 3 Radiocarbon dates. Calibrated using OxCal 4.4.2

Lab no.	Area	Context	Feature	Material	Date BP	95% probability	$\delta^{13}C$
SUERC–99178	1	149	Pit 148, RH3	Charred nutshell: hazel	2923±22	1220–1020 BC	–24.1‰
SUERC–99179	1	149	Pit 148, RH3	Charred nutshell: hazel	2894±24	1200–1000 BC	–21.6‰
SUERC–100358	1	752	Post Hole 751, RH6	Charcoal: corylus	2830±26	1060–900 BC	–26.8‰
SUERC–100359	1	752	Post Hole 751, RH6	Charcoal: corylus	2801±26	1050–840 BC	–28.3‰
SUERC–100349	1	349	Pit 350	Charcoal: alnus	2788±26	1010–840 BC	–26.4‰
SUERC–100350	1	349	Pit 350	Charcoal: alnus	2715±26	910–810 BC	–26.4‰
SUERC–99869	1	161	Post Hole 160, RH4	Charred cereal grain: barley	2705±26	910–800 BC	–25.0‰
SUERC–99870	1	161	Post Hole 160, RH4	Charred cereal grain: barley	2713±26	910–810 BC	–24.2‰
SUERC–99182	1	272	Pit 271	Charred cereal grain: barley	2692±22	900–800 BC	–22.9‰
SUERC–99871	1	272	Pit 271	Charred cereal grain: barley	2697±26	910–800 BC	–22.8‰
SUERC–99183	1	381	Pit 380	Charred cereal grain: naked barley	2701±24	910–800 BC	–23.8‰

Table 3 *cont*

Lab no.	Area	Context	Feature	Material	Date BP	95% probability	$\delta^{13}C$
SUERC–99184	1	381	Pit 380	Charred cereal grain: barley	2706±24	910–810 BC	–24.8‰
SUERC–99188	1	658	Post Hole 657, 6P1	Charred cereal grain: emmer/ spelt	2726±24	920–810 BC	–24.1‰
SUERC–99189	1	658	Post Hole 657, 6P1	Charred spikelet fork: cf. emmer wheat	2694±24	910–800 BC	–23.6‰
SUERC–99190	1	777	Post Hole 776, RH6	Charred cereal grain: hulled barley	2687±22	900–800 BC	–24.8‰
SUERC–99191	1	777	Post Hole 776, RH6	Charred cereal grain: hulled barley	2731±24	930–810 BC	–24.7‰
SUERC–100347	1	274	Pit 273	Charcoal: alnus	2501±26	780–540 BC	–26.2‰
SUERC–100348	1	274	Pit 273	Charcoal: alnus	2481±26	780–480 BC	–26.1‰
SUERC–100353	1	650	Pit 649	Charcoal: corylus	2475±26	770–470 BC	–26.2‰
SUERC–100357	1	650	Pit 649	Charcoal: corylus	2522±26	790–540 BC	–27.4‰
SUERC–99192	1	825	RD 824	Charred cereal grain: barley	2104±24	200–40 BC	–24.4‰
SUERC–99193	1	825	RD 824	Charred nutshell: hazel	2105±22	200–40 BC	–24.3‰
SUERC–100342	1	235	Pit 234	Charred nutshell: hazel	1121±26	AD 770–1000	–24.1‰
SUERC–100343	1	235	Pit 234	Charred nutshell: hazel	1189±26	AD 770–950	–25.8‰
SUERC–99180	1	261	Pit 260	Charred cereal grain: cf. rye	1140±24	AD 770–990	–25.2‰
SUERC–99181	1	261	Pit 260	Charred cereal grain: indet.	1111±22	AD 890–1000	–22.7‰
SUERC–100360	2	945	Pit 944	Charcoal: corylus	4516±26	3360–3100 BC	–26.0‰
SUERC–100361	2	945	Pit 944	Charcoal: alnus	4498±26	3350–3090 BC	–27.1‰
SUERC–100351	2	551	RD 545	Charcoal: corylus	2503±26	780–540 BC	–25.8‰

Table 3 *cont*

Lab no.	Area	Context	Feature	Material	Date BP	95% probability	$\delta^{13}C$
SUERC–100352	2	551	RD 545	Charcoal: corylus	2414±26	740–400 BC	–26.7‰
SUERC–100362	2	956	Pit 955	Charred cereal grain: barley	1666±26	AD 250–540	–23.3‰
SUERC–100363	2	956	Pit 955	Charred cereal grain: barley	1631±26	AD 380–540	–25.5‰
SUERC–99194	2	961	Kiln Flue, 960	Charred cereal grain: hulled barley	1428±24	AD 590–660	–24.7‰
SUERC–99198	2	961	Kiln Flue, 960	Charred cereal grain: hulled barley	1493±24	AD 540–640	–24.0‰

7. FINDS

7.1 Pottery

Melanie Johnson

An assemblage (230 sherds, 1,875g) of handmade prehistoric pottery was recovered consisting of a minimum of 45 vessels. The quantification of the pottery is shown in Table 4. The average sherd weight was 8g, indicating the assemblage was fragmented and consisted of generally small sherds and, overall, the assemblage was abraded to very abraded. A full catalogue is included in the site archive.

Small fragments of fired clay or possible daub were recovered from Pit 038 and Post Hole 776, in a fine orange fabric, but this is such a small assemblage it is not possible to comment upon this further.

7.1.1 Fabric

The fabrics were generally coarse, with most being hard-fired, though a number were crumbly. Colours were generally grey, greyish-brown and brown to orange with generally unoxidised darker cores. Wall thickness ranged from 5mm to 17mm, and inclusions were generally small and comprising 1–3%, with some examples of larger chunks of rock. Surfaces were generally reasonably well finished, being smoothed, with occasional finger-marking or wiping marks visible. There was very little sooting or charred residue visible.

7.1.2 Typology

Ten of the vessels included rim sherds, seven included bases, and a further possible curved shoulder sherd (P14 from Pit 226) was also recorded. The rest of the assemblage was plain body sherds.

The rims included two tiny sherds which comprised only the rounded rim tip (P2 from Pit 038; P30 from Pit 920), four everted rims (P27 from Pit 905, P34 from Pit 639, P38 from Post Hole 657, P41 from Post Hole 677), an incurving rim (P21 from Pit 587), and rims from open-mouthed vessels (P15 from Pit 230, P17 from Pit 271, P19 from Pit 380).

The bases were mostly plain, flat bases (P16 from Pit 230, P18 from Pit 338, P20 from Post Hole 522, P22 from Post Hole 729, P39 from Post Hole 673, P43 from Post Hole 681), with one example of a footed base (P12 from Pit 170).

One base (P18) had a diameter of 16cm and one rim (P41) had a diameter of 25cm, otherwise diameters were not measurable, due to the small size of the sherds.

Only one vessel had any indication of decoration or embellishment. This was a rim sherd (P15) from Pit 230, which had been perforated below the rim.

Six radiocarbon dated features which also contained pottery were all dated to the Late Bronze Age (148, 160, 271, 380, 657 and 776).

7.1.3 Distribution

The vast majority of features contained only a few sherds from one vessel, and the isolated pits and six-post structures contained more of the diagnostic pottery than the roundhouses. Pits 039, 170, 226, 230, 271, 338, 380, 589, 640, 905 and 920 contained rims and bases, while Four-post Structure 3 contained a single base sherd (P20), Six-post Structure 1 contained an everted rim (P38), and Six-post Structure 2 contained two base sherds (P39, P43) and an everted rim (P41). Roundhouses 3, 4, 5 and 6 contained pottery, but apart from one base sherd from Roundhouse 5 (P22 from 729), these were all plain body sherds.

7.1.4 Discussion

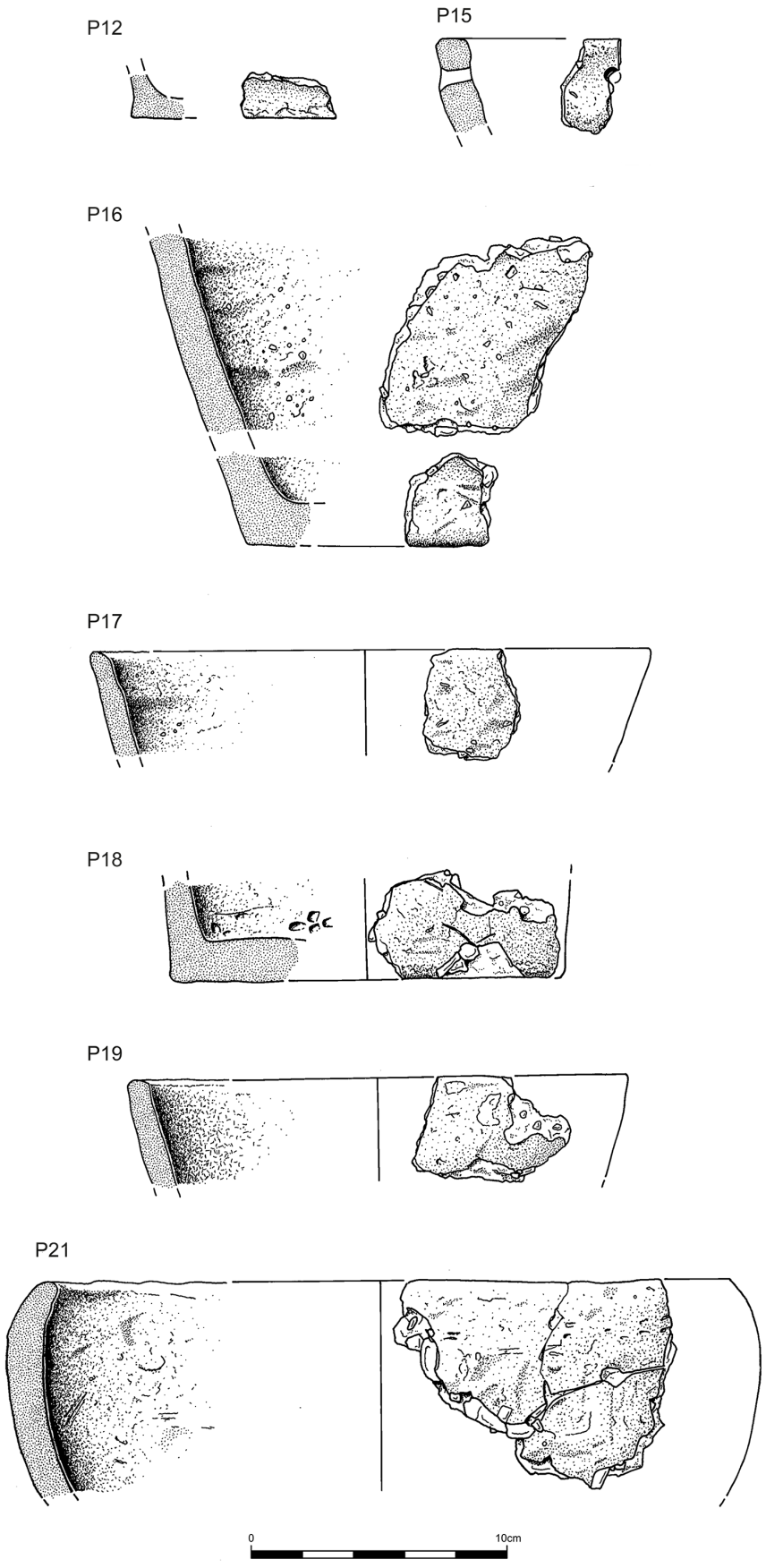
The assemblage is typical of later prehistoric assemblages from mainland Scotland, which consist of coarse, plain vessels with upright, incurving, everted or bevelled rims. Refining dating of pottery from this period is problematic, due to poorly understood typologies, extended periods of use for the so-called 'flat-rimmed ware', and the small size of excavated assemblages. For example, the Early Iron Age palisaded enclosure at Blackford, Perth and Kinross, returned just two body sherds (Johnson 2021) while the Middle Iron Age souterrain and post-built roundhouse at Drumyocher (Johnson 2017) had no finds, and the Early Iron Age settlement at Ironshill, Angus (Pollock 1997), which included four- and six-post structures, also had no pottery. Middle and later Bronze Age sites appear to have larger pottery assemblages than Iron Age sites, which is reflected in the evidence at this site, but even still the typologies are poorly defined, and dating is reliant upon the ability to

Table 4 Distribution of prehistoric pottery

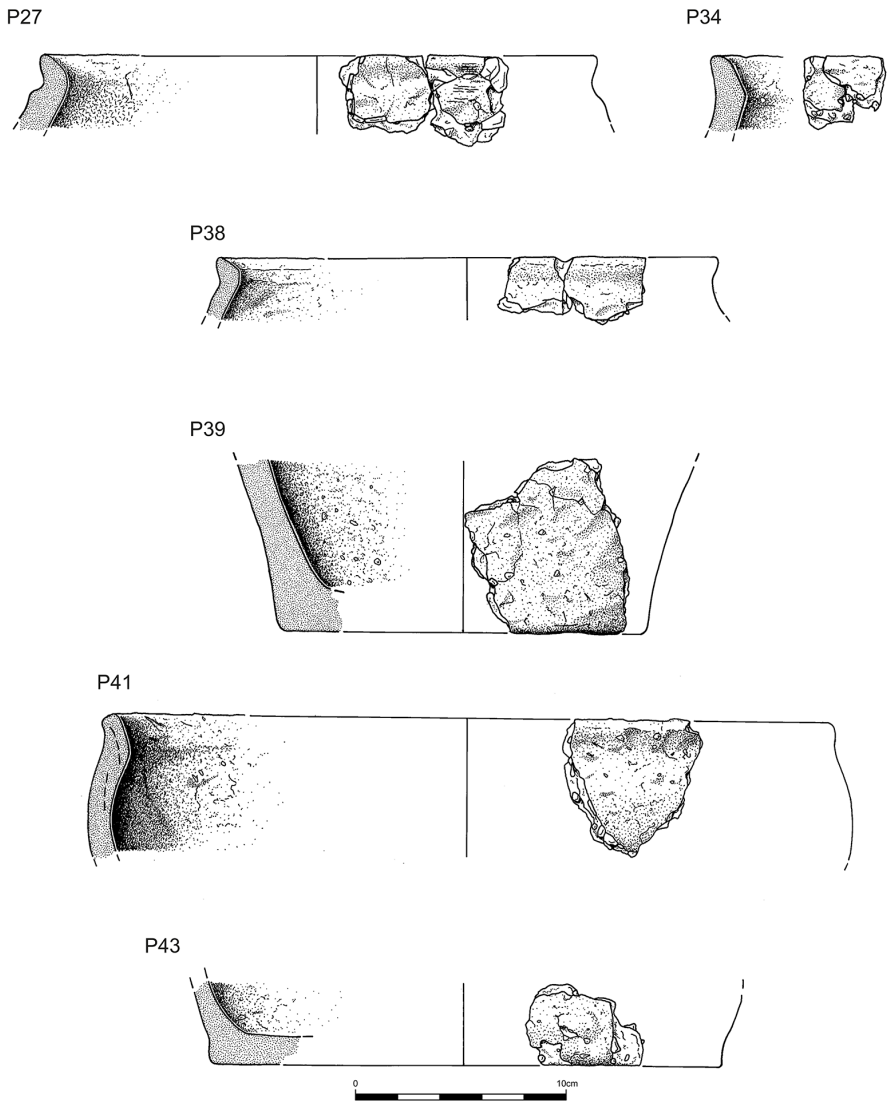
Context	Fill of	Area	Feature	No. sherds	Weight (g)
133	132	1	RH1	2	3
101	100	1	RH3	1	3
105	104	1	RH3	3	3
149	148	1	RH3	13	123
051	050	1	RH4	5	7
161	160	1	RH4	7	32
171	170	1	RH4	2	12
223	222	1	RH4	3	13
227	226	1	RH4	1	4
697	696	1	RH5	1	2
730	729	1	RH5	1	13
777	776	1	RH6	1	1
784	783	1	RH6	1	2
658	657	1	6P1	4	42
674	673	1	6P2	23	285
678	677	1	6P2	3	75
680	679	1	6P2	7	42
682	681	1	6P2	7	89
029	028	1	Pit	3	14
039	038	1	Pit	1	4
231	230	1	Pit	3	204
272	271	1	Pit	7	36
337	338	1	Pit	17	231
381	380	1	Pit	1	32
627	626	1	Pit	1	9
637	636	1	Pit	3	29
640	639	1	Pit	5	35
644	643	1	Pit	9	28
523	522	2	4P3	3	39
589	587	2	Pit	3	152
906	905	2	Pit	53	213
921	920	2	Pit	36	98

procure secure radiocarbon dates. However, some general comments on dating can be made and there may be some emerging trends within the pottery assemblages of this period.

There are no internally bevelled rims and a greater number of everted rims at Loak Farm, suggesting a date beyond the Middle Bronze Age, which ties in well with the radiocarbon dates. For example, the assemblage from the Middle Bronze Age roundhouses at Drumyocher, Aberdeenshire (Johnson 2017) consisted of bucket- and barrel-shaped vessels with internally bevelled rims being



Illus 28 Late Bronze Age–Early Iron Age Pottery



Illus 29 Late Bronze Age–Early Iron Age Pottery

dominant, and contained few everted rims, in contrast to Loak Farm. The Loak Farm assemblage also does not contain any of the ridged vessels more common in the Middle Bronze Age (such as those seen at Linshie Gutter, Lanarkshire (Terry 1995)), which also indicates a later date. McGill (2003) suggested that internally bevelled rim forms could broadly be seen as diagnostic of the later Bronze Age.

Everted rims have been found associated with a souterrain and ring ditch roundhouse at Thainstone, Aberdeenshire (in this case, decorated) (McGalliard & Wilson 2021), at Birnie, Moray (MacSween in prep), at Redcastle souterrain (McGill 2005) and at Dunnicaer promontory fort (Cruickshanks 2020). In each of these instances, their context of recovery suggests they date to the early centuries AD. Everted and flat rims have also been found associated with Late Bronze Age and Iron Age unenclosed settlement at Seafield West, Inverness (Johnson 2011) and with Middle/Late Bronze Age ring ditch roundhouses at Oldmeldrum (Johnson 2010). This indicates that everted rims begin to appear in the later Bronze Age and continue in use through the Iron Age. Therefore, much of the typological dating of later prehistoric sites relies on proportions of pottery types, rather than absolute presence or absence, in lieu of more detailed synthesis of assemblages with secure radiocarbon dates.

No pottery was recovered from the features dating to the early medieval period.

7.2 Worked stone

Ann Clarke

A small assemblage of eight objects of worked stone was recovered, comprising a variety of artefact types including two flat perforated cobbles (400.1 and 825.1); two cobble tools (217.1 and 217.2); a hollowed stone (001.1); two anvils or rests (881.1 and 265.1); and a trough quern (473.1) (Table 5).

Two flat subcircular cobbles (400.1 and 825.1) have a perforation made in the centre of their faces (Illus 30). The largest, 400.1, is made from a flat waterworn cobble of quartzitic schist which has subsequently broken across one end. The perforation is biconical in cross-section and made by grinding from both faces to create a circular hole of 30mm in diameter on the surface narrowing to just 9mm at the hole. The perforation in the centre of 825.1 was made in a similar fashion and is the same shape and size; this a flat cobble of pelitic schist which is damaged around the whole circumference, obscuring the original outline.

The function of these perforated cobbles is not known at present, but they are likely to be components of a larger piece of equipment. They are too large to be spindle whorls (even broken the stones are heavy, weighing 1,100g (400.1) and 498g (825.1)). If they were designed to be suspended, then the central placement of the hole suggests they were to lie flat against something to weigh it down or keep it flat rather than swinging free. The twine used for suspension would have had to be thin, given the 9mm hole diameter. It is more probable that they were designed to be used as a weight or flywheel for a rotational piece of equipment such as a drill (Ilan 2016). The larger perforated cobble (400.1) came from Pit 399, which cut Pit 384: perhaps large Pit 384 was constructed to contain a working station for a contraption such as a drill. The second perforated cobble (825.1) was from Ring Ditch 824.

An alternative interpretation for the perforation is to enable lifting the stone disc from a container. A narrow twine would thread through the small hole and be tied to a toggle below, allowing the disc to be raised or lowered into a container such as a pot without touching the lid.

Stone discs with central perforations, but of differing dimensions, are found sporadically on later prehistoric sites in the wider region. If they are indeed parts of a drill, they would, given their different sizes, have been used for working a variety of materials. They appear to be associated with activity dating to the Middle Bronze Age and later. A weight of similar dimensions to 400.1 came from Structure 1 at a Middle Bronze Age roundhouse at Drumyocher, Aberdeenshire (Johnson 2017) and two centrally perforated cobbles were recovered from over Structure 3C, another Middle Bronze Age roundhouse, at Blackford, Perthshire (O'Connell & Anderson 2021). At Aldclune, Perthshire, the centrally perforated stones were from the earlier roundhouse dating from around 200 BC (Hingley et al 1997) while two centrally perforated cobbles came from Green Castle, Portnockie dating to the Iron Age or perhaps Late Bronze Age (Clarke 2019). More locally, a group of similar roughly perforated subcircular stones was recovered from Oakbank crannog, Loch Tay (Dixon 1984: 233–4, Fig. 34), interpreted as net or thatch weights, a

Table 5 Distribution of stone artefacts

Cat no.	Context	Fill of	Area	Feature	Worked Stone
001.1	001	-	1	Unstratified at RH4	Hollowed stone
217.1	217	216	1	RH3	Pounder/grinder
217.2	217	216	1	RH3	Plain hammerstone
265.1	265	264	1	Pit	Anvil/rest
400.1	400	399	1	Pit	Perforated cobble
473.1	473	471	2	4P3	Trough quern
825.1	825	824	1	RD 824	Perforated cobble
881.1	881	880	1	Pit	Anvil/rest

Illus 30 Two flat perforated cobbles (400.1 and 825.1) and cobble tool (217.1)

numberof perforated stone weights were recovered from Black Spout, Pitlochry (Strachan 2013: 40–2), and a stone weight was recovered from the Middle Bronze Age roundhouse settlement at Drumyocher, Aberdeenshire (Johnson 2017).

The pounder/grinder (217.1) is a fine cobble tool dating to the Bronze Age or Iron Age (Illus 30). It is a rounded quartzite cobble with three broad rounded facets pecked and ground on one end. It was found together with a plain hammerstone (217.2) made

from a schist pebble with light hammering marks over parts of the surface, in Pit 216 associated with Roundhouse 3.

The hollowed stone (001.1) is a large sub-rectangular block of sedimentary rock with a flat base (Illus 31). The fine, oval, round-based basin has been ground into the upper face and it has a smooth interior with visible striations running around the inside of the basin, suggesting a circular motion of shaping or wear. A rough channel (50mm–30mm wide) has been pecked across the flat side rim of the slab at one end, presumably to drain or collect liquid associated with the basin (Illus 31). The rounded basin itself is reminiscent of a Neolithic quern or even a polissoir, but the channel worked on the flat edge has some similarities with hollowed stones found at Late Bronze Age/Early Iron Age Finstown, Orkney, which were thought to be somehow associated with metalworking (Clarke 2020). This large, hollowed stone was found during initial topsoil stripping over the area of Roundhouse 4 and slight, fresh machine damage on its upper face indicates it was sitting upright on the sandy soil below. This suggests the stone was originally left in situ in Roundhouse 4 and may offer a clue as to what the structure was used for. In this respect the remains of iron slag in one of the post holes of Roundhouse 4 may be linked with the use of the hollowed stone in some form of metalworking.

Hollowed stones do not occur as standardised forms; they can be difficult to identify, compare and discuss since they occur in a wide variety of finishes, dimensions and basin or cup shapes (Clarke 2006). They are found across Scotland especially during the Iron Age but none, with the exception of the Finstown stones, have a worked channel on the surface.

Potential evidence for other craft activity comes from two large stone blocks found in pits to the east of the main post hole structures. Neither block appears to have been deliberately shaped. The larger boulder (881.1, from Pit 881) with dimensions of 560mm by 350mm by 180mm has a rounded base and slightly concave upper face formed by cleavage along a quartzitic layer. There is no evidence for grinding. A slightly smaller block of schist (265.1, from Pit 265) with dimensions of 435mm by 360mm by 190mm is also unworked. These may be structural stones or more likely anvils/working rests for craft activities. They were both found in larger pits beyond the structures and could have been used for activities that needed to be located outside the main occupation area.

Illus 31 Hollowed stone (001.1), with close-up of rough channel

A trough quern (473.1) was the only stone artefact from Area 2 (Illus 32). It is made from a coarse-grained metamorphic rock with large grains of quartz and mica. The stone is now very friable and the original edges are destroyed. The worn upper face survives best because it has been compressed and flattened through use, and this has prevented weathering taking hold. It may have been broken in half before burial. The base is slightly rounded and the worked upper face is concave along the length and asymmetrically concave across the width, with heavier smoothing wear on the slightly steeper side. The basin is 25mm deep and worn smooth through use as a grinder. Though the original edge is damaged, the worn face may have extended out to the edge.

The quern dates to the Bronze Age and was reused as post hole filling or as a post pad, in Four-post Structure 3 (Post Hole 471). Close links between agriculture and structures are observed during the Bronze Age of the Northern Isles, where stone agricultural tools such as mattocks and ard points were frequently redeposited in structures, sometimes, as in the case of Ness of Gruting, Shetland, together with caches of grain (Clarke 2006). Unfortunately, no caches of grain were discovered within the four-post or six-post structures following environmental sampling to suggest that they were granaries, but that does not eliminate these structures from consideration as agricultural buildings of another function.

7.3 Slag

Rod Mackenzie

The assemblage of potential metalworking residues largely consists of pieces of slag-like residues as well

Illus 32 Trough quern (473.1)

as magnetic geological material. For the purposes of this report, the general terms macro-residues and micro-residues relate to fragments of material with a volume greater or less than approximately 3mm^3 respectively. Any micro-residues relating to metal production have been quantified separately to the natural geological material in the samples. No instrumental analysis has been performed on any of the metal production residues in the assemblage.

7.3.1 Overview of the assemblage

The assemblage comprised 43 pieces of metal production residues, weighing approximately 2,600g in total.

A description of the macro-residues and an overview of the micro-residues are given below. A catalogue of the micro-residues in the assemblage, listing quantities by context, is provided in the archive.

The only diagnostic macro-residues were two pieces of slag recovered from the fill of Pits 234 and 260, which were close to each other to the north of Roundhouse 1, where radiocarbon dating indicates they were 8th- to 10th-century AD in date. The single fragment of slag from Pit 234 weighs approximately 320g and 85mm in diameter and is plano-convex in shape. The fracture surface of the slag is graphite-grey in colour, and it has a variable density, with a low to moderate abundance of vesicles. The original outer surface of the slag has the possible imprint of a piece of decomposed charcoal. A small fragment of possible corroded iron weighing approximately 1g was also found in the micro-residues from Pit 234. The fragment of slag from Pit 260 is also plano-convex in shape, but at 2,360g and around 180mm diameter, it is considerably larger than the piece from Pit 234. The surface of the slag suggests that it has a similar variable density and abundance of vesicles as the piece from Pit 234, and it also has some traces of decomposed charcoal. Both of the above pieces are characteristic slag by-products of ironsmithing known as 'smithing hearth bottoms'. These are the solidified remains of slag that originally formed and accumulated in the base of blacksmiths' hearths during use. Smithing hearth bottoms are a relatively common find at sites dating from the Late Iron Age to the medieval period where ironsmithing had taken place.

Fragments of slag were also recovered from the fill of Pit 050 (Roundhouse 4) and these range in volume from sub-3mm^3 to around 100mm^3. There are 72 pieces of macro-residue weighing 422g in total, and approximately 550–600 pieces of micro-residues that weigh 462g in total. The slag is pale buff to grey in colour, has a relatively high abundance of vesicles and is of low density. The slag has the characteristic morphology of fuel-ash-derived material. Amongst the fuel-ash slag, there were four pieces of micro-residue that are indicative of ironsmithing. The pieces are small spheres (sub-2mm diameter) of graphite-grey slag.

There are very low trace amounts of ironsmithing evidence in some of the samples, but these tend to consist of only one or two sub-1mm diameter pieces of spheroidal hammerslag or flakes of hammerscale. The only exception is Pit 464 (Four-post Structure 3), which contained seven spheres of hammerslag ranging in size from sub-1mm to approximately 4mm diameter.

The micro-residues from Post Hole 160 (Roundhouse 4) and Ditch 722 (Roundhouse 5) contained fragments of fuel-ash slag. Around 50 small fragments of fuel-ash slag totalling 8g were present in Post Hole 160, whereas Ditch 722 contained 14 small fragments weighing less than 1g.

7.3.2 Interpretation of the assemblage

The evidence for metal production all appears to relate to the forging of ferrous metal. The most notable pieces in the assemblage are the two lumps of smithing hearth-bottom slag recovered from Pits 234 and 260. Both of these features have been radiocarbon dated to the early medieval period (Pit 260: 774–992 cal AD, 95% probability, 1140±24 BP SUERC-99180, 1111±22 BP SUERC-99181; Pit 234: 771–991 cal AD, 95% probability, 1121±26 BP SUERC-100342, 1189±26 BP SUERC-100343). Apart from one small fragment of corroded iron, no other residues relating to metal production were found in Pits 234 and 260.

The type of fuel-ash slag recovered from Pit 050 (Roundhouse 4) is a type typically produced by a reaction between alkali wood ash and the siliceous lining of the surface that the fire and ash is in contact with, and it can potentially originate from a range of activities, such as food or pottery production,

funeral pyres or the burning-down of wattle and daub buildings (Keys 2012: 2; Salter 2005: 1–2). Only four pieces of micro-residues relating to ironsmithing were found in Pit 050, which is not enough to confidently link the fuel-ash slag in the context with metal production, and the slag could be the by-product of an unrelated pyrotechnic event.

Trace amounts of micro-residues relating to ironsmithing were present in the bulk samples recovered from the site. The individual pieces of micro-residue are almost entirely at the smaller end of the spectrum (<1mm in diameter) and were well distributed across the site, with no significant concentrations to pinpoint where smithing activities may have been carried out. It is worth bearing in mind that very small pieces of smithing micro-residues can easily be redistributed, either by being swept up or blown around, or carried on the soles of footwear or buckets, baskets and so on.

From the types and amount of residues present in the assemblage, the overall impression is that ironsmithing was an activity that had taken place during the later phases of occupation, although it was possibly only done on an occasional basis, perhaps by an itinerant smith. The smithing hearth bottom from Pit 260 suggests that ironsmithing was being carried out at, or close to, the site during the early medieval period.

8. DISCUSSION

8.1 Neolithic

Limited evidence for Middle Neolithic occupation on the site includes Pit 944, dated to the second half of the fourth millennium BC.

Several Middle Neolithic pits were also recorded within the adjacent part of the borrow pit (MacIver & Demay 2025), identified through radiocarbon dating.

8.2 Late Bronze Age and Iron Age structures

8.2.1 Roundhouses

A total of seven confirmed roundhouses were identified at Loak Farm, with a further two possible examples surviving only as ring ditches. Six of these survived as single post rings (Roundhouses 1–4, 6 and 7), while one survived as a post ring and ring groove (Roundhouse 5). Radiocarbon dating has confirmed Middle and Late Bronze Age dates: Roundhouse 3 has been dated to the last two centuries of the second millennium BC, and Roundhouses 4 and 6 to the first two centuries of the first millennium BC.

Due to the possible impact of plough truncation, various interpretations of the construction of the post ring houses are possible. Dunwell (2007) has suggested that post rings identified at Dryburn Bridge formed roof support frameworks within the floor space and that the outer walls had been removed by ploughing. However, uneven plough damage would be unlikely to leave the centre ring preserved and the outer ring destroyed, and it is more likely that any outer ring was a wall of wattle and daub or turf which was not load-bearing and sat beneath low eaves. An outer wall would increase the diameter of the roundhouse considerably. A similar interpretation was also given at Newmill (Watkins 1981), where a 6.6m post ring was interpreted as the inner supporting ring for a much more substantial roundhouse. In examples where the outer walls have been identified, the inner post ring generally accounted for *c* 60–67% of the overall diameter, with the outer ring adding an additional *c* 33–40% (Pope 2007: 217; Romankiewicz & Mann 2017). This was the case for Roundhouse 5, which had an internal post ring of 6.5m diameter and a ring groove of *c* 10m diameter, giving it a ratio of 65% to 35%, assuming the outer wall was placed along the ring groove.

The post rings at Loak Farm had diameters ranging from 5.6m (Roundhouse 7) up to 11.2m (Roundhouse 6), which fits well with the data from previously excavated examples, suggesting that roundhouses generally had an overall diameter of between 4m and 14m, with an average size of *c* 8m and a maximum which seldom exceeds 15m (Pope 2008: 17). Adding 33–40% to the diameters of the Loak Farm post rings would make the smallest a diameter of 9.55m to 10.67m and the largest a diameter of 16.7m to 18.7m. The north-eastern Perthshire uplands include many examples of well-preserved earthwork and stone hut circles, including double-walled forms of the Dalrulzion type (Thorneycroft 1933; Thorneycroft 1948), which are not commonly seen elsewhere; the inner rings of recorded examples measure *c* 8–11m in diameter, with the outer ring extending up to 17m. However, while a roundhouse at Culduthel Farm (Hatherley & Murray 2006) was recorded as having a diameter of 19.5m, examples of this magnitude appear very rare, and a number of structures which were recorded as very large roundhouses have now been reinterpreted as a smaller roundhouse with an external stockade around it. This was the case at Scotstarvit, which was originally interpreted as having a diameter of 19m (Bersu 1947) but has been reinterpreted as a 13m roundhouse enclosed by a stockade (Pope 2003). Watkins' (1981) interpretation of the 17.6m diameter roundhouse at Newmill should also be viewed as suspect, as it was based on a partial arc of posts around a 6.6m diameter post ring, giving a ratio of 37.5% for the inner post ring and 62.5% for the outer ring. Again, this would perhaps suggest that the outer ring was an external stockade, an argument favoured by Cressey and Anderson (2011) in relation to a 17.5m ring associated with Structure B at Seafield West. A post ring of 14m was recorded at Blackford (O'Connell & Anderson 2021), which would equate to an overall diameter which could exceed 23m, but here, the excavator interpreted it as a single post ring structure in which the post ring represented the full extent of the roundhouse. Given the apparent rarity of roundhouses which exceed 15m diameter, it is perhaps more likely that at least the larger post rings at Loak Farm would have been of the same single-ring construction.

The downward and outward forces on a single post ring must have been quite considerable, especially during the winter, when a quantity of snow could have accumulated at times on the roof of the roundhouse. This would suggest that the walls would have been considerably reinforced, especially in the case of Roundhouse 1, which had very small-diameter post holes relative to its diameter, suggesting that it was constructed from lightweight posts. Generally, it is thought that this was done using wattle to interlock the posts, but this could have been further reinforced and insulated by stacking a layer of turf around it. It has also been suggested that roof timbers overhanging the post ring may have rested on an external turf bank (Cook & Dunbar 2008), although this would potentially have removed external storage space under the eaves which would have been invaluable for items such as firewood and peat which had to be kept dry but well-ventilated in order for them to dry sufficiently to be used as fuel.

A number of other notable features relating to these roundhouses were identified. Roundhouse 5 appears to have had a fairly substantial entranceway consisting of a series of pits and trenches cut into the ring groove. Post holes representing possible entrance structures were also identified in relation to Roundhouses 6 and 7, while some larger pits adjacent to the post ring forming Roundhouse 1 may have served a similar function. All of these possible entrance structures were to the south or south-east of the post ring. A south-east facing entrance appears to be a recurring theme in relation to roundhouses, and indeed was the case for all but one of the roundhouses at Blackford, where entrances could be reconstructed (O'Connell & Anderson 2021). While various cosmological theories (Oswald 1997) have been suggested as explanations for this orientation, the most likely explanation is to allow morning light into the building while protecting the entrance from the prevailing westerly wind. Other features consisted of a possible fragmented ring ditch within Roundhouse 3, and post holes representing central posts within Roundhouses 5 and 6.

Archaeobotanical results from the roundhouses show mixed uses across the different structures. Roundhouses 3 and 4 contained the largest quantity of plant remains. Roundhouse 3 had a concentration of hazelnut shell and alder charcoal in addition to barley, emmer wheat and six-row hulled barley. Alldritt (this report) suggests that some of the pits (146, 148 and 230) and Circular Feature 216 may have been scoop hearths or fire pits for hazelnut roasting or other cooking activity. Roundhouse 4, and in particular Post Hole 160, contained mixed cereal waste from emmer wheat, spelt wheat and barley. It was found with alder charcoal, oak charcoal and burnt peat, indicating that Post Hole 160 may have been a firepit. The cereal waste/chaff found may also have been collected following cereal processing and then used in the fire as kindling (van der Veen 1989: 305). Roundhouses 1, 2, 5 and 6 all contained small and poorly preserved deposits, suggesting low levels of burning activity and low accumulation of waste, which indicates inconstant habitation or regular cleaning took place.

Roundhouses 4 and 5 also contained traces of fuel-ash slag, which could derive from a number of different types of pyrotechnic events, and a hollowed stone was recovered from topsoil about Roundhouse 4, which could have been used in metalworking.

The general layout of the roundhouses suggests they may have been arranged into two lines aligned south-west to north-east, with one line containing Roundhouses 1, 2 and 3, the other containing Roundhouses 4 and 5 along with a broad south-west to north-east trench in the pit groups and four- and six-post structures; in Area 2, Roundhouse 7 could be considered to be on a south-west to north-east line with Four-post Structures 2, 3, 5 and 6. A line of four Middle Bronze Age ring ditch roundhouses at Drumyocher, Aberdeenshire (Johnson 2017) was also aligned south-west to north-east, with their entrances facing south-east. A similar arrangement can be seen in the upland Perthshire hut circles, where hut circles can be seen strung out in linear arrangements, for example Drumturn Burn, Hill of Cally, Hill of Kingseat, Loch Benachally and others (RCAHMS 1990). It is possible that the roundhouses were largely contemporary with each other, being inhabited and used at the same time and thus indicating a large community, with these alignments perhaps relating to local topographic conditions, or they could indicate rebuilding over generations as the structural timbers rotted, with the main dwelling slightly shifting across the landscape with each generation.

8.2.2 Ring ditches

Two possible further roundhouses survived only as ring ditches (Ring Ditches 545 and 824), making any realistic interpretation of their ground plan and construction very difficult. These ring ditches are rather later than Roundhouses 1–7, with 545 being radiocarbon dated to the middle of the first millennium BC and 824 to the last two centuries BC. The size and curvature of these ring ditches would suggest that they related to fairly large roundhouses of greater than 10m diameter. Previously excavated examples suggest that ring ditches were generally internal features lying just inside the line of the outer wall (Romankiewicz & Mann 2017). However, excavations at Kintore (Cook & Dunbar 2008) identified three types of ring ditch house consisting of those with a post ring external to the ring ditch, those with a post ring internal to the ring ditch, and those, like Loak Farm, with no evidence of a post-built structure either internal or external to the ring ditch. Very similar features without any surviving post holes were identified at Macallan Distillery, Craigellachie (Dunbar 2017) and at Wardend of Durris, while a second example at the same site had a short arc of post holes curving away from one end of it (Russel-White 1995: 15). Limited evidence of surviving post holes was also identified at one of the two ring ditches at Grantown Road, Forres (Cook 2007). Cook and Dunbar (2008: 324) have interpreted ring ditches with no evidence of post holes as being of a 'wigwam' design, with inward-leaning posts set into an external turf bank converging into a single point at the apex, although the possibility cannot be precluded for post holes having been completely removed by plough truncation.

Various interpretations have been placed on the purpose of ring ditches ranging from being created by extra wear caused by overwintered cattle being tethered in one location (Jobey & Tait 1966; Reynolds 1982) through to the creation of storage space serving a similar function to a small souterrain (Kendrick 1982; Kendrick 1995). While Zimmerman (1999) has questioned the necessity of overwintering cattle indoors, this may have been done more for the human occupants than for the animals, as the heat that they produced would probably have created a much more pleasant living environment. This might simply mean that they were brought in overnight and then turned out so that they could roam more freely during the day. A deeper hollow (either worn or deliberately dug) around the periphery of the internal living space would have helped to contain urine and faecal matter, which could then have been mucked out during the day when the animals were outside. This material would presumably have been retained and once sufficiently rotted, would have been added to the fields to improve their productivity.

The possibility that these ring ditches were for storage also appears feasible, particularly in relation to Ring Ditch 545. With no evidence of a post ring (although a few apparently random shallow pits were identified), this would perhaps imply that at least 0.3m had been truncated from the site. A single post hole was identified within Ring Ditch 545, and Post Holes 938, 940, 949 and 953 located at its southern end could tentatively be interpreted as a four-post structure generally thought to be for the storage of grain.

However, while the ditches may have been used for storage, the archaeobotanical analysis on these two ring ditches does not seem to support the hypothesis of grain storage. Very little cereal grain was found in Ring Ditch 824 – only a small amount of barley. The ditch did contain a large deposit of crushed charcoal and hazelnut, which is likely to be the result of discarded domestic hearth waste. Ring Ditch 545 contained a concentration of hazel charcoal in Lower Fill 551, oak within Post Hole 953, and a small amount of oak charcoal in Post Hole 951. The charcoal found may have been discarded fuel waste, or remains of timber structures burning in situ. A perforated cobble was recovered from the fill of Ring Ditch 824, which may have had a use in craft activities.

It is also possible in some cases that the primary function of the ring ditch may have been for drainage purposes. Deeper examples would not only have kept the interior of the roundhouse drier but may also have drawn water away from the ground-set structural elements such as posts, thus extending their lifespan. It was noted that Ring Ditch 545 contained a high percentage of stone, a feature which is paralleled at quite a number of other sites, such as Dryburn Bridge (Dunwell 2007)

and Douglasmuir (Kendrick 1995), where the bases of the ditches were paved with slabs. The benefit of either lining the ditch with slabs or filling it with stone would be that it would act as a soakaway while still providing a usable space above the level of the escaping water. Even without the stones it may still have served a drainage function, albeit with the possibility of standing water at the base during periods of heavy rain.

8.2.3 Four-post and six-post structures

A total of eight four-post structures (Four-post Structures 1–8) and two six-post structures (Six-post Structures 1 and 2) were identified. The four-post structures ranged in size from *c* 2.5m by 2.5m up to *c* 4m by 4m, while the six-post structures measured *c* 3m by 3m and *c* 3.5m by 4m. Of the various interpretations given for these structures, ranging from animal pens through to exposure platforms, the most widely accepted theory is that they were raised granaries. Reconstructions of these, as at Butser Farm, generally envisage them as small, conical-roofed buildings set on low wooden pillars, although the limited surviving remains make any definitive interpretation very difficult. It is thought that each of the wooden pillars would have been topped either with a wider flat wooden disc or a flattish and preferably slippery stone to prevent vermin such as mice and rats climbing up and gaining access to the stored grain.

A distribution map originally produced by Gent in 1983 (Van der Veen 2006, after Gent 1983) shows the majority of these features in central southern Britain, with outliers extending up into the fertile areas of southern and eastern Scotland. Van der Veen (2006) suggests that the large-scale storage of grain during the Early Iron Age relates to communal feasting and that features such as four-posters and grain storage pits gradually died out in the later Iron Age as surpluses were traded for prestige Roman goods such as wine and figs. An alternative explanation for grain storage could be to preserve seed for planting the following year. Whether or not the four- and six-post structures at Loak Farm can be attributed to feasting is open to debate, but assuming that they all were granaries, they would certainly indicate that a considerable amount of grain was being produced and stored.

Experimental archaeology suggests that roundhouses had a maximum lifespan of *c* 60 years (Pope 2008: 16), although this would have varied greatly depending on factors including weather, altitude, local drainage, level of occupancy, maintenance and so on: Barbour and Crone (2001) have suggested as little as 15 years. Evidence for the re-cutting of post holes associated with Four-post Structure 3 suggests that the posts were replaced at least once during its lifespan, while possible evidence of the grain storage structures being replaced during the lifespan of the roundhouse was identified in the overlying plans of Four-post Structures 5 and 6.

The archaeobotanical remains from the four- and six-post structures were slightly sparser than from the roundhouses. Environmental samples were taken from Four-post Structures 1, 2, 3, 4, 5 and 7, which revealed trace amounts of degraded unidentifiable plant detritus and charcoal. Alldritt (this report) suggests that the amount recovered may represent material being windswept, trampled or swept into the area, and that there is certainly little evidence for burning activity in these structures. Six-post Structure 1 contained a small collection of cereal grain, which was mostly unidentifiable but contained some barley and wheat. In Six-post Structure 2 four pits were sampled and only Pit 681 returned identifiable oak charcoal remains. The remaining pits only had trace amounts of charred waste.

This lack of charred material was not altogether unexpected, with Dunwell and Ralston (2008) arguing that granaries were for the storage of surplus unprocessed grain whereas charred cereal remains generally reflected primary crop processing activities. Cook (2016) has also suggested that the lack of charred remains would perhaps be expected in a structure where the material was stored above ground. Considerable quantities of charred remains were recovered from the post holes of the six-post structures excavated at Douglasmuir, but as Kendrick (1995) has pointed out, this was the exception rather than the rule. The large quantities of carbonised remains associated with a few examples might suggest that these structures burnt down, whereas the majority would simply have contained unprocessed grain which would not have survived in the archaeological record. A trough quern was found associated with Four-post Structure 3, which may confirm its agricultural use.

8.2.4 Other structures

A further three structures were identified at Loak Farm (Structures 1–3). Structure 1 was almost certainly associated with Roundhouse 5 and may have been a small pen for livestock. The posts forming this structure are likely to have been interlocked using wattle, and it may have been either roofed or unroofed. Another possible use for a small outbuilding would have been for the storage of firewood, which would presumably have had to have been kept dry, although this perhaps would have been stored under the eaves of the roundhouse.

Structure 2 appears to have been constructed with massive timbers relative to its size suggesting that it was designed to support very heavy loads. Consisting of four massive post holes linked by post trenches, this may have been a very heavy-duty version of the four-post grain storage structures identified elsewhere on site. With the main post holes being at a similar spacing to many of the other four-posters, the implication of this is perhaps that the structure which sat on top of them was considerably larger, overhanging the footprint by a greater amount. Post holes (829, 837, 839, 841 and 865) adjacent to the sides of this structure suggest that the overhang may have been such that a degree of additional support was required. Evidence of posts being replaced suggests that this structure had a long service life and that it was of sufficient significance for repairs to have been carried out. Its proximity to Roundhouse 6 suggests that it may have been an associated structure. A large quantity of oak charcoal was recovered from Gully 849, which may be fuel waste or remains of structural timbers burnt in situ. The remaining post hole features contained unidentifiable crushed charred detritus.

Structure 3 was of a size (6.8m by 4.4m) that could just feasibly be considered a small domestic structure (possibly just falling into the category of roundhouse despite its oval plan). The size of the post holes suggests that this was a fairly lightweight structure, possibly strengthened using wattle between the posts, while the roof appears to have been supported by a single central post. The only archaeobotanical finds from the structure were two fragments of degraded hazelnut shell in Post Hole 531.

A possible Early Iron Age post-built structure was recorded in the adjacent part of the borrow pit (MacIver & Demay 2025), though its identification remains tentative. However, its radiocarbon dating within the first half of the first millennium BC, along with other Early Iron Age pits identified in that area, indicates some limited extension of the occupation in this period beyond the main concentration of settlement described in this report.

8.2.5 Pits

Pits were found to make up a significant element of the site. A notable group of larger pits was identified at the northern end of Area 1 within the vicinity of Roundhouse 6 and a large, isolated pit was identified close to Roundhouse 2. Within Area 2 there was a group of three large pits identified at its eastern end, with a further group at the central southern end of this area. Some of the pits contained possible stone anvils/rests and a perforated cobble, indicating craft activities.

As early as the mid-20th century it was hypothesised that large Iron Age pits may have been for the bulk storage of grain (Bersu 1940). Experiments carried out by Peter Reynolds (1986) at Butser Farm as early as the 1960s proved they would be suitable for this purpose despite the damp British climate; experiments showed that the best results were achieved using beehive pits, which had a narrow entrance but widened out below ground level. This design made sealing the opening to the pit with clay relatively easy, thus creating the anaerobic conditions required for the storage of grain. There is no evidence, however, that this type of feature was being used for grain storage in the archaeobotanical assemblages, or indeed could be used in this way, given the loose sand and gravel natural at Loak Farm.

Environmental sampling has shown that it is likely that some of the large pits from Pit Group 1 (390, 418) were fire pits, based on the charcoal quantities and dearth of cereal grain. The largest concentration of oak charcoal came from Pit 390. Three of these pits (390, 418 and 478) (Illus 24) showed evidence of holding large timber uprights, indicating that their purpose was something other than storage or rubbish disposal. The layout of these pits, however, would indicate that they

represented individual uprights rather than forming elements of a larger structure. These are undated, but pits containing large timber uprights are most commonly associated with the Neolithic period, notably in relation to henge monuments such as Woodhenge, Arminghall Henge and Avebury Sanctuary. Other examples of large Neolithic pits holding upright timbers are the Late Neolithic timber enclosures at Dunragit, Dumfries and Galloway (Thomas 2015) and the Late Neolithic palisaded enclosure and avenue within Trench C at Forteviot, Perth and Kinross (Brophy & Noble 2020). While there is no suggestion that the timber uprights at Loak Farm were part of a henge, cursus or other ceremonial monument, they may have been part of a wider early prehistoric ritual landscape, along with the Loak Court Hill barrow and Loak standing stone. Pits of a similar size to those at Loak Farm were identified at Dubton Farm near Brechin (Cameron 2002) alongside later prehistoric post holes and souterrains. The recovery of Impressed Ware and Carinated Bowl Ware from the Dubton Farm pits suggested a Neolithic date, but there was no evidence that these pits had ever contained timber uprights. Due to the lack of finds and an absence of material suitable for radiocarbon dating, it was not possible to date the pits at Loak Farm, and consequently their interpretation as Neolithic is a conjectural one based purely on their size, morphology and layout. Similar-sized pits were also recorded during excavation of a scheduled monument at Wellhill, Dunning, Perth and Kinross comprising a pit alignment, where an alignment of nine excavated pits has been dated to the Mesolithic and interpreted as the pits having been left open to fill with silt before being re-cut in the Early Neolithic when pottery and other waste was deposited in their upper fills (Brophy & Wright 2021); there is no evidence that they contained timber uprights.

8.3 Early medieval features

Four features consisting of two pits containing smithing slag/smithing hearth bottoms (C234 and 260), a corn-drying kiln (960) and a possible field oven (955) have been dated to the very early–early medieval period. Two of these features (234 and 260) were located in Area 1, while 955 and 960 were located in Area 2.

Pit 955 and Kiln 960 both contained significant deposits of carbonised cereal grain, charcoal and evidence for in situ burning. They contained hulled barley, naked barley and oat. This may indicate that this was an area designated for crop processing or more industrial activities, as both features contained barley.

Pits 234 and 260 dated from the 8th to 10th centuries AD and were located to the north of Roundhouse 1. Both contained evidence of smithing hearth-bottom slag, indicating early medieval ironsmithing. Pit 260 was one of the few features to have contained charred rye grain, which corresponds with its having a later date. Early medieval ironworking was recorded at Upper Gothens, Meikleour, Perth and Kinross (Barclay 2001) within an enclosure, with activity dated to the 9th–13th centuries AD; here, the smelting slag recovered was likely from a furnace bowl. Slightly earlier metalworking evidence has been recovered at Lair (Strachan et al 2019) and King's Seat, Dunkeld (Strachan & MacIver 2025).

Within the adjacent part of the borrow pit (MacIver & Demay 2025), an early medieval pit was dated to the 6th–7th centuries AD, very similar to the radiocarbon dates from Kiln 960, while two hearths in that area containing metalworking waste are also medieval in date (although at least one of these is later, being dated to the 13th–14th centuries), strengthening the evidence for reoccupation at Loak Farm during this period.

The early medieval reoccupation of the site following activity in the prehistoric period is not unknown in Scotland. Early medieval reoccupation of later prehistoric sites is a common occurrence in Perthshire. The 7th–9th century AD Pitcarmick-type longhouses commonly share upland locations with prehistoric roundhouse settlements (Carver et al 2013; Strachan et al 2019). This observation was reinforced by Bailey (2021), who described Pitcarmick-type buildings as often lying in well-preserved prehistoric landscapes. Some of the turf longhouses excavated at Lair, Glen Shee, were noted for their lack of post holes or evidence of earth-fast roof supports, suggesting that, once truncated by modern ploughing, little or no trace would be left in the archaeological record (Strachan et al 2019). This might imply that the few remaining early medieval features from

Loak Farm were the vestigial remains of a wider settlement. The excavations at Lair also recovered evidence of metalworking, where they appear to have been producing low-status metal objects for domestic use.

The reoccupation of later prehistoric structures and settlement areas within the early medieval and medieval periods, which can include evidence for later metalworking activity, has been seen at several Perthshire sites. For example, at Black Spout, Pitlochry, the site was reused around AD 890–975, although there is limited evidence for what that reuse comprised (Strachan 2013). At Bunrannoch, smelting and smithing dated to the 7th–9th centuries AD took place in a reused prehistoric roundhouse (MacGregor 2010), and possibly at Litigan around AD 1000 and Queen's View (Taylor 1990), where metalworking evidence is known but which is not diagnostically distinct or well dated: it could date from the Iron Age to the late medieval periods. Further stone roundhouses at Carn Dubh, Moulin also contained evidence for early medieval reoccupation comprising perhaps some ironworking (Rideout 1995) and similarly at Aldclune (Hingley et al 1997).

At Logierait, Perth and Kinross (Ellis et al 2021) a number of features were dated to the early medieval period, including a buried soil containing a furnace base and bloom fragment, pits and postholes possibly forming structures, one pit containing a tuyère, and ditched field boundaries, all dated to the late 7th–9th centuries AD. Elsewhere in Scotland a small metalworking workshop of the 5th–7th century AD was found at Eilean Olabhat, North Uist on the site of an Iron Age settlement dating to the middle centuries of the first millennium BC, although in this case it appears to have been producing higher-status metal items (Armit, Campbell & Dunwell 2008).

At Bertha Park Phase 2, Perth (Engl 2020), features radiocarbon dated to the late 7th–12th centuries AD were excavated, including a putative rectangular post-built structure, lines and groups of pits, and a cattle burial, amongst a palimpsest of features which also included Mid–Late Neolithic pits and a Late Bronze Age ring ditch roundhouse. At Bertha Park Phase 1 (Lowther & Wilson 2022), a pit in Area K was dated to AD 888–988, amongst a group of pits with no discernible pattern. Early historic pits were also recorded at Cliffburn Road, Arbroath, dating to AD 680–980 (Dunbar 2012), suggesting that pit groups and isolated features of this period can often comprise evidence for limited reoccupation of earlier sites (two Middle Bronze Age roundhouses, in the case of Cliffburn Road). A subrectangular trench-built building and associated pits at Newbarns, Angus were also dated to the later first millennium AD (McGill 2004).

Evidence for early medieval features such as ovens and kilns are also known in Perth and Kinross. For example, a corn-drying kiln and a probable house structure dating to AD 1043–1282 were recorded at North Scotstarvit, Fife (Macgregor 1998). A corn-drying kiln dating to AD 421–547 has been reported at Newmill West (Wilson & Clarke 2019) during the A9 dualling between Luncarty and Pass of Birnam. An early historic (AD 430–620) and a medieval (12th–14th century) corn-drying kiln and hearth were recorded at Lethangie, Kinross (Cachart 2008), the earlier feature containing hulled barley and oats while the later included rye.

Slightly further afield, at Burdiehouse, Edinburgh (MacIver & Paton 2023), structures, pits and enclosures dating from the 7th century AD to the 12th century AD included an 11th–12th-century clay-lined corn-drying kiln and a hearth within a post-hole setting dating to the 7th–9th centuries AD. These features related to rural settlement, and the authors acknowledge that sites of this period in lowland Scotland are often difficult to define. The lack of wider rural settlement evidence from this period has been argued (Dunwell & Ralston 2008) as possibly being attributable to the construction methods of associated dwellings, such as post pads, crucks and shallow trenches, which leave little in the way of cut features.

Due to the limited number of features dating to the early medieval activity at Loak Farm, there are constraints to what can be established about the activity on site during this period. The evidence in Area 1 shows that occasional ironsmithing was carried out on or near the site. The combination of food processing and ironworking activity probably indicates that there were nearby early medieval domestic structures which have left no trace in the archaeological record or have not been uncovered.

9. CONCLUSION

The location of the site offered clear practical benefits: the surrounding area was generally flat, it has free-draining sands and gravels, and is close to a source of fresh water. However, a further incentive for choosing this particular location may have been the surviving elements of an earlier prehistoric ritual landscape. To this day, the area of the site is dominated by Loak Court Hill barrow, and this is likely to have been an even larger and more visibly significant feature during the period when the settlement was occupied. The Loak standing stone is also likely to have been known to the occupants of this settlement, while the large pits containing evidence of timber uprights in Area 2 and a single Middle Neolithic radiocarbon date from Pit 944 might point to a more extensive early prehistoric ritual landscape. The presence of earlier prehistoric features found in conjunction with later prehistoric settlement appears to be a recurring theme, with Neolithic features having been recorded alongside Iron Age features at sites such as Newmills, Grantown Road and Dubton Farm. While this may simply reflect the fact that a good area to settle during the Neolithic period remained a good area to settle in the Iron Age, visible surviving remains may have acted as a catalyst for choosing that location.

The identified structures were typical of those dating to the later prehistoric period but nonetheless provide valuable information on construction and distribution. There has been a long-running debate as to whether or not roundhouses identified only as a post ring would also have had a ring groove defining the outer wall. Only one of the roundhouses at Loak Farm consisted of both a post ring and a ring groove, while the remainder consisted of a post ring only. The size of the larger post rings might indicate that this was the full extent of the structure, but this could not be definitively proven. Two ring ditches may also have been roundhouses and have parallels at Macallan Distillery, Craigellachie (Dunbar 2017) and at Wardend of Durris (Russel-White 1995). Four- and six-post structures of the type found at Loak Farm are predominantly found in central southern Britain and are indicative of very fertile regions able to produce surplus grain. While the lack of cereal grain in the archaeobotanical assemblage does not support this at Loak Farm, the structures may have been associated with other agricultural practices.

Although the material assemblage was relatively small, it provides a valuable insight into the activities carried out on site. The pottery assemblage is considered typical of later prehistoric assemblages from mainland Scotland, while parallels for stone tools such as perforated cobbles are known from the wider region. Smithing hearth-bottom slag thought to date from the early medieval period was recovered from two of the pits, while a hollow stone and two unworked stone blocks which may have been used as rests provide further evidence of metalworking.

Overall, the excavations carried out at Loak Farm give a valuable insight into what appears to have been an extensive later prehistoric settlement of Mid to Late Bronze Age date. The evidence suggests that this was a thriving community living in substantial timber roundhouses producing sufficient grain to allow a significant surplus to be stored in four- and six-poster above-ground structures. Iron Age radiocarbon dates associated with two ring ditches suggest a more limited continuity of occupation throughout the Iron Age, while three pits and a possible kiln associated with metalworking and grain processing produced much later dates, suggesting reoccupation during the early medieval period.

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The site archive will be deposited with the National Record for the Historic Environment. The finds assemblage will be allocated to a museum through Treasure Trove procedures.

The final form and opinions expressed in this report remain the responsibility of the author and CFA Archaeology Ltd.

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