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Excavation of prehistoric roundhouses and post-medieval kilns at Drumyoche and Hospital Shields, Aberdeenshire

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1. ABSTRACT

A programme of archaeological watching brief and excavation was carried out by CFA Archaeology Ltd along the route of the Aberdeen to Lochside Natural Gas Pipeline during its construction in 2004. The remains of four truncated Middle Bronze Age roundhouses, one Iron Age post-built roundhouse with a souterrain entered from the house, and two medieval or post-medieval corn-drying kilns were excavated at Drumyoche Farm, near Arbuthnott, Aberdeenshire. An assemblage of decorated pottery was recovered, unusually for this period. The remains of three truncated probable ring-ditch roundhouses were excavated to the north-east of Hospital Shields Farm, near St Cyrus, Aberdeenshire; these features have been radiocarbon dated to the Late Bronze Age.

2. INTRODUCTION

A watching brief was maintained during the topsoil-stripping operations for the Aberdeen to Lochside Natural Gas Pipeline between Garlogie and Lochside in Aberdeenshire, from April to August 2004. This led to the discovery of the remains of five previously unknown prehistoric roundhouses, a souterrain and two post-medieval kilns at Drumyoche Farm by Arbuthnott (NGR: NO 7831 7679 centred), which were excavated between May and August 2004, and the remains of three previously unknown prehistoric roundhouses to the north-east of Hospital Shields Farm, near St Cyrus (NGR: NO 7215 6740 centred), which were excavated in April and May 2004. These sites would have been directly affected by pipeline construction; therefore the aim of the work was to excavate and record the features in advance. The fieldwork and post-excavation work were funded by National Grid Transco.

2.1 Working methods

Topsoil was removed across the pipeline working width by tracked earth-moving machines equipped with smooth-bladed ditching buckets, to reveal the natural substrate surface. Once cleared of topsoil, the area was cleaned by hand and all features were at least 50% excavated. Sampling consisted of bulk samples for flotation; these were taken from each context within a negative feature.

Due to the nature of the pipeline construction method, the Drumyoche site was excavated in three phases to clear parts of the site in sequence in order to allow pipe stringing and welding to take

place. The site was excavated in three parallel strips running the length of the site which arbitrarily cut across the features. This meant that each structure was not always exposed completely at any one time, as excavation progressed across the different strips.

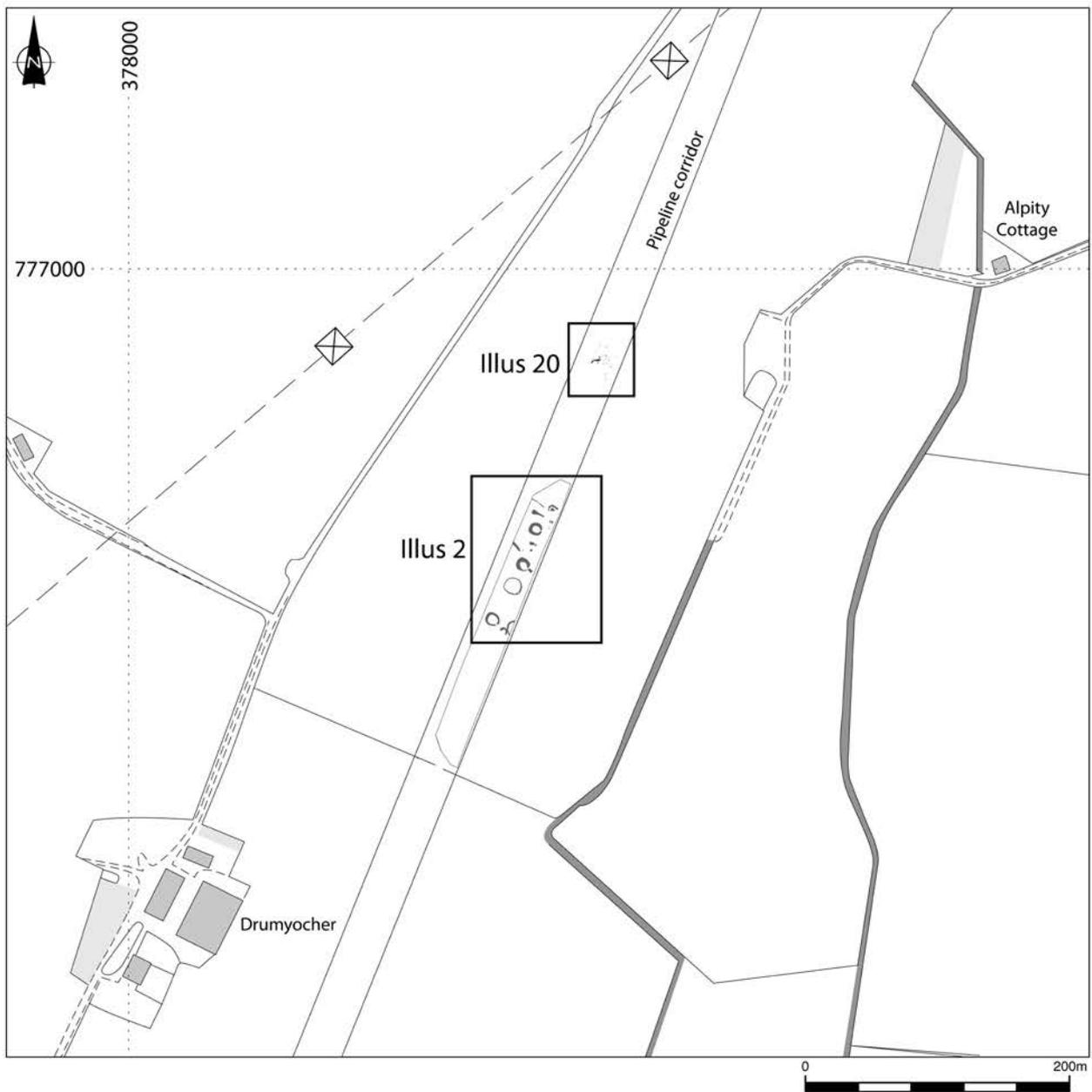
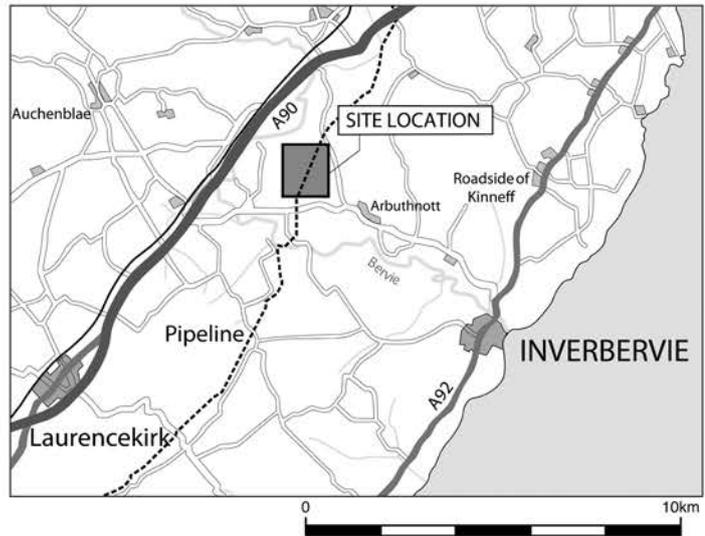
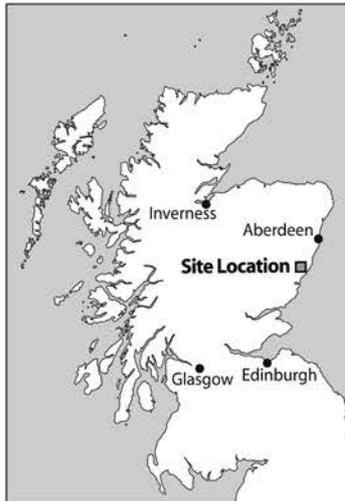
3. DRUMYOCHER BRONZE AGE FEATURES

3.1 Introduction

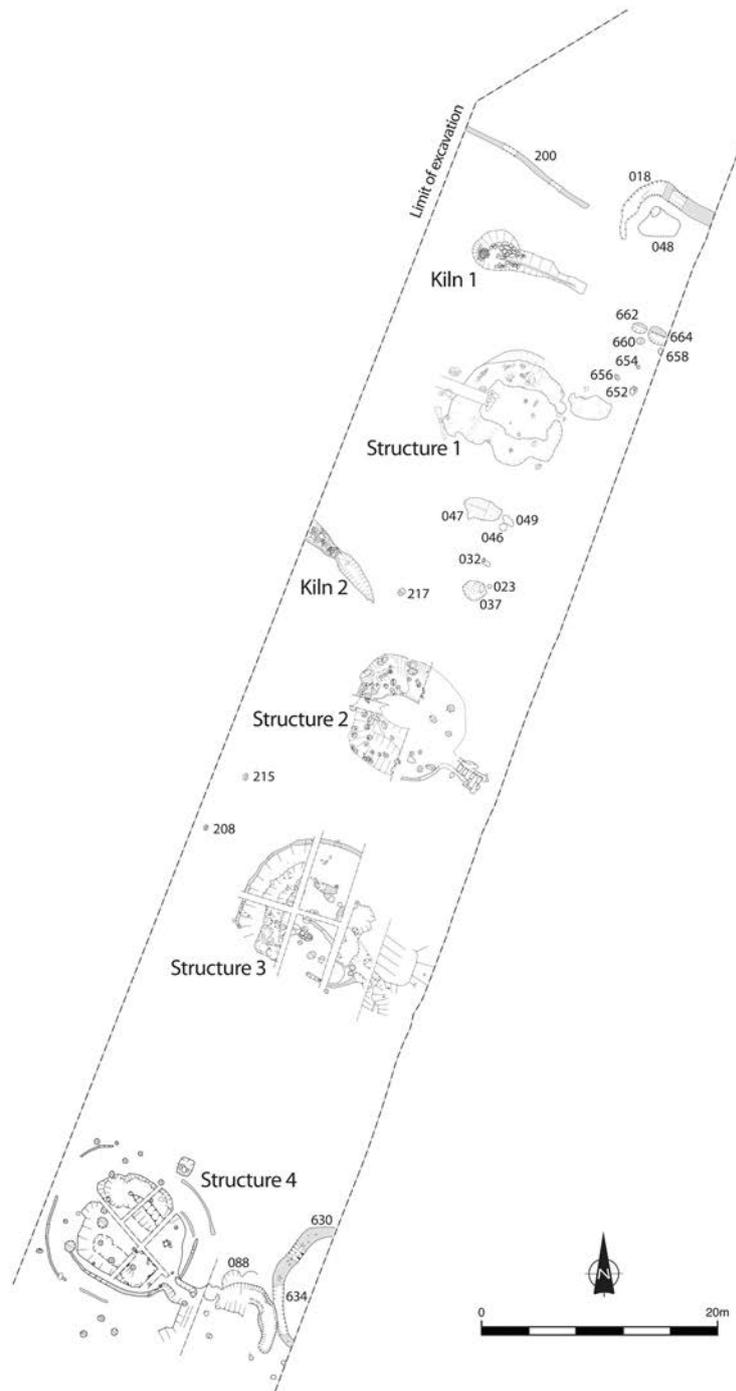
The site at Drumyoche lay within arable land on a gentle south-east facing slope at about 125m AOD, about 400m to the north-east of Drumyoche farm (Illus 1) (NGR: NO 7831 7679 centred). Natural substrate was a mix of pink clay and orange gravel, the latter being very stony.

Four ring-ditch houses (Structures 1–4) lay in a row on a south-east-facing slope (Illus 2) within an area measuring 125m by 25m, forming an unenclosed settlement of mid to late second millennium BC date. It is possible that this represents all of the features of this date at this location; however, the narrow, linear nature of the pipeline corridor may mean that other associated features lie outside of the area available for investigation.

Although there are differences between each structure, and it is not clear whether they were all occupied at the same time, the size of these structures, their associated artefacts, their date, and the excavation of comparative structures on other sites in Angus, Perthshire and Aberdeenshire all indicate that they form a coherent group of ring-ditch houses of similar date. The presence of charred grain, pottery and coarse stone objects suggests a domestic nature for these structures.



Illus 1 Location map, Drumyocher



Illus 2 Site plan, Drumyoche

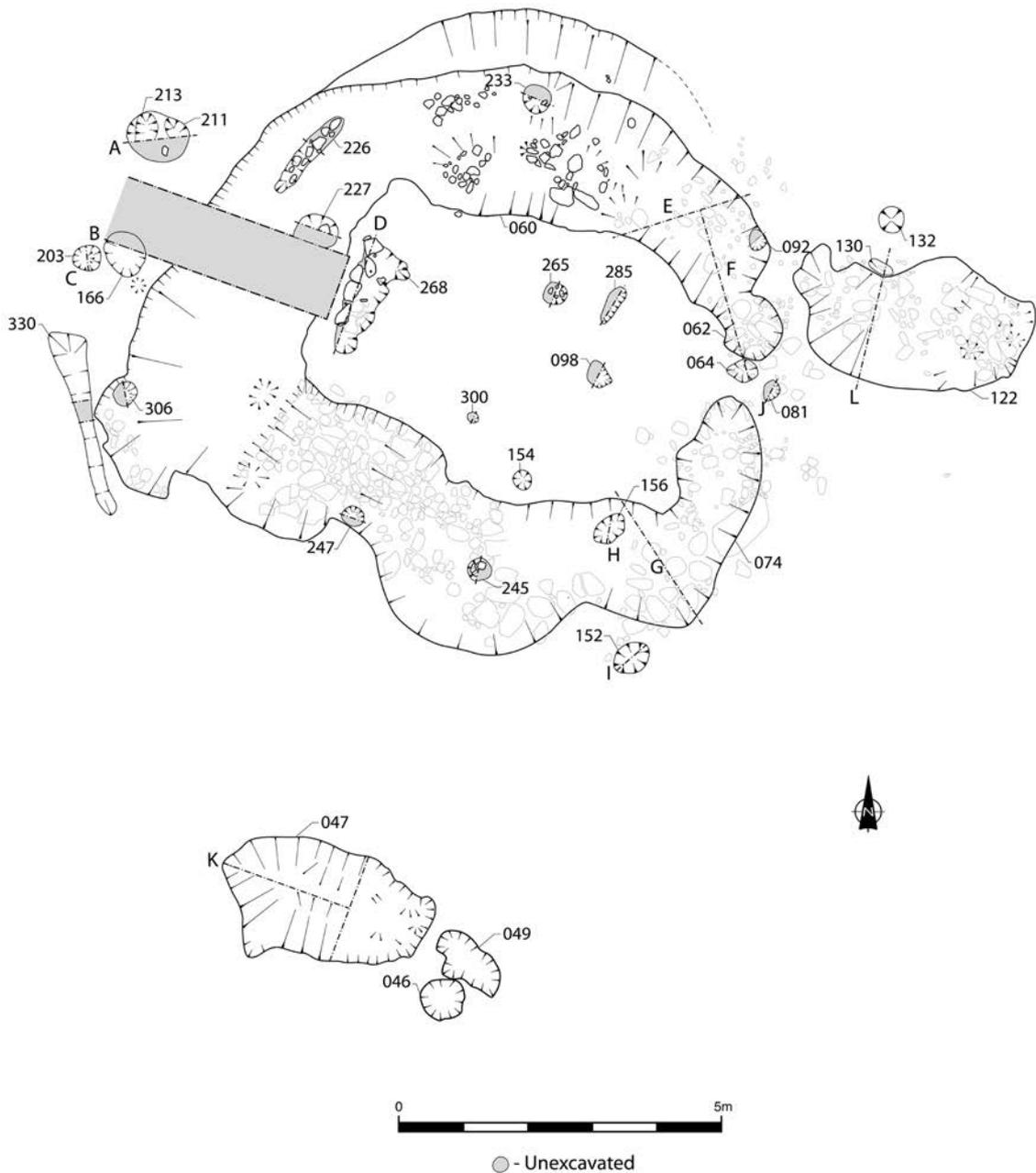
3.2 Structure 1

Structure 1 was a roughly oval building, defined by a penannular ring-ditch, with an entrance to the east-south-east (Illus 3 & 5). The building measured 6.5m by 4.5m internally and 10m by 9m externally.

The ring-ditch was broad and shallow, measuring up to 2.6m wide and up to 0.3m deep. The base of the ditch was uneven and a number of features were

cut into it. At the west, or back, of the building it had been revetted into the natural slope, resulting in a flat-based ditch with a fill that was wedge-shaped in profile (Illus 4B) and was filled with brown sandy silt with little stone content (160).

The northern (060) and southern (074) arcs of the ditch were broad U-shaped cuts with a gently sloping outer edge and a slightly steeper inner edge (Illus 4E, G), with the northern part



Illus 3 Plan of Structure 1, Drummyocher

being deeper and better-defined than the southern part.

The northern part of the ditch (060) and its terminal (Illus 4F) was filled by an upper fill of brown silt (059) containing numerous stones of varied sizes, interpreted as a rough surface of cobbles. A lower fill of black charcoal-rich silt (206) covered an area approximately 1m by 1.2m and was 0.05m thick (not shown in section). The southern ditch (074) and its terminal (Illus 4G) were filled with brown sandy silt (075) which contained numerous stones of varied sizes, interpreted as a rough spread

of cobbles, perhaps to provide a solid surface. This spread beyond the cut to overlie Pit 152 just outside the ditch.

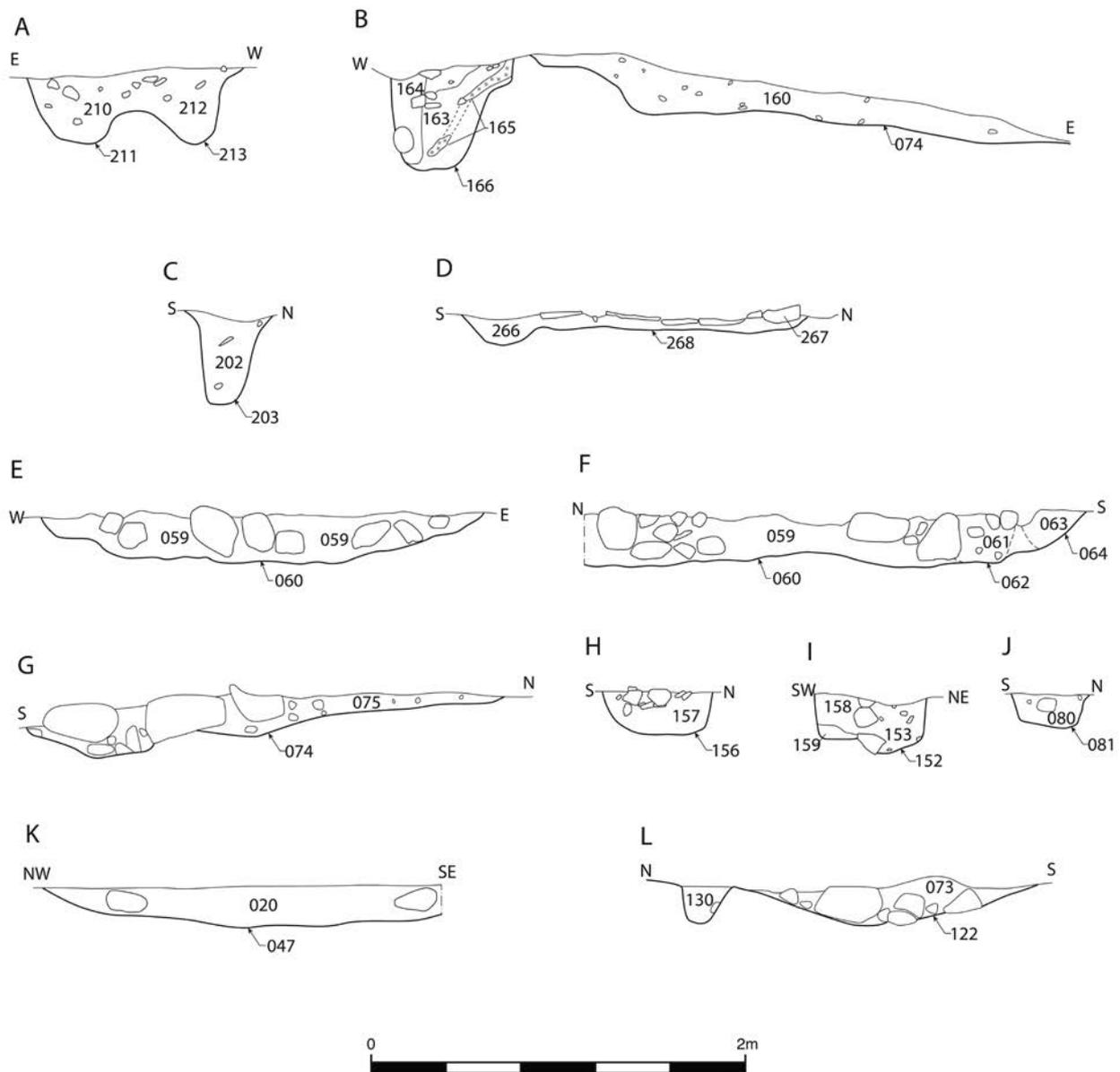
The break in the ring-ditch lay to the east-south-east and was marked by the two ditch terminals. Two post-holes (062 and 064) were located at the inner edge of the northern terminal; both appeared to cut the fill of the ring-ditch (Illus 4F), or perhaps represent timbers which were still in situ when the ditch silted up. A further post-hole, 081 (Illus 4J), lay between the ditch terminals. It is likely that the break in the ring-ditch marks the entrance into

the building, although access would have been impeded by these post-holes, assuming they were contemporary. Alternatively, the entrance may have lain further to the south-east, in the area of stone packing within the ditch terminal, where this stone could have provided a surface for a passageway. There was no evidence for a porch structure and the presence of the large pit 122 lying to the outside, again assuming contemporaneity, suggests that there was no formal entrance structure.

The structure's ring-ditch contained a number of pits cut into the natural substrate at its base and sealed by the ring-ditch fill (clockwise from the break in the ditch: 156, 245, 247, 306, 227, 233,

092; Illus 4H). These varied in depth from 0.25 to 0.32m, and in diameter from 0.37 to 0.6m. It is possible that these, with the exception of 306, formed the main weight-bearing post-ring of the building along with Post-hole 081. If so, the post-ring measured approximately 7m in diameter (between 233 and 245). A short linear feature (226), in the base of the north-west part of the ditch, was filled with stones and was only 0.5mm in depth; its purpose is unclear.

Several large pits were found to the exterior of the ring-ditch (152, 166, 203; Illus 4B, C, I), one of which was a double pit (211, 213; Illus 4A). Assuming loss of at least two or three post-holes to



Illus 4 Sections associated with Structure 1

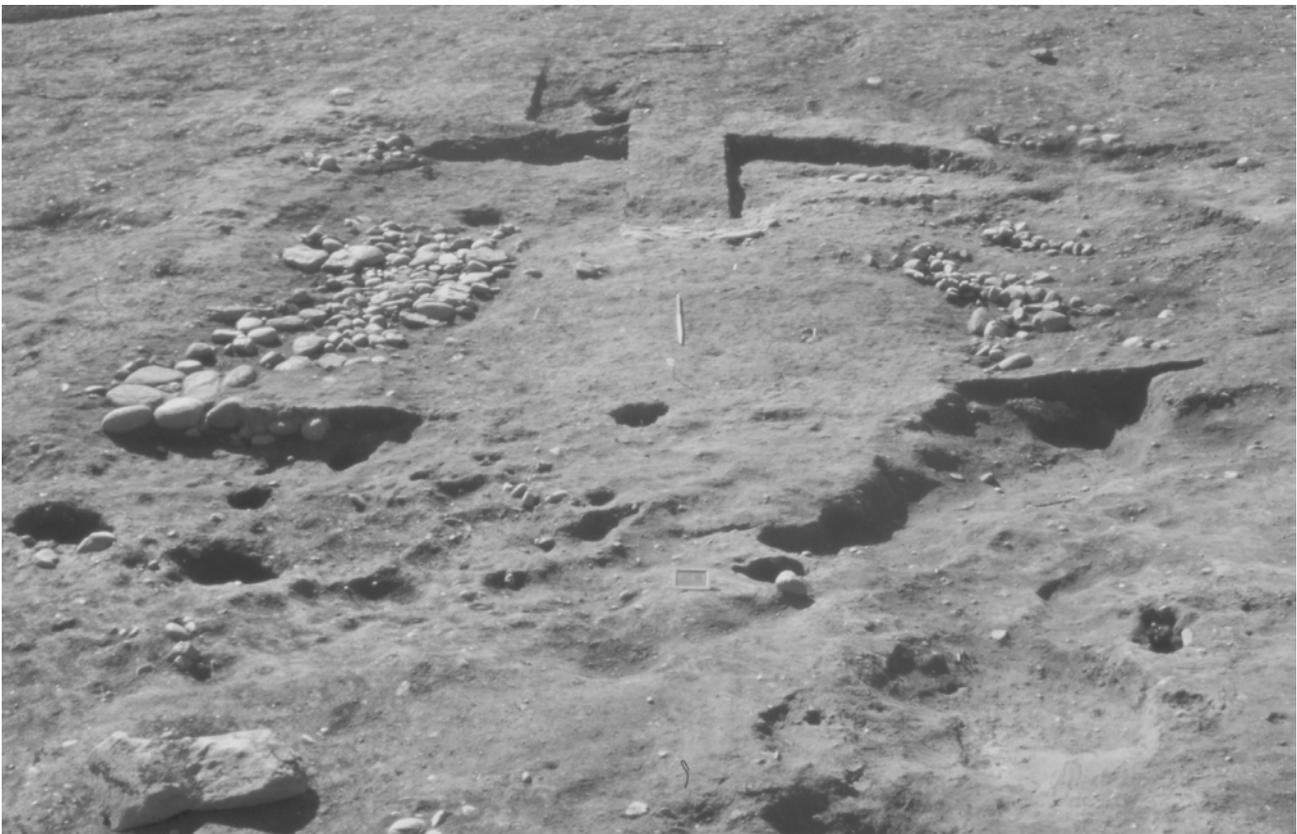
the south of the ring-ditch, an alternative post-ring could be postulated, incorporating 152, 306, 166, 211, 233 and 092. A linear slot (330) to the west measured 3.75m long, 0.6m wide and 0.1m deep at maximum; its purpose is unclear.

A number of features were found inside the building. A possible hearth feature (268) was located towards the western side of the building's interior (Illus 4D). It consisted of a roughly oblong setting of flat stones (267) within a matrix of brown silty sand (266) containing some charcoal, which on removal was found to fill a shallow cut (268), irregular in plan and measuring 2.1m by 0.6m by 0.1m deep. The stones appeared to have been affected by heat. There were five small pits: 154, 265, 285, 098 and 300, varying in diameter between 0.3 and 0.6m and between 0.12 and 0.2m in depth. These features did not appear to form any kind of pattern to suggest that they were associated with each other or formed any kind of internal structure, and their function is unclear.

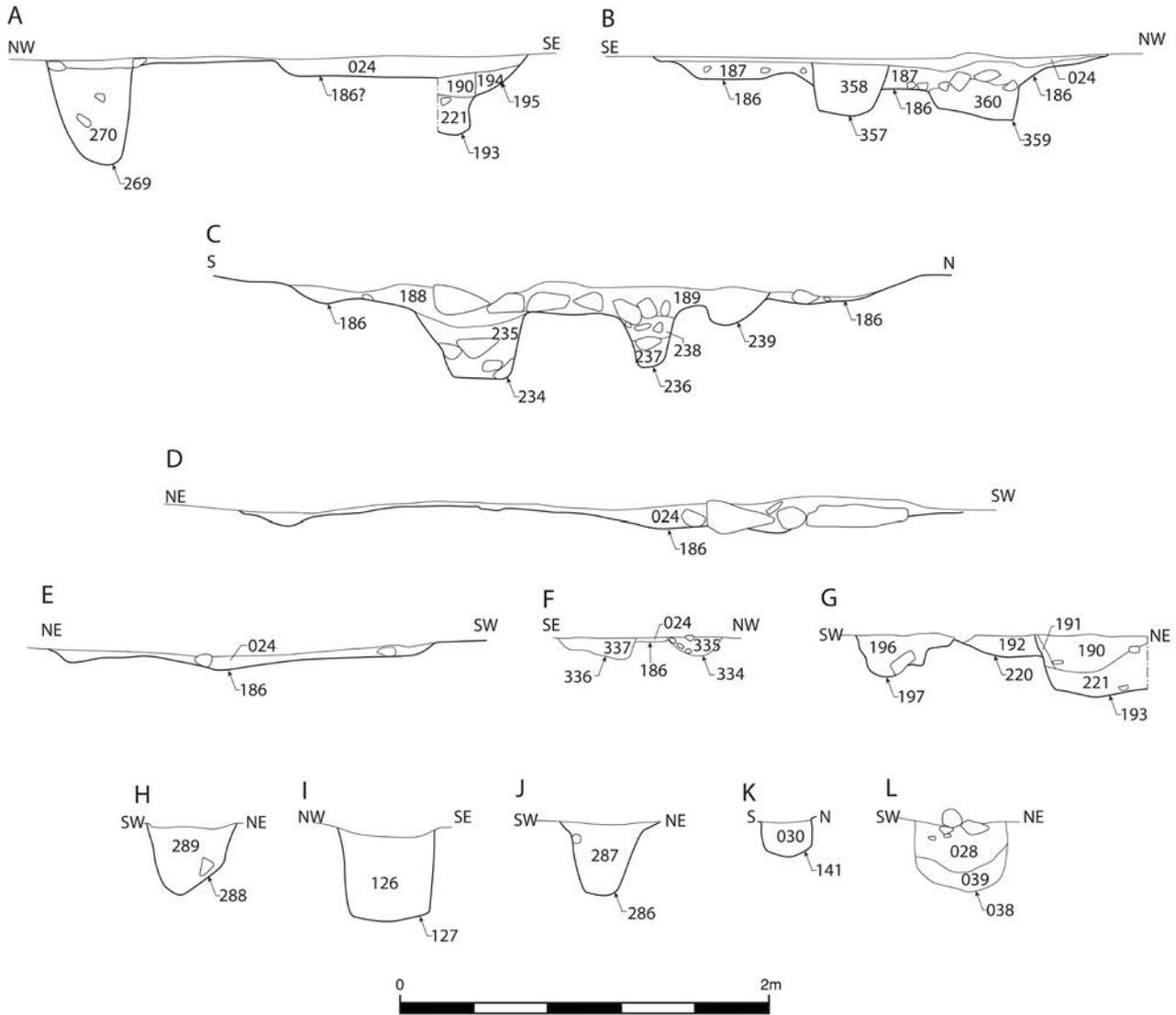
The majority of the finds, principally pottery, came from the northern ditch terminal. The ditch seems to have been a focus for deposition of finds,

either during or following occupation, particularly in the area around the terminals. The ring-ditch fill also contained two saddle quern fragments and a single lithic artefact.

A series of pits was found to the north-east of the entrance to Structure 1 (Illus 2 & 3). Feature 122 (Illus 4L) was a large irregular oval pit with a shallow U-shaped profile, and small circular pits 130 and 132 lay to the north. All were shallow pits with charcoal-rich fills, and a stone weight was recovered from Pit 122. The profiles and fills of 652, 654, 656, 658 and 660 suggest that these features were post-holes. Features 662 and 664 were larger shallow pits. This suite of features may represent the remains of rubbish pits or activities associated with the occupation of Structure 1, lying as they do close to the entrance. Alternatively, based on the shape and profile of 122, some or all of the features could relate to an earlier, heavily truncated, ring-ditch structure. Two barley grains from Pits 654 and 662 were radiocarbon dated to 1610–1430 BC and 1508–1318 BC respectively (Table 9: SUERC-11120, SUERC-11121).



Illus 5 Structure 1



Illus 7 Sections associated with Structure 2

of the area. Layer 189 was a compact stony deposit measuring 3m by 2.5m by 0.3m deep. It contained some large stones and may have been a laid surface. Beneath this was 188, a charcoal-rich fill deposited against the inner edge where the scoop was deepest, measuring 2m by 1m by 0.4m thick; two barley grains from this context were radiocarbon dated to 1508–1264 BC; Table 9). The lowest deposit was 187, a thin layer of re-deposited natural covering the base of scoop 186. Beneath this last deposit, a number of pits were found cut into scoop 186.

While the majority of pits and post-holes in the western half of Structure 2 appeared to cut the base of scoop 186 (or were perhaps cut by it in some cases), at least five cut the fill. These were 334 and

336 in the south-west corner (Illus 7F), 357 at the inner edge of the west side (Illus 7B) and 184 in the same area, and 239 (Illus 7C). There is no clear pattern to the features that underlay the fill, but based on their sections it is possible to identify several deeper examples with steep sides and flat bases which seem more likely to have functioned as post-holes (eg 038, 127, 193, 197, 234, 236, 269, 286, 288, 357, 359; Illus 7A–C, G–J, L). Shallower examples, although of similar dimensions in plan, may simply be pits. Running clockwise from the entrance, these were 079, 050, 377, 369, 179, 177, 220, 195, 324, 281, 355, 290, 294, 296, 376, 338 and 100. Those which appear more likely to be post-holes are highlighted in red on the plan (Illus



Illus 8 Structure 2



Illus 9 Structure 2 entrance

ring-groove, slots forming an entrance, shallow scoops and post-holes (Illus 10 & 12).

A ring-groove (396) ran around the outside on the north and west sides, and measured between 0.3m and 0.6m wide by 0.2m deep (Illus 11E, G). Extrapolation of the curve to the east suggests that the ring-groove, if complete, would have enclosed an area approximately 13m in diameter.

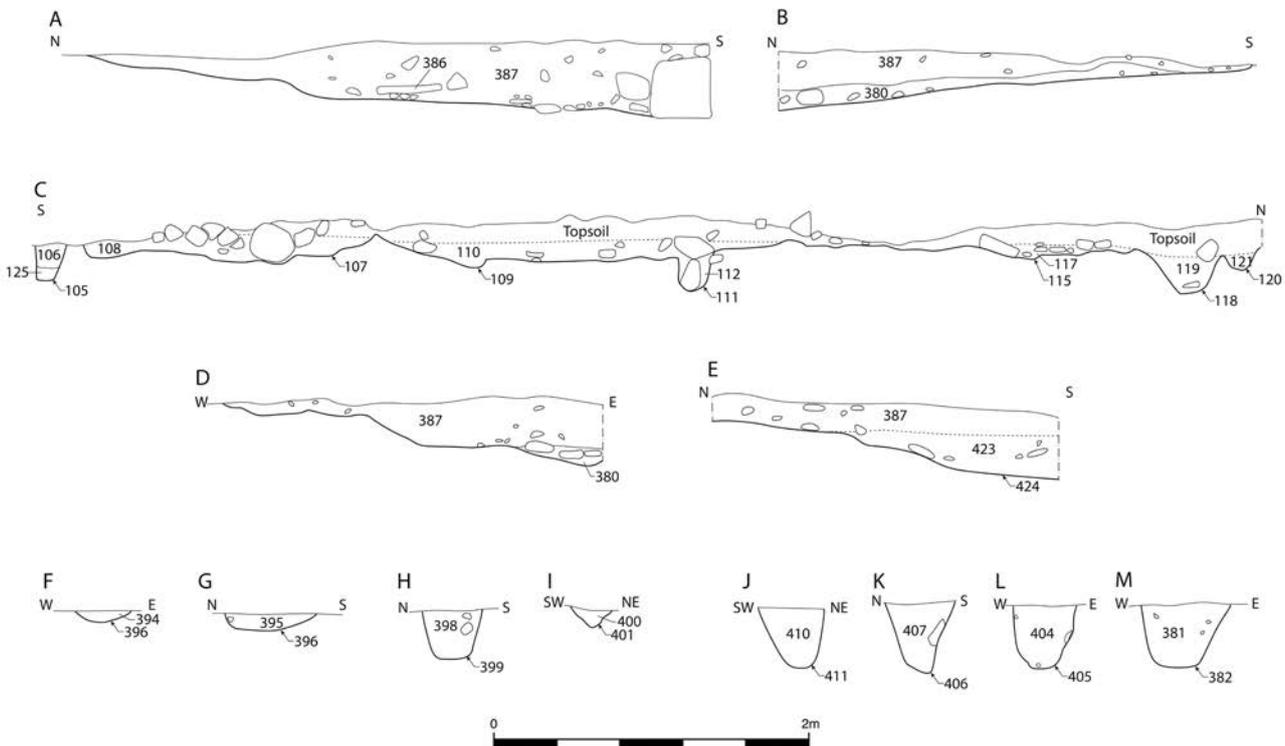
A deeper curving slot to the south-east (105/399; Illus 11C, H) turned at an angle to form a straight slot which defined the southern part of the entrance. A short linear slot (146) defined the opposite side, and seems to have been cut into the natural substrate on the north side, forming a sunken passage about 4m long by 1.6m wide. The remnants of a cobbled area were recorded outside the entrance passage. Two post-holes were present close to the inner entrance (148, 150).

A shallow scoop ran concentrically with the ring-groove to the west, where it was better defined and more steeply cut than elsewhere; here, the cut of the building was up to 0.4m deep (Illus 11A, B, D). Another large shallow scoop (115, 424), measuring *c* 5.5m by 3m, lay within the eastern side of the

structure (Illus 11C, E). Adjacent to it, to the south, a second scoop (107), measuring 1.8m by at least 1.2m, was found. Traces of these scoops were not identified in the central third of the house, but it is possible that they represent the vestigial remains of a ring-ditch with an external diameter of *c* 10m.

Features identified as post-holes, and which may have formed a post-ring, comprise 111, 324, 405(?), 382 or 390, 406, 417, 410, 118 (Illus 11C, J–M). These form a ring *c* 6m in diameter, with the post-holes to the north being the most evenly spaced of the group. Potentially there could have been another post-hole below the western baulk. To the south-west, 392 had a section which suggests that it also functioned as a post-hole. One of these features (410) contained a whole pot (P89) laid on its side at the base of the pit (Illus 18).

Several pits were found within the building. In the north-east quadrant, two elongated pits (415 and 419) with steep sides and flat bases, and *c* 0.3m deep, were found, along with two smaller pits (413, 422). Within the south-east side of the building was a shallow linear gully (401) which was 0.3m wide



Illus 11 Sections associated with Structure 3



Illus 12 Structure 3

by 0.1m deep and survived for a length of 2.7m, containing a stony fill (Illus 11I). A pit (409), 0.3m deep with a U-shaped profile, cut the northern end. Over this, a roughly circular group of stones lay at the centre of the house. Shallow hollows (402 and 414), one filled with stones, were present to the south of the gully. Another group of stones (387) was found lying in a roughly linear deposit aligned north-west to south-east across the north-west of the building.

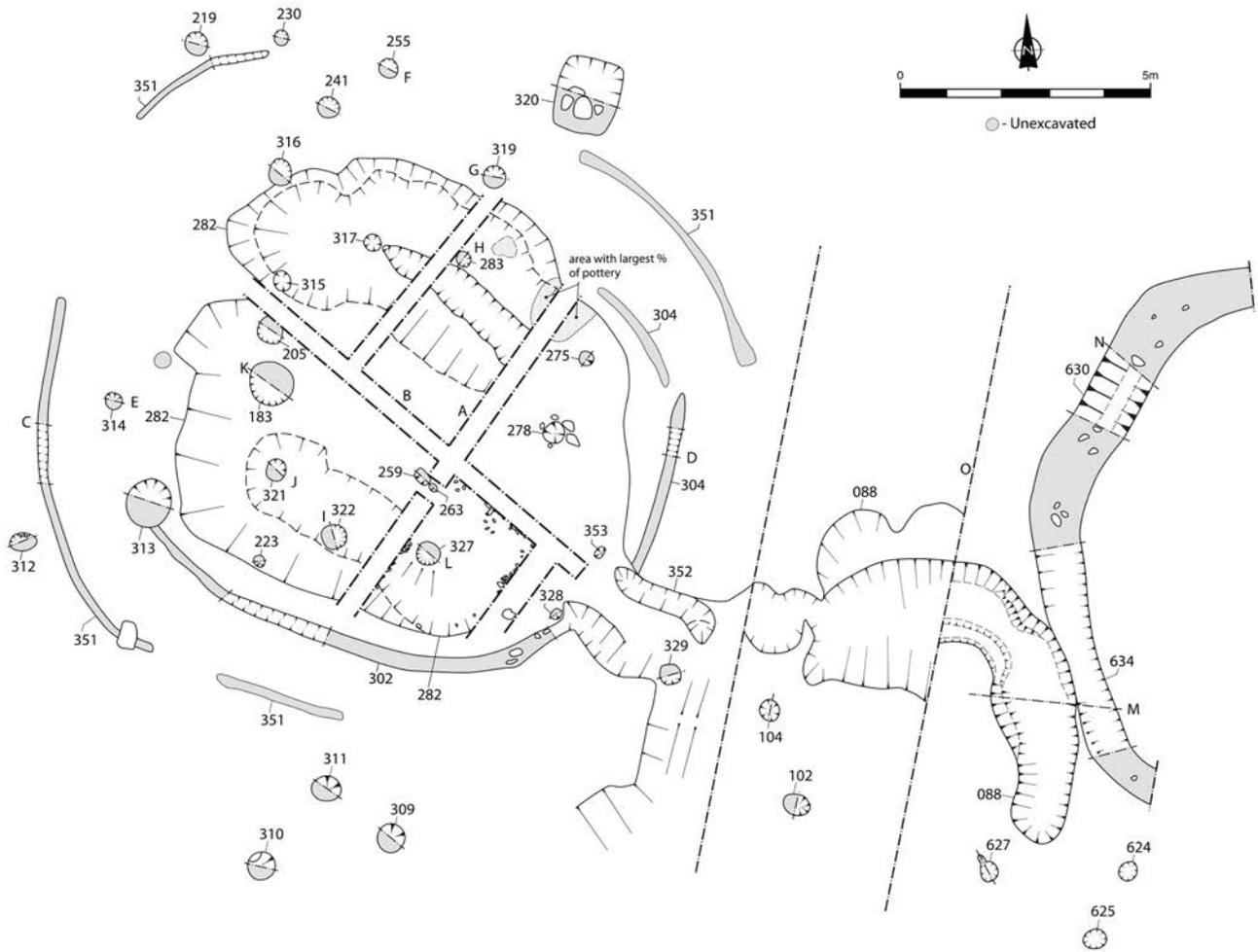
3.5 Structure 4

This building (Illus 13 & 15) was defined principally by two partial, approximately concentric, ring-grooves and a shallow oval scoop.

The shallow scoop (282) measured 6.5m by 7.5m and up to 0.4m deep. Within it were two deeper areas, irregular in plan, cut into the base of the scoop on each side of the structure (Illus 14A). On the southern side this formed an area measuring 4.2m by 1.1m, and on the northern side an area measuring 4.5m by 2m; on the northern side it was a deeper, more defined cut.

The upper fill of the structure was dark brown loose silt containing some stones, charcoal and lithic artefacts (167; Illus 14B). Beneath this was a layer of cobbles forming a laid surface in two irregular arcs over the interior of the building (Illus 16), roughly corresponding to the deeper ditched areas. This rough cobbling became more akin to flagstones on the west side.

Nine post-holes or pits (clockwise from south: 327, 322, 321, 183, 205, 315, 317, 283, 278; Illus 14H–L) formed a ring measuring approximately 6m in diameter. They were masked by the overlying fills. These pits measured between 0.3m and 0.55m across and 0.2–0.4m deep and some contained packing stones. Most were probably part of a post-ring, but potentially the large pit 183 and the possible post-hole 315 may not have been part of this or could be later additions. Based on the spacing, another post-hole may have been present below the baulk between 278 and 283. Three of the features (183, 205, 278) contained cereal grains which produced radiocarbon dates of 1608–1411 BC



Illus 13 Plan of Structure 4, Drummyocher

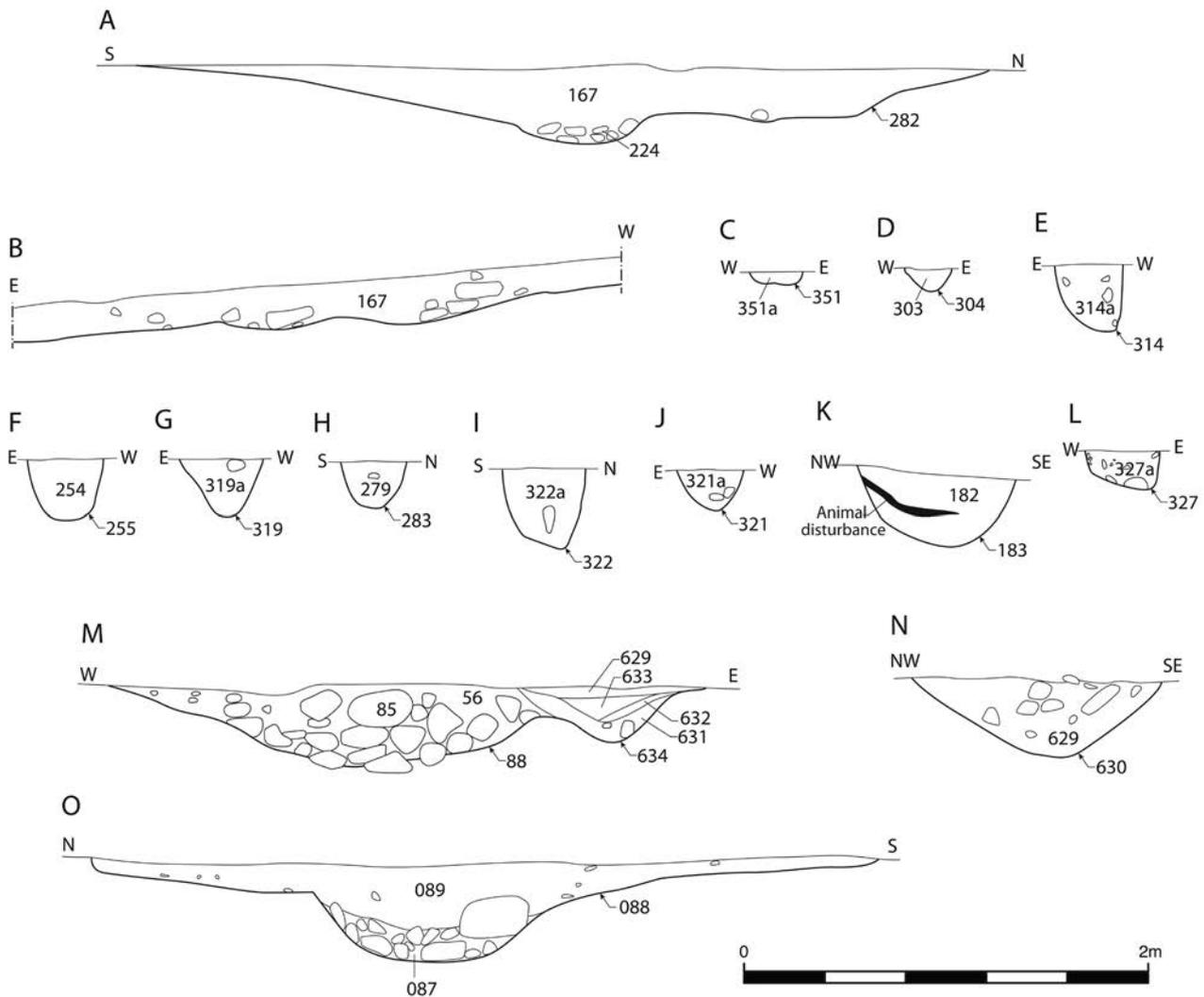
(Table 9; SUERC-11110, SUERC-11100, SUERC-11104).

There were two shallow ring-grooves running concentrically around the outside of the building (Illus 14C–D). The inner (302/304) lay to the south and east and was discontinuous, surviving as three main segments measuring up to 0.4m wide by 0.2m deep, with a diameter of *c* 10.5m. The outer ring-groove (351) was more vestigial and was also discontinuous, surviving as four segments measuring up to 0.2m wide by 0.15m deep, with a diameter of 13.5m. It is likely that the inner ring-groove related to the outer wall of the structure and the outer ring-groove formed a drip gully.

The entrance lay on the south-east and formed an elongated sunken passage. Four pits were recorded (328, 329, 352, 353) forming a square setting within the entrance passage measuring 2m by 1.1m, suggesting a covered porch. Between these pits was an area of stone slabbing.

A number of pits (223, 241, 255, 275, 314, 316, 319) were cut into the outer edge of the scoop (282) and between the scoop and the ring-grooves. Most had profiles which suggest they may have held posts (eg Illus 14E–G) and were 0.2–0.32m deep, and some contained packing stones. Some of these (314, 316, 319) appear to follow the line of the inner ring-groove and may have been deep post-holes in the base of this feature, which has otherwise been lost in this area. One large shallow pit (313) cut the inner ring-groove and presumably post-dated the use of the structure, and one post-hole (255) returned Iron Age radiocarbon dates from charred grain (Table 9; SUERC-11105, SUERC-11109).

Several pits were found to the outside of the outer ring-groove (351). Three pits on the south side (309, 310, 311) may form two sides of a rectangular four-post setting. A roughly square pit (320) was found to the north and three other isolated pits were



Illus 14 Sections associated with Structure 4

found on the north and west (230, 219, 312). All were shallow.

The entrance structure appeared to lead into a long curved ditch (086/088) which measured 8m from tip to tip by 2.5m across at its widest and 0.6m deep. It had two fills, the lower being a layer of stones 0.2m thick. This ditch may be the remains of a souterrain, an elaborate entrance passage, or may represent the remains of an earlier ring-ditch house. Ditch 088 was cut by a semi-circular ditch (630/634) which continued out of the excavated area (Illus 14M). This feature had a projected diameter of 11–12m and the ditch measured up to 1.2m wide by 0.4m deep, shallower where it abutted 088. A sequence of fills (629, 631, 632, 633) was recorded in the section excavated through its northern end (630; Illus 14N).

Five pits were found to the south of the entrance passage (102, 104, 624, 625, 627). These ranged in size from 0.3–0.4m across, and 0.1–0.2m deep with U-shaped profiles. One of them (102) contained a cereal grain which returned a radiocarbon date of 1405–1132 BC (Table 9; SUERC-11094), later than the dates from material retrieved from Post-holes 183, 205 and 278.

The majority of the pottery finds were recovered from a small area on the north side of the building, within scoop 282 (Illus 13). Four of the post-ring post-holes each contained a single sherd: 183, 278, 322, 327. Eight lithics were recovered from this house, all but one of which were from the overlying layer 167, with the additional lithic from the fill of 243.



Illus 15 Structure 4

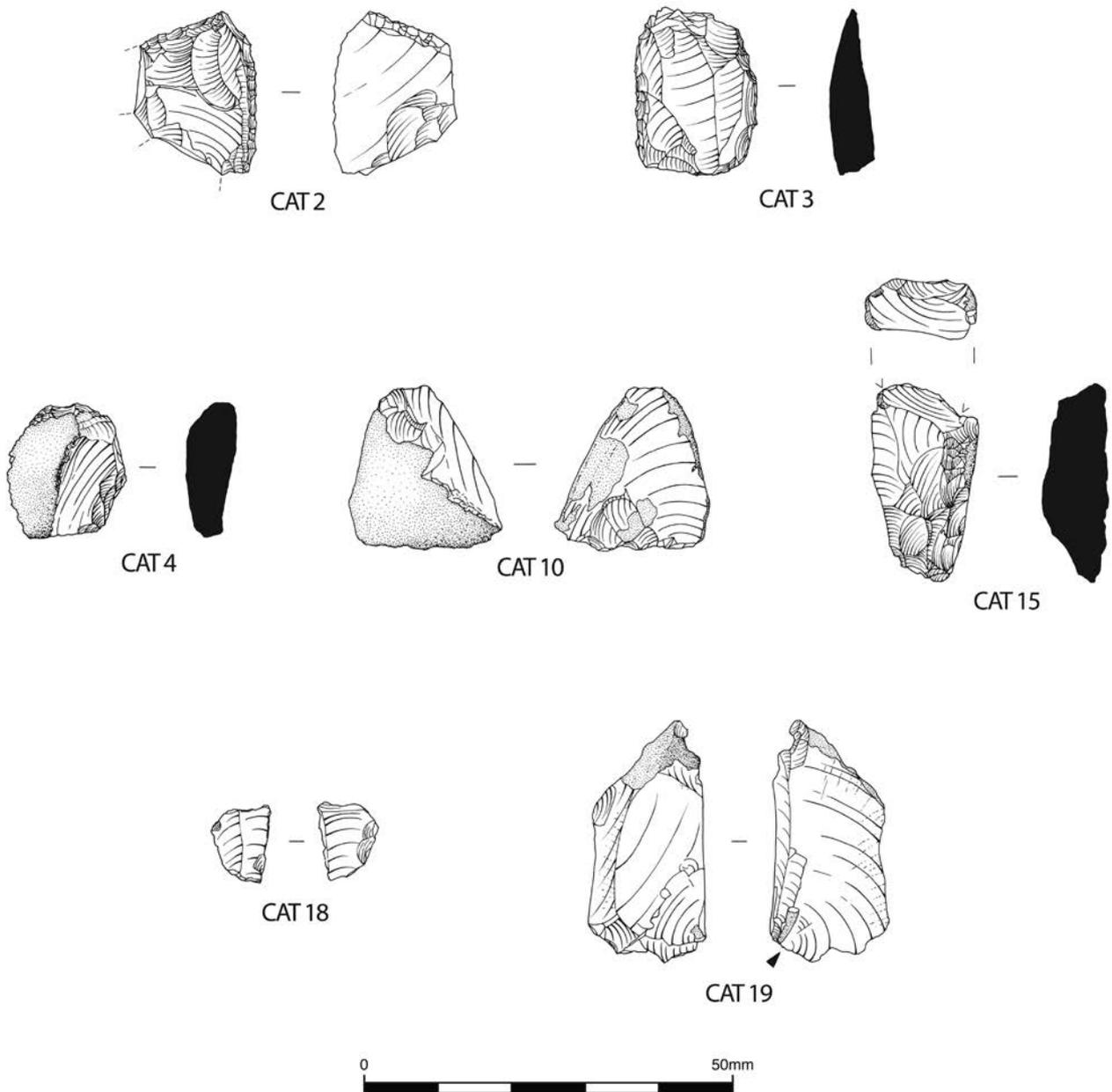


Illus 16 Structure 4 cobbles

3.6 Other features

Between Structures 1 and 2 seven pits were found (Illus 2). Two were large shallow features. Feature 037 was an oval stone-filled cut, measuring 1.31m in length and filled with brown/black silt (022), beneath which was found a small pit (031) measuring 0.46m across and 0.11m deep. It contained one sherd of pottery. Feature 047 was a shallow egg-shaped pit measuring 2.9m by 2.2m by

0.05–0.13m deep (Illus 4K), and contained a loose fill of dark brown/black silt with charcoal. Smaller pits associated with these were 023, 032, 046 and 049. Based on the plan, and sections of 037 and 047, there is potential for this group of features to be the heavily truncated remains of a ring-ditch house. An outlier to this group was a small sub-rectangular pit (217) measuring 0.7m by 0.4m by 0.1m deep, and containing a light brown silt fill.



Illus 17 Lithics, Drumyocher

To the north-west of Structure 3 were two small pits (208 and 215) (Illus 2). Pit 215 was a small sub-rectangular pit measuring 0.6m by 0.5m by 0.1m deep and contained a brown silt fill with pebbles present. Pit 208 was a small circular pit measuring 0.5m across by 0.1m deep and contained a light brown sandy fill with packing stones and charcoal evident.

3.7 Finds

3.7.1 Lithics

Torben Bjarke Ballin

Twenty-two lithic artefacts were retrieved: 12 pieces of débitage, three cores, and seven tools. Some were surface finds, and some appeared to be residual. A detailed catalogue of the lithic finds is contained within the site archive.

All artefacts are in flint, with most flints being medium-grained (15 pieces) or fine-grained (six pieces) and one piece coarse-grained. Several of the flints are characterised by fossils and impurities, and the flaking properties of the raw material are generally poor. Thirteen artefacts are cortical, and the cortex is generally smooth and abraded. This suggests procurement from a pebble source, most likely the nearby shores of the North Sea.

The assemblage includes 12 pieces of débitage, most of which are flakes. The only blade is a small, regular piece (25 × 9 × 3mm) which was detached by the application of soft percussion. The definable flakes are either hard-hammer flakes (two) or bipolar specimens (six; eg Illus 17, CAT 10 and 19), but in two cases it was not possible to determine the applied percussion technique. The flakes are generally short and squat (average dimensions: 23 × 21 × 5mm). Several of the unmodified flakes have used edges. One small (18 × 17 × 4mm) platform rejuvenation flake was also retrieved.

The three cores were classified as two bipolar cores and one single-platform core (Illus 17, CAT 15). They are all quite irregular and characterised by unsystematic reduction. The two bipolar cores are of roughly equal size (average dimensions: 31 × 19 × 12mm), with one being unifacial and the other bifacial. The remaining core is a small (27 × 15 × 10mm) single-platform core on an abandoned bipolar core.

There are two scrapers: one short end-scrapers (Illus 17, CAT 4) and one side-scrapers (Illus 17,

CAT 3). The end-scrapers is small (19 × 16 × 7mm), with a regular distal scraper-edge and additional lateral blunting. Its proximal end has broken off. Due to its small size, it falls into the subjective category of thumbnail-scrapers. The side-scrapers is based on the distal fragment of a bipolar flake (22 × 16 × 7mm), and it has two opposed lateral working-edges. The proximal break has been blunted.

The distal fragment (22 × 16 × 4mm) of a flake, with one end and one lateral side missing, is technologically the most sophisticated piece of the assemblage (Illus 17, CAT 2). Due to the fragmentation, it has not been possible to classify the piece more precisely. At the distal end, the implement is characterised by a slightly concave invasive retouch of the dorsal face and edge-retouch of the ventral face, whereas the right lateral side, dorsal face, has slightly convex edge-retouch. The piece may be either the fragment of a scale-flaked knife or an arrowhead (oblique or barbed-and-tanged), or possibly a fragment of an arrowhead rough-out.

Four edge-retouched pieces (eg Illus 17, CAT 18) are simple, expedient specimens. One is based on a bipolar microblade, whereas the other retouched pieces are based on indeterminate or bipolar flakes. The category probably covers implements with a variety of functions.

The technology is a mixture of basic and sophisticated approaches, with the plainer, mainly bipolar, approaches dominating. Though some simpler pieces may be of an Early Iron Age date, it is thought that the assemblage is a palimpsest, including Neolithic and Early Bronze Age elements. It is uncertain whether the solitary soft-hammer blade and the core tablet are Mesolithic or Early Neolithic.

3.7.2 Pottery

Melanie Johnson

A large assemblage of handmade prehistoric pottery (833 sherds, 15.439kg) was recovered. The sherds were sorted into sherd families and catalogued, according to dimensions, fabric, surface finish, decoration and morphology. A minimum (MNV) of 163 individual vessels are represented, some by only one sherd.

The average sherd weight is high, at 18.5g, which indicates that the assemblage is in fairly good

Table 1 Quantification of pottery assemblage from Drumyochoer

Context group	No. of sherds	Weight (g)	MNV
Structure 1	66	2040	11
Structure 1 external features	40	830	6
Structure 2	15	156	10
Structure 3	481	6676	64
Structure 4	182	4973	55
Structure 4 external features	6	111	2
Other features	1	40	1
Unstratified	42	613	16
<i>Totals</i>	833	15439	163

condition, and this is borne out by the presence of some large sherds. However, few of the pots have substantial portions of their profiles surviving and the average sherd weight is probably increased by a small number of very thick and heavy vessels. A full catalogue has been prepared for the site archive.

Pottery was recovered from Structures 1–4 from a range of different contexts and the assemblage is summarised in Table 1. The assemblage also includes a quantity of unstratified pottery recovered during surface cleaning of features.

Structure 1 and associated features

Sixty-six sherds of pottery were recovered from eight features within this structure. The majority of the pottery by weight came from the northern ditch terminal 060 (49 sherds, 1,824g) due to a substantial portion of a vessel (P90) being recovered from here. The southern ditch terminal (074) in contrast contained only two plain body sherds (P46), and a few further sherds came from other locations in the ring-ditch (231, 249).

The vessel from 060 (P90; Illus 18) was a substantial portion of a barrel-shaped vessel. A very thick base sherd, five non-joining rim sherds and 41 body sherds weighed 1,700g. The rim was inturning with an angled top.

An internally bevelled inturning rim sherd (P140) and an upright internally bevelled rim (P141) were recovered from within the ring-ditch (231 and 249 respectively). Also within 249 was a body sherd (P142) decorated with roughly incised parallel lines. A post-hole within the ring-ditch (306) contained a

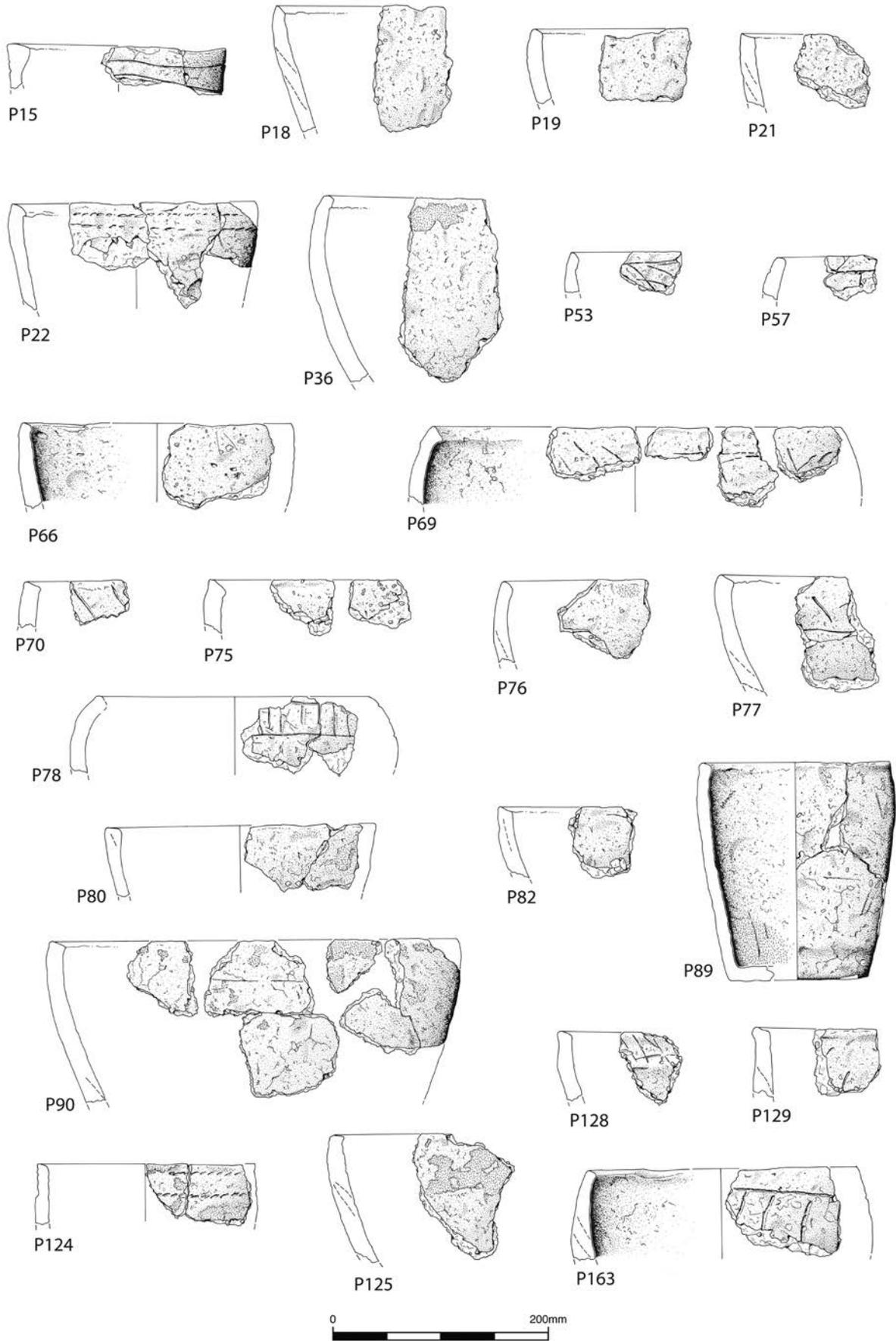
rim sherd from a slightly barrel-shaped vessel with an upright rim and an internal bevel (P31).

Further plain body sherds (P150, P58) and a rim sherd (P31) were found in post-holes cut into the base of the ring-ditch (152, 227, 306). This latter vessel (P31) was a single upright rim sherd with an internal bevel from a barrel-shaped vessel.

A pit feature, possibly a hearth, within the structure (268) contained a rounded, slightly inturning rim sherd which is decorated with a deeply incised, horizontal line below the rim (P57; Illus 18).

Pits outside the entrance of the building (656, 662, 664) contained 40 sherds, with 664 containing the second largest group of pottery associated with this structure (30 sherds weighing 434g, P121–124), including a base sherd (P121) and decorated rim sherds (P124; Illus 18). Pit 656 contained only plain body sherds (P144). P106 from 662 was a flat base sherd with very little wall surviving and a diameter of 11mm. Pit 664 contained sherds from four different vessels, two of which (P122, P123) were plain body sherds. P121 was a flat base sherd with no wall present. P124 comprised three rim sherds and five body sherds weighing 90g; the vessel had upright walls and a rim with an internal bevel and was decorated with impressed cord. The cord was wide and in two horizontal parallel lines 14mm apart, one of which was immediately below the rim.

Overall, the assemblage is in fairly good condition, although a number of the vessels have suffered some abrasion. Many of the vessels displayed sooting on the surfaces. Wall thickness ranged between 6 and



Illus 18 Pottery, Drummyoher

15mm. A variety of firing conditions are indicated by the range of colours (orange, brown, grey) of both the surfaces and cores, most likely from an open fire or simple clamp kiln. Surfaces were generally smoothed, though some evidence of wiping and finger marking was recorded, and P57 was very roughly finished.

The fabrics are generally coarse with hackly fractures and rock and sand inclusions; these were identified as primarily quartz (white grains), mica (both as plates or as very fine fragments), and various types of rock with stones measuring up to 8mm in size in some instances. The vessels were in general very heavily gritted, with up to 30% inclusions.

Structure 2

This assemblage was small, comprising only 15 sherds weighing 156g. It was recovered from six different contexts, with no context containing more than five sherds of pottery. None of the pottery was decorated and much of it was abraded.

The ring-ditch, Context 186, contained three plain body sherds (P47). Pottery was recovered from three post-holes within the ring-ditch. Post-hole 234 contained a rim sherd; this was an inturning rim with an internal bevel (P45). Post-hole 236 contained two plain body sherds (P152). Post-hole 286 contained parts of two vessels, P5 and P6, the former being a rim sherd with a short internal bevel, the latter being a plain body sherd. Context 141, the ring-groove near the entrance, contained two possible shoulder sherds from the same vessel (P3). Part of the entrance structure, Context 637, contained parts of three vessels, P84, P85 and P151. A very abraded footed base sherd was recovered during cleaning (P32).

Many of the vessels displayed sooting on the surfaces. Wall thickness ranged between 7 and 14mm. Most of the vessels were brown in colour with grey cores. Surfaces were generally smoothed, though some evidence of wiping and finger marking was recorded. An example of laminar fracture was recorded (P6).

The fabrics are generally coarse with hackly fractures and rock and sand inclusions; these were identified as primarily quartz (white grains), mica (both as plates and as very fine fragments), and various types of rock with stones measuring up to 12mm in size in some instances. The vessels

were in general quite sandy, with up to 7% stone inclusions.

Structure 3

A large assemblage was recovered from this structure, comprising 481 sherds of pottery weighing 6,676g, recovered from just nine different contexts. A number of sherds were recovered during site cleaning from the upper fill.

Almost half of the pottery was recovered from Context 109, with 321 sherds weighing 2,986g from 23 different vessels. This context formed a long entrance passage into the structure. A range of vessels was found, including a group of 283 plain body sherds (P71–3, P132, P133). A high percentage of rim sherds was found, mostly from barrel-shaped vessels and with upright or slightly inturning rims with an internal bevel (P69, P70, P74, P75, P76, P77, P82, P130, P131, P135; Illus 18), or flat-topped rims (P80, P81; Illus 18). Vessels with slight necks or shoulders were also identified, and these all had rims with internal bevels (P79, P128, P129; Illus 18). Rim diameters of 30cm (P69) and 20cm (P80) were recorded. A base with very little wall present was also recorded (P134); this vessel was grass marked on the underside of the base.

Several of the vessels were decorated with incised motifs on their exteriors and these were often crudely drawn (Illus 18). P69 has incised lines below the rim, uneven and irregular in form but including diagonal and horizontal lines. P70 has two diagonal lines immediately below the rim. P77 has a diagonal incised line below the rim with a further horizontal line below that. P78 has a crude horizontal ladder pattern. P128 has a possible lattice motif on the neck. P75, P129 and P130 have possible incised lines but these are unclear.

A large shallow scoop (115/424) near the entrance to the structure contained Pit 113. Six sherds from two vessels (P87, P88) were found in Context 113 and 11 sherds from two vessels (P59, P60) from Context 115. One of these was a fragment of a base (P87), while another vessel was represented by rim sherds with a rounded upright rim (P59).

Contexts 380 and 387 were the fills of the structure. A flat base with a diameter of 13cm (P145), an internally bevelled rim (P126) and the remains of a vessel with a slight shoulder and a slightly inturning flat-topped rim (P125; Illus 18)

were recovered from the former, while from the latter a sherd was recovered from a barrel-shaped vessel with an unevenly made internally bevelled rim (P163; Illus 18) decorated with a single horizontal line below the rim and three slightly diagonal lines extending below that. The remaining 48 sherds were plain body sherds.

Post-holes 382 and 422 within the building each contained a single plain body sherd (P86, P149). An area of flat slabs within the building (402) contained a large flat base sherd with a convex interior (P16). It was 25mm thick.

Pit or Post-hole 410 was found towards the centre of the structure and contained an almost complete vessel (P89; Illus 18), laid on its side. It comprised 22 sherds weighing 889g, and was a small bucket-shaped vessel with a flat-topped rim. It stands 16cm high, with half of the rim circumference present, and the entire base. The rim diameter is 14cm and base diameter is 11cm. It is in good condition with some surface cracking, with sooting on the upper body exterior and the whole of the interior.

Sixty-five sherds weighing 1,568g were unstratified within the structure. They include plain body sherds and rim sherds. The rims include internally bevelled forms (P29, P115), simple rounded rims (P97, P114), and flat-topped rims (P35, P117, P154), with barrel- and bucket-shaped vessels. One vessel had a slight ridge on the exterior below the rim (P96).

Many of the vessels displayed sooting on the surfaces. Wall thickness ranged between 5 and 13mm with bases up to 25mm thick. A variety of firing conditions are indicated by the range of colours (orange, brown, grey) of both the surfaces and cores. Surfaces were generally smoothed, though some evidence of wiping and finger marking was recorded. Examples of laminar fracture and a false rim were recorded.

The fabrics are generally coarse with hackly fractures and rock and sand inclusions; these were identified as primarily quartz (white grains), mica (both as plates and as very fine fragments) and various types of rock. The vessels were in general quite sandy, some with up to 30% sand, and with up to 10% stone inclusions. One of the body sherds was overfired.

Structure 4 and associated features

The assemblage recovered from this structure comprised 182 sherds of pottery weighing 4,973g, recovered from just five different contexts and from cleaning surfaces (61 of the sherds).

The majority of the pottery recovered from this structure came from context 167, the upper fill of the ring-ditch, with a concentration on the north-east side of the structure. The assemblage comprises 117 sherds weighing 3,082g and includes a number of plain body sherds, four base sherds (P11, P20, P27, P61), and a number of rim sherds. The pots are barrel-shaped vessels with upright or slightly inturning rims with an internal bevel (P12, P13, P14, P18, P19, P21, P22, P63, P67, P68; Illus 18), or flat-topped rims (P66; Illus 18). One of these (P22) was decorated with two lines of thick twisted cord. One rim was slightly everted (P15; Illus 18), decorated with an uneven incised line below the rim. Rim diameters of 16cm (P15, P67), 18cm (P22) and 20cm (P66) were recorded.

Post-holes/pits within the structure contained parts of four different vessels. An upright flat-topped rim sherd (P55) came from 183, a large plain body sherd came from 278, a plain body sherd came from 322, and a slightly footed base sherd (P2) came from 327.

Pottery recovered during cleaning included plain body sherds, a body sherd decorated with a single wide incised line (P51), a base sherd (P49), and eight rim sherds. The rims included flat-topped (P93), rounded (P36, P52; Illus 18), internal bevels (P37, P53; Illus 18), and slightly everted (P38, P50). P53 is decorated with incised lines on the exterior; the overall pattern is unclear but includes one horizontal line below the rim and three diagonal lines. P38 is decorated with incised crossed lines.

Six sherds (111g) were recovered from external features. The ditched entrance structure (086/088) produced four plain body sherds. A post-hole (627) to the exterior of the entrance produced two rounded rim sherds.

Many of the vessels displayed sooting on the surfaces, and there was some sooting on coil breaks, indicating that they were burnt after they were broken. Wall thickness ranged between 6 and 15mm with bases up to 20mm thick. A variety of firing conditions are indicated by the range of colours (orange, brown, grey) of both the surfaces and cores.

Table 2 Quantities of pottery decoration, rim types and other features (MNV)

Trait	Structure 1	Structure 2	Structure 3	Structure 4	Unstratified
Decorated (cord)	1	–	–	1	–
Decorated (incised)	2	–	9	1	3
Flat rim	–	–	2	2	5
Internal bevel	1	2	14	10	5
Angled top	1	–	–	–	–
Rounded rim	1	–	1	2	4
Everted	–	–	–	1	2
External ridge	–	–	–	–	1
Shoulder	–	1	–	–	1

Surfaces were generally smoothed, though some evidence of wiping and finger marking was recorded, as well as examples of very roughly finished surfaces. Examples of laminar fracture were recorded.

The fabrics are generally coarse with hackly fractures and rock and sand inclusions; these were identified as primarily quartz (white grains), mica (both as plates and as very fine fragments), and various types of rock. The vessels were in general quite sandy, and with up to 20% stone inclusions.

Other features

Pit 037, lying between Structures 1 and 2, contained a single plain body sherd (P139).

Discussion

The assemblage is made up of heavily gritted coarse pottery, quite thick-walled, and the vessels are generally either barrel- or bucket-shaped, with upright or inturning rims, often with an internal bevel or otherwise with a flat or round top. This type of pottery is usually referred to as Flat-rimmed Ware (Coles & Taylor 1970) and, typologically, geographically and chronologically, is a rather ill-defined ware present throughout Scotland during the second and first millennia BC.

The majority of the pottery was recovered from Structures 3 and 4, with those buildings containing 43% and 33% respectively of the entire assemblage by weight. In comparison with the other roundhouses, Structure 2 contained hardly any pottery, only 1% of the total by weight, and more pottery was recovered from unstratified contexts

during cleaning of Structures 3 and 4 than from Structure 2 in its entirety.

The quantity and range of decoration is unusual on a site of this period, with 18 decorated vessels out of 163 recorded (11%). There are two principal methods, incised lines and impressed cord. The impressed cord is on the rim exterior in paired parallel horizontal lines. The cord is thick and crude, leaving wide impressions. There are only two cord-impressed vessels, one from a feature outside Structure 1 and one from the main cut of Structure 4. The incised decoration includes ladder motifs, horizontal and diagonal lines, and possible lattice or cross motifs. The incision tends to be executed fairly crudely, with uneven lines, and again tends to be on the upper part of the body on the exterior. Structure 3 has the largest quantity of incised vessels but no cord-impressed vessels. Table 2 summarises the distribution of rim and decorative types between the structures.

There are no distinct differences in fabric between the structures, suggesting that clays were procured locally and that vessels were made within the settlement or traded locally, as would be expected for domestic later prehistoric pottery.

Distribution

Within the buildings there are some quite distinct patterns of deposition, excluding Structure 2 whose assemblage is too small and dispersed for any meaningful comments to be made about patterns of deposition. Within Structure 1, a large deposit of pottery was found in the northern ditch terminal

(060); this comprises 1,824g or 64% of the whole of Structure 1's assemblage by weight, although it accounts for only two vessels, one of them being P90 (Illus 18). It is possible that this substantial portion of vessel is a similar deposit to that in Post-hole 410 in Structure 3 and was perhaps a whole vessel at the time of its deposition. The second largest deposit was in Pit 664 to the north-east of the building's entrance and thus outside.

Within Structure 3, there was a large amount of pottery in Context 109: 2,986g (45% by weight of the building's total) and 23 different vessels. Context 109 forms part of the entrance passage and so this is an unusual place to find such a large quantity and variety of pottery. A further ten vessels were found in Context 387, the upper fill of the building, which may relate to abandonment and infilling of the structure. A whole pot was deposited at the base of a post-hole (410) which appeared to form part of the post-ring for this structure. There is no evidence that the pot was smashed by the weight of an inserted post, nor did it contain any artefacts. It may be seen as some sort of ritual foundation or closing deposit.

Within Structure 4, large amounts of pottery (3,082g, 61% of the total) were recovered from Context 167, again the upper fill of the structure and, like Structure 3, its presence here may relate to abandonment and infilling of the structure. Hardly any pottery was found from elsewhere within the building, as most of the rest of this building's assemblage was unstratified.

The paucity of pottery from Structure 2 is interesting. The reason for this skewed distribution is uncertain, but may lie in the functions of the different buildings – perhaps Structure 2 did not have a domestic function but could instead have been a workshop; however, the architecture is the same. Alternatively it may be due to the manner in which buildings were abandoned and infilled, or the way in which domestic debris was dealt with and accumulated.

Parallels

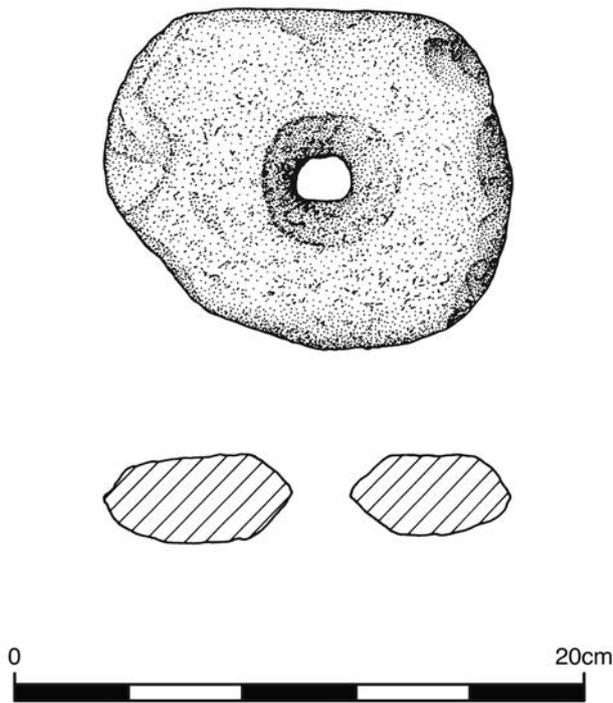
The site has been radiocarbon dated to the Middle Bronze Age (the range is 1610–1132 BC, with two outlying dates of 353–43 BC and two intrusive dates of AD 1295–1635), and there are a number of good parallels for this type of settlement site in Scotland,

both for the range of vessel types present and for the range of depositional practices seen.

Excavations at Kintore revealed two Middle Bronze Age roundhouses (RH25, RH26) which had pottery associated with them (MacSween 2008). Unfortunately none of the vessels are illustrated but the descriptions indicate that the majority of the pottery found from this period consisted of bucket- and barrel-shaped plain pots, with internally bevelled rims dominant. Decoration is scarce, with only two examples of possible decoration. The Kintore assemblage has examples of ridges, grooves or cordons below the rim on the exterior, a trait which is absent from Drumyoche except in one possible instance (P96, Structure 3). RH26 contained three vessels which were considered to have been near-complete in situ vessels, providing an interesting parallel for the complete and almost complete vessels from Structures 1 and 3.

Ring-ditch houses at Deer's Den, Kintore, Aberdeenshire (Alexander 2000) have been dated to the Middle and Late Bronze Age (spanning 1600–700 BC). Pottery found associated with two of the ring-ditch houses comprised bucket- and barrel-shaped vessels with flat bases and closed mouths, the rims including plain flat rims and short everted rims with internal bevels. One of the vessels was substantially complete and had a ridge/pronounced shoulder; it was recovered from a pit within the ring-ditch of Structure 3, again providing parallels with deposition at Drumyoche. This structure has a spread of radiocarbon dates, ranging between 1890 and 1030 BC; this bears good comparison with Drumyoche.

At Lairg, vessels had internally bevelled, flat, rounded and expanded rims (MacSween & Dixon 1998). External ridging was present on some vessels, with incision sometimes present between the ridges; another vessel had fingernail impressions between the ridges and another had impressed twisted cord. One vessel (V107) was decorated with two incised lines below the rim, while a further vessel (V154) was decorated with a band of impressed cord and incised lines below the rim. This assemblage is dated to 1800–1200 BC and is differentiated from the earlier prehistoric material on the site by its talc temper. This is the same range of decorative techniques seen at Drumyoche and is again used



Illus 19 Stone weight SF13, Drummyocher

in limited quantities, although Drummyocher does not contain the ridged component.

At Blackford, Perth & Kinross (O'Connell & Anderson forthcoming), uneven distribution of pottery among groups of Bronze Age roundhouses was also noted (eg Areas B/C), along with concentrations of pottery within specific contexts within buildings (eg Structure 2B). In Area D at Blackford, the pottery from Structure 1D came primarily from the entrance area, where it was suggested that the sherds found their way into the fills of the entrance pits/post-holes during the sweeping out of the building through the door. This is comparable to the distribution of sherds in Structure 3 at Drummyocher. Structures 1G and 2G in Area G at Blackford both contained what could be considered 'special' deposits of pottery in post-holes forming part of the post-ring for each building. At Blackford, decoration comprises external ridges and there is no evidence for incised or impressed decoration.

Conclusion

Two main themes arise from the examination of the Drummyocher assemblage within its Middle Bronze Age context. The first is that the wares

of this period are not necessarily plain, but that a small quantity of incised and impressed decoration can be expected. The execution of this decoration is fairly crude and lies within a broader assemblage of plain pots, but nonetheless some significance must be attributed to this. Why was it considered appropriate to decorate a small number of vessels? Did they have a different function or meaning? Further analysis may demonstrate whether there are regional variations during this period: for example, on some sites (Kintore, Lairg, Blackford, Lintshie Gutter), external ridges are a more common form of decoration, and, with the exception of Lairg, it appears that these types could be mutually exclusive. Little synthetic and typological work has been undertaken on assemblages from this period across the country, so it is still unclear whether there are regional or chronological distinctions to be made.

The second theme is that of 'special' deposits of whole or almost whole pots. This may also be a common theme of the period, and has been noted at Drummyocher, Deer's Den, Kintore and Blackford. The purpose of these vessels is unclear but, especially where they had been placed at the bottom of a structural post-ring, the pot and its contents (if any) were certainly not intended to be retrieved.

3.7.3 Coarse stone

Adam Jackson

Two food-processing tools (querns) were recovered from the excavations, both saddle querns from Structure 1. Saddle querns and rubbers (or grinding stones) are commonplace on prehistoric sites from the Neolithic onwards.

Two other curated artefacts were identified, namely a weight (SF13) from Structure 1 and a cobble hammerstone from surface cleaning. Cobble hammerstones are also common finds on Scottish sites of all periods. The weight, SF13 (Illus 19), is similarly of common form, but is of interest because it was recovered from Structure 1. Although the exact function of this weight is unclear, there is evidence of wear caused by its having been tied to, and suspended by, rope or twine. It is possible that this artefact functioned as a loomweight.

3.8 Environmental evidence

3.8.1 Palaeoenvironmental remains

Mhairi Hastie and Mike Cressey

A system of flotation and wet sieving was used to separate the archaeological material from the soil samples. Any carbonised plant remains present, including cereal grain and seeds of wild taxa, were extracted and identified with reference to in-house modern comparative reference collection and seed atlases. Botanical nomenclature follows that of the *Flora Europaea* (Tutin et al 1964–80). The wood charcoal from the 4–6mm fraction of the floating debris was examined to determine the relative frequency of individual species. Anatomic keys listed in Schweingruber (1992) and in-house reference charcoal was used to aid identification. In this report, roundwood is used as a term for wood that has not been modified. Full details of the results are provided in the site archive.

Results

One hundred samples contained small amounts of identifiable charred material, principally wood charcoal. In general, the cereal grains recovered were poorly preserved or abraded, and no more than 20 identifiable grains were recovered per sample. Tables 3, 4, 5 & 6 summarise the results for the four structures and Table 7 summarises the results for the features between Structures 1 and 2, and isolated pits 215 and 217. Charcoal quantifications are provided in Table 8.

Cereal remains

Preservation of cereal grains was particularly poor and in most cases the cereals could only be identified to the generic level.

The plant assemblages consisted principally of barley and oat grain. A small proportion of the barley grains still retained the faint traces of hulls and this suggests that the hulled variety (*Hordeum vulgare* var *vulgare*) was present. None of the oat grains were sufficiently preserved to distinguish between the cultivated and wild species. One potential (cf) barley rachis fragment was present in Post-hole 357 (fill 358) in Structure 2. One wheat grain was recovered from Post-hole 405 and another from spread 380 in Structure 3, and a poorly preserved possible (cf) wheat grain was recovered from Pit 037 (fill 022).

Wild taxa

The wild taxa, as represented by seeds (here used in the general sense to include items which are strictly fruits), were relatively sparse in the samples. The wild flora present are in keeping with northern British flora, including *Polygonum persicaria/lapathifolium* (persicaria/pale persicaria), *Spergula arvensis* (corn spurrey), *Plantago lanceolata* (ribwort), *Stellaria media* (chickweed), *Ranunculus* spp (buttercup), *Carex* spp (sedge) and Gramineae indet (grass family). Fragments of monocotyledon rhizomes, together with one rhizome identified as Cyperaceae (sedge family), were also recovered from a small proportion of the samples. The assemblage contains a mixture of remnants of crop cleaning and seeds from taxa that were probably growing on disturbed ground around the site. Occasional seeds of more damp/wet ground were also recovered, including *Ranunculus flammula* (lesser spearwort), *Ranunculus sceleratus* (celery-leaved buttercup), *Carex* spp (sedge) and *Eleocharis* sp (spike rush).

Small (<5mm in diameter) poorly preserved fragments of hazelnut shell were recovered from two deposits in Structure 2, Contexts 339 (pit fill) and 358 (post-hole fill), and one from a post-hole (664) outside Structure 1.

Flax

Two seeds of *Linum usitatissimum* (cultivated flax) were recovered from Ring-ditch 186 and Pit 177 in Structure 2. Previous macrofossil analysis (Dickson & Dickson 2000) suggests that flax was being cultivated in Scotland from the Neolithic onwards, either for the linseed oil or for fibres to produce linen. The presence of one flaxseed from the site may suggest that this crop was also being cultivated during the occupation of the site. The plant can sometimes persist for a year or two and may occur as a casual weed in corn crops cultivated on ground previously used for flax. The quantity of flax present, however, gives little scope for interpretation.

Wood charcoal

The charcoal was poorly preserved with the bulk of the material comprising small amorphous fragments with only occasional larger fragments of roundwood that can be attributed to branchwood. Much of the charcoal is amorphous in shape, probably due to fragmentation during post-deposition. Soil staining

Table 3 Summary of plant remains from Structure 1, Drumyochoer

Latin name	Plant part	Common name	Ring-ditch	Post-holes	Pit 122	No. of contexts		
						External post-holes		
			3	8	1			7
Wild taxa								
<i>Corylus avellana</i> L	nut shell	hazel	-	-	-			1
<i>Polygonum persicaria</i> <i>lapathifolium</i> L	nutlet	persicaria/pale persicaria	-	1	-			7
cf <i>Polygonum</i> sp	nutlet	knotgrass	-	-	-			1
Chenopodiaceae indet	achene	fat hen family	-	1	-			4
<i>Stellaria</i> spp	seed	chickweed	-	2	-			-
<i>Ranunculus flammula</i> L	achene	lesser spearwort	-	-	-			1
<i>Vicia</i> <i>Lathyrus</i> sp	seed	vetch/pea	-	-	-			1
cf <i>Plantago</i> sp	seed	plantain	-	-	1			-
Gramineae (large)	caryopsis	large-grained grass	-	1	-			-
<i>Carex</i> spp (bi)	nutlet	sedge	1	-	-			1
Monocotyledon rhizome	frag	rhizome	+++	2	1			3
Bud indet	buds	indeterminate	-	-	-			1
Seed indet	seed	indeterminate	-	2	-			2
Cereals								
<i>Hordeum</i> sp	caryopsis	barley	2	4	1			20
<i>Hordeum vulgare</i> var <i>vulgare</i> L	caryopsis	hulled barley	-	2	-			-
<i>Avena</i> sp	caryopsis	oat	2	1	-			2
Cereal indet	caryopsis	indeterminate	-	1	-			7
Other								
cf Animal dropping	frag	animal dropping	-	1	-			-

Table 4 Summary of plant remains from Structure 2, Drumyochoer

Latin name	Plant part	Common name	No. of contexts				Post-holes
			Ring-ditch	Entrance	Pits		
			1	3	14	19	
Wild taxa							
<i>Corylus avellana</i> L	nut shell	hazel	-	-	+	+	
<i>Polygonum persicaria/lapathifolium</i> L	nutlet	persicaria/pale persicaria	1	-	-	-	
cf <i>Rumex</i> spp	nutlet	rush	-	-	-	1	
Chenopodiaceae indet	achene	fat hen family	-	-	1	2	
<i>Stellaria media</i> (L) Vill	seed	chickweed	-	-	-	8	
<i>Spergula arvensis</i> L	seed	corn spurrey	-	-	1	-	
<i>Ranunculus</i> spp	achene	buttercup	-	-	1	6	
<i>Vicia Lathyrus</i> sp	seed	vetch/pea	-	-	-	1	
<i>Plantago lanceolata</i> L	seed	ribwort	-	-	-	1	
Gramineae (large)	caryopsis	large-grained grass	-	-	-	3	
<i>Carex</i> spp (bi)	nutlet	sedge	-	-	-	2	
<i>Carex</i> spp (tri)	nutlet	sedge	1	-	1	1	
cf <i>Carex</i> sp	nutlet	sedge	1	-	-	-	
Cyperaceae rhizome	frag	rhizome	-	-	1	-	
Monocotyledon rhizome	frag	rhizome	8	-	9	2	
Seed indet	seed	indeterminate	-	1	-	1	
Cereals							
<i>Hordeum</i> sp	caryopsis	barley	12	5	29	28	
<i>Hordeum vulgare</i> var <i>vulgare</i> L	caryopsis	hulled barley	-	-	2	-	
<i>Hordeum vulgare</i> cf var <i>nudum</i>	caryopsis	naked barley	-	-	1	1	
cf <i>Hordeum</i> sp	caryopsis	barley	-	1	1	1	
cf <i>Hordeum</i> sp	rachis	barley	-	-	-	1	
<i>Avena</i> sp	caryopsis	oat	5	4	8	21	
cf <i>Avena</i> sp	caryopsis	oat	-	2	-	4	
Cereal indet	caryopsis	indeterminate	9	1	7	4	
<i>Linum usitatissimum</i>	seed	cultivated flax	1	-	1	-	
Other							
cf Culm node	frag	straw	-	-	-	1	

Table 5 Summary of plant remains from Structure 3, Drumyocheer

Latin name	Plant part	Common name	No. of contexts				
			Ring-grooves	Pits	Post-holes	Spreads	
Wild taxa							
<i>Polygonum persicaria/lapathifolium</i> L	nutlet	persicaria/pale persicaria	1	-	2	-	
<i>Polygonum</i> spp	nutlet	knotgrass	5	-	-	-	
<i>Rumex</i> spp	nutlet	rush	-	-	1	-	
Chenopodiaceae indet	achene	fat hen family	2	-	-	-	
<i>Stellaria</i> spp	seed	chickweed	3	-	-	-	
<i>Vicia/Lathyrus</i> sp	seed	vetch/pea	-	-	1	-	
<i>Carex</i> spp (tri)	nutlet	sedge	-	-	1	-	
cf <i>Eleocharis</i> sp	nutlet	spike-rush	1	-	-	-	
Seed indet	seed	indeterminate	2	-	-	-	
Cereals							
<i>Triticum</i> sp	caryopsis	wheat	-	-	1	1	
<i>Hordeum</i> sp	caryopsis	barley	-	2	17	12	
<i>Hordeum vulgare</i> cf var <i>vulgare</i> L	caryopsis	hulled barley	-	-	1	-	
<i>Avena</i> sp	caryopsis	oat	-	-	2	-	
Cereal indet	caryopsis	indeterminate	-	-	4	4	

Table 6 Summary of plant remains from Structure 4, Drumyochoer

Latin name	Plant part	Common name	Ring-ditch	Post-holes	No. of contexts		
					External ditch	External post-holes	
Wild taxa			1	7	3	5	
<i>Polygonum</i> spp	nutlet	knotgrass	–	–	1	–	–
cf <i>Prunella</i> sp	nutlet	self-heal	–	–	–	–	1
Cyperaceae rhizome	frag	rhizome	–	–	–	–	1
Monocotyledon rhizome	frag	rhizome	1	–	1	–	–
Cereals							
<i>Hordeum</i> sp	caryopsis	barley	15	37	1	12	–
<i>Hordeum vulgare</i> var <i>vulgare</i> L	caryopsis	hulled barley	–	2	–	–	–
<i>Hordeum vulgare</i> cf var <i>nudum</i>	caryopsis	naked barley	–	2	–	–	–
<i>Avena</i> sp	caryopsis	oat	–	2	–	2	–
Cereal indet	caryopsis	indeterminate	4	12	–	2	–

Table 7 Summary of plant remains in features between Structures 1 and 2, and isolated pits 215 and 217, at Drumyochoer

Latin name	Plant part	Common name	Pits			Other isolated
			037	047	049	
Wild taxa			037	047	049	215
<i>Polygonum persicaria/lapatbifolium</i> L	nutlet	persicaria/pale persicaria	–	1	1	–
cf <i>Carex</i> sp	nutlet	sedge	1	–	–	–
cf Culm node	frag	straw	–	+	–	–
Cereals						
cf <i>Triticum</i> sp	caryopsis	wheat	1	–	–	–
<i>Hordeum</i> sp	caryopsis	barley	7	3	1	2
cf <i>Hordeum</i> sp	caryopsis	barley	–	–	–	1
<i>Avena</i> sp	caryopsis	oat	–	–	–	1
Cereal indet	caryopsis	indeterminate	1	1	–	–

is common throughout the assemblage, which possibly relates to the local heavy clay.

The bulk of the charcoal recovered from Structures 1–4 was *Corylus avellana* (hazel) with lesser quantities of *Alnus glutinosa* (alder), *Betula* sp (birch) and *Quercus* sp (oak). Occasional fragments of *Calluna vulgaris* (heather/ling) and *Pinus* sp (pine) were also present, although in extremely small quantities. Table 8 shows the distribution of species by structure.

A single piece of pine, probably Scots pine, was recovered from Structure 2. The pine fragment was vitrified and its presence is attributed to primary and secondary burning, where a high temperature was achieved sufficient to convert the charcoal to a glass-like consistency.

No fragments of charcoal contained evidence of trimming or other wood-working evidence.

The species present are all native and would have been exploited from the locality for domestic fuel and building materials. There is insufficient roundwood charcoal present to allow the reconstruction of the local woodland vegetation record. An appraisal of charcoal from different types of context has not been attempted due to the low sample weights.

Discussion

Apart from the wood charcoal, only low quantities of palaeoenvironmental remains including cereal grain and weed seeds were recovered from across the site. No large concentrations of grain were observed.

The plant assemblages recovered from the structures and associated features consisted principally of hulled barley and oat, and are consistent with the Bronze Age date.

Occasional grains of probable naked barley were recovered from two samples from Structure 2 and one in Structure 4. Naked barley was a principal crop of early prehistory from the Neolithic through to the Bronze Age and was generally replaced in the Iron Age by the hulled variety. It is a hardy species that is more tolerant of harsh growing conditions than the hulled variety and it has a low cold tolerance. It can be grown on marginal land and it has been suggested that cultivation of small amounts may have continued into the Iron Age simply to maximise cultivation on marginal ground not suitable for hulled barley (Holden et al 2003). In this case, however, the quantity of naked barley recovered suggests that it is more likely to be a remnant of past crops, growing as a weed of

Table 8 Summary of charcoal ID quantification by structure at Drumyoche

		<i>Alnus</i>	<i>Betula</i>	<i>Calluna</i>	<i>Corylus</i>	<i>Pinus</i>	<i>Quercus</i>
Structure 1	No.	2	4	4	50	–	17
	Wt (g)	0.02	1.2	0.45	4.87		2.35
Outside Structure 1	No.	–	–	–	8	–	–
	Wt (g)				0.9		
Structure 2	No.	18	71	11	227	1	31
	Wt (g)	16.0	22.7	0.6	26.3	0.2	21.22
Structure 3	No.	2	9	–	45	–	5
	Wt (g)	0.02	0.2		4.0		7.7
Structure 4	No.	–	1	–	12	–	–
	Wt (g)		0.4		1.5		
Outside Structure 4	No.	–	6	–	8	–	2
	Wt (g)		0.5		0.4		0.3
Between 1 and 2	No.	–	2	–	56	–	4
	Wt (g)		0.2		5.0		0.4
Total IDs	No.	22	93	15	406	1	59
	Wt (g)	16.04	25.2	1.05	42.97	0.2	31.97

the hulled barley rather than indicating specific cultivation.

As with many prehistoric sites, charred plant remains were present in small quantities throughout many different deposits and features. The plant assemblages recovered are extremely similar both in composition and abundance of plant remains to Birnie, Moray (Hastie 2005), with none of the large concentrations of charred cereal grains observed from other similar Scottish sites such as Kintore (Holden et al 2003), Tormore (Barber 1997) and Lairg (Holden 1998).

Much of the plant material would have found its way into features through natural infilling rather than being associated directly with their original function. Increasing evidence, from other Scottish prehistoric sites, suggests that cereal grains were probably stored in stacks and only processed when needed, probably in a piecemeal fashion.

The wild taxa recovered were extremely sparse. Much of the fragile weed seeds brought to the site either with harvested grain, fire wood, turf or specifically collected wild plants for culinary and medicinal purposes, would not become charred and thus not survive into the archaeological record. Nevertheless, a small number of seeds, principally species common to arable land and wetter heath

areas, were present. Heather, sedge and spike-rush were all probably brought to the site as part of turf collected principally as a source of fuel; fragments of monocotyledon rhizomes also recovered along with the other plant remains may also have originated from burnt turf. The presence of such material together with cereal grains and arable weeds has been suggested to indicate that turf was being used to damp down the hearth prior to cereal parching (Miller et al 2000).

3.9 Radiocarbon dating

Phil Richardson

Four pairs and six lone single-entity AMS dates were obtained from ten different contexts from Structures 2 and 4 and two features outside Structure 1. Insufficient material for dating was recovered from Structure 3. Radiocarbon assays were carried out at SUERC Radiocarbon Laboratory, East Kilbride, and dates were calibrated using OxCal software v4.2. The results are presented in Table 9.

The calibrated dates generally fall within the range 1610–1132 BC at 2-sigma, placing these structures in the Middle Bronze Age.

The sampling strategy aimed to retrieve dates that related to the use of the buildings. Unfortunately the

Table 9 Structures 1–4 (Drumyocher) radiocarbon dates (calibrated using OxCal v4.2)

Lab code	Structure	Context	Sample material	Age BP	Calibrated date (95.4% probability)	$\delta^{13}\text{C}$
SUERC-11120	Ext Str 1	653 (fill of 654)	Barley indet	3230±35	1610–1430 BC	-23.7
SUERC-11121	Ext Str 1	661 (fill of 662)	Barley indet	3165±35	1508–1318 BC	-23.4
SUERC-11095	Str 2	128 (fill of 129)	Oat	410±50	1420–1635 AD	-25.0
SUERC-11099	Str 2	128 (fill of 129)	Oat	605±35	1295–1408 AD	-24.6
SUERC-11103	Str 2	188 (fill of 186)	Barley indet	3165±35	1508–1318 BC	-24.0
SUERC-11102	Str 2	188 (fill of 186)	Barley indet	3090±35	1431–1264 BC	-23.3
SUERC-11112	Str 2	339 (fill of 338)	Hazelnut shell	3195±35	1595–1407 BC	-26.1
SUERC-11111	Str 2	339 (fill of 338)	Barley indet	3155±35	1503–1308 BC	-23.5
SUERC-11094	Str 4	101 (fill of 102)	Barley indet	3030±35	1405–1132 BC	-21.1
SUERC-11100	Str 4	182 (fill of 183)	Barley indet	3220±35	1608–1422 BC	-21.0
SUERC-11104	Str 4	204 (fill of 205)	Barley indet	3215±35	1607–1417 BC	-25.4
SUERC-11105	Str 4	254 (fill of 255)	Barley indet	2110±35	346–43 BC	-22.9
SUERC-11109	Str 4	254 (fill of 255)	Barley indet	2135±35	353–52 BC	-22.9
SUERC-11110	Str 4	276 (fill of 278)	Barley indet	3205±35	1601–1411 BC	-24.1

overall quantity of recovered charred plant remains was low. Consequently, no dates were recovered from Structure 3, and dating material for Structure 1 was retrieved from two pits to the east and north-east of the building. The dates from Structure 2 came from two post-holes in the post-ring and from the northern part of the ring-ditch. The dates for Structure 4 were retrieved from three of the post-holes from the post-ring, a pit to the east of the entrance and a pit to the north of the structure.

There are reliability issues associated with the use of pits and post-holes to infer dates for the whole structure, as posts could have been replaced throughout the life of the structure and dated entities lying within fills could derive from an earlier period. Attempts were made to date samples from structural elements of the buildings, but the lack of recovered suitable material meant that this was only possible for Structure 4. A sample from the ring-ditch was therefore dated from Structure 2 in order to compare it with the date from the post-ring.

Two oat grains from a post-hole in Structure 2 produced medieval/post-medieval date ranges (SUERC-11095, SUERC-11099), suggesting that these were intrusive. A pair of dates obtained from Pit 255 in Structure 4 (SUERC-11105, SUERC-11109) varied significantly from the other four single-entity dates, producing an Iron Age date. These dates pass a chi-squared test, allowing them to be combined to provide a date of 2123 ± 25 BP or 205–55 BC. A further date, recovered from Pit 102 outside the entrance 102 (SUERC-11094), also appeared to be outside the range of the three dates recovered from the post-ring. Consequently, chi-squared tests were conducted on the uncalibrated dates in order to test whether the dates were statistically coherent. The samples failed the chi-squared test (they were statistically distinguishable) and could not, therefore, statistically, relate to a simultaneous event.

A further chi-squared test was carried out on the three dates obtained from Structure 4's post-ring (SUERC-11100, SUERC-11104, SUERC-11110). These samples passed the chi-squared test (they were not statistically distinguishable) and could, therefore, statistically, relate to a simultaneous event, ie a contemporary post-ring.

The three dates retrieved from the post-ring of Structure 4 are considered to be indicators of the date of the use of the building, while the earlier

and later dates relate to other activities not directly associated with the structure itself.

Although the statistical analysis suggests that the structures were broadly contemporary, there is no definitive evidence to show that the samples recovered all belong to a single event. Therefore combination of the dates to provide a tighter date range is not justified.

3.10 Discussion

Sue Anderson

Structures 1–4 were found on a gentle south-east-facing slope, and were arranged in a linear group, each with its entrance lying between east and south. There was no evidence for any enclosures associated with the structures, and a number of pits were found around them. Radiocarbon dating and pottery evidence indicates that they date to the Middle Bronze Age, and they form a coherent group, both in terms of their dating and their arrangement, although they may not be exactly contemporary and there are hints of earlier (and perhaps later) structures existing within the excavated strip. There are a number of structural differences, as well as some clear similarities, between the four main buildings.

Structure 1 was a ring-ditch roundhouse of approximately 10m diameter. Post-holes associated with it were found both within and outside the ring-ditch. It is possible to trace a putative post-ring within the ditch itself, with a diameter of 7m. Although this post-ring is not inside the ring-ditch as such, post-rings of 7m inside 10m houses are paralleled by some Kintore Type 2 structures (Cook & Dunbar 2008: table 35, RH09, RH20), although these were later than the presumed date of Structure 1. Alternatively, six post-holes lay close to the edge, or outside of, the ring-ditch as excavated (152 was covered by the fill of the ring-ditch which spilled out over it). If these formed the post-ring then the structure is comparable with Kintore Type 1 houses, at least three of which were of similar size (Cook & Dunbar 2008: table 35, RH11, RH12, RH14), although again slightly later than Structure 1. Several Type 1 ring-ditch structures of comparable size were excavated at Blackford, Perth & Kinross (O'Connell & Anderson forthcoming) and dated to the later Middle or early Late Bronze

Age. Two Type 1 roundhouses at Oldmeldrum, Aberdeenshire (White & Richardson 2010) were dated to the Middle and Late Bronze Ages, and an earlier MBA Type 1 structure was excavated at Deer's Den, Kintore (Structure 3; Alexander 2000: table 4), so the Drumyocher structure fits within the date range of this type. As a caveat, however, the date of Structure 1 relates to external pits which may or may not be related to its use and could even be part of an earlier structure, as noted above.

Structure 2 was also a ring-ditch structure, although part of the ring-ditch to the east has been lost. Although the roundhouse extent was well defined and it had a clear, presumably porched, paved entrance passage, the overwhelming number of internal features makes it impossible to determine which of them formed part of the supporting structure for the roof. A partial ring-groove was also identified and may well have continued around the edge of the ring-ditch. However, if so it was very shallow and is perhaps visible in only one section across the ring ditch (Illus 7D). The sections also indicate that the outer limits of the main part of the ring-ditch may have been less extensive than the plan suggests, particularly to the north. If so, several post-holes may in fact fall on the edge of the ditch, suggesting that this too was of Kintore Type 1. One structure at Kintore (Cook & Dunbar 2008: 92, RH25) also had a partial ring-groove which merged with the ring-ditch. The large number of post-holes may be evidence for at least two phases of structure on this site, although deciphering this from the plan and stratigraphic evidence is not feasible. Similar large numbers of pits were seen in at least two of the Blackford MBA structures (Structures 2B and 6B; O'Connell & Anderson forthcoming), both of which produced a range of radiocarbon dates which, when comparing the earliest and latest, proved to be statistically significantly different, and both were interpreted as being of multi-phase construction.

Structure 3 had an entrance and partial ring-groove of similar type to Structure 2 and also contained a bewildering array of internal features. It is possible to suggest the presence of a post-ring *c* 6m in diameter, and perhaps the remains of a 10m-wide ring-ditch, which was ill-defined, in the central part of the house. The outer ring-groove is likely to represent the position of a palisade or drip-gully 13m in diameter. If it had formed an outer wall,

the putative internal post-ring would appear to be too small. A number of similar ring-groove and ring-ditch structures were excavated at Blackford, although only one had a defined entrance porch which sprang from the ring-groove (Structure 1E; O'Connell & Anderson forthcoming).

Structure 4 appears to have been a more intact version of Structure 3 and possibly also Structure 2. Again it had a slot-defined entrance or porch and the remains of a ring-groove surrounding a ring-ditch. Like Structure 2, there was an external ring-groove, although this one was slightly larger at 14m diameter. The inner post-ring cut through the ring-ditch and was 6m in diameter and the outer ring-groove was roughly 10m in diameter.

Overall, then, in terms of the major structural elements the three buildings to the south of the site appear very similar in size, plan and layout, the main differences being explainable by loss of some elements through truncation. Structure 1 falls less easily into this group, having a differently aligned, porchless entrance and no clear evidence of ring-grooves.

In terms of their internal features, the structures appear more individual in character. Structure 1 was the only building to have possible evidence for a hearth, although the position of feature 268 is somewhat off-centre and its plan is quite linear. The stones within it appeared fire-cracked but there was little carbonised material from the fill. The few small pits and scoops in the central platform of this structure provide little information – at least one was considered to be natural, and three contained nothing but small quantities of charred seeds. Structure 2, on the other hand, while having an abundance of features within the ring-ditch itself, had only two shallow pits or scoops on the central area, and Structure 4 was similarly bare in the centre. Structure 3 had a number of shallow scoops in the central space, some of which were infilled with stones, and the area itself was roughly paved. A line of stones close to the north-western edge of the ring-ditch could perhaps represent a partition. The purpose of the central gully is unclear, although it does appear to align with the south side of the entrance. While it could perhaps have functioned as a drainage channel, this is not a normal feature of Bronze Age roundhouses in Scotland. Paving was also present in the ring-ditch of Structure 1, perhaps

in an attempt to level the area after long periods of wear, and similar use of cobbles was noted (but not planned) in Structure 4. Structure 2 had a flagstone entrance but the interior was not paved.

Artefacts from the site comprised largely pottery sherds, including a few more complete vessels. Some lithic artefacts and worked stones were also recovered. Pottery was recovered in varying quantities from each of the four structures and from features outside Structures 1 and 4. The largest group was from Structure 3, although in terms of number of vessels it was rivalled by Structure 4. These houses also contained the largest groups of lithic artefacts (seven and eight pieces respectively) and similar quantities of charred plant macrofossils (63 each). Structures 1 and 3 each produced smaller numbers of pottery sherds, the largest group being from Structure 1 (although MNVs were similar), and only one lithic artefact each. All stratified stone objects were from Structure 1, while Structure 2 contained the largest group of plant macrofossils. A similar range of finds was therefore recovered from each of the structures; whether the varying quantities imply anything about their function is debatable, as these could simply reflect the longevity of the structures or the speed at which they were abandoned.

Other features associated with the MBA structures are harder to interpret. It has been suggested that those between Structures 1 and 2 could represent the very truncated remains of another ring-ditch house, perhaps earlier than the others. The features to the north of Structure 1 might have been similar. Both sets of features produced small quantities of Bronze Age pottery and some plant macrofossils. Those to the north of Structure 1 were dated by radiocarbon analysis and appear to be broadly contemporary with Structures 2 and 4. If they were part of a ring-ditch house, they would pre-date Structure 1. The latter may therefore be later than the others to the south (although perhaps not by many years), which may explain why it appeared different in plan to the rest of the buildings.

The section of curvilinear feature to the east of Structure 4 was not dated. It contained four sherds of pottery. A nearby post-hole was radiocarbon dated later than Structure 4, though still Bronze Age. There is a possibility that Ditch 088 could have been a small souterrain. Its profile certainly does not suggest that it

was another ring-ditch as it was considerably deeper with a steeper profile. That there was some Iron Age activity in the area previously used by Structure 4 is shown by the presence of radiocarbon dates from one external post-hole. The edge of Ditch 088 was cut by a later curvilinear ditch, but as only a segment of this was excavated and it produced no finds, its function and date are unknown.

4. DRUMYOCHER IRON AGE FEATURES

4.1 Roundhouse and souterrain

A post-built roundhouse (Structure 5) and a souterrain lay to the north of Structures 1–4 (Illus 20 & 22) on top of the crest of a hill at about 135m AOD (NGR: NO 7837 7693) and has been dated to the Iron Age on the basis of morphology and radiocarbon dates; no artefacts were found in any of the features.

The building (Illus 20) was defined by a ring of post-holes (619, 589, 573, 587, 574, 579, 609, 603, 601; Illus 20) measuring approximately 8m in diameter. The post-holes ranged in size between 0.35m and 0.7m across, and 0.1–0.45m deep, and some contained packing stones.

A number of smaller pits (597, 599, 611, 613, 615; Illus 20) were located within what would have been the interior of the building, perhaps holding the supporting posts for the superstructure of the building or forming part of some internal feature or division. While the entrance to the building is not apparent, it could be assumed to lie on the east or south-east on the opposite side to the souterrain, and it is possible that external Post-hole 605 formed part of an entrance porch structure.

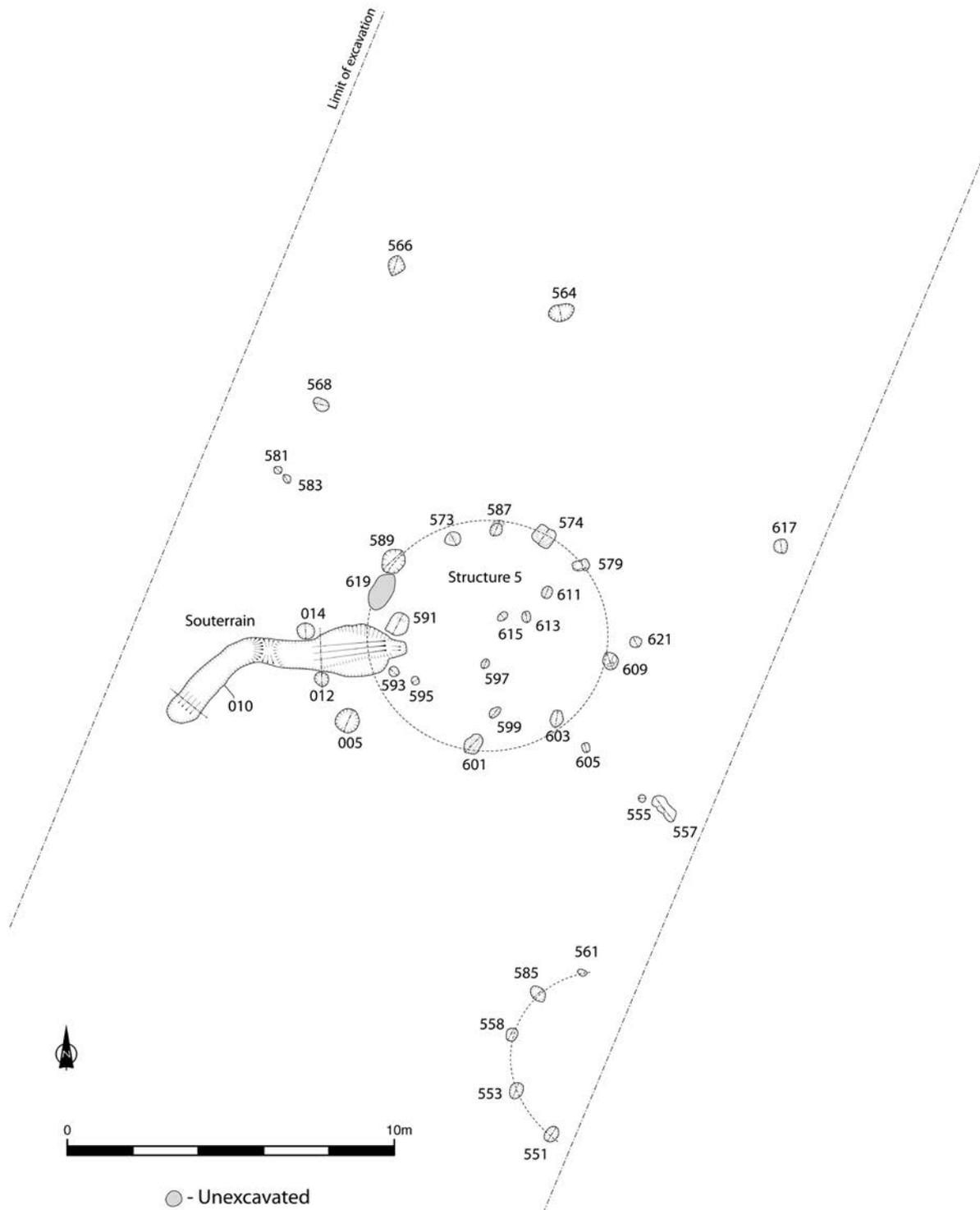
An entrance to a souterrain lay within the post-ring on the west side of the building. From this access point, the floor of the souterrain sloped at a shallow angle down to its base. Pits 012 and 014 were directly adjacent to the upper edge of the souterrain cut and, along with Pits 591, 593 and 595, perhaps formed a post-setting around the mouth of the souterrain. However, 593 and 595 were small and shallow in comparison with the others (Illus 21).

The souterrain was slightly curved in plan and measured 7.6m from tip to tip by up to 1.6m wide, aligned roughly east/west. The cut of the souterrain

was vertical-sided with a flat base and reached a maximum depth of 0.9m (Illus 21). It was divided into two compartments by a 'causeway' of natural substrate left in place. The upper fill was mid brown sandy silt containing rounded and sub-angular cobbles. The lower fill was red/brown sandy silt. It appeared from the mixed nature of the lower fill that

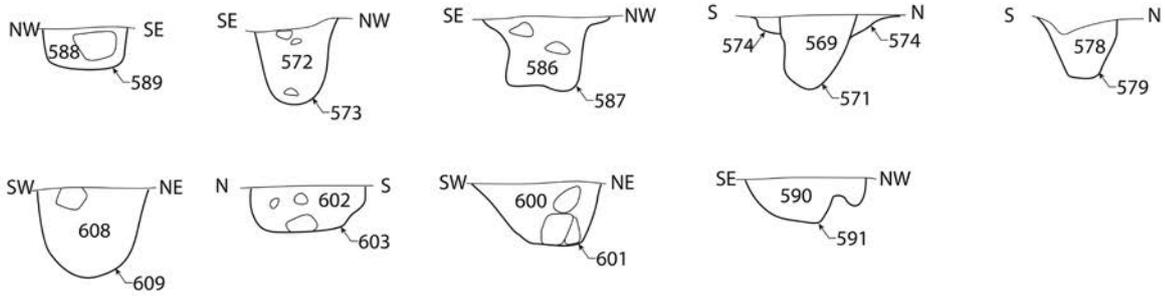
it was composed of re-deposited natural, perhaps from the natural silting up of the cut.

An arc of five pits (Illus 20), forming a half-circle with a diameter of about 5m, was discovered to the south of the building. The pits measured between 0.3m and 0.5m across and between 0.2m and 0.4m deep, so were on the whole smaller and

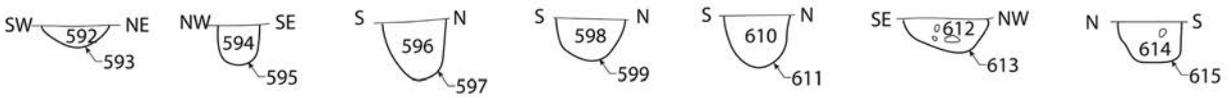


Illus 20 Plan of Structure 5, Drummyocher

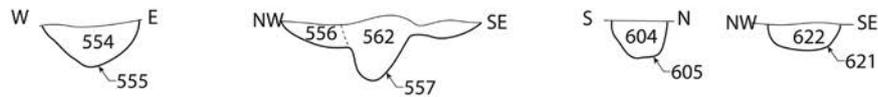
Post-holes of Structure 5



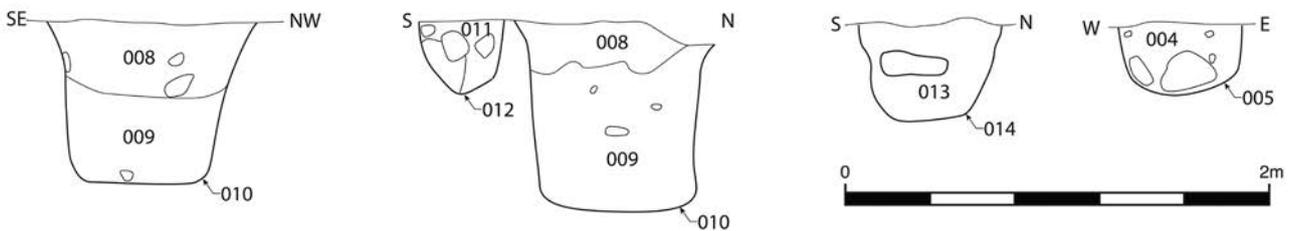
Internal pits



External pits



Souterrain and associated pits



Illus 21 Sections associated with Structure 5

shallower than those forming the roundhouse. Most of these pits contained packing stones and one (558) contained a flat stone placed at the base of the pit, interpreted as a post pad. This suite of pits may represent the remains of a second post-built roundhouse or other structure, but as it lay on the edge of the area available for excavation it was only partially investigated.

A number of other isolated pits were found in the vicinity of the roundhouse. These pits did not form any readily discernible patterns and it is unclear whether they were directly associated with the structures.

4.2 Environmental evidence

4.2.1 Palaeoenvironmental remains

Mhairi Hastie and Mike Cressey

(For methodology, see Section 3.8 above.)

Eleven samples contained small amounts of identifiable charred material, principally wood charcoal. Preservation of the cereal grains was particularly poor and in most cases the cereals could only be identified to the generic level.

The plant assemblage recovered from Structure 5 was extremely sparse (Table 10). Only very small



Illus 22 Structure 5 and the souterrain

amounts of poorly preserved grain were recovered from a small number of features associated with the structure. Almost equal amounts of barley and oat were identified. A small proportion of the barley grains still retained the faint traces of hulls, indicating that the hulled variety was present. None of the oat grains were sufficiently preserved to distinguish between the cultivated and wild species.

Only five seeds of wild taxa were recovered, including one persicaria/pale persicaria; a possible seed of ribwort; one sedge; and a dock seed (*Rumex* sp).

The bulk of the charcoal assemblage consisted of very poorly preserved amorphous fragments of roundwood that probably represent small fragments of branchwood. Hazel dominated the sample, although small quantities of alder and birch were also identified. The range of species present are all native and would have been available locally.

Discussion

When compared with Structures 1–4, there is an increase in the quantity of oat recovered

from this structure compared to the number of barley grains, and this may suggest that the oat represented a specific cultivated crop, rather than an opportunistic arable weed. Evidence from other Scottish sites (Boyd 1988) suggests that black oat (*Avena strigosa*) was being cultivated during the Iron Age, so the assemblage would fit into a well-established pattern for this period. Ethnohistorical evidence indicates that barley and oat were sometimes cultivated together as a maslin crop – ‘mashlum’ in old Scots (Fenton 1999) – yet there is no direct evidence to suggest that this was being carried out at the site. High concentrations of grain that could indicate the presence of large-scale storage of corn are lacking and the exact proportion of barley to oat cannot therefore be established.

4.3 Radiocarbon dating

Phil Richardson

One single-entity AMS date was obtained from the fill of Post-hole 601, a possible load-bearing post-hole forming the main post-ring

Table 10 Summary of plant remains from Structure 5 and the souterrain at Drumyoher

Latin name	Plant part	Common name	No. of contexts			
			Post-ring	Inside	Outside	Souterrain
			5	6	5	2
Wild taxa						
Gramineae (large)	caryopsis	large-grained grass	–	1	–	–
Gramineae (medium)	caryopsis	medium-grained grass	–	1	–	–
<i>Polygonum persicaria</i> <i>lapathifolium</i> L	nutlet	persicaria/pale persicaria	1	–	1	–
<i>Polygonum</i> spp	nutlet	knotgrass	1	–	–	–
<i>Rumex</i> spp	nutlet	rush	1	–	–	–
<i>Plantago</i> cf <i>lanceolata</i> L	seed	ribwort	1	–	–	–
<i>Carex</i> spp (bi)	nutlet	sedge	–	–	1	–
Cereals						
<i>Hordeum</i> sp	caryopsis	barley	9	2	5	3
<i>Hordeum vulgare</i> var <i>vulgare</i> L	caryopsis	hulled barley	2	3	2	–
<i>Hordeum vulgare</i> cf var <i>vulgare</i> L	caryopsis	hulled barley	1	–	–	–
cf <i>Hordeum</i> sp	caryopsis	barley	1	2	–	–
<i>Avena</i> sp	caryopsis	oat	13	1	1	1
cf <i>Avena</i> sp	caryopsis	oat	–	–	–	3
Cereal indet	caryopsis	indeterminate	7	1	3	1

Table 11 Structure 5 (Drumyoher) radiocarbon dates (calibrated using OxCal v4.2)

Lab code	Context	Sample material	Age BP	Calibrated date (95.4% probability)	$\delta^{13}\text{C}$
SUERC-11119	600 (fill of 601)	Charred grain: barley	1910±35	AD 18–214	-26.5

of the building. No other suitable material for dating was present. Radiocarbon assays were carried out at SUERC Radiocarbon Laboratory, East Kilbride, and dates were calibrated using OxCal software v4.2. The results are presented in Table 11.

The calibrated range at 2-sigma is AD 18–214, suggesting that this structure belongs in the later Iron Age, although over-reliance on a single date should be strongly cautioned against. However, the form of the structure and the presence of the souterrain reinforce this date.

4.4 Discussion

This Iron Age post-ring roundhouse with souterrain lay some 150m to the north-east of the Bronze Age settlement and was located on higher ground. It has a single radiocarbon date of AD 18–214 from one of the post-ring post-holes. Although a considerable period of time appears to have elapsed between the earlier Middle Bronze Age settlement and the construction of this roundhouse, this suggests that the general area was considered very suitable for settlement and agriculture. The presence of Iron

Age radiocarbon dates from a feature associated with Structure 4 has been discussed above, but there is no particular evidence of continuity between the main periods of prehistoric activity on the site.

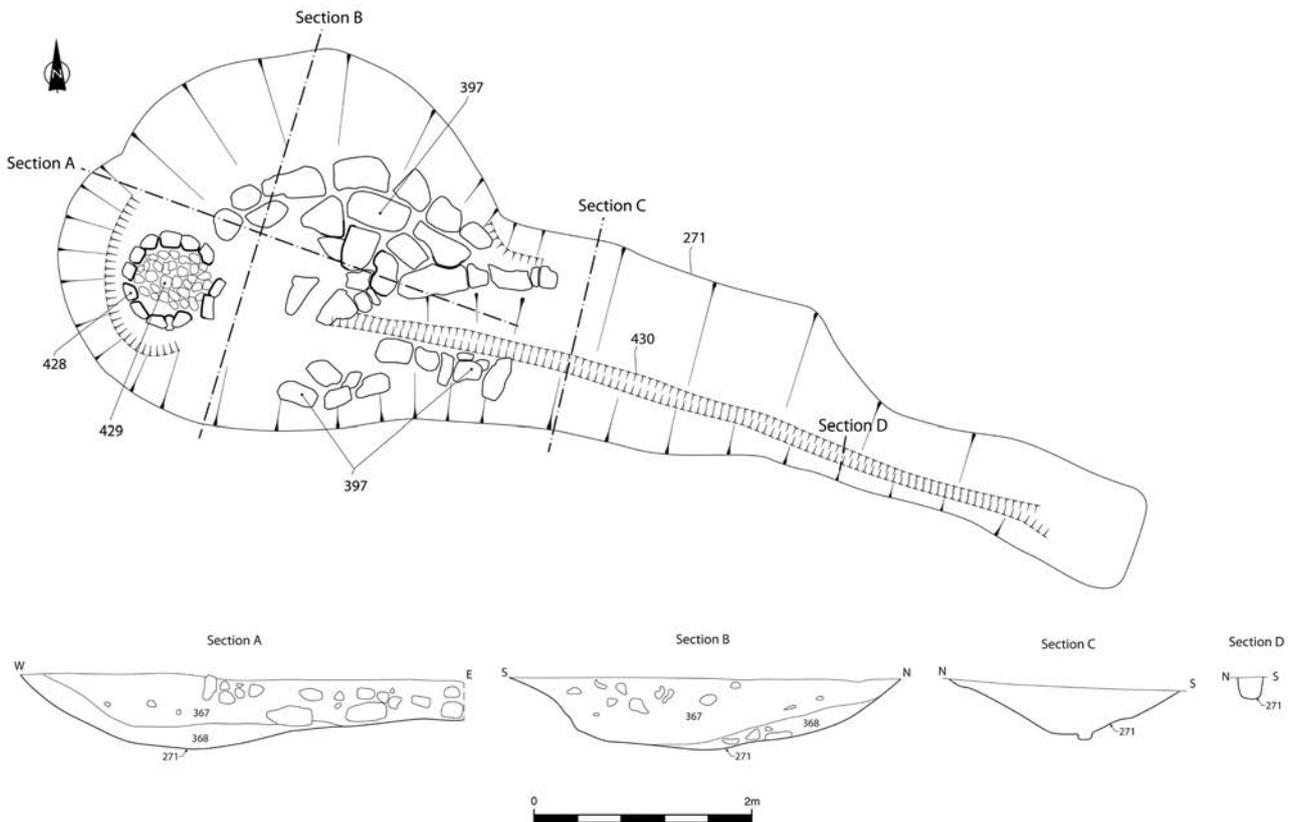
There is a range of sizes, shapes and construction techniques recognised within the souterrain category. A concentration of these features is located in the area known as ‘southern Pictland’ (Wainwright 1953; Wainwright 1963; Armit 1999). The one at Drumyochoer can be considered to lie on the northern fringes of the ‘southern Pictland’ group. It is small, not stone-lined, and has an unusual natural substrate division. While it may have been timber-lined, there was no evidence in the base for the positions of posts, as seen at Redcastle, Lunan Bay, for example (Alexander 2005: illus 9).

The function of souterrains is the source of much ongoing debate (eg Armit 1999; Coleman & Hunter 2002; Anderson & Rees 2006; Dunwell & Ralston 2008), but in this context, where the souterrain’s entrance appears to lie within the post-ring of the roundhouse, it can be assumed that the structure had a storage function at the domestic scale. The fact that the souterrain was entered from inside the

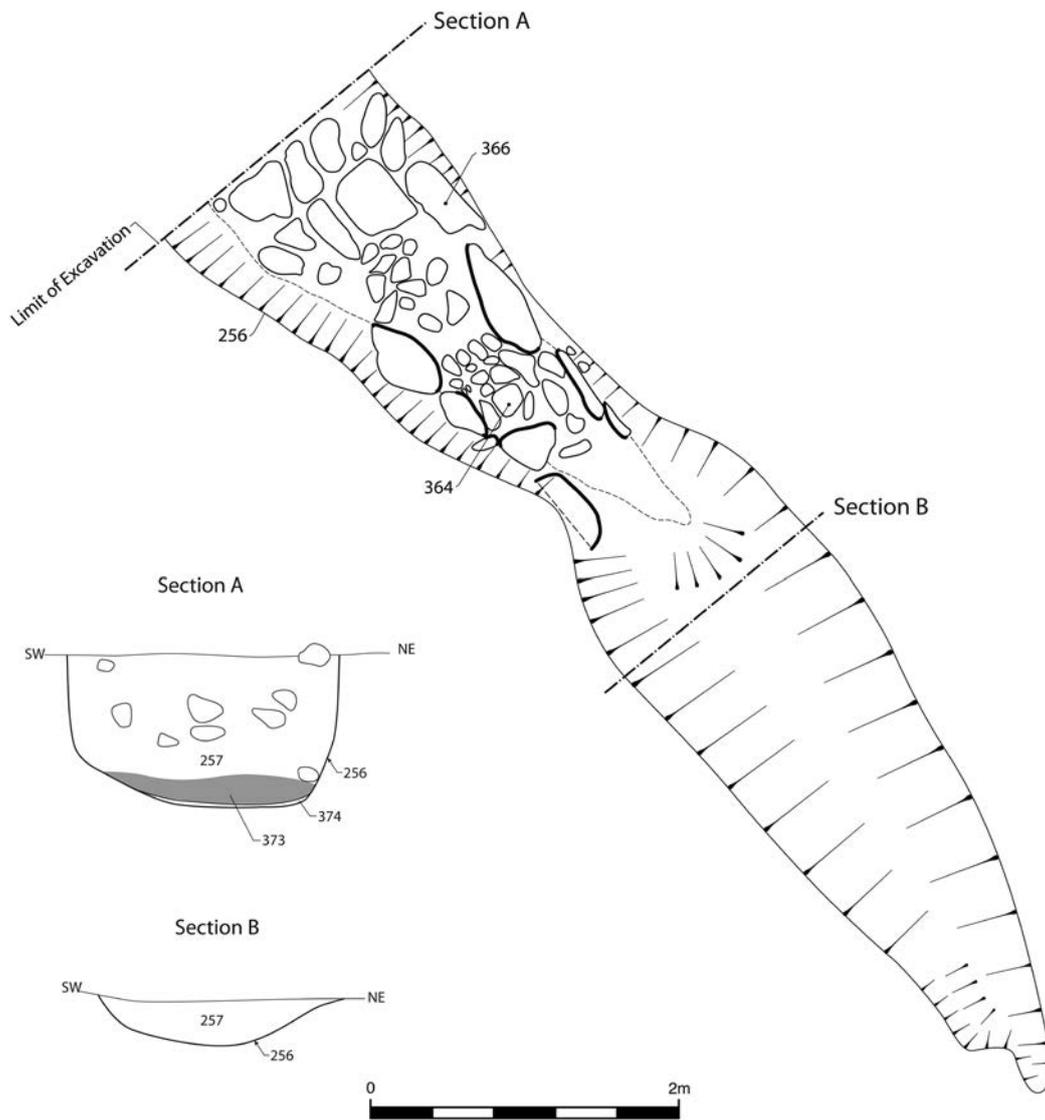
building could indicate that the goods it contained were in regular use within the building, with the entrance allowing easy access from within the structure, or that the goods had some value and so required greater control, which was achieved by only allowing access via the building.

While souterrains are often found in the vicinity of post-built structures, it is less common to find them with a direct connection. The Drumyochoer souterrain and linked house can be added to the well-known examples at Newmill in Perthshire (Watkins 1980b) and Dalladies in Kincardineshire (Watkins 1980a), and a stone hut circle with souterrain which was excavated at Dinnet, Aberdeenshire (Abercromby 1904). None of these examples has such a clear incorporation of the passage entrance into the superstructure of the building, however, and this is perhaps the first case in which it is possible to see a tied-in and apparently covered entrance into the souterrain.

A second post-built roundhouse may have been located adjacent to Structure 5, but it was not possible to investigate this fully. This glimpse of a second structure indicates either that the



Illus 23 Plan and sections of Kiln 1, Drumyochoer



Illus 24 Plan and sections of Kiln 2, Drummyocher

settlement was slightly larger in extent, and indeed may continue into the fields beyond the edge of the pipeline route, or was the result of local shifting of settlement, with one house replacing another on almost the same spot. It is not known whether this second building also had a souterrain attached.

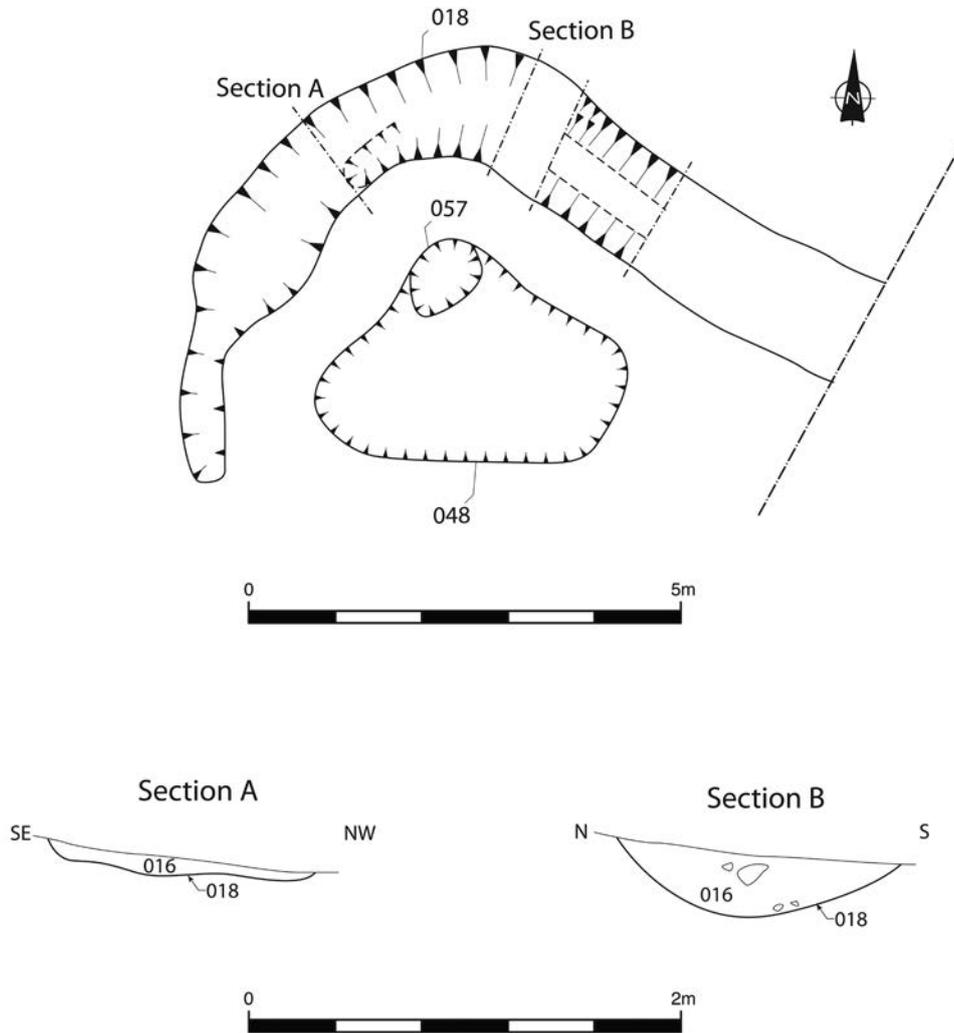
The lack of any pottery recovered from Iron Age Structure 5, in comparison with the quantities found in Bronze Age Structures 1–4, fits with an overall pattern of reduction in the quantities of pottery found on domestic sites in mainland Scotland as the first millennium BC progresses and into the first millennium AD; for example, at Ironshill (Pollock 1997) and Douglasmuir (Kendrick 1995), both in Angus, Wardend of Durris (Russell-

White 1995) and Candle Hill (Cameron 1999) in Aberdeenshire, and Newmill (Watkins 1980b) in Perthshire.

5. DRUMYOCHER MEDIEVAL/POST-MEDIEVAL FEATURES

5.1 The kilns and ditch

Two medieval or post-medieval kilns, unrelated to the Bronze Age roundhouses, were excavated within the same area: Kiln 1 lay to the north of Structure 1 and Kiln 2 lay between Structures 1 and 2 (Illus 2). Kiln 1 was fully excavated while Kiln 2 was only partially exposed in the excavation area. They were each of slightly different construction, although each



Illus 25 Plan and sections of Ditch 018, Drumyocheer

did include an inner chamber and a channel/flue running off downslope.

Kiln 1 (Illus 23) measured 10.2m long by a maximum of 3.8m wide and was roughly tear-drop shaped in plan. A linear channel ran off downslope from the kiln chamber. The kiln had a well-defined, inner chamber in its south-west quadrant. This was a circular, stone-lined chamber (428) with a cobbled floor (429) which measured approximately 1.4m across. Between it and the gully was an outer chamber, roughly paved around its edges (397), and presumably holding the fire pit in the centre. A layer of mottled, ashy clay (368), up to 0.2m thick, overlay the cobbles at the base of the kiln and appeared to coat the side of the kiln in places.

The channel running off to the east had a U-shaped cut measuring up to 2.2m wide by 0.4m deep, becoming shallower and narrower to the east.

It contained a smaller gully cut into its base, set off-centre, which contained ashy burnt material containing slag (see McLaren, 5.2.1 below). This gully was *c* 7m in length by 0.3m wide and ran eastwards from the centre of the outer chamber.

The kiln appeared to have been deliberately backfilled with a deposit (367) containing many large stones. One sherd of medieval pottery was found.

Kiln 2 (Illus 24) was only partially excavated where it lay inside the site boundary. The extent of the excavated portion measured 7.9m long by a maximum of 1.7m wide and was irregular in plan. Within the kiln, an area lined with large orthostats appeared to be divided into two chambers. The outer chamber, measuring 0.5m by 0.7m, had a roughly cobbled floor (364) and presumably contained the fire pit. This cobbling was sealed beneath a burnt

layer (354). The inner chamber, measuring 1.4m by 0.9m, was more roughly paved (366). A channel led off from the kiln downslope to the east.

Within the inner chamber of the kiln, the lower fill (365) of the kiln was a layer of yellow and black clay containing ash, which was found on top of the paved surface (366). This surface was set into brown/red clay (373) which contained pebbles. Beneath this clay was a further thin layer of blue clay (374), 0.02m thick, sitting directly on the base of the kiln. This kiln also appeared to have been deliberately backfilled with a deposit (257) containing stones.

Samples of hulled barley and oat from Contexts 354 and 365 (Kiln 2) were radiocarbon dated (see Table 13; SUERC-11113, SUERC-11114, SUERC-11115). The two dates from Context 354, the burnt layer above the cobbles in the outer chamber, indicate a 15th–17th-century AD date, while the single date from 365 was slightly later and had an extended 2-sigma range (AD 1492–1798), which may be due to the calibration curve at this point.

A curved ditch (018) was found at the north end of the site (Illus 25). It measured up to 1.3m wide with a diameter of approximately 5.5m. At its west end it measured just 0.03m deep, increasing to 0.4m deep at the east end. It had a flat base and near-vertical sides. It partially enclosed a large shallow pit (048) with a grey-brown silt fill (017). The function of this feature is not known, but samples of barley and oat from the fill (016) have been radiocarbon dated to AD 1515–1938 (see Table 13; SUERC-11092, SUERC-11093) and thus it seems to be unrelated to the roundhouses and is more likely to be associated with the kilns.

5.2 Finds

5.2.1 Vitrified material

Dawn McLaren

A small assemblage (597g) of vitrified material was recovered from Kiln 1. This material is dominated by small fragments of slag characterised by their vitreous and vesicular nature, low density and friability. Low density, non-magnetic slags such as these are often referred to as fuel ash slags or alkali silicates, which are formed when silicate-rich materials, such as clay and stone, fuse with alkalis, including soda or ash, as the result of exposure to the high temperatures of a fire (Bayley 1985: 41–2;

McDonnell 1994: 230). They can be produced as an incidental by-product of a range of pyrotechnic processes such as those in ovens, hearths, kilns and furnaces, as well as accidental fires (Bayley et al 2001: 21). They tend to be light in weight, brittle and porous in texture with frequent voids and air bubbles, and can be glassy in patches.

One fragment is worthy of further note, a large sub-oval cake of vitrified porous material from Kiln 1. Although this fragment is similar in size and shape to smelting or smithing hearth bottoms, it is lighter (McDonnell 1994: 229). Two sides of the cake are straight: one, with a small adhering fragment of possible hearth lining, indicating that it had been formed against a structure, perhaps that of the kiln itself.

All of the vitrified material was associated with a post-medieval kiln (Kiln 1). It is likely that the material was an incidental waste product of the firing processes undertaken within this structure. The recovery of charred grains from the interior of the kiln suggests use as a corn-drying kiln. The interpretation of the vitrified material is instructive in this light as it may be the result of the ashes produced by the charcoal fuel and fire-consumed grain fusing under high temperatures with silicate-rich substances, probably from burnt plant material and clays within the earth. No diagnostic ironworking slags (eg tapped slag, hearth bottoms or hammerscale) were recovered from the excavations and none of the fragments appears to be associated with metalworking.

5.3 Environmental evidence

5.3.1 Palaeoenvironmental remains

Mhairi Hastie and Mike Cressey

Cereal grains and other plant remains were present in the kiln bowls, the highest concentration of grain from the site being recovered from Kiln 2 (Table 12). The grain and other plant remains were particularly well preserved. Both the cereal grain and the wild taxa assemblages recovered from the kilns were different in composition to the assemblages recovered from the prehistoric roundhouses.

Cereal remains

Oat grains dominated the plant assemblages. A large number of the grains still had fragments of lemma

Table 12 Summary of plant remains from the post-medieval features at Drumyoher

Latin name	Plant part	Common name	Kiln 1	Kiln 2	Ditch 018	Pit 048
Wild taxa						
<i>Polygonum persicaria</i> <i>lapathifolium</i> L	nutlet	persicaria/pale persicaria	–	6	–	–
<i>Rumex</i> spp	nutlet	rush	–	3	–	–
cf <i>Rumex</i> spp	nutlet	rush	–	2	–	–
<i>Stellaria</i> spp	seed	chickweed	–	2	–	–
<i>Spergula arvensis</i> L	seed	corn spurrey	2	9	–	–
<i>Agrostemma githago</i> L	seed	corncockle	–	1	–	–
<i>Ranunculus</i> cf <i>sceleratus</i>	achene	celery-leaved buttercup	1	–	–	–
<i>Brassica</i> sp	seed	mustard/cabbage	–	1	–	–
<i>Potentilla</i> sp	achene	cinquefoil	–	1	–	–
<i>Calluna vulgaris</i> L (Hull)	floret	ling/heather	–	+	–	–
<i>Calluna vulgaris</i> L (Hull)	buds	ling/heather	–	+	–	–
<i>Myosotis</i> sp	nutlet	forget-me-not	–	1	–	–
<i>Chrysanthemum segetum</i> L	seed	corn marigold	–	38	–	–
<i>Lapsana communis</i> L	achene	nipplewort	3	5	–	–
Gramineae (large)	caryopsis	large-grained grass	–	8	–	–
<i>Carex</i> spp (tri)	nutlet	sedge	3	2	–	–
Monocotyledon rhizome	frag	rhizome	1	1	–	–
cf Culm node	frag	straw	–	1	–	–
Peat? or vegetable matter with charcoal	frag	peat/veg matter	–	++	–	–
Seed indet	seed	indeterminate	1	4	–	–
Cereals						
<i>Hordeum</i> sp	caryopsis	barley	4	18	1	1
<i>Hordeum vulgare</i> var <i>vulgare</i> L	caryopsis	hulled barley	–	32	1	–
<i>Avena</i> sp	caryopsis	oat	26	107	8	4
<i>Avena strigosa</i> L	caryopsis	black oat	–	4	–	–
cf <i>Avena</i> sp	caryopsis	oat	–	8	–	–
Cereal indet	caryopsis	indeterminate	–	8	–	–

and palea attached, and two grains were identified as *Avena strigosa* (black oat). A small quantity of hulled barley grain (*Hordeum vulgare* var *vulgare*) was also recovered from the kiln fills, with occasional sprouted barley being recovered from Kiln 2. One small culm node fragment (straw) was recovered

from Context 354 (Kiln 2); this could not be identified to species level.

Wild taxa

The assemblage consisted principally of species commonly associated with cultivated fields

including *S arvensis* (corn spurrey), *Agrostemma githago* (corncockle) and *Chrysanthemum segetum* (corn marigold).

Other plant remains

Fragments of peat and heather charcoal were recovered from the fill of Kiln 2, while one monocotyledon rhizome was present in Context 368 (Kiln 1).

Wood charcoal

The quantity of charcoal recovered from the kilns was extremely low and poorly preserved, with the bulk of the material comprising small amorphous fragments. Only charcoal from Kiln 1 was in sufficient condition to allow identification of wood species, with small amounts of both alder and birch present.

5.4 Radiocarbon dating

One pair of dates was obtained from the fill of feature 018 (Context 016), and one pair and a single date from the burnt deposits within Kiln 2 (Contexts 354 and 365). Radiocarbon assays were carried out at SUERC Radiocarbon Laboratory, East Kilbride, and dates were calibrated using OxCal software v4.2. The results are presented in Table 13. The date ranges place these features in the late medieval to post-medieval periods.

5.5 Discussion

Mhairi Hastie

The greatest number of cereals and most diverse plant assemblages from the site were recovered from

the kilns. The plant remains were well preserved, suggesting that they had undergone little movement prior to burial and that they were most likely burnt in situ. The particularly good preservation of the grain argues against the material being used as fuel for the kiln; rather, the presence of such material within the kiln bowls would suggest that the structures were used to dry corn. The vitrified residues from the features were not suggestive of metalworking. The overall structure of the kilns is similar to that of other medieval and post-medieval corn-drying kilns (for examples see Gibson 1989; Holden 2006).

Cereal-drying kilns of this type worked by lighting a fire in the flue and this heat would then be drawn into the kiln bowl. From here the heat would be drawn up through a permeable floor or mat upon which the cereal grains were spread (Pollock 1985: 367). It was common for occasional grain or small weed seeds to fall through the drying mat or floor and become charred at the base of the kiln; the burnt grain recovered would not have been burnt during the drying process, but is material which was accidentally drawn into the fire. During the medieval period the drying mat was replaced by a metal grill or bars, which was less flammable. Ethnohistorical evidence from the Hebrides (Fenton 1999) tells us that oats were laid on a straw bed in the drying kiln, but bere (hulled six-row barley) was often dried in the ear, being spread over the bare wooden ribs of the kiln floor. Fragments of alder and birch wood charcoal, recovered from the fill of Kiln 1, may be the remains of the wooden kiln floor.

Table 13 Post-medieval features (Drumyoher) radiocarbon dates (calibrated using OxCal v4.2)

Lab code	Context	Sample material	Age BP	Calibrated date (95.4% probability)	δ ¹³ C
SUERC-11092	016 (fill of 018)	Charred grain: barley indet	195±35	AD 1645–1917	-24.0
SUERC-11093	016 (fill of 018)	Charred grain: oat	255±35	AD 1515–1938	-25.8
SUERC-11113	354 (fill of Kiln 2)	Charred grain: hulled barley	395±35	AD 1437–1632	-23.0
SUERC-11114	354 (fill of Kiln 2)	Charred grain: oat	410±35	AD 1429–1627	-26.3
SUERC-11115	365 (fill of Kiln 2)	Charred grain: oat	275±35	AD 1492–1798	-24.6

It is not possible to identify the fuel used to heat the kiln, as no fire pit remained. Nevertheless, it is suggested by Scott (1951) that long kiln flues were specifically constructed when the fuel used had a tendency to spark, for instance when using straw, gorse or brushwood. Heather charcoal recovered from the base of Kiln 2 may have also originally formed part of the drying platform, although heather may have been an element of peat used to fuel the kiln. Peat was used to fuel kilns until the late post-medieval period, when smokeless fuel, such as coke or even the chaff from winnowing, was used instead, to eliminate the distinctive peaty flavour from the grain (Fenton 1999).

Corn-drying kilns were usually built away from settlement areas to avoid potential fires destroying main buildings. Evidence from Hoddum (Holden 2006) particularly indicates that kilns regularly burnt down, several at the site having been rebuilt three or four times during occupation of the site. Neither kiln at Drumyocheer appears to have been destroyed by fire during its use.

The plant assemblages were primarily dominated by oat, probably black oat, with lesser quantities of hulled barley, although the outer chamber of Kiln 2 contained almost equal quantities of oat and barley. Oat became the principal crop cultivated in Scotland in the post-Roman period, and the composition of the cereal remains would be typical for a medieval or later date. Oat was commonly dried in temperate climates prior to grinding; this helped remove the awns and made the grain more brittle, making it easier to grind.

The quantity of weed seeds recovered, particularly from Kiln 2, was high, consisting of up to 30% of the total number of identified items in Context 354. The weed seed assemblage contained a number of taxa known to be common weeds of arable land prior to improved agricultural practices; these include corn marigold, corn cockle, corn spurrey and nipplewort. Differentiation between spring-sown and winter-sown cereals was not possible, as seeds characteristic of both spring- and winter-sown crops were present, corn marigold and corn spurrey being indicative of spring-sown and corn cockle being indicative of winter-sown crops.

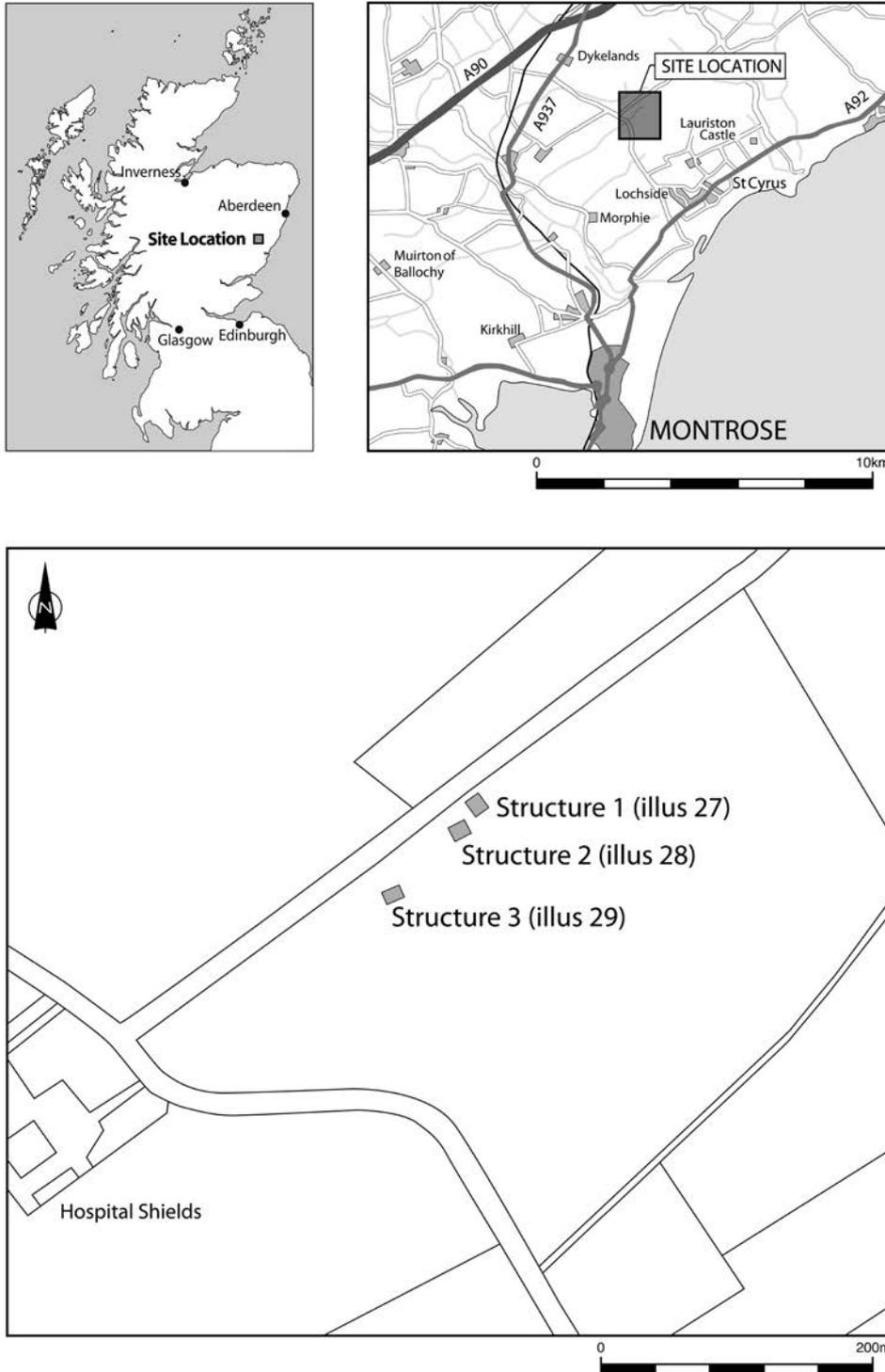
The presence of a high number of weed seeds with the cereal grain suggests that the crop had only been partially cleaned and it is possible that the final sieving of the grain to remove small weed seeds,

usually undertaken after threshing, may not have been carried out.

Interestingly, a number of common medieval weed seeds were not present, including both *Raphanus raphanistrum* (wild radish/charlock) and *Galium aparine* (cleavers). These relatively large seeds are similar in size to the grain itself and would have been difficult to remove. The lack of such taxa may indicate that preliminary hand cleaning of the cereals had been carried out prior to drying, with large weed seeds being removed by hand. Another possibility is that specific crop husbandry techniques were being undertaken to restrict the growth of such species. For instance, cleavers, more commonly known as sticky willie, is a vigorous climber and may have been removed by hand from the crops during the growing season.

Morphological comparisons can be made with the Abercairny kiln in Perthshire (Gibson 1989: 220–3), the kilns at Chapelton in Angus (Pollock 1985) and the kiln at Lockerbie (Kirby 2011). The Abercairny kiln measured *c* 1.5m in diameter, the Lockerbie kiln measured 2.7m and the Chapelton kilns measured between 0.5m and 2m. All of these kilns were of drystone construction. It is more common to find kilns of this type with flues of around 1.5m to 2m, as at Chapelton and Abercairny (ibid). Grain from the floor of the Abercairny flue produced two dates ranging between AD 1030 and 1260 (both 875±50 BP, GU 1927, GU 1928), some of the earliest radiocarbon dates for such sunken corn-drying kilns. The Lockerbie kiln was dated using charred oats from within the fire pit, which produce two dates ranging between AD 1450 and 1800 (270±30 BP and 355±30 BP). The Chapelton kilns were assumed to be medieval on negative evidence alone, ie due to the dearth of post-medieval debris associated with them, while the presence of decorated dressed stone blocks in their construction (Pollock 1985) prevents them from being earlier than this.

Before the introduction of large, communal drying kilns as part of agricultural improvements during the 18th century, individual farms generally had their own kilns (Gibson 1989: 219). The Drumyocheer kilns fall into the category of an individual farm kiln, as they are too small to be classed as large, communal ones.



Illus 26 Location map, Hospital Shields

Therefore, the kiln was likely to have been built and used prior to the 18th-century agricultural improvements, placing it within at least the late medieval to post-medieval period. It is highly probable that the kiln had been completely backfilled by the middle of the 19th century and the land subject to agricultural use. As at

Chapelton (Pollock 1985), the Drumyocher kilns were likely to have been dismantled only to ground level, before the remaining open chamber was backfilled. This would explain why the stonework around the bowl of the kiln has survived in situ, rather than being robbed out and re-used.

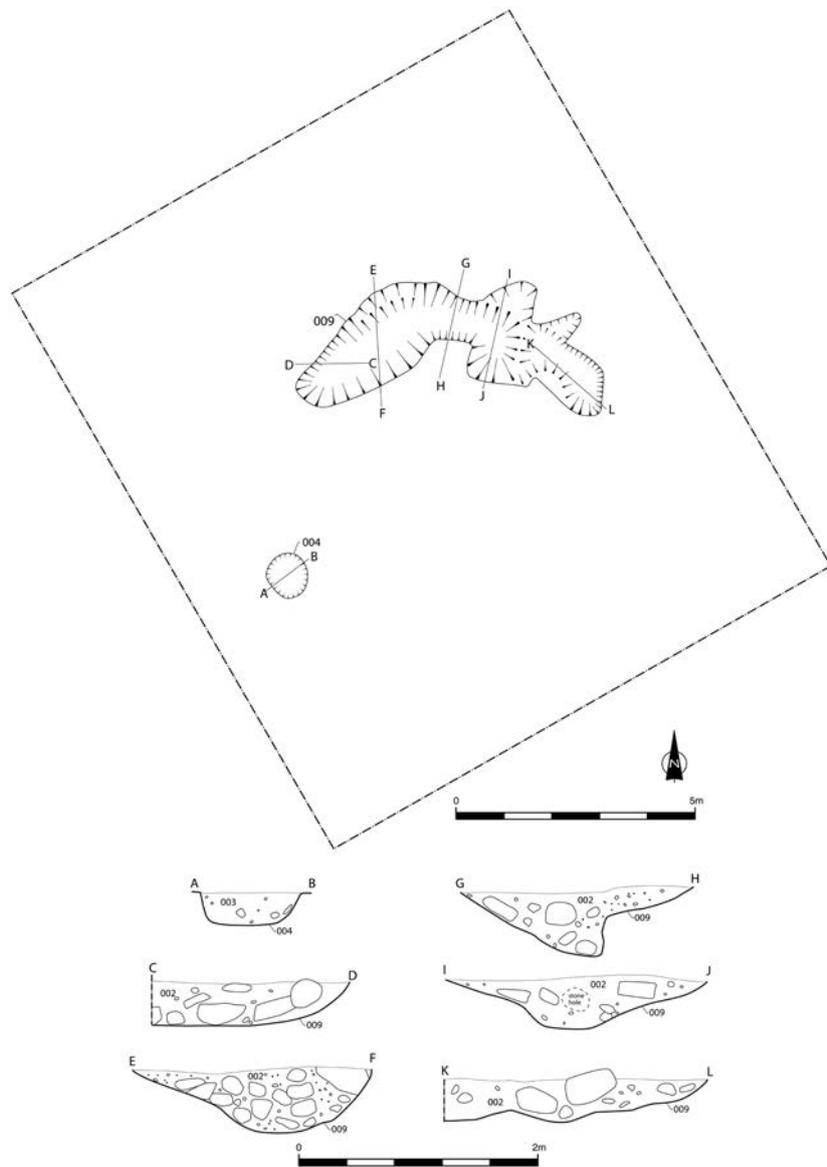
6. HOSPITAL SHIELDS

6.1 Introduction

Three discrete groups of features were identified during the watching brief and excavated. These lay within an area measuring 100m by 40m (Illus 26), within arable land on a gentle south-facing slope at about 170m AOD (NGR: NO 7215 6740 centred). No other features were identified during the course of the fieldwork, but the linear nature of the pipeline corridor may mean that other associated features lie outwith the area available for investigation.

These clusters of features have been interpreted as the possible truncated remains of three ring-ditch roundhouses (Structures 1–3). It is

presumed that the hollows and pits described below represent all that remains of the ring-ditches. The associated pits are interpreted as the remains of associated internal post-rings forming the superstructure of these buildings. The usual complexity in ground plan that one would expect to see in a ring-ditch house is largely absent and it is suggested that what remains is the vestiges of the deeper features, particularly of the ring-ditch on the northern, upslope side of the structure where it would have been more deeply cut into the slope. The presence of charred grain, pottery and coarse stone objects such as rubbers, pivot stones and saddle querns suggests a domestic nature for these structures.



Illus 27 Structure 1, Hospital Shields, plan and sections

The size of these structures, their associated artefacts, their date, and the excavation of comparable structures on other sites in Angus and Aberdeenshire all combine strongly to suggest that these structures are the truncated remains of ring-ditch houses. Although when taken individually their interpretation as ring-ditch houses may not be so readily apparent, as a group they form a stronger body of evidence to suggest an unenclosed settlement of first millennium BC date.

6.2 Structure 1

Structure 1 (Illus 27) consisted of a roughly crescent-shaped hollow (009) with an associated pit (004). The cut of the hollow measured 6.5m from end to end by 2.3m across at its widest point, by 0.55m deep at maximum. The hollow, although in very general terms crescent-shaped, was irregular in outline and appeared to have been formed by at least three interlinked pits, separated by small ridges of unaltered natural substrate within the feature. This hollow was filled with a homogeneous dark brown silt (002) which contained pebbles and larger stones. No patterns could be discerned within this stony fill to indicate the former presence of stone paving, walls or surfaces. Two possible post-holes can be seen on the outer edge.

A circular pit (004) lay 3.2m to the south-west of the hollow and measured 0.9m across by 0.3m deep. It contained several large stones which could have been packing stones. This pit may represent all that remains of the structural post-holes associated with this building, if such features were indeed ever present.

The internal diameter of the structure is difficult to estimate but would have been in the region of 9m if it is assumed that the outer wall lay on the outer edge of the hollow.

A coarse stone object, identified as a pivot stone (see Jackson, 6.5.2 below; SF5), was found in the fill of the hollow. Insufficient charred archaeobotanical material survived for radiocarbon dating.

6.3 Structure 2

Structure 2 (Illus 28) consisted of a crescent-shaped hollow (078) and seven associated pits. The hollow measured 9m from end to end by 3m wide at its

widest point, by 0.4m deep at maximum. The outer edge of the hollow cut was generally less well defined, with a shallow slope leading into the main part of the hollow. The hollow, although in general terms crescent-shaped, appeared to have been formed by at least five interlinked pits. It was filled by a homogeneous dark brown silt (005) and, at its western tip, a layer of flat stones appeared to have been laid on the base of the hollow to form a surface at the eastern end measuring 2.2m by 1.3m (section J–K, Illus 28).

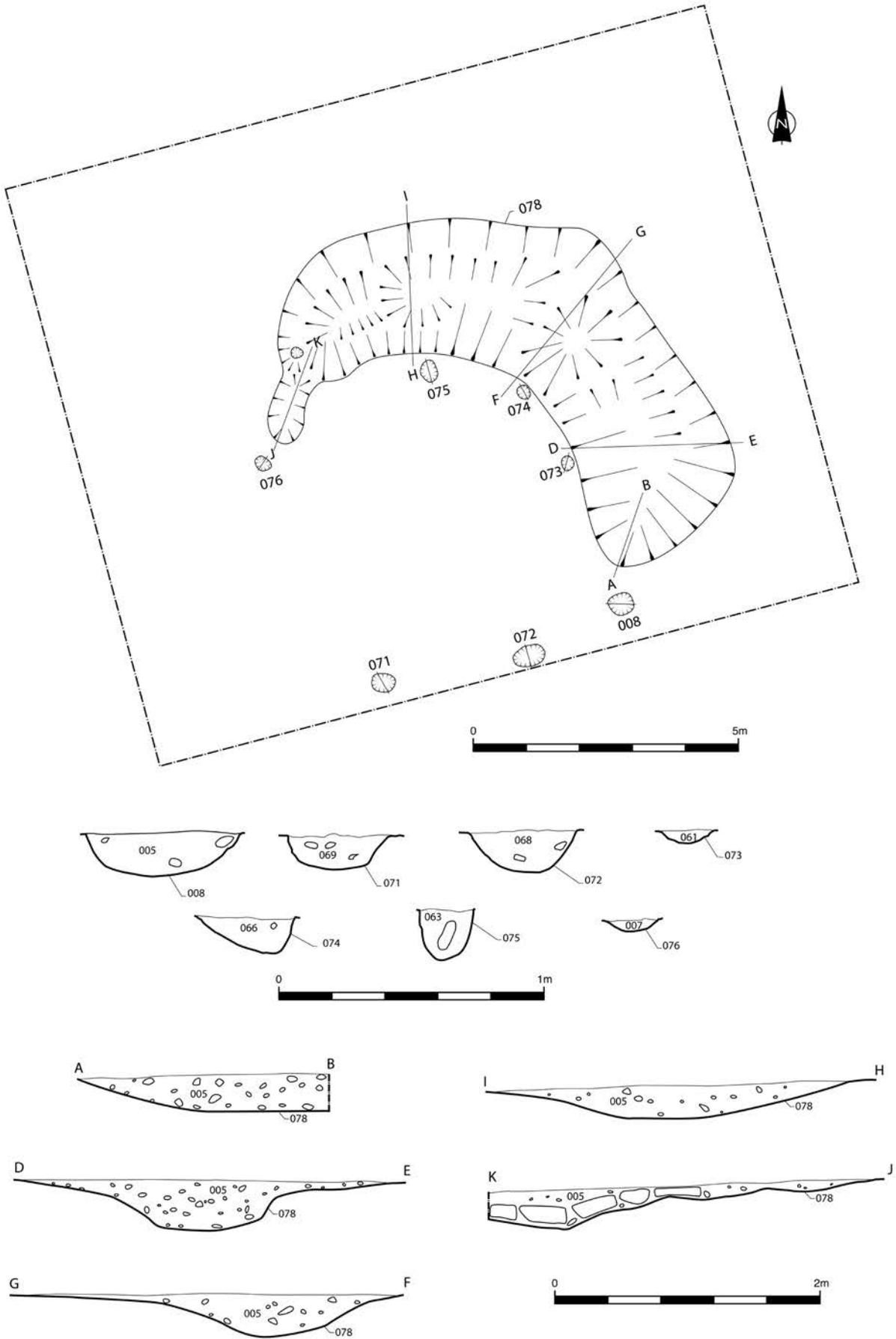
Four associated pits (073, 074, 075, 076) lay in a rough arc around the inner edge of the hollow and three pits (008, 072, 071) formed a separate arc in line with the outer edge of the hollow (Illus 28). The pits were small, ranging between 0.2m and 0.55m across, and between 0.06m and 0.2m deep. Truncation is evidenced by the difference in depth between, for example, Pits 076 and 075. The fills of the pits were very similar, being homogeneous dark brown silt. These pits are likely to be the remains of structural post-holes which would have held timber uprights; although no post-pipes were recorded, some of them contained packing stones.

It is not clear from the plan of this building where the entrance may have been, although it is unlikely to have lain along the hollow. The building would have had an internal diameter of approximately 9m, if it is assumed that the outer wall lay on the outer edge of the hollow and that Pit 072 represents a post-hole from the outer wall. However, it is equally likely that the outer wall did not survive archaeologically and that the structure was larger.

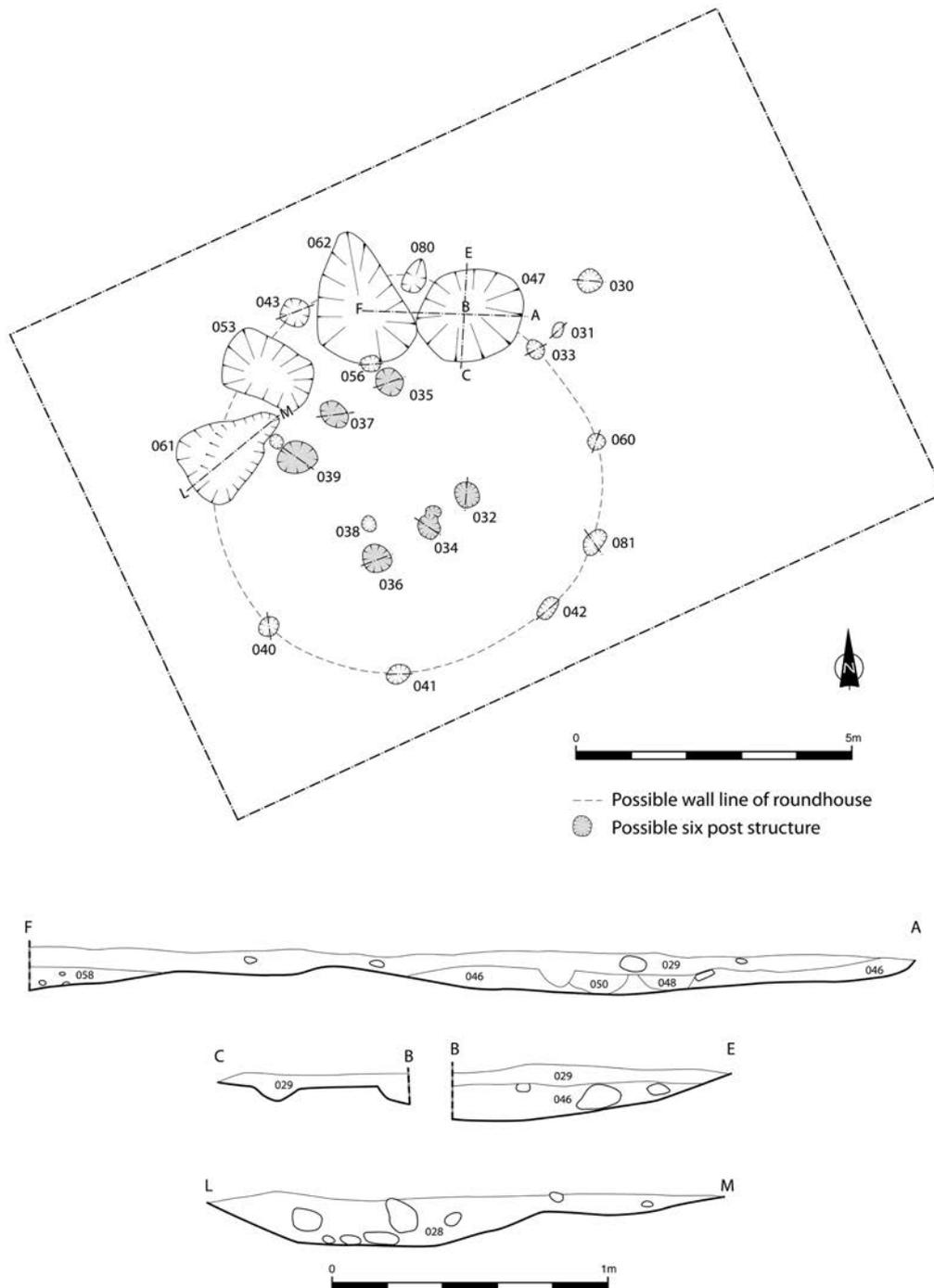
A number of artefacts were found in this area, including two pieces of saddle quern and a possible stone lamp (see 6.5.2), and two sherds of prehistoric pottery (see 6.5.1). Insufficient charred archaeobotanical material survived for radiocarbon dating.

6.4 Structure 3

Structure 3 (Illus 29) comprised 24 pits and had a more complete ground plan than the other structures. Four large, discrete pits (061, 053, 062, 047) were found on the north/north-west side instead of the crescent-shaped hollow found at the other structures. These pits measured between 2.4m across by 0.2m deep. Pits 047 and 062 were sealed



Illus 28 Structure 2, Hospital Shields, plan and sections

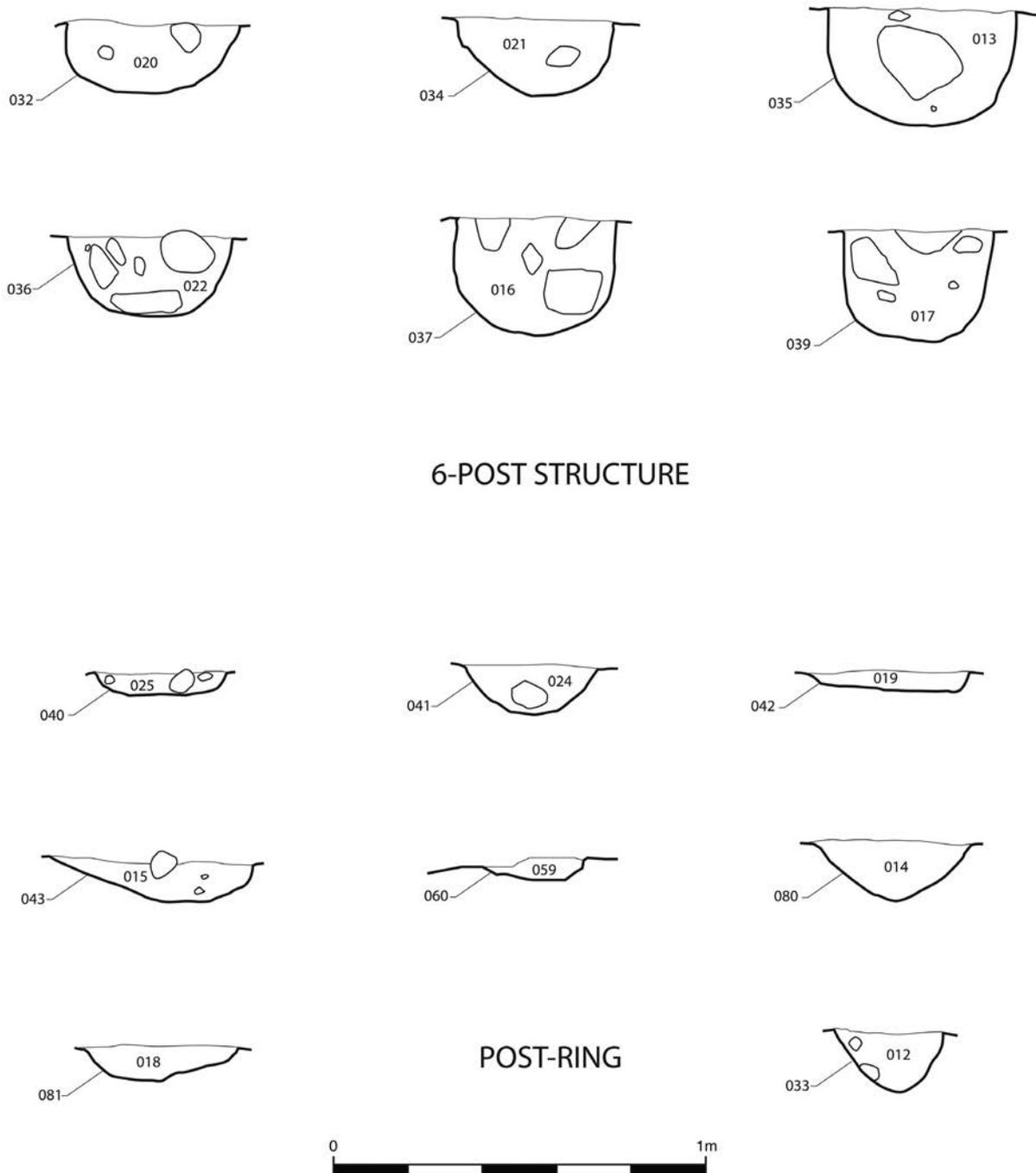


Illus 29 Structure 3, Hospital Shields, plan and sections

by an upper fill of red-brown silty sand with gravel and cobbles (029). Pits 053 and 061 were both filled by 028, a brown silt, which obscured the distinction between the two pits on the surface.

A possible ring of eight pits (060, 081, 042, 041, 040, 043, 080, 033; Illus 29) was recorded, forming a rough circle about 7m in diameter. These pits are likely to have held the upright posts that supported

the roof of the roundhouse; however, many of them were very shallow (up to 0.15m deep), presumably truncated, and none showed any evidence of containing post-pipes although several contained large stones which could have been packing stones. These pits measured between 0.3m and 0.5m wide. In addition, two small pits lay outwith this inner circle (030, 031) and may represent surviving



Illus 30 Structure 3, post-hole sections

post-holes from the outer wall line of the structure or internal features. The estimated diameter of the post-ring is 7m; it is not clear where the outer wall would have lain, so the overall diameter of the structure cannot be estimated.

Internally there were six pits (032, 034, 036, 039, 037, 035), ordered in two parallel rows of three, forming a square six-post setting measuring about 2m by 2m (shaded on Illus 29). These pits were the most substantial of all of those associated with this

structure, measuring up to 0.5m across and 0.3m deep (Illus 30). It is unclear whether these pits are related to the roundhouse. Pits 056 and 038 appear to be unrelated to either the post-ring or the six-post structure and may represent features internal to the roundhouse. The fills of the pits were very similar, being homogeneous dark brown silt, and some had packing stones present.

A number of artefacts were found in this area, including a rubber which had been re-used as a

pivot stone (Context 029; 6.5.2 below) and sherds of prehistoric pottery (primarily from Pit 047; see below). Five radiocarbon dates (Table 14) were obtained for this structure; a single date from the fill of Pit 043 and a pair each from the fills of Pits 047 and 053. The five dates ranged between 1005 and 801 BC.

6.5 Finds

6.5.1 Pottery

Melanie Johnson

Thirty-seven sherds of handmade prehistoric pottery, weighing 252g, were collected, representing a maximum of 13 individual vessels. The majority of the sherds are undiagnostic and undecorated, but a rim sherd and three neck sherds were recorded. Much of the pottery is abraded and none of the sherds have substantial portions of their profiles surviving. Only two sherds, weighing 7g, were recovered from the fill of the hollow of Structure 2, while the remaining sherds (35 sherds weighing 245g) were recovered from pits associated with Structure 3. A full catalogue has been prepared for the site archive. Summary descriptions of the diagnostic sherds are presented below, and illustrated in Illus 31.

► **P4. Neck sherd from an everted rimmed vessel.**

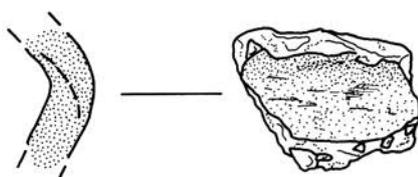
► **P9. Rim sherds from an open-mouthed vessel with a slight internal bevel.**

Joining sherds from P9 were found in Contexts 029 and 046; the latter was the lower fill of a pit (047) of Structure 3, while 029 was the upper fill running across two adjacent pits, 047 and 062.

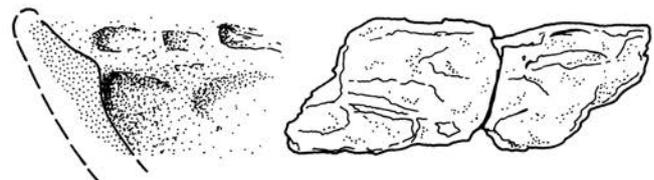
► **P10. Rim sherd. Simple upright rim, slightly flattened.**

The assemblage is small and contains very few diagnostic sherds; however, given its context and the little morphological information there is within the assemblage, the pottery can be said to belong to the rather poorly-defined wares of the Bronze Age and Iron Age, found across much of mainland Scotland, and generally referred to in the context of the Bronze Age as 'flat-rimmed' ware.

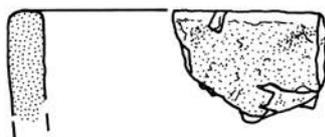
There are few comparable assemblages published for this date in this part of Scotland, and the assemblages are often very small. Examples include Douglasmuir, Angus (Kendrick 1995); Wardend of Durris, Aberdeenshire (Russell-White 1995), which included two plain rims, one inverted rim and one sherd possibly from a shouldered vessel; Deer's Den, Kintore, Aberdeenshire (Alexander



P4



P9



P10



Illus 31 Pottery, Hospital Shields

2000), which included bucket- and barrel-shaped vessels with plain flat rims and short everted rims with internal bevels; and Ednie, near Peterhead (Strachan & Dunwell 2003), which produced a pottery assemblage containing simple straight-sided vessel forms with flat and internally bevelled rims. McGill (2003) comments that the assemblage is consistent with a Late Bronze Age date and suggests that internally bevelled rim forms could be seen as diagnostic of this period.

6.5.2 Coarse stone

Adam Jackson

Five curated artefacts of coarse stone were recovered, and include food-processing tools, a pivot stone and a possible crude stone lamp. Sedimentary, igneous and metamorphic rocks are all present and would have been gathered locally.

Three food-processing tools (querns and rubbers) were recovered. Two saddle querns and a rubber were recovered from Structures 2 and 3 respectively; the rubber has evidence of having been re-used as a pivot stone. They are common forms and little can be made of their contexts of recovery. Saddle querns and rubbers (or grinding stones) like these are commonplace on prehistoric sites from the

Neolithic onwards and they do not contradict a broad Iron Age date.

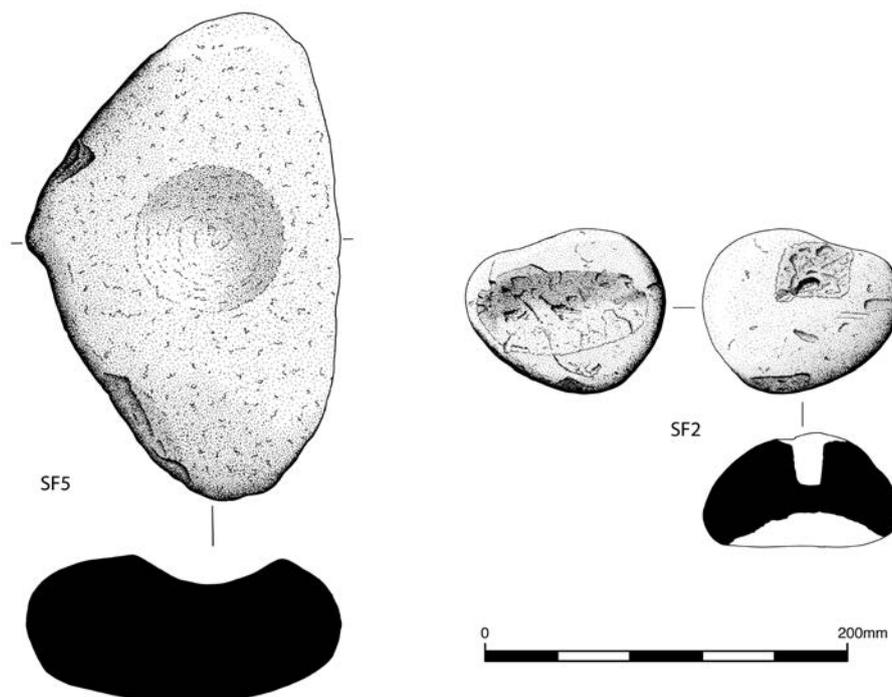
Two other curated artefacts were identified, namely a (possible) lamp from Structure 2 (SF2) and a pivot stone (SF5) from the hollow fill of Structure 1. The first of these, SF2 (Illus 32), comprises a natural cobble with a pecked depression that suggests that it may have functioned as a lamp, despite the absence of evidence of burning. However, it is of crude form and this, in conjunction with uncertainty over its function, makes the identification of chronological parallels difficult. The pivot stone, SF5 (Illus 32), is of standard form, comprising a natural unmodified stone with a single smooth ground circular depression in one face. Pivot stones are commonplace on Scottish sites of prehistoric, medieval and post-medieval date.

6.6 Environmental evidence

6.6.1 Archaeobotanical remains

Mhairi Hastie

Carbonised grains were recovered from 16 contexts (one in Structure 1, two in Structure 2 and 13 in Structure 3); a low, almost uniform spread of grain was present throughout these features, although the bulk of the material was recovered from Structure



Illus 32 Coarse stone objects, Hospital Shields

3. The grain was highly abraded and most of the samples contained fewer than ten identifiable grains per sample, although Pit 047 in Structure 3 contained 39 grains, the largest concentration.

Most of the grain was highly abraded and the majority could only be identified as barley (*Hordeum vulgare*). Occasional grains of hulled barley were identified, where preservation allowed, suggesting that the majority were originally hulled, while one grain of possible naked barley (*Hordeum vulgare* cf var *nudum*) recovered from Pit 043 potentially indicates the presence of the naked variety as well. One possible grain of wheat (cf *Triticum*) was recovered from Pit 033.

Only four seeds of wild taxa were recovered, including *Polygonum aviculare* (knotgrass) and *Polygonum persicaria/lapathifolium* (persicaria/pale persicaria). Both species are commonly associated with arable fields and disturbed land.

The assemblage indicates the presence of clean grain at the site. Grain could be charred during a number of daily activities, including the drying of small quantities of grain near to the domestic hearth or the discarding of spilled grain onto the fire. The abraded nature of the grain indicates that the plant material has been reworked/transported around the site through such activities as sweeping, kicking or scraping of the ground, creating a relatively homogeneous background level of charred grain.

6.7 Radiocarbon dating

Two pairs and one single date were obtained from three different contexts associated with Structure 3 and calibrated to 1005–801 BC. Insufficient material for dating was recovered from the other structures. Radiocarbon assays were carried out at Poznań Radiocarbon Laboratory, Poland, and dates were

calibrated using OxCal software v4.2. The results are presented in Table 14.

The calibrated dates indicate a terminus post quem for the infilling of the features within the first quarter of the first millennium BC, which falls into the Late Bronze Age. It is assumed that all three groups of features fall into the same broad period of use.

6.8 Discussion

The excavations at Hospital Shields have revealed the probable truncated remains of three roundhouses of Late Bronze Age date, forming an unenclosed settlement. These roundhouses are of a particular type known from Douglasmuir (Kendrick 1995: 55, illus 23) and at Newbarns, near Inverkeilor, Angus (McGill 2004: 102–5, fig 10; Trench C2). These structures are typified by a crescent-shaped hollow on the northern side, suggesting that the entrances were on the south or south-east side, and a series of post-holes or pits lying within the arc of the hollow. They measured at least 7–9m in diameter internally. Structure 3 was the best preserved, with a more complete plan surviving. A domestic origin is posited for the assemblages of charred grain, pottery and coarse stone tools found within the features.

At Douglasmuir, Kendrick (1995) chooses to describe the three similar buildings there as Structures 7–9, distinguishing them from the more typical ring-ditch roundhouses numbered Houses 1–6, although she does acknowledge that they could be ‘ploughed-out houses originally similar in form to Houses 1–6’ (Kendrick 1995: 54). The crescent-shaped hollows would probably have lain within the building, with the wall to their rear, and the remainder of the building was constructed of posts,

Table 14 Hospital Shields radiocarbon dates (calibrated using OxCal v4.2)

Lab code	Context	Sample material	Age BP	Calibrated date (95.4% probability)	$\delta^{13}\text{C}$
Poz-14465	015 (fill of 043)	Barley grain	2690±35	906–801 BC	-17.4
Poz-14468	028 (fill of 053)	Hulled barley grain	2725±35	968–808 BC	-16.0
Poz-14469	028 (fill of 053)	Barley grain	2780±30	1004–844 BC	-20.3
Poz-14466	046 (fill of 047)	Barley grain	2775±35	1005–836 BC	-22.0
Poz-14467	046 (fill of 047)	Barley grain	2760±35	996–830 BC	-13.6

of which at least some of the post-holes were found in each area, and a turf wall, of which no trace now survives.

At Douglasmuir, two of the three structures were slightly larger, the hollows of Structures 7 and 8 measuring about 14m in length. The hollows were irregular in plan, especially Structure 7, and Structure 8's hollow consisted of two pits separated by a ridge of unaltered natural substrate, a technique mirrored at Hospital Shields. Structure 9 consisted of two linear pits and a spread of post-holes, which Kendrick (1995: 56) suggests could represent a post-ring of about 8m diameter.

At Newbarns, Angus (McGill 2004) the hollow was a similar size (*c* 7m in length, 1.7m wide and 0.3m deep) but, unlike those at Hospital Shields, the profile of the hollow was steeper on the interior than on the exterior. Thirty-four small pits or post-holes were associated with this structure, lying within the curve of the hollow, and an external linear groove may also be associated with this structure. The archaeobotanical assemblage was similarly impoverished, and unfortunately no radiocarbon dates were obtained for the Newbarns structure.

At Oldmeldrum another very similar structure was excavated as 'Feature Group 1' (White & Richardson 2010: illus 9), forming part of a linear group of ring-ditch structures similar to that identified at Drumyoche (Section 3 above).

The possible six-post setting within Structure 3 at Hospital Shields may be unrelated to the roundhouse and may instead form a separate six-post structure coincidentally lying within the structure. The pits forming this feature are considerably deeper than the pits otherwise associated with the roundhouse. This structure could not be dated separately because of the lack of suitable archaeobotanical material, so it is unclear whether it pre- or post-dates the roundhouse, or indeed is contemporary. Four and six-post structures are known from a variety of Late Bronze Age and Iron Age settlement sites in Scotland, including Douglasmuir, Angus (Kendrick 1995, structures A–H), Dryburn Bridge, East Lothian (Dunwell 2007), Ironhill, Angus (Pollock 1997), Deer's Den, Kintore (Alexander 2000) and Myrehead, Falkirk (Barclay 1983). These structures are not easy to interpret and could have fulfilled a

wide variety of functions, of which the traditional interpretation as granaries (Dunwell 2007; cf Kendrick 1995) would be only one. However, it remains possible that the six-post setting forms the internal structure of the upstanding building or some other internal feature.

The three feature groups excavated at Hospital Shields, then, fall within a tradition of ring-ditch roundhouse construction common throughout the first and second millennia BC. Although they appear to be truncated, and thus their floor plans are incomplete, there are common elements such as a segmented curvilinear hollow, associated pits, some of which must have been structural post-holes, and the recovery of a domestic finds assemblage, including pottery and coarse stone tools associated with food processing.

7. CONCLUSION

The pipeline watching brief has provided a glimpse into the archaeology of a continuous swathe cutting across the Aberdeenshire countryside. The discoveries of cists (Johnson 2016), clearance cairns (Johnson 2011) and other minor features (Johnson 2004) in other places along the pipeline's route are reported elsewhere and emphasise the importance of monitoring these types of projects.

The excavations at Drumyoche and Hospital Shields are significant in their elucidation of the types of later prehistoric domestic settlement present in south-eastern Aberdeenshire.

The group of Middle Bronze Age ring-ditch houses at Drumyoche share many traits with each other and with other similar sites across Scotland, while at the same time displaying diversity in their floor plans and a density of features which makes the unpicking of structural elements and phasing difficult; and some more unusual elements, such as a paved entrance and long porch structures, are present. The presence of decorated pottery is unusual for mainland Scotland's Middle Bronze Age and is an exciting addition to pottery typologies of this period.

The Iron Age post-ring roundhouse and souterrain at Drumyoche, which perhaps dates to the first two centuries AD, is an important addition to the corpus of known roundhouses with associated souterrains.

Significantly, the entrance to the souterrain clearly lies within the post-ring roundhouse, and large post-holes at the mouth of the souterrain suggest some form of entrance structure incorporated into the superstructure of the roundhouse. The souterrain itself is small and may be compared to the souterrains at Dubton Farm, Brechin (Cameron 2002), some 26km to the south-west. The adjacent arc of pits hints at the presence of another roundhouse.

The excavation at Hospital Shields has provided support to interpretations of sites at Douglasmuir, Oldmeldrum and Newbarns, and together these provide strengthened evidence that an alternate type of later Bronze Age domestic structure may be recognised in the vestigial remains of crescent-shaped hollows or ditches and associated pits or post-holes with domestic finds assemblages.

Of course, the limited corridor of the pipeline could mean that additional elements of each of these sites lie outwith the excavated areas, and future work may perhaps provide additional information.

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The project archive has been deposited with the National Monuments Record of Scotland. The finds have been allocated to University of Aberdeen Museums. Full specialist reports for all classes of material are provided within the site archive.

9. REFERENCES

- Abercromby, J 1904 'Exploration of circular enclosures and an underground house at Dinnet on Deeside, Aberdeenshire', *Proc Soc Antiq Scot* 38, 102–22.
- Alexander, D 2000 'Excavation of Neolithic pits, later prehistoric structures and a Roman Temporary Camp along the line of the A96 Kintore and Blackburn Bypass', *Proc Soc Antiq Scot* 130, 11–75.
- Alexander, D 2005 'Redcastle, Lunan Bay, Angus: the excavation of an Iron Age timber-lined souterrain and a Pictish barrow cemetery', *Proc Soc Antiq Scot* 135, 41–118.
- Anderson, S and Rees, A 2006 'The excavation of a large double-chambered souterrain at Ardownie Farm Cottages, Monifieth, Angus', *Tayside and Fife Archaeological Journal* 12, 14–60.
- Armit, I 1999 'The abandonment of souterrains: evolution, catastrophe or dislocation?' *Proc Soc Antiq Scot* 129, 577–96.
- Barber J (ed.) 1997 *The Archaeological Investigations of a Prehistoric Landscape: Excavations on Arran 1978–81*. STAR Monograph Series 2. Edinburgh.
- Barclay, G 1983 'The excavation of a settlement of the Later Bronze Age and Iron Age at Myrehead, Falkirk District', *Glasgow Archaeological Journal* 10, 41–71.
- Bayley, J 1985 'What's what in ancient technology: an introduction to high-temperature processes', in Phillips, P (ed.) *The Archaeologist and the Laboratory*, 41–4. CBA Research Report 58: London.
- Bayley, J, Dungworth, D & Paynter, S 2001 *Archaeometallurgy*. English Heritage (= CFA Guideline 2001:01).
- Boyd, W 1988 'Cereals in Scottish antiquity', *Circaea* 5/2, 101–10.
- Cameron, K 1999 'Excavation of an Iron Age timber structure beside the Candle Stane recumbent stone circle, Aberdeenshire', *Proc Soc Antiq Scot* 129, 359–72.
- Cameron, K 2002 'The excavation of Neolithic pits and Iron Age souterrains at Dubton Farm, Brechin, Angus', *Tayside and Fife Archaeological Journal* 8, 19–76.
- Coleman, R & Hunter, F 2002 'The excavation of a souterrain at Shanzie Farm, Alyth, Perthshire', *Tayside and Fife Archaeological Journal* 8, 77–101.
- Coles, J M & Taylor, J 1970 'The excavation of a midden in the Culbin Sands, Morayshire', *Proc Soc Antiq Scot* 102, 87–100.
- Cook, M & Dunbar, L 2008 *Rituals, Roundhouses and Romans: Excavations at Kintore, Aberdeenshire 2000–2006*. Vol 1: *Forest Road*. Edinburgh: Scottish Trust for Archaeological Research.
- Dickson, C & Dickson, J 2000 *Plants & People in Ancient Scotland*. Stroud: Tempus.
- Dunwell, A 2007 'Cist Burials and an Iron Age Settlement at Dryburn Bridge, Innerwick, East Lothian', *Scottish Archaeological Internet Reports* 24. Available via Archaeology Data Service. <https://doi.org/10.5284/1017938>
- Dunwell, A & Ralston, I 2008 *Archaeology and Early History of Angus*. Stroud: Tempus.
- Fenton, A 1999 *Scottish Country Life*. East Linton: Tuckwell Press.
- Gibson, A 1989 'Medieval corn-drying kilns at Capo, Kincardineshire and Abercairny, Perthshire', *Proc Soc Antiq Scot* 118, 219–29.
- Hastie, M 2005 'Preliminary Analysis of Carbonised Plant Remains from Birnie, Moray: Seasons 1999–2002', Headland Archaeology Ltd, unpublished client report.
- Holden, T 1998 'Charred plant remains', in McCullagh, R & Tipping, R (eds) *The Lairg Project 1988–1996: The Evolution of an Archaeological Landscape in Northern Scotland*. 165–72. STAR Monograph Series 3. Edinburgh.
- Holden, T 2006 'The corn-drying kilns at Hoddom', in Lowe, C *Excavations at Hoddom, Dumfriesshire: An Early Ecclesiastical Site in South-west Scotland*, 102–13. Edinburgh: Society of Antiquaries of Scotland.
- Holden T, Hastie, M & Lyons, S 2003 'Forest Road, Kintore, Aberdeenshire: The Carbonised Plant Remains', Headland Archaeology Ltd, unpublished client report.
- Johnson, M 2004 'Aberdeen to Lochside Natural Gas Pipeline: Summary Account of Archaeological Fieldwork', CFA Archaeology Ltd, unpublished client report.
- Johnson, M 2011 *Two Cairnfields and Two Field Systems in Aberdeenshire: Excavations at Cheyne Hill, Findlayston, Round Hill and Trees 2003–4*. *Archive Report*. CFA Archaeology Ltd, unpublished client report.

- Johnson, M 2016 'Excavation of two Early Bronze Age short cists and a prehistoric pit at Lindsayfield, near Stonehaven, Aberdeenshire', *Scottish Archaeological Internet Reports* 63. <http://doi.org/10.9750/issn.2056-7421.2016.63>
- Kendrick, J 1995 'Excavation of a Neolithic enclosure and an Iron Age settlement at Douglasmuir, Angus', *Proc Soc Antiq Scot* 125, 29–67.
- Kirby, M 2011 'Lockerbie Academy: Neolithic and Early Historic timber halls, a Bronze Age cemetery, an undated enclosure and a post-medieval corn-drying kiln in south-west Scotland', *Scottish Archaeological Internet Reports* 46. Available via Archaeology Data Service. <https://doi.org/10.5284/1017938>
- McDonnell, G 1994 'Slag report', in Ballin Smith, B (ed.), *Howe: Four Millennia of Orkney Prehistory. Excavations 1978–82*, SOAS Monograph series 9, 228–34. Edinburgh: Society of Antiquaries of Scotland.
- McGill, C 2003 'Pottery', in Strachan & Dunwell, 154–6.
- McGill, C 2004 'Excavations of cropmarks at Newbarns, near Inverkeilor, Angus', *Tayside and Fife Archaeological Journal* 10, 94–118.
- MacSween, A 2008 'The prehistoric pottery', in Cook, M & Dunbar, L 2008 *Rituals, Roundhouses and Romans: Excavations at Kintore, Aberdeenshire 2000–2006*. Vol 1: *Forest Road*, 173–89. Edinburgh: Scottish Trust for Archaeological Research.
- MacSween, A & Dixon, D 1998 'Prehistoric pottery', in McCullagh, R & Tipping, R (eds) *The Lairg Project 1988–1996: The Evolution of an Archaeological Landscape in Northern Scotland*, 139–44. STAR Monograph Series 3. Edinburgh.
- Miller J J, Ramsay, S & Alldritt, D 2000 'Charred and waterlogged plant macrofossils', in Haselgrove, C & McCullagh, R with Lowther, P & Mills, C (eds), *An Iron Age Coastal Community in East Lothian: The Excavation of Two Later Prehistoric Enclosure Complexes at Fisher Road, Port Seton: 1994–5*, 40–9. STAR Monograph Series 6. Edinburgh.
- O'Connell, C & Anderson, S forthcoming Excavations in a Prehistoric Landscape at Blackford, Perth & Kinross, 2007–8. *Scottish Archaeological Internet Reports*.
- Pollock, D 1985 'The Lunan Valley Project: medieval rural settlement in Angus', *Proc Soc Antiq Scot* 115, 357–99.
- Pollock, D 1997 'The excavation of Iron Age buildings at Ironshill, Inverkeilor, Angus', *Proc Soc Antiq Scot* 127, 339–358.
- Russell-White, C J 1995 'The excavation of a Neolithic and Iron Age settlement at Wardend of Durris, Aberdeenshire', *Proc Soc Antiq Scot* 125, 9–27.
- Schweingruber, F H 1992 *Microscopic Wood Anatomy*, Swiss Federal Institute of Forest, Snow and Landscape Research.
- Scott, L 1951 'Corn-drying kilns', *Antiquity* 25/100, 196–208.
- Strachan, R & Dunwell, A 2003 'Excavations of Neolithic and Bronze Age sites near Peterhead, Aberdeenshire, 1998', *Proc Soc Antiq Scot* 133, 137–71.
- Tutin, T G, Heywood, V H, Burges N A, Valentine, D H, Walters, S M & Webb, D A 1964–80 *Flora Europaea*. Cambridge: Cambridge University Press.
- Wainwright, F T 1953 'Souterrains in Scotland', *Antiquity* 27/108, 219–32.
- Wainwright, F T 1963 *The Souterrains of Southern Pictland*. London: Routledge.
- Watkins, T F 1980a 'Excavation of an Iron Age open settlement at Dalladies, Kincardineshire', *Proc Soc Antiq Scot* 110, 122–64.
- Watkins, T F 1980b 'Excavation of a settlement and souterrain at Newmill, near Bankfoot, Perthshire', *Proc Soc Antiq Scot* 110, 165–208.
- White, R & Richardson, P 2010 'The excavation of Bronze Age roundhouses at Oldmeldrum, Aberdeenshire', *Scottish Archaeological Internet Reports* 43. Available via Archaeology Data Service. <https://doi.org/10.5284/1017938>