

3 The Excavation

An area 20 × 30m was excavated (illus 1; illus 2). A number of features cut into the natural boulder clay were revealed directly below 300–350mm of topsoil. The field had been intensively cultivated in the years prior to excavation. Ploughing and disturbance by field drainage systems had destroyed stratigraphic relationships across the site, making it impossible to subdivide the features into phases. As a result, the features are described in the following structural groups: the roundhouse, the two hearths or ovens and the four-post structure.

3.1 The roundhouse

3.1.1 Methodology

Discussion of the building relies on the earthfast elements of the structure, particularly the ring of post-pits which would have held roof supports. In order to maximize possible structural evidence, all post-pits on or near the line of the ring were sectioned and drawn on radial lines from the centre of the ring, in the direction of structural stress during and after construction (based on reconstruction research in progress; Murray, in preparation).

The only exceptions were those post-pits that

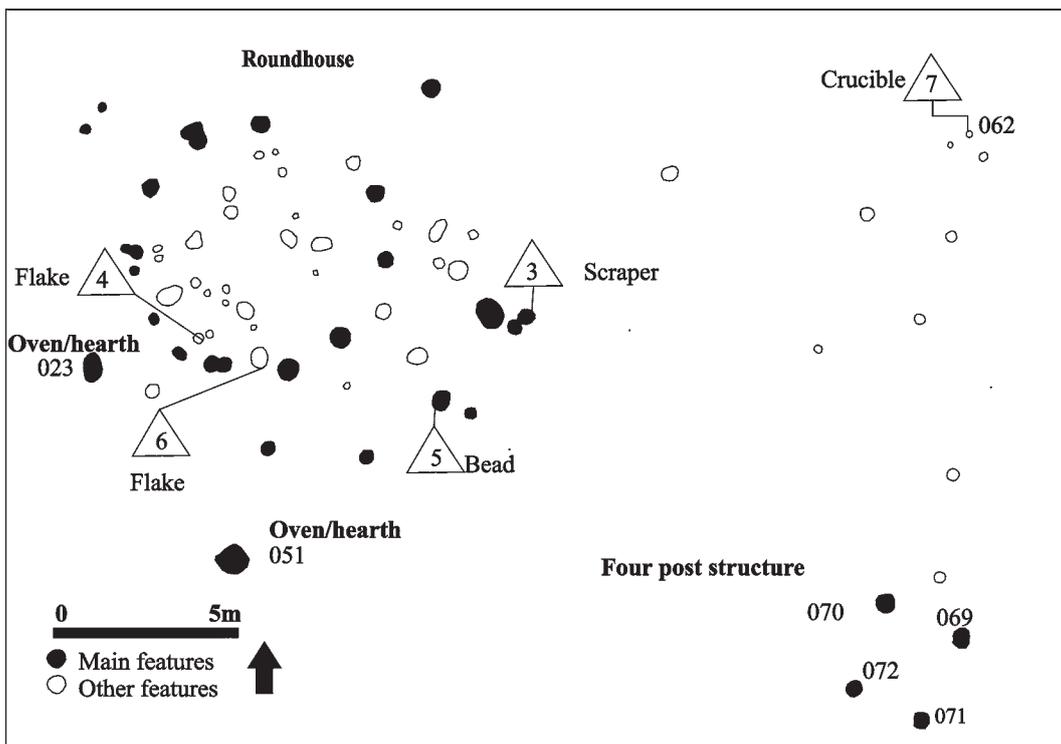
were intercut; these were sectioned across both pits to attempt to reveal their relationship.

The lack of horizontal stratigraphy means that some of the observed features may be earlier or later than the roundhouse although there was nothing in the fills or artefactual evidence to suggest that this was the case. It does, however, mean that interpretation of isolated post-holes can only be tentative.

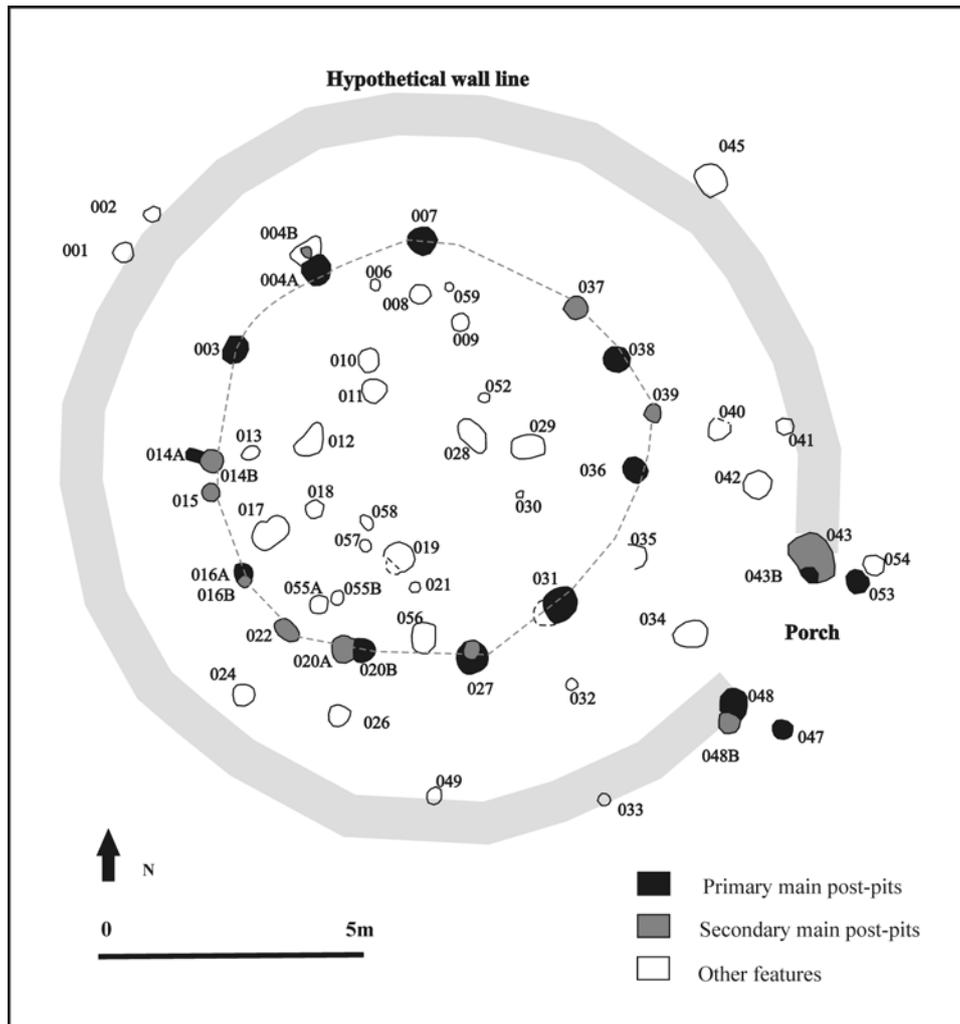
3.1.2 The structural evidence

A number of post-pits, interpreted as the main roof supports, formed a ring approximately 7m in diameter (illus 3; illus 4). Analysis suggests two possible episodes of building or repair.

A series of seven of the post-pits (003, 004A, 007, 038, 036, 031 & 027) around the west, north and east sides of the ring were distinctive. The pits were 470–550mm in diameter, with surviving depths of between 250 and 450mm (illus 5). Clear post-shadows, diameter 200–280mm, survived in two of the post-pits (003 & 004). Two other possible post-shadows were in the range of 150–300mm in diameter. With the exception of Post-pit 027, which appeared to have been reused, all the post-pits in the series had convincing stone packing on the side



Illus 2 Site layout



Illus 3 Location of primary and secondary post-pits in the roundhouse

of the pit which faced the centre of the building. Post 036, to the north side of the entrance, had additional packing stones on its north side.

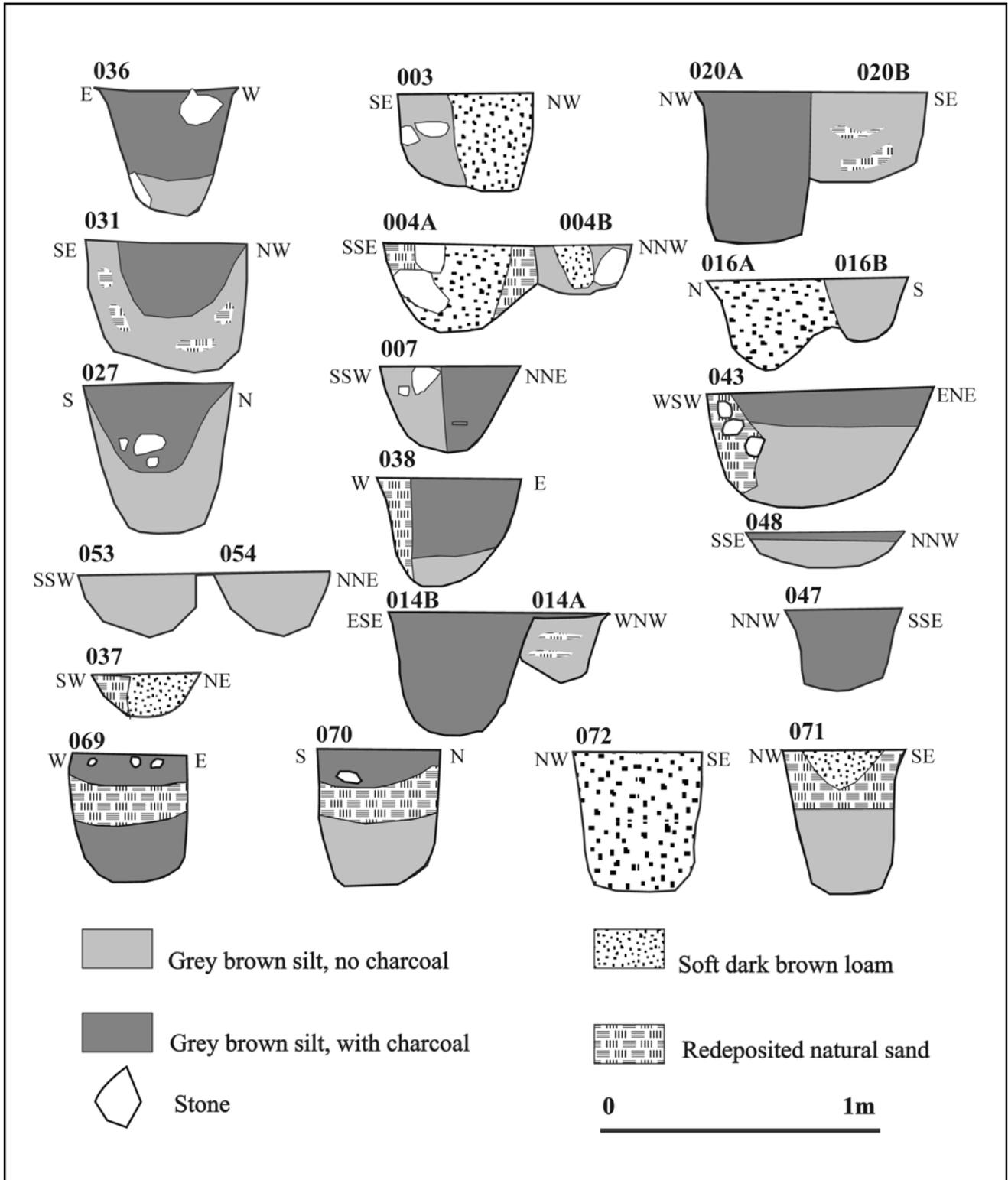
These post-pits were c 1.80m, or roughly two paces, apart (centres). A gap between Post-pits 007 and 038

appears to have been the result of disturbance by modern field drainage. A spacing of 2.50m between Post-pits 031 and 036 is discussed below. For two reasons these features are regarded as the primary stage of building. Firstly, there is evidence of later repair as the post-pit of one of the posts (004A) had been cut by the pit of a later, angled buttressing post (004B) (*illus 5*; *illus 6*), and two other post-pits (027 & 031) appeared to have been reused. Secondly, it is only this set of large post-pits which have the stone packing towards the centre of the building. This would have stopped the base of the posts shifting inwards against an outward pressure on the tops of the posts, a situation which is most likely to have arisen during the initial positioning and construction of the roof. Once the roof was in position, it would have been relatively stable, unless damaged by external influences (based on reconstruction research in progress; Murray, in preparation).

The pattern of posts at c 1.80-m intervals continues around the south-west part of the main post ring but in this area two of the posts (016A and 020B) had been replaced (by 016B and 020A) and, as noted above, Posts 027 and 031 may also have been replaced by new posts in the original holes. Post 014B also cuts an



Illus 4 General view of roundhouse looking south-east towards the entrance. Painted markers show the position of the post-pits



Illus 5 Section drawings of post-pits

earlier, smaller post-pit (014A) but this is less clearly a replacement as Post 014A was c 300mm outside the apparent line of the post ring.

A number of other relatively shallow post-pits (037, 039, 022 & 015), on or near the line of the ring of roof supports, may also have been repairs or secondary supports but the lack of horizontal stratigraphy make this impossible to prove and it is

equally possible that they represent the foundations of internal screens or partitions.

The evidence for the line of the outer wall is tenuous. It may be indicated by a number of post-pits (001, 002, 045, 041, 043, 048, 033 and, possibly, 049) found around the perimeter of the structure and roughly equidistant from the post ring. These are the basis of the hypothetical wall line shown in



Illus 6 Post-pits 004 and 004a, looking west

the plan (*illus 3*) and would suggest a building of around 12–12.5m in diameter.

Two of the post-pits on this outer line (043 & 048) coincide with the gap of 2.50m between Posts 031 and 036 of the post ring and may be interpreted as the entrance. A corresponding set of outlying post-holes (053/054 & 047) may represent a porch (see further below). Both Posts 043 and 048 appear to have been replaced. This possible entrance lies in the south-east quadrant of the building.

3.1.3 Interior of the building

North-west quadrant The area within the post ring and opposite the entrance was characterized by a number of irregular, rather saucer-shaped shallow hollows (006, 010, 011, 012) up to 50–100mm deep, which were filled with sandy silt; context 012 was around an undisturbed natural stone. Features 008, 009 and 013 may have been small post-holes. No comparable features were observed between the post ring and the possible wall line.

South-west quadrant There appeared to have been a structure in this area at some point in the building's existence. The evidence was more concentrated within the line of the post ring but two features (contexts 024 & 026) between the ring and the hypothetical line of the outer wall have been included as possibly related. A sub-rectangular area was bounded by Post-pits 017, 018, 019, 056 and 026, with related Post-holes 055 and 058 and Hollows 057, 021 and 024. The post-pits were fairly substantial (330–550mm diameter and 140–250mm deep), with a post shadow 250mm in diameter in Post-pit 017, and were capable of load bearing. However, it is unlikely that Post-pits 017 and 056 had held roof supports as they were well within the ring line. Charcoal identified as birch (larger roundwood) and hazel (twig) (*Hastie 2005*) in the top of Post-pit 018 might suggest the use of wattle or of a structure incorporating light timber. Two flint flakes (SF 4 and 6) were found in this area.

North-east quadrant This area was a fairly clear apart from a small pit or shallow post-pit (029) and a very small patch of burning and charcoal (028). It would be tempting to consider context 028 as the remains of a hearth but it was very disturbed by ploughing and topsoil removal and should be treated with caution. A line of three small, shallow post-holes (030, 052 & 059) with very similar grey, silty fill extended across the north-east and south-east quadrants; they may be related to the building but the fill was unlike that of the other features.

South-east quadrant and the entrance If the identification of Post-pits 043 and 048 as the entrance is correct, the area between the entrance and the post ring would be the line of movement, or passage, either to the centre of the building, or to the area between the post ring and the outer wall. Within this area there were two irregular depressions (034 & 035), 80–120mm deep, which appear to be the result of erosion/wear rather than having been cut. Pits 040 and 042 to the northern side of the passage were both between 460 and 550mm in diameter and 200–300mm deep and may indicate the position of a partition or other structure in this area. A flint scraper (SF 3) was found in Post-pit 054, and part of a glass bead (SF 5) was found in Post-pit 048 on either side of the entrance.

3.1.4 Discussion of the building

Although only earthfast elements survived, some conclusions may be suggested concerning the possible structure of the building. Firstly, there are a number of points which support the common reconstruction of these roundhouses as having the main weight of the roof carried on a ring beam, rather than on the external wall.

The size and depth of the post-pits and the size of posts, indicated by post shadows, suggest a considerable weight-bearing capacity. The regularity of the spacing of the primary posts suggests that the roof weight was shared equally between them, and the packing of the primary post-pits on their inner faces suggests that they were being given support against stress from inside. All of these features would be compatible with individual posts supporting individual rafters, but the details of the repairs indicate that the posts were linked, probably by a ring beam. The repairs on the south-west side suggest that, at some time in the life of the building, a whole section of the roof support system needed propping and appears to have been repaired while the rest remained intact. It is important not to be too quick to suggest a complete rebuild as it is quite easy to prop sections of a ring beam between the main posts (on the same principal as using a modern Acro-prop); Post-pits 015 and 022 may have been such props. When the roof weight had been transferred, then the original main post could have been removed and a substitute post put in, or even the

same post replaced and re-packed (as in, perhaps, contexts 014, 016, 020). The fact that the buttressed post (004) was on the opposite side suggests that instability on one side of the roof could affect the other side, a situation that is more probable if the posts had been linked by a ring beam. As many of the prevailing winds in the area come from the west, this seems the most probable cause of the instability, even though in general the aerodynamics of a round building enable it to withstand quite strong winds (Murray, in preparation).

Evidence for the line of the outer wall is slight but suggests a building with a diameter of about 12–12.5m. This is slightly greater than the 10m diameter which would be achieved by applying the optimum ratio between the post-ring and outer wall as suggested previously (Hill 1984). However, it agrees well with Pope's suggested modification of this ratio (1:0.615) based on a large sample of excavated roundhouses (Pope 2003, 107), which would suggest that the outer wall of this structure might have had a diameter of some 11–12m. The wall is unlikely to have been of stone or clay as at least some spread of wall debris could have been expected to be present in the tops of the earthfast features. A turf wall, or a shallow-based wattle wall, are possible. It should be stressed that the posts identified as possibly being on the wall line, may in reality have been on either the inner or outer face of that wall.

The entrance in the south-east quadrant of the Thainstone roundhouse follows the most common orientation of roundhouse entrances to the east or south-east and locally can be paralleled by the trend in the larger group of earlier Iron Age structures excavated nearby at Kintore (M Cook, pers comm). Whether such orientation should be interpreted functionally in terms of light within the structure, or ritually in terms of the cosmology of the building (for example Oswald 1997; Parker Pearson & Sharples 1999), is considered to be outwith the scope of this paper, which is based on a single excavated example.

Posts 047 and 053/054 are interpreted as having held the outer lintel of a porch. This is perhaps confirmed as they coincide with the slightly wider spacing between roof Posts 031 and 036 and with the patches of worn ground within the supposed passage area (034, 035).

The need for a porch was probably twofold: it would provide some weather protection but, perhaps more essentially, if the outer wall was relatively low, the porch lintel could be higher than the wall top, supporting the outer edge of the roof at the entrance. If this assumption is correct, the repaired Posts 048/048B and 043/043B, may have held the door.

On this basis it may be conjectured that, if the main part of the roof extended from the apex of the building to the wall, with the weight carried on a ring beam at a height of *c* 3m, then with an average 45° pitch for thatch, this would give a central height of *c* 6.5m, allowing a shallower pitch from the ring to the porch lintel. The height of the main wall below

this could have been in the range of 0.5m if the building had a diameter of 12m, and up to 1.5m if the building had a diameter of 10m.

The lack of floor deposits limits interpretation of the function or use of the building but the evidence does suggest that there was an area of considerable activity in the north-west quadrant, which had caused some erosion even in the top of the natural subsoil. This is perhaps unsurprising as this quadrant opposite the door receives good light levels through much of the day, even in winter when more tasks would be undertaken inside.

Some of the roundhouses excavated at Kintore, Aberdeenshire, had erosional hollows, which tended to be deepest, or only present, in the north or north-east sector; however, none of these are contemporary with the Thainstone example (M Cook, pers comm). The same pattern has been observed in Iron Age roundhouses excavated at Birnie, Moray (Hunter 2002a, 9).

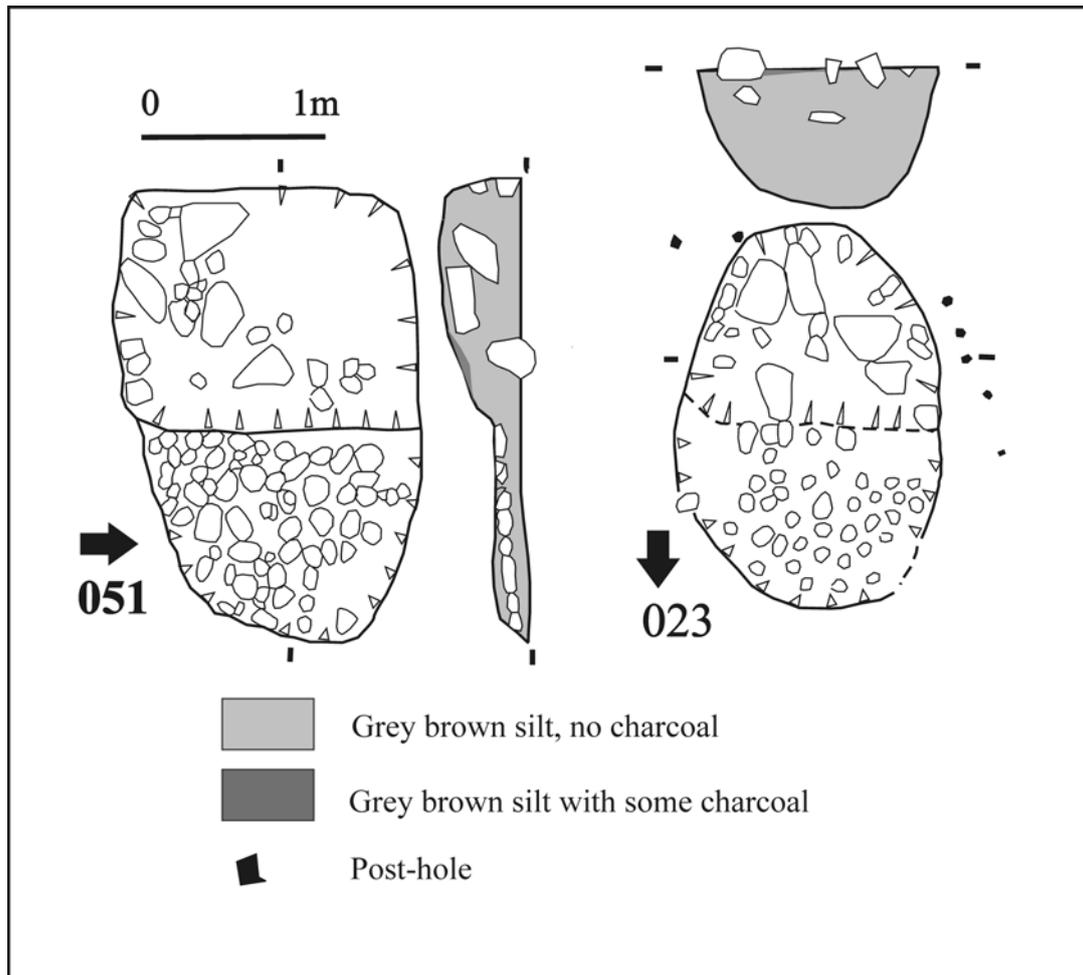
There also appears to have been some sort of structure in the south-west quadrant of the Thainstone building, possibly a bench or bed. A similarly situated feature in Cladh Hallan House 401 (Marshall *et al* 1999, 18, fig 8) was interpreted as the possible setting of a vertical loom, but there is no evidence for such a specific identification at Thainstone.

3.2 Ovens/hearths

To the south-west of the roundhouse, there were two small hearths or ovens (023 & 051) (illus 7). It is not possible to determine if these were contemporary with the roundhouse, or with each other, although their structural similarity suggests that they were intended for the same function. Both were roughly ovoid, 1.04–1.25m long and 0.70–0.80m wide, being divided into a pit at one end, some 250–370mm deep, and a higher area of cobble flooring at the other end. In both features there were some stones apparently lining the sides of the pit. Feature 023 (illus 8) also had a few small stake-holes, diameter 20mm, around the upper edge on the south and west sides. There was a small quantity of charcoal in the base of Feature 051 (illus 9), but no concentration of charcoal, or any appearance of heat-affected soil occurred in either feature. However, in both instances, the pit was partially filled with heat-cracked stones (up to 250 × 200mm), the remaining fill appearing to be silt accumulated in the pits after the deposition of these stones.

3.2.1 Interpretation

Heat-cracked stones as found in these features can be produced by cooking with hot stones in water in the manner of a burnt mound. However, this is unlikely as the features lacked the quantities of either stone or charcoal produced by cooking this



Illus 7 Ovens F023 and F051



Illus 8 Oven F023, looking north. White pegs mark post-holes



Illus 9 Oven F051, looking west

way, even on a small scale. It is more probable that the heat-cracked stones derived from the collapsed superstructure of an oven or hearth built on the cobbles. The function of the pit in each hearth is not clear as there was no evidence of a rake out of burnt material; one possibility could be that they had held small bellows.

It is worth considering if these could have been industrial hearths. The crucible fragment (SF 7), although from the other side of the site, shows that metalworking took place in the vicinity, and one possible explanation of these features would be as small bronzeworking hearths. Small-scale bronzeworking does not produce large quantities of debris

and experimental casting shows that the ground below is often not visibly heat-affected. The identification of these hearths with metalworking may perhaps be supported by the excavation at Birnie, Moray, of part of a tuyere, or bellows shield, in a linear scoop (Hunter 2003, 13). On the same site, a clay ingot-mould has been found in the central hearth in one of the roundhouses (F Hunter, pers comm), which may indicate that small-scale bronzeworking could even have utilized domestic hearths.

However, analysis of a sample of the infill of Feature 023 lacked any evidence of industrial debris: 'The palaeoenvironmental remains present were extremely sparse including one small fish bone vertebrate, occasional small fragments of poorly preserved mammal bone (<1 mm in size), fragments of wood charcoal and one poorly preserved oat grain' (Hastie 2005). This very small amount of material may have derived from general occupation debris washed into the oven pit after it fell into disuse. However, the lack of industrial material, which might equally have been expected to have been in the surrounding yard area, suggests that both Features 023 and 051 may have been predominantly, if not exclusively, used for domestic food preparation.

If the identification of these external ovens as domestic is valid, and if they were indeed contemporary with the roundhouse, it has some implication in considering the functions that took place within a 'house' and may suggest caution in automatically assuming all houses had internal hearths or where such hearths exist that they were primarily for cooking.

3.3 Four-post structure

To the south-east of the roundhouse there was a group of four post-pits (illus 2) set at the corners of a rectangle, with sides of 2.25–2.45m. The diagonals

(to centres) were both 3.35m. The post-pits, which were all straight-sided and flat-bottomed, ranged in diameter from 400 to 500mm and in depth from 450 to 520mm. Three of them (069, 070, 071) had a very similar sequence of fills – a lower fill of silt sealed by 100–150mm of silt lensed with redeposited natural sand – suggestive of the posts having been removed, followed by a gradual silting up. This appeared to have sunk down before the accumulation of charcoal-rich layers which were very similar to those in the upper fills of the roundhouse post-pits. The fill of the fourth pit (072) was of uniformly loose soft brown silt.

Similar four-post features are generally regarded as raised granaries or stores (Gent 1983, 245–51). There was no evidence for the function of the Thainstone structure; indeed, the fact that it appeared to have been dismantled would mitigate against the presence of any remnant of stored grain or other goods even if the survival of occupation levels on the site had been better. It is slightly smaller than most of the rather earlier four-post structures from Kintore, Aberdeenshire, the majority of which ranged between 2.5 and 3sq m (M Cook, pers comm). However, it is within the range recorded by Gent (see Gent 1983, 245) and is similar to other examples such as at Lower Greenyards, Stirling (Rideout 1996, 232), where there were two, approximately 1.8sq m and 2.1sq m, respectively, 6–7m from a roundhouse.

The appearance of the posts having been removed in the Thainstone example suggests that it may have been in use in the early stages of the settlement and then moved or replaced. It is not possible to be categorical that it was in use when the roundhouse was originally built, but its proximity makes it possible. The radiocarbon date from charcoal sunk into the top fill of one of the posts suggests that the four-post structure was out of use by the third century AD.