

Fluctuating settlement patterns in Bronze Age Sutherland: excavation of a roundhouse at Navidale, Helmsdale

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ABSTRACT

Excavation of a well-preserved upstanding roundhouse revetted into a steep hillside at Navidale has revealed a structure with unusually sophisticated architectural traits dated to around 1400–1200 BC. The house was built within an agricultural landscape but its abandonment appears to have been linked to a cessation of agriculture within that landscape, possibly part of a wider environmental decline across northern Scotland.

INTRODUCTION

The upgrade of the A9, the main trunk road north between Inverness and Wick, entailed the excavation of a roundhouse a few miles north-east of Helmsdale in Sutherland, previously identified by the Ordnance Survey in 1976 and confirmed by a later survey (AOC 1994).

The roundhouse (NMRS ND01NW 40) lay at an altitude of approximately 140m above sea level within unimproved ground consisting of heather moor, gorse and bracken north of a steep-sided narrow gorge, through which a freshwater stream, Allt Briste, flows towards steep cliffs (illus 1) where access to the seashore is possible. Lying 300m to the south-east were a further two upstanding roundhouses. To the south, on the opposite side of Allt Briste, were three hut circles and a complex of stone-built structures surrounded by an enclosure. A recent field survey on the south side of Allt Briste identified enclosures, cairns and rectilinear buildings of

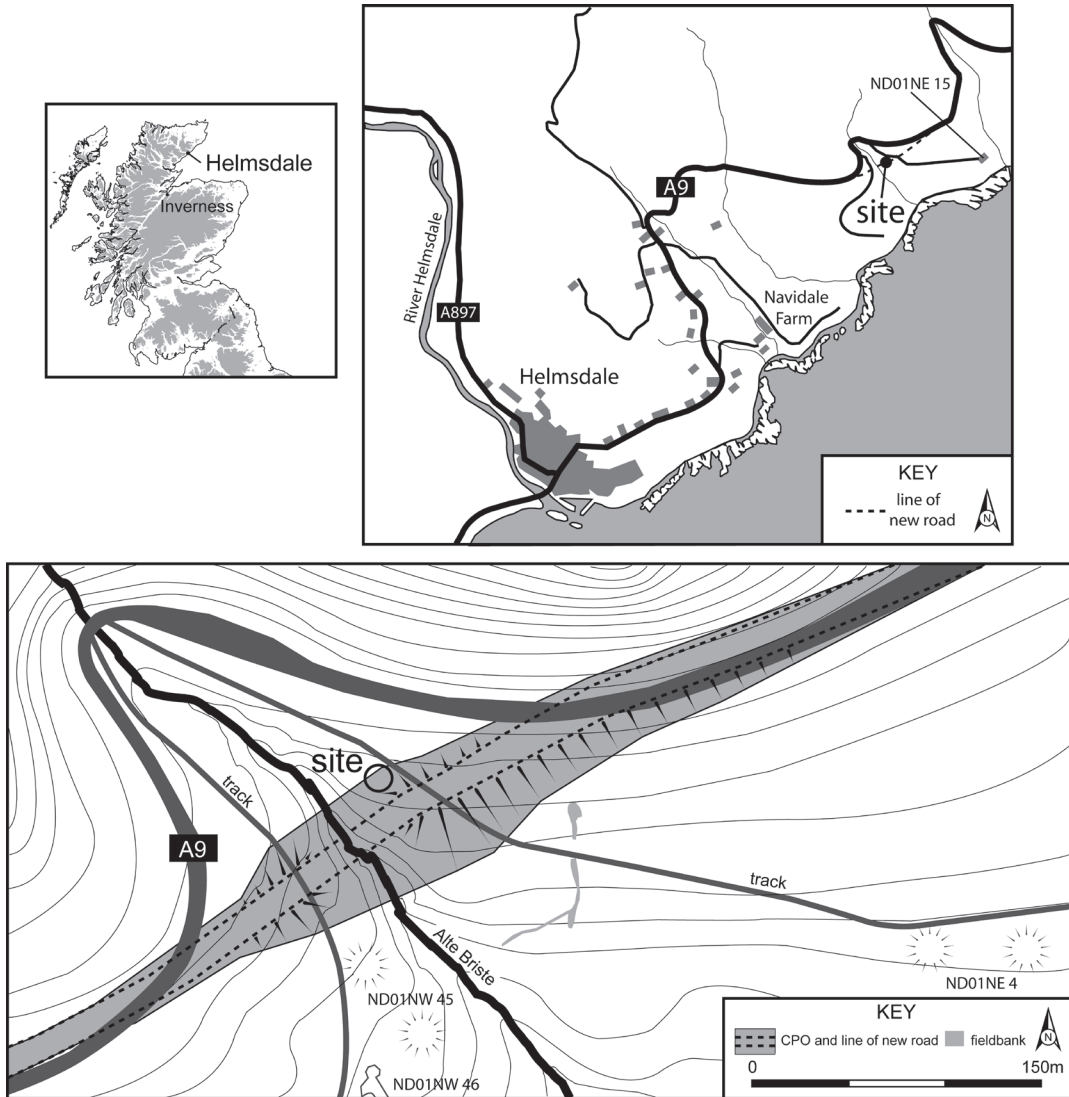
unknown date lying within the post-medieval improved fields (Farrell 2002).

The excavation was conducted in November and December 2002 (Dunbar 2003a). The excavation area, originally covered by dense gorse (illus 2), measured approximately 175sq m. The site was sub-divided into six areas (marked A to F) to allow multiple sampling of specific contexts dispersed across the site (illus 3). A final phase of fieldwork, undertaken in January 2003, examined a field bank that lay outwith the limits of the road re-alignment area (Dunbar 2003b).

THE EXCAVATED EVIDENCE

The excavation revealed a roundhouse which had been built over an artificial platform cut into the hillside. The main structural components of the roundhouse were a bank and stone wall, two drains, an internal post-ring and hearth (illus 3).

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ILLUS 1 Location map, Scotland and site

The excavated evidence is presented in the order in which it would have been built.

ROUNDHOUSE PLATFORM

The roundhouse was positioned on a natural terrace within the otherwise steep gradient of the hillside. The terrace had been augmented to

create a platform on which the roundhouse was constructed. The platform was constructed by cutting into the natural slope to create the rear of the platform and then depositing the spoil from these excavations downslope to create the front edge of the platform (illus 4). The redeposited spoil (context 131) formed the foundation layer for the front apron (context 153) and wall core



ILLUS 2 Photo of site prior to any work taken during walkover survey AOC3854

(context 107), the base upon which the stone floor (context 105) and the footing for the inner wall (context 106) was set. No artefacts or charcoal were recovered from the platform.

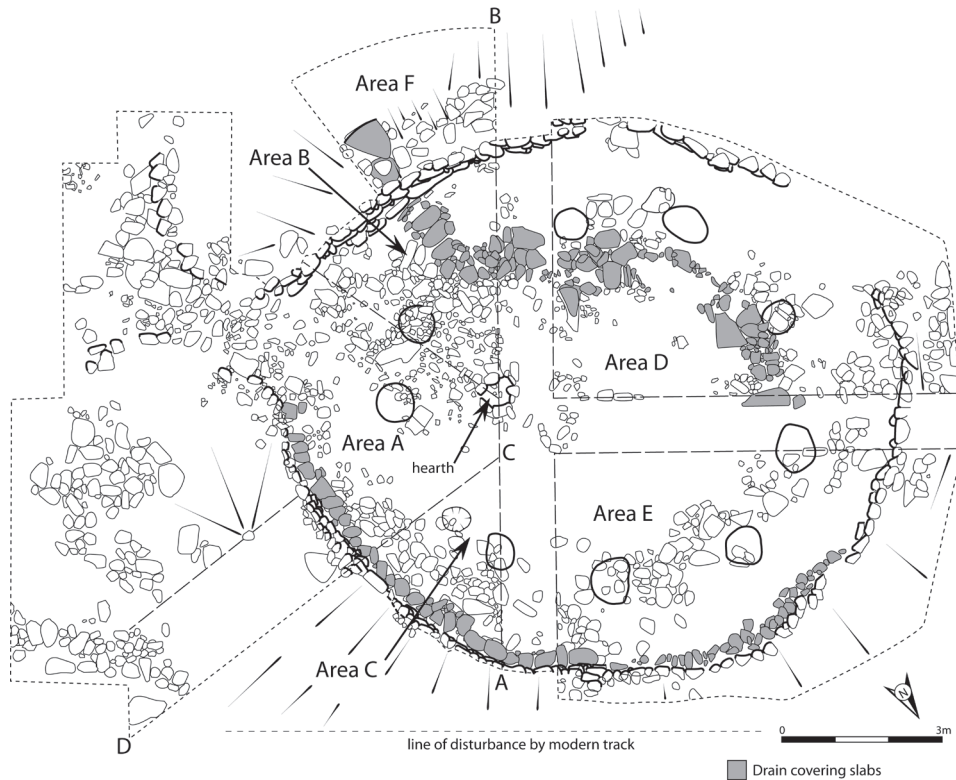
INTERNAL AND PERIMETER DRAINS

The roundhouse had two drains: a perimeter drain (contexts 132, not shown & 134) and an internal drain (context 123, illus 9 below). The perimeter drain followed the line of the northern wall of the roundhouse, from due north round to the entrance. The internal drain lay within the internal circle of post-holes, following their curve before exiting due south between two post-holes and eventually passing out of the house under the revetment wall (illus 3).

The perimeter drain (contexts 132 & 134) was visible as a line of capstones (illus 5) directly below the northern wall face (context 106). At most points the capstones of the drain lay

under the foundation course of the roundhouse wall, indicating that the drain feature clearly preceded wall construction. Therefore, whilst most capstones could not have been moved, in some instances it would have been possible to remove some individual capstones to clear portions of the drain. The drain was V-shaped and was cut into the weathered bedrock to a depth of between 0.15m and 0.35m (illus 6). The drain continued until the subsoil dropped downslope at the entranceway. Any water being carried by the drain appeared to filter out through the redeposited material (context 131) of the roundhouse platform lying below the stone floor surface (context 105) at the entrance to the roundhouse.

The internal drain (context 123) was cut through the subsoil and platform material, the cut partially lined with small edge-set stones and capped with large flattish stones (illus 6). The upper faces of the capstones formed part of the



ILLUS 3 General plan with floor, drains, revetment, post-holes and excavation areas

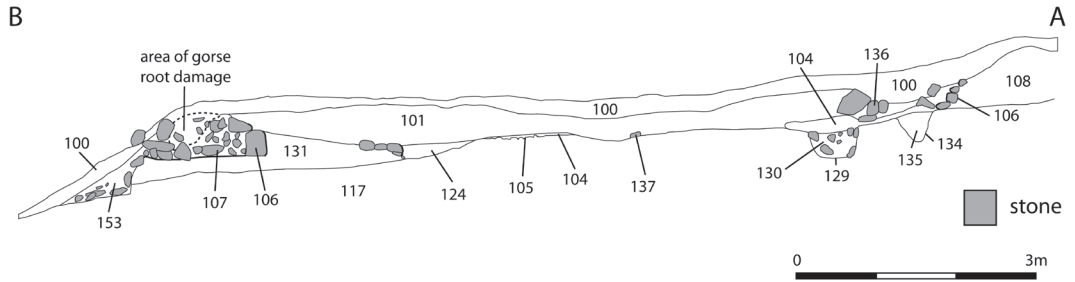
floor surface (context 105). At the inner face of the roundhouse wall (context 106), the drain cut was visible below the foundation course of the wall (illus 7). The drain extended under the wall core (context 107) from the inner face and was stone capped along its length. It was cut into the subsoil below the front apron (context 153). The point at which it emerged downslope was marked by a very large irregular boulder (illus 8), easily two or three times larger than any other stone on site and which was placed over the last few capstones, clearly marking the exit of the internal drain.

Both drains were filled with a very similar dark, charcoal-rich matrix with intermittent grit and infrequent small sub-rounded stone inclusions. A stone pounder (FN17) and burnt

chert flake (FN31) were recovered from the fill of the internal drain. Both drains had quern-stones reused as capstones (FN38 & FN27; illus 8 and see illus 15c). A stone weight (FN28; illus 14c), which had fractured during manufacture, was also reused as a side stone within the internal drain (illus 8). All of the charcoal from these two features derived from alder (*Alnus glutinosa*).

FRONT APRON (REVTMENT & FRONT WALL)

Excavation revealed that the front apron to the platform had two components (illus 4), a front revetment (context 153) consisting of large sub-angular stones and gravel-rich sand which partially overlay stone walls (contexts 106 & 107) built within a shallow cut in the redeposited



ILLUS 4 NE-SW section through platform and roundhouse



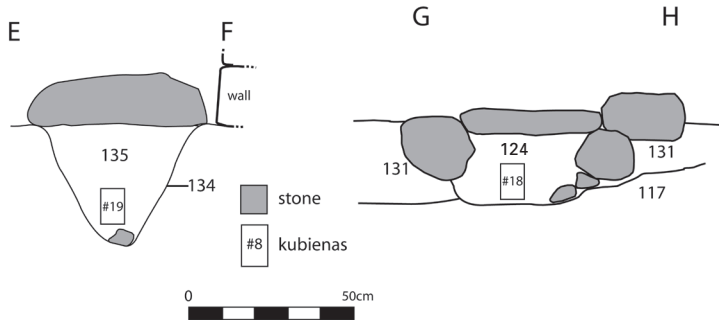
ILLUS 5 View of in situ capstones of perimeter drain in Area C

platform material (context 131). The front revetment (context 153) extended downslope from the front wall and provided structural support for the edge of the platform. The revetment consisted mostly of large sub-angular stones and was distinct from the front wall. The front wall (context 107), unlike the revetment, had been built rather than dumped (illus 7). It was up to 1.5m wide at its base and survived to a height of 1 m. The main body of the front wall was roughly built of stone and earth, in contrast to the inner face (context 106) which consisted of several courses of carefully layered stonework that formed the inner wall of the roundhouse.

A single hammerstone (FN36) and a sherd of pottery were recovered from the section excavated through the front wall. No artefacts were recovered from the revetment.

BANK AND ENTRANCEWAY

The northern side of the house was sheltered and protected by a bank (context 108). During the excavation it was not possible to determine the original extent of this bank due to the landscaping undertaken during the construction of the access track to the nearby World War II coastal lookout point. Though disturbed, certain aspects of the nature of the bank and its role could be deduced.



ILLUS 6 Sections through perimeter drain [134] and internal drain [123]

The bank (context 108) was present around the rear of the platform, from the entrance in the south-east to the beginnings of the front apron at the north-west (illus 3). The bank was, on average, over 2.5m thick at the base increasing to 5m thick near the entranceway where it was delineated by large stones. It is clear from the undisturbed portion that the bank was greater in height than the inner wall (context 106; illus 10). The top of the bank was capped with small cobbles (context 109; illus 10 and 12) and was built to a maximum height of 1.35m. The bank overlay the original topsoil (context 114). The core of the bank was composed of earth with a few large stones at the back of the bank to stop slippage of bank material. The bank was very different in character to the wall core (context 107), with considerably less stone and a much wider base.

The entrance to the roundhouse was completely floored with a cobbled surface (context 105) that extended out beyond the entrance, thus creating a forecourt (illus 11). In plan the entrance resembled a funnel 3.5m wide narrowing to 1.25m at the point at which it met the wall of the house. The passage through the walls was 2m long and widened out to 1.5m as it enters the roundhouse.

A pottery sherd was recovered from the section excavated through the bank. A large saddle quern (FN18) was found at the periphery of the forecourt.

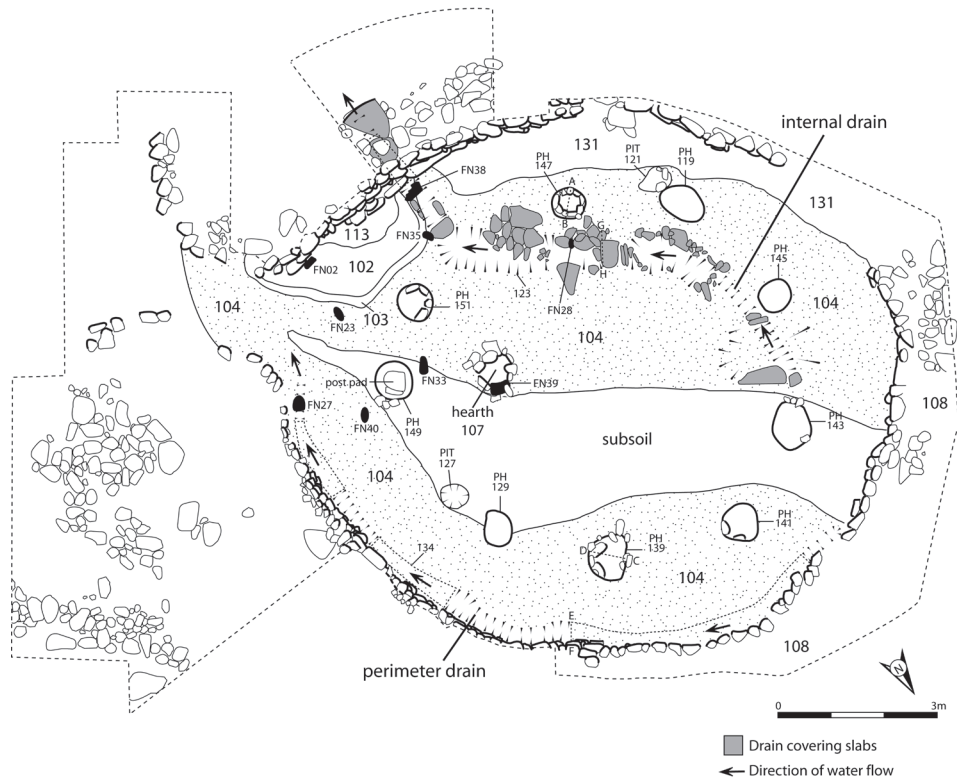
INNER WALL FACE

Different techniques were employed at the front and rear of the roundhouse to create the external structural element of the roundhouse walls: a narrow stone wall core (context 107) and stony revetment (context 153) at the front and a wider stone-capped bank (contexts 108 & 109) at the rear. In both cases the interior face was finished with coursed stonework (context 106).

At least two stone courses of the stone facing (context 106) survived around the majority of the roundhouse. Naturally rounded stones of



ILLUS 7 View of lintel over internal drain [123] as it exits the roundhouse under wall [106]



ILLUS 8 Photo of revetment/wall core with large drain cap boulder, Area F

locally sourced granite were chosen as facing stones (R Engl pers comm). The stones were laid in clearly defined courses (illus 7). No features such as beam slots or footings for supporting roof timbers were noted in the wall face.

On the downslope side of the roundhouse the facing survived to a height of approximately 0.80m, with three or four courses still in situ (illus 7 above). Only a small amount of stone tumble was encountered in this area of the house, in contrast to the rear of the house where a considerable amount of stonework deriving from the wall face had to be removed (illus 11). In places the wall face survived up to six courses high, reaching a height of 1.10m, giving a truer indication of the actual height that the rear wall had originally achieved (illus 12).

INTERNAL POST-RING

The internal post-ring consisted of nine post-holes (contexts 119, 129, 139, 141, 143, 145, 147, 149 & 151), axially aligned south-east/north-west on the doorway, described an oval measuring 7.35m by 6.75m (illus 9 above). The posts were regularly spaced at about 1.75m, except for the two nearest the entrance. These two posts were only 0.8m apart and were much further away (some 2.7m) from their neighbouring post-holes in the sub-circle. The post-holes had an average diameter of 0.68m, and depth varied between 0.35m and 0.54m (illus 13). All of the post-holes contained packing stones. The packing stones in Post-hole 147 survived in their original positions, indicating a timber post approximately 0.40m

in diameter. Two other features, contexts 121 and 127, both lay adjacent to post-holes but were much shallower features without packing stones, possibly representing footings for replacement posts.

Potsherds were found within Post-holes 147 and 129. Charcoal from the post-hole fills was uniformly alder (*Alnus glutinosa*).

FLOOR SURFACE

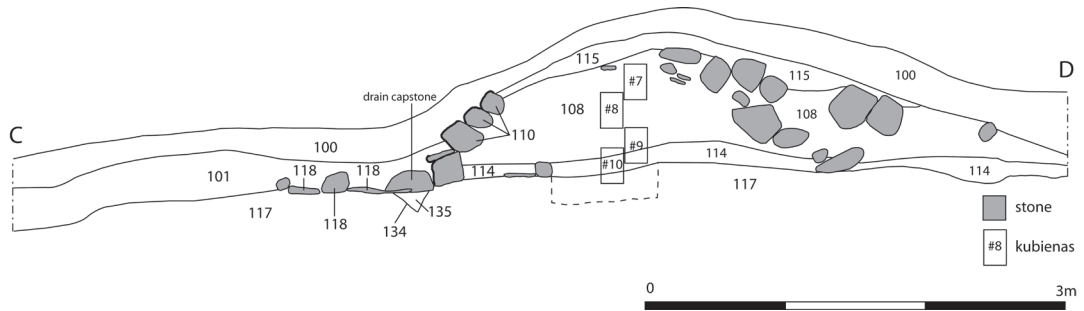
To the rear of the roundhouse the floor surface consisted of the weathered bedrock and no flooring material was found. The constructed stone floor (105) was confined to the front of the roundhouse, the entranceway and the forecourt

(illus 11), where the ground level had been artificially raised. The foundation layer (131) was especially thick at the entranceway and along the south side of the house. A stone floor consisting of flat and rounded cobbles (context 105) was laid directly over this. A hearth (context 137), outlined by granite stones arranged in a vaguely circular fashion, was set into this floor (illus 8).

The stone floor contained four coarse artefacts reused as cobbles; a rubbing stones (FN23 & FN35), a knocking stone (FN33) and a cupmarked stone (FN40) (illus 9). Both the knocking stone and cupmarked stone were placed 'face' down. A saddle quern (FN39) set on edge was used as one of the stones defining the hearth (context 137; illus 9 above).



ILLUS 9 Plan showing artefacts reused within structure with FN and showing extent of survival of occupation layer [104]



ILLUS 10 Section through bank [108]

OCCUPATION DEPOSIT

An occupation layer (context 104) covered most of the interior of the house but especially the stone floor (illus 8). It consisted of dark gritty sand with charcoal inclusions and contained the majority of the small finds recovered from the site. These comprised a complete stationery quern (FN02; illus 9) and a slug quern fragment (FN06; illus 15), both found up against the inner wall face (context 106), a decorated stone pendant fragment (FN12; illus 16), a hammerstone (FN14), most of the chipped stone assemblage including the only flint artefact, a retouched flint flake (FN15; illus 14) and a single potsherd.

ABANDONMENT AND POST-ABANDONMENT

A small discrete deposit of burnt material (context 113) that derived from a single episode of burning lay directly over the floor and occupation deposit (context 104), up against the inner wall face (illus 9). Two potsherds were recovered from this deposit, which also contained hazel (*Corylus avellana*) charcoal. This would appear to relate to abandonment or post-abandonment activities as its position against the inner wall face is an unlikely place for a hearth in a roofed structure where the eaves would have been at the lowest.

Overlying both deposit (context 113) and occupation layer (context 104) was another deposit (context 103), present in Areas A and B

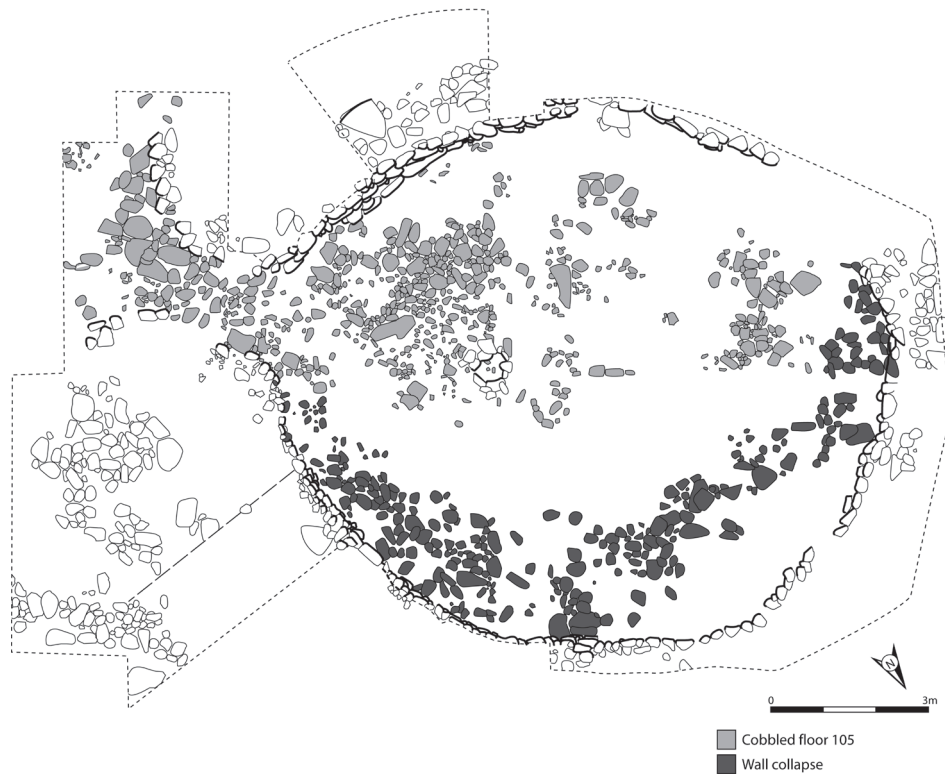
only (illus 98). Up to 0.25m deep, it contained a hammerstone (FN13), a polishing stone (FN09) and a broken pecked stone (FN08), three pieces of quartz and a pottery sherd. At the rear of the roundhouse, the upper part of this deposit contained large amounts of stone tumble deriving from the collapse of the inner wall face.

INUNDATION DEPOSITS

Inundation deposits (contexts 101 over 102) constituted the main fill of the roundhouse, with 101 present across the entire structure and 102 more localized around the northern side of the entrance (illus 4 & 8). Both deposits consisted of light-coloured striated layers of sands with infrequent small sub-rounded stones. They were up to 0.60m deep with scattered iron pan at their bases. These contexts post-dated the majority of the wall collapse.

FIELD BANK AND PLATFORM

The fieldbank consisted of large stones with additional piecemeal inclusions from probable field clearance. There was no evidence of an earthen bank or turves. The fieldbank extended for 75m, aligned north/south downslope, with a 50m long extension curving south-west as it approached the Allt Briste. The platform at the eastern end of the fieldbank measured 7.0m



ILLUS 11 Roundhouse plan showing extent of wall tumble and stone flooring

by 4.5m aligned north/south. It was roughly rectangular in plan and comprised sub-angular and sub-rounded stones. The stones formed a crude flattish platform revetted along its southern edge. No artefacts were recovered.

ECOFACT AND ARTEFACT STUDIES

The full texts and catalogues for the finds reports presented below form part of the project archive lodged with the National Monuments Record of Scotland.

Samples were assessed to determine the survival of plant macrofossils, parasites and pollen but preservation was poor and further study was not conducted. Barley and hazelnut

shell were present but in negligible amounts (Hall 2004).

THE POTTERY

Ann MacSween and Alan Vince

Seven sherds and a handful of fragments were recovered from seven contexts. The undecorated pottery was all heavily tempered with rock fragments and was undiagnostic with no indication of vessel form. The sooting noted on some sherds suggests that these were probably cooking vessels.

On detailed examination by eye it was concluded that three fabric types were

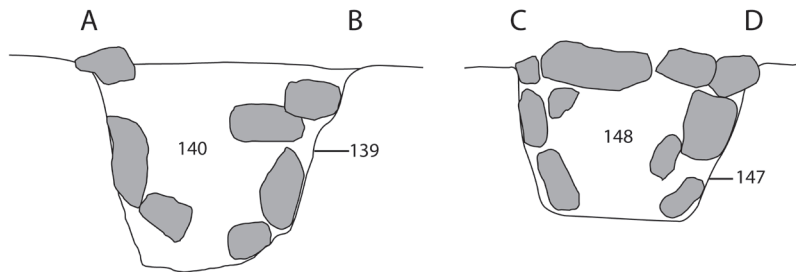


ILLUS 12 View of in situ rear wall [106] with stone capping [109] over bank visible

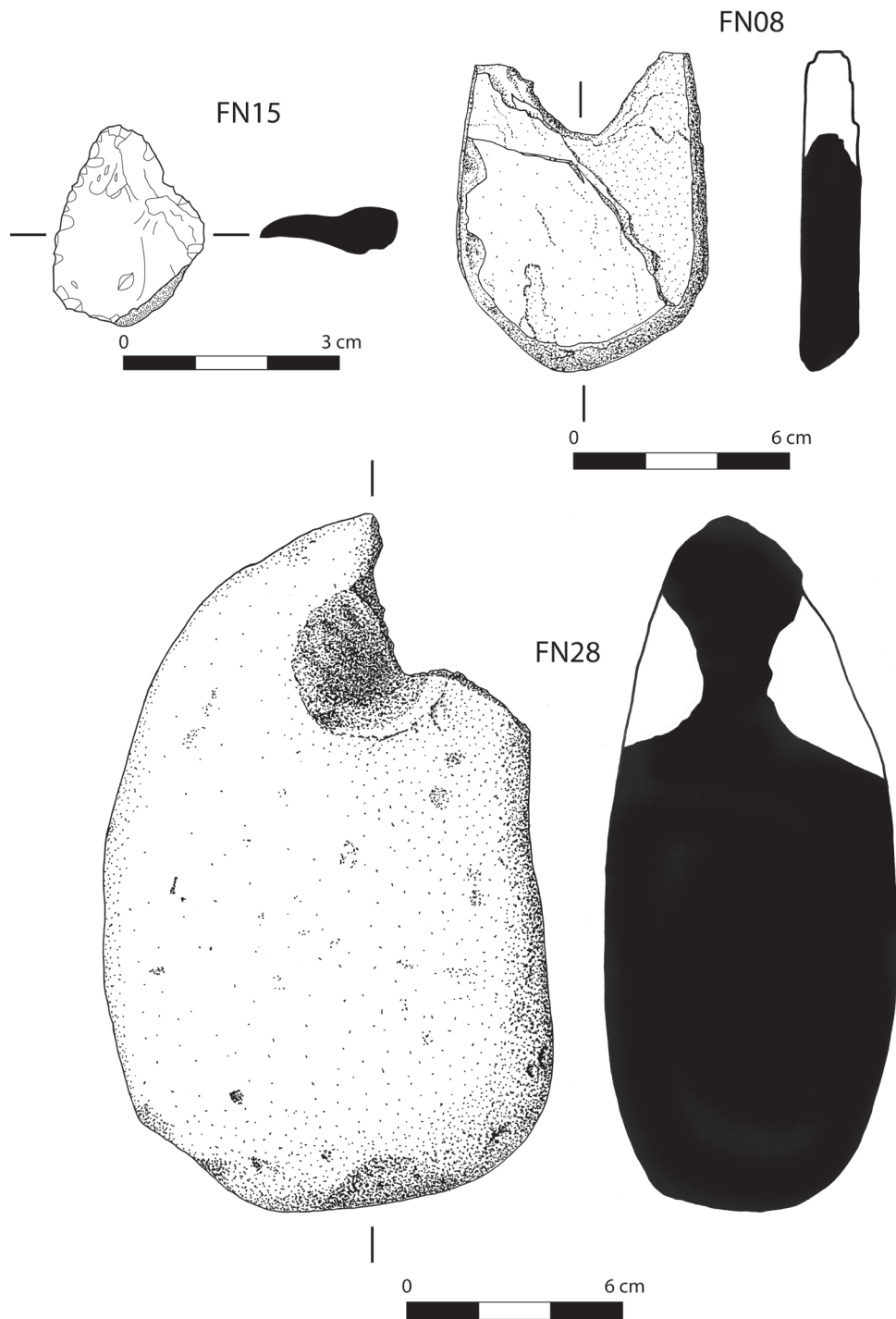
represented. The three fabric types have very different petrological characteristics due to employing different methods of clay preparation and because raw materials derived from different sources. The raw materials could all be locally sourced. The texture of Type 1 suggests the use of boulder clay with fragments of metamorphic rock fragments, which probably originated

in the Moine schist series. The clay of Type 2 was probably sedimentary in origin, with the inclusions either natural to the clay or deliberate addition of river gravel. The Type 3 fabric comprised clay and inclusions, which could have derived from the weathering of mudstone.

The very small amount of pottery found at Navidale is typical of sites of this type. At Lairg,



ILLUS 13 Sections of post-holes [139] and [147]



ILLUS 14 Worked stone artefacts FN15, FN08 and FN28

Sutherland, only six of the excavated houses produced pottery, and only one, which had been destroyed in a catastrophic fire, produced it in any quantity (MacSween 1998, 141, table 21). The small number of vessels and sherds in the other houses led to the conclusion that there was a regular cleaning out of the deposits that accumulated in the houses, perhaps for use as manure (Carter 1998, 159).

THE CHIPPED STONE

Rob Engl

Eighteen pieces of chipped stone were retrieved from the excavation (Table 1). The quartz was classified using a variation of the system devised by Finlayson (1998) for the lithic material recovered from Lairg, Sutherland. The assemblage comprised 15 pieces of struck quartz, two pieces of chert and a single piece of flint. Only the latter (FN15) showed secondary modification in the form of a retouched scraping edge (illus 14). Where present, the cortex on the quartz appeared smooth and water-rolled indicating a coastal or riverine pebble source. The chert and flint were both probably obtained from the same local pebble source.

TABLE 1
Chipped stone assemblage

<i>Material</i>	<i>Type</i>	<i>Number</i>
Quartz	Flakes	7
	Primary	(2)
	Secondary	(1)
	Tertiary	(4)
Quartz	Shatter	6
Quartz	Bipolar core	2
Chert	Flakes	2
Flint	Retouched flake	1
<i>Total</i>		<i>18</i>

Both cores were classified as bipolar. However, all the flakes appear to have been produced using direct hard hammer percussion, probably from simple platform or amorphous cores. Of these, only FN24 exhibited signs of use-wear along the distal edge. Though the flake edges are relatively thick this does not exclude them from use as expedient tools (Finlayson 1998). The six pieces of shatter represent the waste material from the initial knapping of the raw material.

Discussion

The chipped stone was recovered entirely from within the structure, mostly from the occupation deposit (104) or post-abandonment deposit (103).

Quartz is a common component of lithic assemblages on Scottish prehistoric sites. The general nature of the assemblage suggests that the lithic industry of Navidale is of a later prehistoric date although Finlayson (1998) has observed that at Lairg the distribution of worked quartz was largely absent from sites of Iron Age date. The assemblage recovered at Navidale suggests that, in common with the small lithic assemblages at Kilphedir (Fairhurst & Taylor 1971), chipped stone was worked on or near the site and exploited locally available raw materials through expedient hard hammer reduction techniques.

THE COARSE STONE

Rob Engl

Some 22 coarse stone artefacts were recovered. The artefacts were grouped according to general characteristics such as morphology, use-wear and perceived function (see Table 2). A detailed description of each illustrated artefact is given below.

The site was situated on a solid geology of Late Silurian age, consisting of granites, biotites and other related igneous materials

TABLE 2
Coarse stone assemblage

<i>Artefact type</i>	<i>Total</i>
Saddle querns	5
Slug querns	1
Quern rubbers	2
Hammerstones	4
Grinders	1
Pounders	1
Pecked stone	2
Cup-marked stone	1
Manuports	3
Mortar	1
Pendant	1
<i>Total</i>	<i>22</i>

(Futty & Towers 1982). Other rock types within the wider area include foliated quartz-feldspar, mica-schists and hornblende-schists. The site was situated close to outcroppings of rock and sources of water-worn cobbles from both the foreshore and stream bed of Allt Briste. These localized rock formations were therefore the most probable sources of raw materials utilized in the assemblage.

Quern stones

The excavation recovered six quern stones, of which five were saddle querns. Two saddle quern rubbers were also retrieved. The quern stones are grouped into three sub-categories based on morphology and patterns of wear (Table 3).

Cobble tools

There were nine cobble tools (Table 4). The two stones which has been shaped by pecking, FN08 and FN28, were probably intended as weights, either for the loom or as net-sinkers. The other artefacts are all likely to have had domestic functions. The grinder/polisher, FN09, had parallel facets suggesting that the cobble had been used at an angle and worn by a back-and-forward motion. Artefacts such as these were probably used in a wide range of household activities, such as the working of skins, while artefacts such as the pounder, FN17, were probably used in the processing of household foodstuffs. The hammerstones would have been used to reduce or shape hard intractable lithic materials such as quartz and were also used in the shaping and maintenance of saddle querns and rubbers. The working faces of these artefacts would need constant roughening in order to maintain a suitable grinding surface.

TABLE 3
Distribution of quern stones

<i>FN</i>	<i>Context</i>	<i>Area</i>	<i>Type</i>	<i>Material</i>
02	104	A	Stationary saddle quern	Sandstone
06	104	A	Slug quern fragment	Granite
18	101		Stationary saddle quern	Granite Schist
23	105	A	Rubber	
27	135	A	Saucer quern	Granite Biotite
35	105	B	Rubber	Granite
38	124/105	B	Stationary saddle quern	Granite Schist
39	137	A	Stationary saddle quern	Granite Schist

TABLE 4
Distribution of cobble tools

<i>FN</i>	<i>Context</i>	<i>Area</i>	<i>Type</i>	<i>Material</i>
08	103	B	Pecked stone	Foliated Granite
09	103	B	Grinder/polisher	Quartzite
13	103	B	Hammerstone	Granite
14	104	A	Hammerstone	Quartz Feldspar
17	124	D	Pounder	Granite
25	104	E	Hammerstone	Fine grained granite
28	124	B	Pecked stone	Granite Schist
36	107	B	Hammerstone	Granite
40	105	A	Pivot stone	Granit

Catalogue of illustrated coarse stone artefacts

FN06 Context 104. Slug quern fragment (illus 15).

This artefact was made from a split oval boulder of granite and had been transversely broken in half. It was longitudinally concave and transversely convex and had a rounded base. There was evidence of pecking to the narrow end of the working surface together with smooth patches of wear around the perimeter and it was worked up to the edge. L 155mm × W 180mm × Th 65mm.

FN08 Context 103. A small horseshoe shaped slab of

foliated granite with a wide hole pecked through on both sides at the narrowest end of the stone (illus 14). The pecked hole, diameter 32mm and depth 7mm, had increased the fragility of the stone leading to the top portion of the artefact breaking off. The artefact may have been a loom weight or net-sinker. L 90mm × W 70mm × Th 10mm.

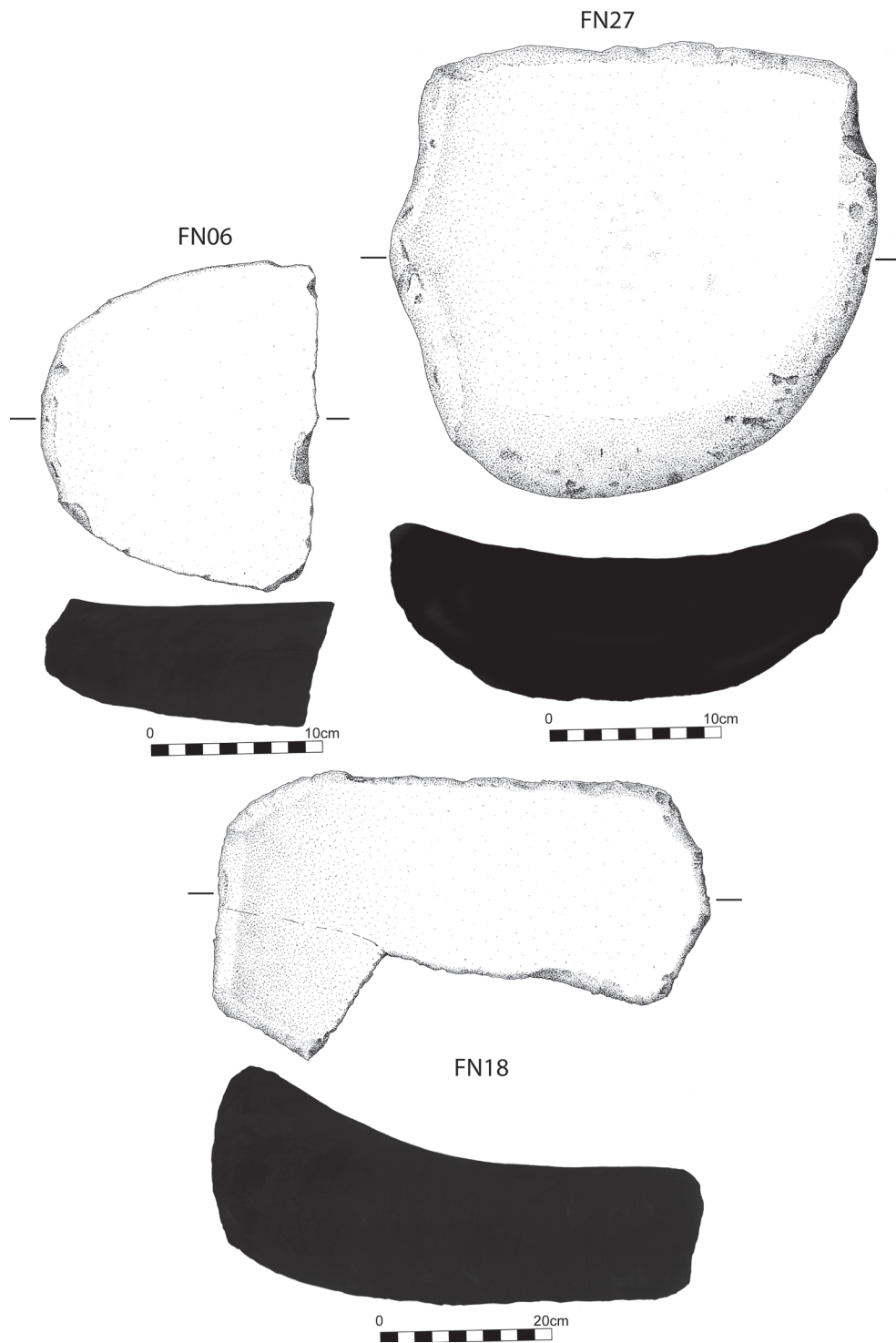
FN18 Context 101. Large stationary quern (illus

15). This was found in situ, at the entrance to the roundhouse. It was made from a rectangular boulder of granite schist. This saddle quern had a flat stable base with a single pronounced raised and longitudinal concavity. Pecking was visible across the central portion of the artefact together with several longitudinal striations. Smooth patches of wear were present around the perimeter and it had been worked right up to the edge. Though mostly intact, a fragment had been broken off along two thirds of the right longitudinal edge. L 560mm × W 280mm × Th 240mm.

FN27 Context 135. Saucer quern (illus 15). A split, roughly circular boulder of biotite-granite. The working surface of this quern stone was worked in a roughly circular fashion. Unlike the other quern stone examples this artefact was worked short of the perimeter creating a pronounced lip. Pecking had been applied to the central portion of the surface and there are smoothed patches of wear around the inner perimeter. A larger area of smoothed wear was located along the outer perimeter at one end probably caused by the initial movement of the rubber away from the body. The opposite end appeared to have suffered some damage and a small portion of the quern edge appears to have been broken off. L 230mm × W 280mm × Th 75mm.

FN28 Context 124. Pecked stone (illus 14). A large oval cobble of granite-schist in which the pecking of a hole through the narrowest end of the stone had caused the artefact to break before the hole could be completed. The stone had been pecked from both faces to form depressions approximately 30 mm deep and 45 mm in diameter. This artefact may have been intended as a large loom weight or net-sinker. One longitudinal edge of the artefact appeared to have grinding wear suggesting that at some stage the artefact was reused as a grinding tool. L 180mm × W 15mm × Th 65mm.

FN40 Context 105. A large oval cobble of granite, with half of a pecked and ground cup-mark visible on one face (illus 16). The cobble had been broken transversely across the cup-mark, which had



ILLUS 15 Quern stones FN06, FN18 and FN27

a diameter of 50mm and a depth of 40mm with rotary striations, suggesting that the cobble had been used as a pivot stone. The reverse face of the cobble also had traces of a cup-mark placed slightly off centre. This also had a depth of 40mm and similar rotary striations present. Both faces of the cobble show evidence of heavy diffuse pitting, indicating subsequent use as a hammer-stone. L 170mm × W 155mm × Th 110mm.

Discussion of the coarse stone

The coarse stone assemblage can be readily compared with several other excavated roundhouse sites situated within the wider locale, including the Bronze Age/Iron Age roundhouse sites of Upper Suisgill (Barclay 1985), Kilphedir (Fairhurst & Taylor 1971) and Lairg (McCullagh & Tipping 1998).

The treatment and distribution of saddle querns are similar at all four sites. At Upper Suisgill four saddle querns were recovered, three of which had been reused as building materials either within post-holes or walls. A fourth saddle quern was found within a disturbed context of occupation material. At Navidale, saddle querns FN27 (context 135) and FN38 (context 124/105) were used as capstones covering the drain. Saddle quern FN39 was retrieved as part of the possible hearth setting (context 137). This has a direct parallel at the nearby site of Kilphedir where a large stationary saddle quern was recovered from the edge of Hearth II in Hut-circle V (Fairhurst & Taylor 1971, 83).

Navidale has a similar assemblage to that recovered from Lairg but it does not display the structured deposition seen there. In Roundhouses 3 and 4 at Lairg, two large stationary saddle querns had been intentionally placed with the grinding face down, probably as closing deposits to mark episodes within the structural life of the house. Although two saddle querns and two rubbers were recovered from Fill 104 and Floor layer 105 of the roundhouse at Navidale, only saddle quern FN18 appeared to be in situ. This artefact was positioned directly outside the roundhouse entrance, probably to maximize available working light and shelter.

Though the chronology of saddle querns is uncertain, an Iron Age date has been attributed to the rimless types present at Navidale (Close-Brooks 1983). This is contradicted by the dating evidence (see below), which indicates occupation only in the mid-second millennium BC.

All but one of the other coarse stone artefacts at Navidale were found within the interior fills and structure of the roundhouse. The hammerstone FN 36 was retrieved from the roundhouse wall (context 107).

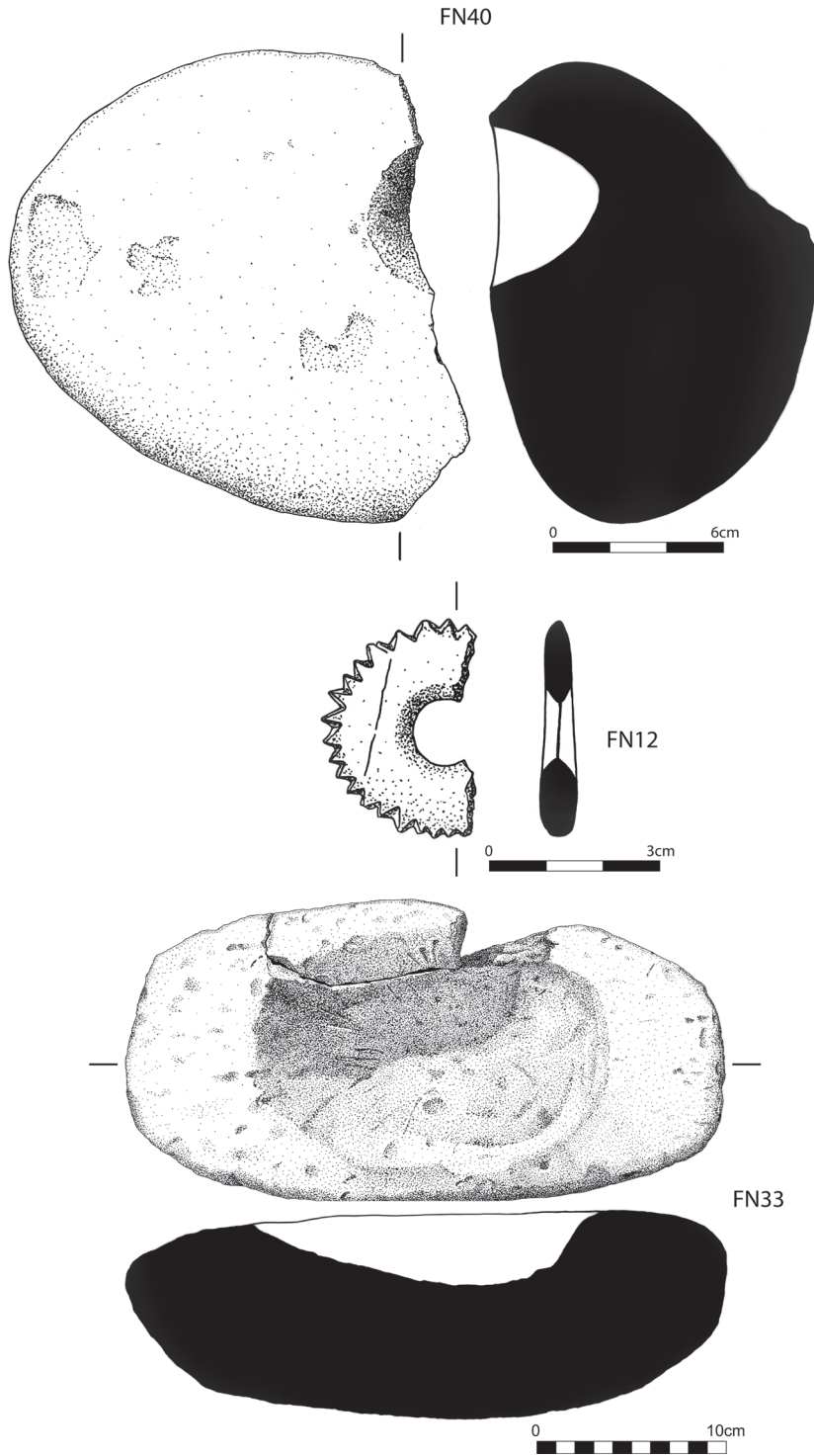
The variety of cobble tools was also very similar throughout the assemblages of the four sites listed above. Pounding stones, hammerstones, grinding stones and pivot stones are all common artefacts on domestic sites of the Bronze Age and Iron Age. At Navidale the two pecked stone artefacts, FN28 and FN08, were both used as weights despite their differing sizes. FN08 may have been a large spindle whorl or loom weight. However, the large size of the pecked hole suggests that it was meant to hang from much larger cordage than would be usually found on a loom. However, given the coastal location of Navidale, a more likely interpretation of these artefacts would be that they were used in fishing as net-sinkers or line weights.

THE PENDANT AND MORTAR

Dawn McLaren and Fraser Hunter

Pendant (illus 16)

FN12 L 37mm × W 26mm × Th 6mm. An incomplete oval pendant (*c* 50% surviving) with a decorative serrated edge created by grooves cut bifacially into the tapered edge was recovered from occupation deposit (context 104). It was fashioned from dark brown/red siltstone with light grey surface mottling, chosen presumably for its decorative qualities. This may be from a local source but is more typical of the Southern Uplands (S Miller pers comm), raising the possibility that the stone was an import.



ILLUS 16 Worked stone artefacts FN40, FN12 and FN33

However, this cannot be confirmed from visual inspection alone. The central circular perforation is bi-conical (diameter max 16 mm, min 12 mm). The finish is more careful on one surface than the other, as concentric striations remain around the central perforation of the flatter face. This surface also displays slight polish, perhaps from contact with the wearer's garment and contrasts with the slightly domed outer surface. It seems that one face only had been prepared for outward display, indicating use as a pendant rather than a bead.

This pendant is difficult to parallel. Although there are earlier and later examples of decorated stone pendants, no close equivalents of Middle–Late Bronze Age date are known to the writers. Flat perforated stone pendants are found with Middle Bronze Age burials such as Loanhead of Daviot, Seggiecrook and Drumdurno, Aberdeenshire; Kiltry Knock, Banffshire; and Aldbourne, Yorkshire (Greenwell 1890, 56; Callander 1905, 186; Kilbride-Jones 1936, 283, 301, fig 10a and b; DES 1960, 2; Shepherd & Cowie 1977, 117; Kinnes & Longworth 1985, 128). None are closely similar to the Navidale example; apart from the incised slate object from Seggiecrook, all are simple flat oval or sub-oval undecorated stones with a biconical perforation at one end. Perforated stone pendants are also known from Beaker inhumation burials such as Ruthven, Aberdeenshire and Achnamara, Argyll (Childe 1937, 89; Clarke 1970, 315) but these are significantly earlier than the Navidale

example. A related pendant from Traprain Law is a decorated variant of the Iron Age tradition of cancell coal ring-pendants. It too was oval with a central biconical perforation; incised grooves on both faces divided the external rounded edge to form segmented decoration, but in contrast to the Navidale pendant these grooves continued onto the domed surface to create 'lobate figures' (Cree 1924, 259, fig 15, no 37, 271). It is poorly dated, but such cancell coal ring-pendants are an Iron Age type. While the habit of decorative pendants was clearly a long-lived one, none of these parallels can be seen as a tradition closely related to the Navidale example. It remains an interesting but enigmatic find, with tantalizing hints that it may be an import.

Knocking stone (illus 16)

FN33 L 320mm × W 155mm × Th 104mm. Dimensions of hollow L 140mm × W 110mm × Th 45mm. A plano-convex slug-shaped quern rubber with a central oval hollow, from reuse as a knocking stone was recovered from the stone floor (context 105) where it had been reused upside down as cobble. It is now in two joining fragments with one small piece missing. It is made from micaceous sandstone from a local source (S Miller pers comm). The grinding face was worn smooth, with peck marks from manufacture on the rounded ends and domed surface. The centre of the grinding face had a

TABLE 5
Calibrated radiocarbon dates

<i>Context No & Area</i>	<i>Species</i>	<i>Lab No.</i>	<i>Date BP uncal</i>	<i>2 Sigma cal BC</i>	<i>3 Sigma cal BC</i>
[122] (D)	<i>Alnus glutinosa</i>	SUERC-4393	3020 ± 35	1390–1120 BC	1410–1110 BC
[113] (B)	<i>Corylus avellana</i>	SUERC-4392	3035 ± 35	1410–1210 BC (89.1%)	1430–1120 BC
[135] (A)	<i>Alnus glutinosa</i>	SUERC-4395	2720 ± 35	930–800 BC	1000–790 BC
[152] (A)	<i>Alnus glutinosa</i>	SUERC-4399	3050 ± 35	1410–1210 BC (93.5%)	1430–1120 BC
[124] (D)	<i>Alnus glutinosa</i>	SUERC-4394	3060 ± 35	1420–1250 BC (90.0%)	1440–1120 BC

secondary hollow, pointed oval in plan, formed by gouging with a metal tool; tool marks from manufacture have been obliterated by use-wear except where the hollow becomes shallow. The concentrated peck marks and lack of evidence for grinding suggest that this functioned as a mortar, perhaps a knocking stone for dehusking barley (cf Fenton 1978, 396). The breakage that affected the hollow led to the stone being reused as a part of the flooring material (context 105).

There are many examples of the secondary reuse of quern stones. An unprovenanced rubbing stone (NMS BA 40) has a similar central pecked ovoid depression on the grinding surface which indicates secondary use as a mortar or knocking stone, while saddle quern rubbers from Archerfield, East Lothian (Curle 1908, 309–10) and the Late Bronze Age structure at Blairhall Burn, Amisfield, Dumfriesshire (Strachan et al 1998, 77) had been reused as anvils.

SOIL MICROMORPHOLOGY

Claire Ellis

Seven samples were selected for micro-morphological analysis. Samples were prepared for thin section analyses by G McLeod at the Department of Environmental Science, University of Stirling using the methods of Murphy (1986).

Colluvium

Sample 02 comprised two layers, a lower silt rich in organic matter (context 102) and an upper coarse sand/grit (context 101), interpreted as alluvium following site abandonment. The lower silt (context 102) exhibited no internal structure but it was well sorted and appeared to be alluvial/colluvial in origin. The source of this silt is likely to be an eroding peaty soil which had not been subject to a great deal, if any, manuring. The boundary between the silt (context 102) and the well-sorted coarse sand/grit (context 101) was distinct and demonstrated a dramatic change in the carrying capacity of the

water flow, such as might be caused by a sudden downpour and scouring out of the C-horizon (weathered bedrock). The band of sandy silt, rich in organic matter, within context 102 was interpreted as the result of a temporary reduction in amount of runoff and hence erosion.

Sample 03 comprised a lower mixed deposit (context 103) of mid-brown to orange silt with numerous stones and rare charcoal flecks overlain by context 102. In thin section, context 103 was readily identifiable, with the top of the slide comprising the boundary between context 103 and context 102. The silt (context 103) was rich in organic matter and moderately well sorted, but a lack of internal structure and preferred orientation of the larger rock fragments prevents a firm identification of the mode of deposition. Much of the amorphous organic matter appeared to be charred. However, the lack of phytoliths within this organic matter indicates that grasses (in the broadest sense) were the primary source. Context 103 had been subject to significant post-depositional bioturbation and so must have remained accessible to soil biota and was not buried by impenetrable colluvium for some years.

Sample 16 comprised an upper alluvial layer (context 101) of light brown bands of sand interbedded with organic-rich layers and a lower layer (context 131) of mid-brown and orange silt with dark sands; the latter was interpreted as a deposit that was excavated from the rear of the house and dumped towards the front to create level ground. Context 131 was a poorly sorted coarse sand with frequent granite rock fragments and was dominated by charred amorphous organic matter, especially towards the top of the unit. The silt of context 131 was very similar to that of context 108 (Sample 09 below) and so it is possible that it too had been dumped; unfortunately the original fabric had been largely destroyed by bioturbation. The unit was not particularly compact but the concentrations of ash and charcoal, especially towards the top of the deposit, may indicate its incorporation by tramping, rather than being a primary component

of the dumped deposit. The boundary between contexts 131 and 101 was sharp, indicative of a rapid change in the depositional regimen and presumably marked the abandonment of the site and a sediment hiatus before the onset of localized flooding. The overlying sediment (context 101) comprised an extremely well-sorted silt and resembled context 102 of Sample 02 in both description and mode of deposition, rather than the coarse sand/grit of context 101 in the same sample. The silt was dominated by extremely well-decomposed amorphous organic matter; it was not charred. The frequent occurrence of biogenic silica, with a few diatoms, indicates the source of the organic matter was grasses, in the widest sense, growing in a damp environment.

The bank

Sample 09 comprised the grey brown mottled material (context 108) which formed the core of the bank. The sediment was well-compacted, poorly sorted silt with coarse sand to grit-sized mineral grains and rock fragments. The lack of any internal structure indicates that this sediment had been dumped. Anthropogenic input into the sediment was apparent in the form of charred amorphous organic matter and weakly defined zones rich in ash and disseminated charcoal; clearly this material was incorporated prior to bank construction. The relatively low concentration levels of ash and other anthropic indicators suggest that the source of the bank material is an improved, probably cultivated soil rather than a midden.

Buried soil

Sample 10 was described as comprising the natural subsoil (context 116 and 114), which was interpreted as a buried soil; only context 114 was observed in the thin section. Context 114 was poorly sorted with sub-rounded to sub-angular granite rock fragments occurring in the lower two thirds of the thin section. These were set within a silt which was rich in charred organic matter largely derived from wood or plants

rather than turves or peat. The ash component (charred organic matter, charcoal and biogenic silica) had been reworked by soil biota. The micromorphological analysis confirms the interpretation of this sediment as a buried soil and the incorporation of the granite clasts and the resultant fabric indicates that not only had the soil been improved through the addition of midden-like material but that it had also been physically disturbed probably through tillage or cultivation.

House-drain fills

Sample 18 was from the internal drain fill (context 124) and **Sample 19** was from the perimeter drain fill (context 133). The fills of the two drain cuts were very similar both in their physical characteristics and mode of deposition. In both cases the silts were well-sorted and had been deposited by low velocity flows. The silt appeared to derive from a manured soil and/or midden, incorporating frequent charred and uncharred organic matter, disseminated charcoal and fragmentary phytoliths. The burning of both wood and grasses was indicated.

Discussion

Following abandonment, the roundhouse was first covered by a silt rich in organic matter (context 102), which was overlain by a coarse sand/grit (context 101). These alluvial/colluvial deposits were deposited by water and appear to have derived from an eroding soil and the underlying weathered bedrock. Made ground (context 131) within the roundhouse is likely to have been dumped. It contained a significant amount of burnt organic matter, which was probably the ashy remnants of an internal hearth gradually incorporated by tramping. The bank material (context 108) derived from a soil that had either been burnt or manured and may well have been cultivated. The buried soil (context 114) underneath the bank had been manured and very likely tilled. The drain fills underlying the house were deposited in a low velocity environment

and contained re-deposited cultivated soil and/or midden.

RADIOCARBON DATING

The radiocarbon dating strategy was designed to establish the period of use for the roundhouse and determine the duration of the use of the site. The contexts selected for radiocarbon dating all contained substantial quantities of identifiable, unabraded charcoal from fast-growing species. The five contexts chosen for dating included the internal and perimeter drains (contexts 124 and 135) respectively, structural post-hole (context 152), replacement post-hole (context 122) and the abandonment/post-abandonment activity (context 113). The four contexts relating to the active use of the roundhouse contained only *Alnus glutinosa* while the remaining sample from a abandonment/post-abandonment deposit (context 113) consisted purely of *Corylus avellana*. Consequently, only a single AMS date was sought for each context.

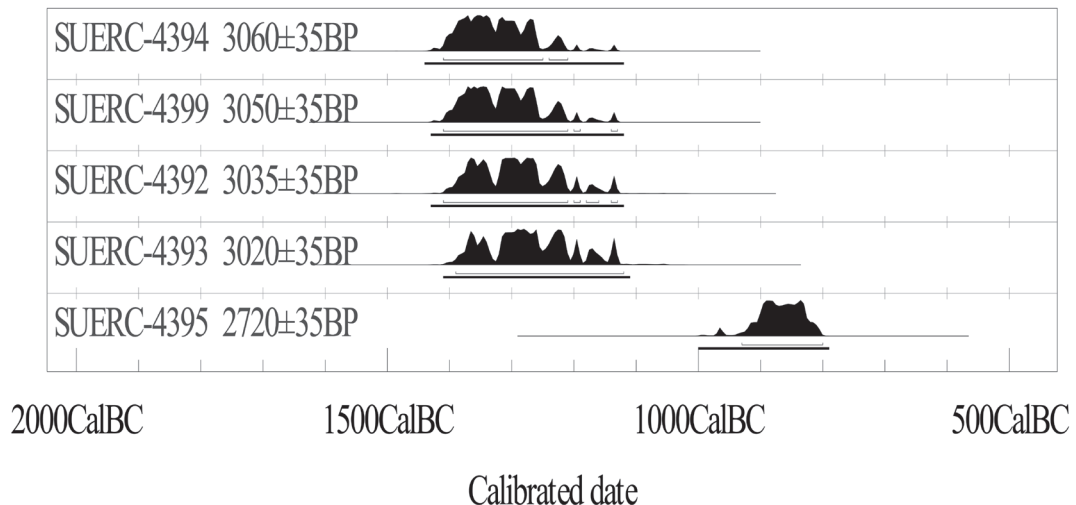
The selection of contexts 122, 124, 135 and 152 was based on the premise that the likely mechanism for charcoal production and its incorporation within the features derived from numerous single event domestic activities within the structure. Evidence for this premise was supported by the unabraded condition of the charcoal, which made its incorporation via environmental, residual or subsequent intrusive sources less likely. The remaining context, burnt deposit (context 113) differed in that it was an abandonment/post-abandonment deposit. This was interpreted as a single event which was subsequently covered by in-wash material.

As the calibration curves of the dated samples (Table 6) clearly show the date recovered from the perimeter drain fill (context 135) is aberrant, in that it differs significantly from the four other dates including the post-abandonment burning episode (113).

The perimeter drain lies upslope of all the other dated features and was not covered by the initial post-abandonment activity represented by

TABLE 6
Calibration curves using OxCal version 3.10 © C Bronk Ramsey 2005

Atmospheric data from Stuiver et al 1998



context 113. The perimeter drain was covered by vacuous stone tumble from the rear wall and then by the 'innundation deposits' which, it is argued below, did not completely cover the site until the 20th century thus leaving open the possibility for later contamination.

The other four dates span both the active use of the roundhouse and its immediate post-abandonment activity. They indicate a short duration of use at some point between 1400 BC and 1200 BC.

GENERAL DISCUSSION

The discussion focuses on the two strands of evidence that have emerged from the excavations at Navidale that the author considers most significant: the architectural sophistication of the structure and the more indirect evidence for the history of agricultural activity in the surrounding landscape.

THE ARCHITECTURE

The roundhouse was a carefully planned structure constructed in a single phase (Ellis above). The drains were clearly an integral part of the design and indicate that the builders anticipated drainage problems. This suggests that the siting of the house was of greater importance than the prevailing ground conditions. The position of the house is very close to the first suitable crossing point of the Allt Briste, above the beach. Below this point the sides are too steep for easy crossing. Some relationship with movement up and down the coast may have been a factor in the choice of location, a location that also affords a clear view southwest across the lower lying ground towards Helmsdale.

Roundhouses of the second and first millennium BC show a remarkable degree of conformity in their architecture and the Navidale house incorporates many of the standard features, such as a stone wall, turf bank, post-supported superstructure and south-east orientated entrance.

However, the Navidale house also incorporated a few innovative features. The rear wall was a stone-faced earthen bank while the front wall comprised a stony, rubble core faced with stone. The large earthen bank wrapped around the rear of the roundhouse and its inner face was revetted with coursed stonework, the top capped with cobbles and the rear stabilized with the occasional use of very large stones. Similar style banks are a feature of other roundhouses in northern and western Scotland (Fairhurst & Taylor 1971, 84; Barclay 1985, 167; Barber 1997, 27; McCullagh & Tipping 1998, 46). In contrast, the front wall at Navidale was carefully built of stone, some 1.5m wide with a coursed inner face. At Carn Dubh the majority of the houses had rubble walls and at House 1 there was evidence of stone facing (Rideout 1995, 147). At Kilphedir (Fairhurst & Taylor 1971), and Hut circles 1 and 2 at Kilearnan Hill (McIntyre 1998), stone-faced walls with rubble cores were found. At House 7 at Lairg (McCullagh & Tipping 1998, 57), Armadale in Caithness (Strachan 1996) and the hut circle at Cul a' Bhaile in Jura (Stevenson 1984) stone was employed as the main structural element of the house wall. Whilst there are numerous sites utilizing stone-faced banks or stone-faced rubble walls, the Navidale roundhouse is atypical in featuring both of these building techniques within the same structure. It seems probable that the enlarged bank at the rear of the roundhouse was a direct attempt to control hill run-off from the steep slopes above and to work in conjunction with the drains. It may be that the builders of the roundhouse were utilizing a variety of methods in order to prevent the problems of hill run-off.

At Navidale one of the most striking features of the house was the enlarged stone-capped bank that formed the eastern side of the entrance. At Kilphedir, the entrance to House V was extended during a second phase of building, creating a narrow passage 4.6m long (Fairhurst & Taylor 1971, 84). At Armadale, Caithness (Strachan 1996) the walls widened from about 2.5m to 4.4m at the entrance, creating a narrow

passage some 1.2m wide. Kilphedir, Armadale and Navidale were all unenclosed settlements making the defensive aspect of such entrances negligible. Instead it may be better to view such entrances in terms of controlling conditions within the house by preventing draughts and dampness and providing insulation.

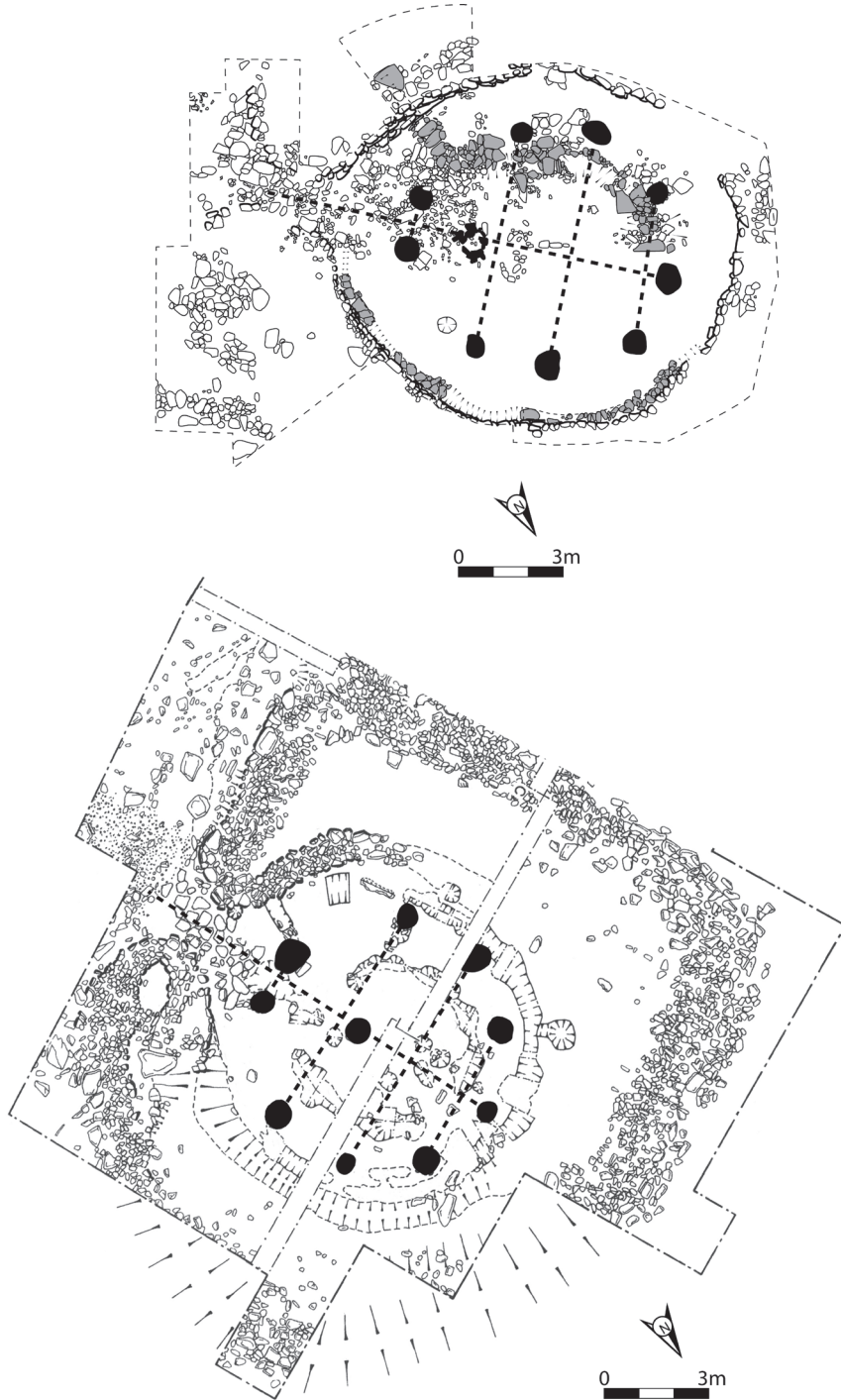
As described above, the drains at Navidale were integral to the overall roundhouse design and were clearly constructed before the walls and bank were built. The drains were therefore a solution to a problem previously encountered elsewhere and anticipated at Navidale. There are a few isolated examples of excavated roundhouses with features described as drains. The most closely comparable example to Navidale is that at House 1 at the Dunion, Roxburgh, where a 'crescentic ditch' ran from the back edge of the house round to the entrance and opened onto the hill slope below. It was concluded that this feature was a 'drainage ditch, cut to divert runoff from the hill around the house' (Rideout 1992, 89–90). At House 1 at Carn Dubh in Perthshire, a drainage ditch for preventing hill wash from entering the house was also postulated (Rideout 1995, 147). Apart from these examples, neither of which were stone lined or capped, drains do not appear to have been a necessity within most Bronze Age or Iron Age roundhouses. At numerous other roundhouses, such as at Lairg (McCullagh & Tipping 1998, 111), there are internal gullies but these are thought to be erosional features and are therefore very different in function to stone-built drains. However, even where there are examples of houses built upon platforms of a type very similar to that at Navidale, drains are not present (Fairhurst & Taylor 1971; Jobey 1980; Terry 1995; Barber 1997). The sophisticated drainage system seen at Navidale seems to be a very specific response by that community to a problem that they must have encountered elsewhere.

The entrance of the roundhouse at Navidale was on the southeastern side, following a pattern common in Bronze Age roundhouses (Bruck 1999) across a wide geographical range

including northern Scotland (Fairhurst & Taylor 1971; Rideout 1995; McCullagh 1998; McIntyre 1998). Whilst at many other sites the positioning of the entrance may have been a deliberate choice, the very nature of the platform site at Navidale leaves only the south-east and north-west as viable positions for the entrance due to the steepness of the natural slope. The need for a south-east-facing entrance may, of course, have influenced the selection of the site. While an entrance to the south-east may have had a basis in ritual, tradition or even a ceremonial significance it is indisputable that, on a more practical level it, also maximized the amount of natural sunlight able to enter the structure.

It was not necessary to floor the hard subsoil at the rear of the house but the remainder of the house was floored with flat stones amongst which were the capstones of the internal drain. The entrance and forecourt of the roundhouse was similarly paved, as is common in first and second millennium BC houses, presumably because these areas would have been subjected to considerable wear and were also partially exposed to the elements. Similar forecourts are present at Kilphedir, Cul a' Bhaile and to a lesser extent at Carn Dubh and Armadale (Strachan 1996). Unlike the examples at Carn Dubh, however, there were no post-holes or stakeholes around the entrance at Navidale that could represent 'door furniture'. However, within the floor surface at Navidale was a cupmarked stone, which had previously been used as a pivot stone. The use of such stones would exclude the need for post-holes.

The plan of the post-ring within the house reveals a clear axial line of symmetry north-west to south-east aligned on the entrance, with four pairs of post-holes and a single post-hole directly opposite the entrance (illus 9), a pattern first identified by Guilbert (1981; 1982). All the post-holes at Navidale were equally spaced with the exception of the two post-holes immediately inside the entrance, which were much closer together. The layout of the post-ring at House 5 at Carn Dubh (Rideout 1995) matches the



ILLUS 17 Roundhouse plan with post-ring dimensions, circles, line of symmetry, post-hole pairs compared to House 5, Carn Dubh

Navidale post-ring in all aspects (illus 17). The Carn Dubh house was dated to 970–800 cal BC and is a stone-built double-walled roundhouse.

On the basis of in situ packing stones the average post diameter would have been 0.40m, indicating stout supports capable of bearing the full weight of the roof. No other evidence for roof construction was found; no beam slots were discovered in the inner stone facing of the roundhouse nor were any post-pipes found in the surviving segments of the bank. As discussed by O'Sullivan (1998, 107) in the context of Lairg, the reliance upon the ringbeam method of roofing in the interpretation of evidence from Bronze Age and Iron Age roundhouses may obscure other methods of roofing structures. At Kilphedir (Fairhurst & Taylor 1971), Kilearnan Hill (McIntyre 1998), Lairg (McCullagh & Tipping 1998), Cul a'Bhaile (Stevenson 1984) and Lintshie Gutter (Terry 1995) the evidence, such as the presence or absence of post-rings, ring-grooves or surrounding banks and stone walls, indicate that there was more than one way to roof a roundhouse. However, at Navidale the most likely solution is that the roof was supported by a ringbeam arrangement, with the large walls and banks bearing the weight of the rafter ends.

The roundhouse at Navidale contained no evidence for any internal features other than the drains and a stone hearth. There was no evidence for the use of internal screens, such as those suggested by the array of stakeholes within the interior of hut circle 1 at Tormore on Arran (Barber 1997, 11) or Cul a'Bhaile on Jura (Stevenson 1984, 137). Unlike Lairg (McCullagh & Tipping 1998, 104) or Arran (Barber 1997, 11), where wattle screens were used to line the inner face of an earthen bank, at Navidale the inner face was stone-lined. Given the presence of a stone floor any internal divisions, if present, may have been held in place by methods other than earthfast posts. The only evidence for division of space within the interior of the roundhouse derives from the arrangement of the structural posts (illus 17). The gap between the two post-

holes immediately inside the entrance is much shorter than between all the others. The identical layout at House 5 at Carn Dubh may indicate a common design feature to address a similar purpose. It seems most likely that this was related to draught prevention, perhaps to protect the hearth and avoid the creation of updraughts that might bring sparks into contact with the roof. In both House 5 at Carn Dubh and at Navidale, the 'cooking pit' and hearth lay off centre towards the entrance. A screen could have been positioned across the closely spaced posts to create a simple wind break to protect this feature.

The unusual construction features of the Navidale roundhouse, the drains, the large rear bank and the elaboration of the entranceway, have been portrayed in functional terms as architectural features designed to cope with the steep slopes and subsequent problems inherent in this particular site (illus 18). However, as described above, other similarly positioned roundhouses do not display this full range of adaptations. It is possible that the architectural sophistication of the house was as much for show as for practical reasons. It may be that the large stone-capped bank, drains and entrance were a way of displaying status within the community, the architectural aggrandizement of these features distinguishing this house from others as well as fulfilling a practical function, perhaps in the same way as envisaged, for instance, at Culhawk Hill in Angus (Rees 1998).

That the Navidale roundhouse had a domestic function is indicated by the nature of the artefacts. The roundhouse provided a relatively large assemblage of artefacts including pottery sherds and numerous coarse stone artefacts, all of which are typical of a domestic assemblage. The pottery came from contexts throughout the house and comprised undecorated jars and vessels showing signs of use such as burning and sooting. One large saddle quern recovered from the periphery of the forecourt appeared to be in situ, face up in a useable position. Another two were positioned against the inner face of the roundhouse, possibly left where they were



ILLUS 18 Post excavation view of roundhouse viewed from entrance looking south-east

abandoned. The remaining quern stones were reused in the stone floor, as capstones over the drain or as part of the hearth. This mirrors the use of saddle querns at sites such as Kilphedir, Upper Suisgill, Carn Dubh and Tormore on Arran. The reuse of these items as integral parts of the paving indicates that they were brought to the site as broken, worn out objects; given that stone for building was easily available in the locality a symbolic meaning for their re-use in the floor seems likely. They also support the micromorphological evidence that the house was set in an established agricultural landscape.

The weights found at Navidale are atypical of the artefact assemblages from contemporary sites. Too large and heavy to be spindle whorls and too carefully worked to be seen as roofing weights, it seems probable, given the coastal location of the roundhouse, that these artefacts were fishing net weights or weights for shellfish creels. Though the roundhouse lies above cliffs up to 150m high, access by foot to the seashore is possible. It is recognized that during the

first millennium BC communities within the Scottish Highlands practised a broad spectrum of economic strategies and that fishing alongside hunting and fowling would have been practised to complement arable and pastoral produce (Armit 1997, 188 & 192).

There is one item in the artefact assemblage which supports the theory that the house at Navidale was that of an important member of the community (see above). The pendant is a decorative object fashioned from a mottled siltstone which may have been brought some distance to the site, either as a finished object or as the raw material (McLaren & Hunter above). Ashmore (2001, 6) has described the second millennium BC as a period of 'weak but persistent long distance connectivity'; the presence of the pendant links Navidale into these long distance trading connections and reflects upon the status of the inhabitants.

Excavation of the roundhouse indicated only a single phase of construction and use. A recent appraisal of unenclosed roundhouses by Halliday

(forthcoming) concludes that such structures were rarely in use for long periods. Rather, occupation periods lasted perhaps as little as ten years and a general pattern of 'short occupations broken by longer periods of disuse' is probably true for most cases. Occupation of short duration was also demonstrated at Buiston crannog where two roundhouses had lifespans of only five years and 17 years each (Crone 2000). Further evidence for the short lived nature of Bronze Age settlements comes from work by Bruck (1999) which indicates that the majority of settlements were single phase with few lasting more than two or three phases, the duration of individual timber buildings restricted to less than 100 years. Whilst the structural evidence at Navidale also suggests a single phase of use it is possible that the house could have been refurbished without leaving any archaeological evidence. As the post-holes were cut through the upper weathered surface of the bedrock and therefore not liable to collapse, they could have been reused. Given the investment in the creation of the platform, stone-capped bank, cobbled floor and drains it would have been possible to remove the original roof, replace the posts and undertake a wholesale reroofing of the structure using the original post-holes. The presence of two shallow pits adjacent to two of the post-holes may point to a period of repair and consolidation rather than replacement. However, from recent work on reconstructions of roundhouses it has been noted that it is relatively easy to replace vertical posts within the ring-beam style of roundhouses (H Murray pers comm). Therefore, while the roundhouse displayed evidence of only a single phase of use the duration of this phase may have been more considerable than perhaps envisaged for most timber roundhouses.

AGRICULTURAL ACTIVITY IN THE SURROUNDING LANDSCAPE

Little substantial evidence for the economic activities of the roundhouse inhabitants was

found (see above). Barley and hazelnut shell were present, but in negligible amounts. As no animal bone was found the pastoral activities of the inhabitants cannot be defined. However, although no fish bone or shell were found, the stone weights imply the use of fishing nets and the coastal location of the house makes it very unlikely that marine resources did not form an important part of the daily diet of the occupants. The presence of barley and the numerous querns found in the house indicate that cereals also formed part of the diet but evidence for agricultural activity comes from a more indirect source: the micromorphological evidence.

The roundhouse had become in-filled with more than 0.5m of water-washed material in a fashion similar to that at Upper Suisgill in Sutherland, where water-washed deposits up to 1.8m in depth were encountered, preserving a range of first millennium BC features (Barclay 1985). At Upper Suisgill the first inundations had occurred during the first millennium BC covering the earliest activity and were followed by further activity and further inundation deposits. As at Upper Suisgill, the rapid build-up of in-wash sediments within the roundhouse at Navidale was demonstrated by the lack of any substantial organic layers between the identifiable episodes of accumulation.

At Upper Suisgill the contemporary removal of vegetation from the slopes above the site was proposed as the catalyst for the subsequent erosional episodes. There is evidence for a similar scenario at Navidale, with both the bank material and buried soil containing evidence of agricultural activity (Ellis above). The evidence for manuring and tillage indicate that the roundhouse lay within an established cultivated landscape, similar to the landscape surrounding the roundhouses at Lairg (McCullagh & Tipping 1998, 209). It is possible the fieldbank and platform, to the southeast of the roundhouse, were part of this landscape. Similar fieldbanks at Lairg first appeared during the earlier part of second millenium BC (McCullagh & Tipping 1998, 206).

However, the bulk of the inwash material derived from eroding soil and underlying weathered bedrock which contained no evidence of manuring, suggesting that cultivation of the surrounding landscape ceased with the abandonment of the house, perhaps as a result of soil erosion by agriculture. At both Lairg and Upper Suisgill there was evidence of soil erosion, beginning at Lairg in the Early to Mid-Bronze Age (McCullagh & Tipping 1998, 210). Lairg provided strong evidence that widespread soil erosion and nutrient loss was an important factor in the desertion of the settlements; soil erosion led to ploughing of the B-horizon and in time this led eventually to soil thinning and ultimately falling yields (Carter 1998, 160). It is possible that agricultural practices around Navidale during the Early to Middle Bronze Age precipitated similar soil thinning and nutrient loss that eventually brought about the abandonment of the settlement and cultivation.

Cessation of agricultural activity is hinted at in the artefact assemblage; three useable querns were left in the house suggesting that the inhabitants no longer had any use for them. This must have represented a major upheaval for the inhabitants who built the house at a time when they were participants in what must have been an active agrarian society, bringing old worn querns and incorporating them into their new house, perhaps as a symbolic tribute to the source of their wealth and happiness. The abandonment of the querns hints at an abrupt and sad end to the occupation of the structure and the lack of any evidence for manuring or tilling in the inwash sediments suggests that the abandonment of the house is intimately connected to the decline of the surrounding agricultural land. This may also explain why a house which represented a large investment of resources was apparently not used for an extended period of time.

CONCLUSION

The roundhouse at Navidale is an important addition to the growing corpus of excavated

roundhouses from Northern Scotland. Its Middle Bronze Age date of 1400–1200 BC overlaps with the main occupation at Lairg, which began at 1800 BC and was deserted by 1000 BC (McCullagh & Tipping 1998, 209), and is slightly earlier than the various other first millennium BC settlements within the Strath of Kildonan (Fairhurst & Taylor 1971; Barclay 1985; McIntyre 1998).

The position of the Navidale roundhouse on a steep hillside and latterly protected by alluvial deposits has ensured its survival as an upstanding structure, allowing its full complexity to survive intact. Despite the considerable investment of time and materials in its construction, there is no evidence to suggest other than a single, possibly extended, period of use at the site. Evidence from the alluvial deposits that protected the house indicate that the abandonment of the roundhouse was intimately linked to a cessation of cultivation in the surrounding landscape. At Lairg, the general pattern was one of gradual decline during the Bronze Age with settlement finally abandoned c1000 BC. The evidence at Navidale indicates that the decline seen at Lairg was not limited solely to inland upland settlements. While Navidale's coastal location gave its inhabitants access to marine resources not available to inland settlements, it seems clear that these were not sufficient on their own to sustain settlement. In view of the evidence from Lairg it seems likely that this abandonment is connected to a wider environmental decline across northern Scotland rather than simply a localized event of soil exhaustion.

ACKNOWLEDGMENTS

The author is grateful to Historic Scotland who funded the excavation and specifically to Patrick Ashmore for his help and considered advice. Without the kind aid of the landowner Mr Wynne and the expertise of the staff at Edward MacKay Plant Hire the excavations would have been considerably more difficult. A special thanks is also due to the team of excavators, Graeme Carruthers, Rob Engl, James Hepher, Alan Duffy, Joe Sommerville, Ralph Troup and Don Wilson

who had to endure some of the most trying weather conditions and hard work in the semi-darkness of a Highland winter. Thanks are also due to staff at AOC Archaeology, particularly Ciara Clarke for organizing the array of specialists, Murray Cook, the project mentor, for his support and advice, Ciara Clarke, Anne Crone and Ronan Toolis for their patience and editing skills, and to Graeme Carruthers for his production of the illustrations. Thanks must also go to Suzanne Miller for providing the geological identifications of the pendant and knocking stone.

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This paper is published with the aid of a grant from Historic Scotland.