

HISTORIC SCOTLAND PROPERTIES IN CARE
MINOR ARCHAEOLOGICAL WORKS 2011

Mid Howe Broch: Excavation, April 2011.

HS PIC Index Number: 90218

SITE: Mid Howe Broch, Rousay, Orkney Islands.

N.G.R.: HY 3716 3061

DESCRIPTION: Investigation into the nature of likely *in situ* deposits of a hearth,
possibly used for metalworking.

PROJECT CODE: HSCO-90218-2011-01

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INTRODUCTION

Kirkdale Archaeology was requested by Historic Scotland to carry out some small scale work at Mid Howe broch in the Orkney Islands (Figure 1). The site sits on the shore of the island of Rousay on the N side of Eynhallow Sound, a fast tidal race separating Rousay from Mainland Orkney. It is a Middle Iron Age site comprising the broch itself encircled on the landward side by two ditches, with a series of smaller structures filling the intervening space.

The site was excavated from 1929 - 34 (Callendar and Grant: 1934), before being passed into state care in 1934. Prior to this it was a large grassy mound, one of three such mounds within a 500 metre stretch of this coast. The site suffered from the archaeological methods of the day, but a primary aim seems to have been to present the site for display, meaning that generally only the later deposits were exposed and then left *in situ*, potentially preserving earlier material below.

Within one of the outbuildings on the N side of the broch (building G in Callendar and Grant's report) an apparent metalworking hearth was exposed and left, apparently, unexcavated. This was covered over by a viewing case, presumably soon after the excavation. This case had deteriorated alarmingly, and ferns were visible growing on the archaeological deposits within it. This prompted Historic Scotland to remove the cover and commission Kirkdale to clean up the material within. The aims were to attempt to determine if the deposits really were *in situ* and to provide a record of them to modern standards.

Building G was a roughly rectangular N/S structure (in this report the walls of the protective cover over the hearth are assumed to run N/S, with the broch to the S) whose N end had been lost to the sea. The entrance was originally from the S, leading out to a curvilinear passageway following the outer wall of the broch. This access was then blocked off, with an apparent small room constructed at the S end of building G, and a presumed new entrance somewhere in the eroded N end.

The side walls are of very different character, with the W being a low dry stone wall running reasonably straight with few architectural features. By contrast the E wall survives much higher, displays at least three changes in alignment and incorporates numerous features such as small niches and large upright slabs, either built into the wall face or

projecting out at a right angle to form partitions. These side walls are shared with the adjoining buildings F (to the W) and H (to the E).

The hearth lies within this room, slightly closer to the W wall than the E. It is roughly square, formed of heat cracked slabs, and angled to run NW/SE. The modern cover enclosed an area some 1.8m N/S by 1.4m E/W and had already been removed at the time of arrival. The remains were cleaned up, planned and photographed and context numbers were assigned and described.

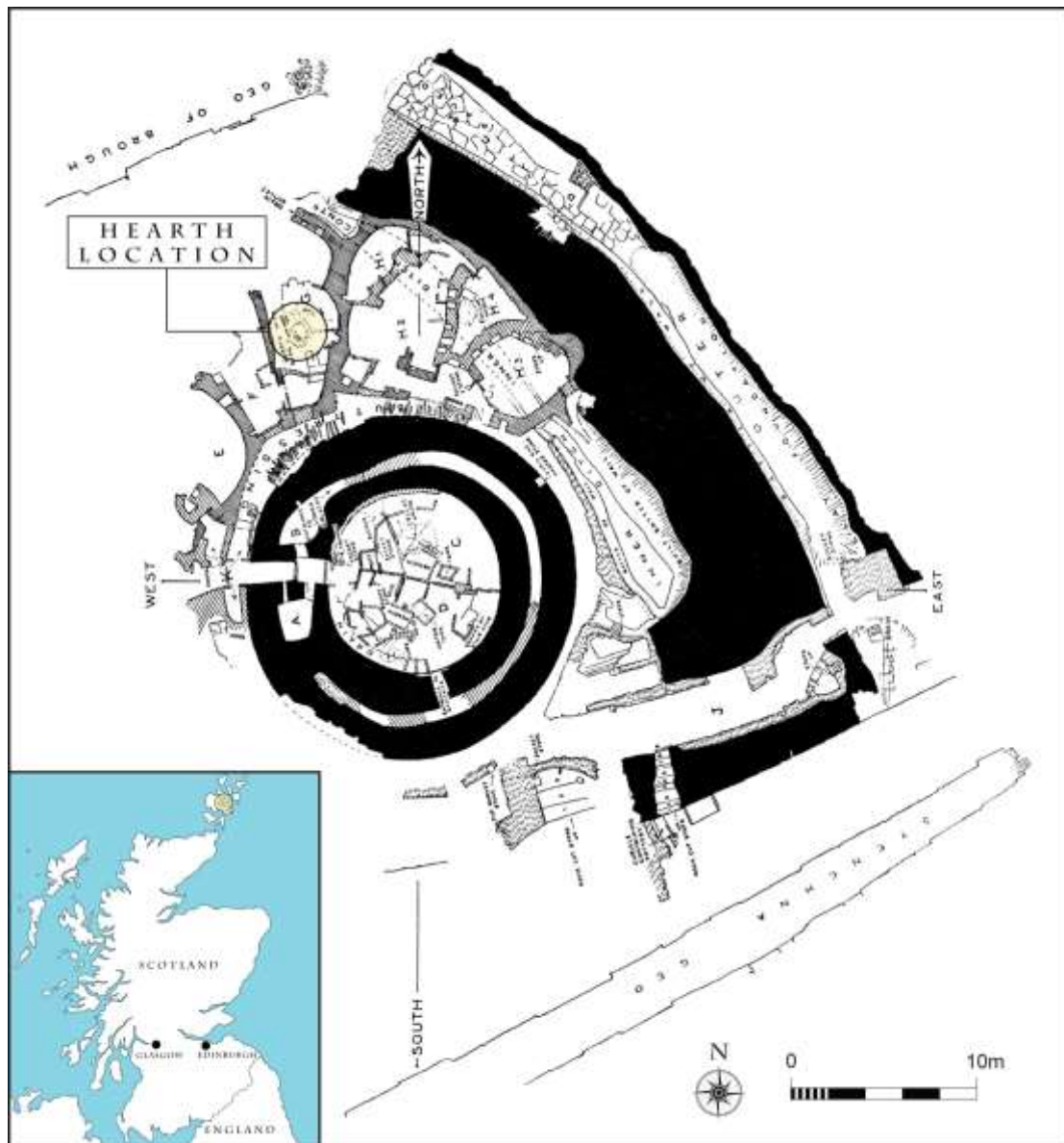


Figure 1: Location map of Mid Howe Broch, and the hearth being examined.

DESCRIPTION

Small ferns and green lichen could be seen growing out of the enclosed remains and a white patina covered some areas of both soil and stone, likely to either be a fungal growth or salt derived. Excavation proceeded with the careful cleaning of all exposed surfaces, with minimal removal of deposits.

The hearth itself measures roughly 0.5m square internally, and is angled NW/SE, squint to the N/S of the W wall, but parallel to the closest stretch of the E wall. All but its SW side are formed by flagstones placed on edge, with the NW (**011**) and SE (**013**) sides both single thin slabs, and the NE (**012**) built of two stones. All are heat affected internally to the hearth, but especially **011**, this is also the only slab whose outer (NW) face can be seen, and this also appears burnt. All these side walls tilt slightly, but this movement seems most pronounced with **011**. The SW side **014** has material banked up against both its faces, obscuring its construction, but appears to comprise a tall 'pillar' stone at either end, with horizontally laid dry stone walling between. This side appears to be well faced internally but poorly faced externally. The pillar at the NW end is at least 0.4m high, leaving it standing 0.25m higher than any of the other walls of the hearth, while that to the SE appears broken off, leaving it flush with the surrounding masonry.

Within these walls **016** was a deposit of fine sand rich in slag. This had evidently been heat affected, with the colour varying from vivid orange in the E corner, changing to a more yellow hue, until it is mid grey in the W corner. A particularly large piece of slag was noted in the S corner, in the angle between **013** and **014**. While cleaning over **016** a collection of eleven pieces (weighing some 550grams) of ferrous rich slag were collected from its upper surface.

Material is banked up against this hearth on all but its NW side to a varying extent, but especially to the NE and SW. To the NE **018** consisted mostly of small to medium sized (un-burnt) flagstones mixed in with some fine sand, generally pale grey in colour, but with patches of red and yellow throughout. To the E this overlay some of the wooden elements of **002**, the infill of the cut for the modern cover. To the SW, **017** consisted of an equal mix of flagstones and clay, again typically pale grey, but with some vivid reddish/yellowish patches throughout. The whole deposit sloped down away from the furnace, dropping some

0.15m. The S edge of **017** overlay **001**, the low concrete wall forming the base of the modern cover.

The cover had been constructed by digging a narrow shallow slot **003** which was only excavated in a stretch along its N side, where it was 0.1- 0.15m deep. This was certainly dug around the N side of the hearth, and probably at least parts of the E and W sides too, although not excavated here. A low concrete wall **001**, 0.08m wide above ground and 0.15m high, was then built within **003**. On the S side, **001** seems to have been built directly onto paving **021/ 022** (described below), without the need for a cut. The slot **003** was then backfilled by **002**, typically silty clay but incorporating wood fragments, especially along the E side, where there was evidence for both vertical and horizontal timbers.

To the S, wall **001** was built directly on top of slabs **021** and **022**. To the SW, **022** consisted of a series of small flagstones covering a strip c.1.25m E/W by 0.75m N/S. Context **021** was just to the E of **022** and consisted of two large (the largest of which measured 1.05m by 0.75m) slabs covering an area of 1.6 m E/W and obscured to the S and N (by **001**). Context **021** was roughly 0.1m higher up than **022**.

Both **021** and **022** continued below **001** to be sealed under deposit **017**, and the N edge of **021** is marked by **015**. This consisted of a slab set on its edge (although sloping over to the NE slightly) measuring 0.6m long, 0.075m wide and at least 0.15m high. This was tight against the face of **021** and was orientated SE/NW, running close to (but not quite touching) the middle of **013**, the SE side slab of the hearth which it formed a fair right angle with. A further smaller slab to its NE acted as a "chocking" stone, and the line of **015** continues outside the area of excavation to the SE, with further slabs to the NE forming the other side wall of an apparent channel 0.4m wide. This runs up to the E wall of the room, joining it at a point where a single large vertical slab forms its W face, which is slightly recessed to the E from the line of the wall to its immediate S. Just in front of this vertical wall slab a horizontal slab sits over the side walls of **015**, forming a covered channel. As well as having **001** built against it, **015** is overlain by **017**.

Much of the NW of the cleaned area was filled by **019**, a deposit of mid to dark grey clay with patches of reddish and yellowish clay throughout. Occasional small flagstones and charcoal flecks were noted throughout **019**. On its N side **019** was cut by **003**, and in the

excavated stretch it could be seen to continue below the base of **003** to the N, running under the concrete wall **001**. It was also sealed by **018** to the SE.

To the S, **019** could be seen to be banked up against **011**, the NW side wall of the hearth. Running off the SW end of **011** (although not touching each other) was **010**, a single unburnt slab, which **019** also overlay. This was laid on its edge, running NW/SE, to form a rough right angle with **011**, and it measured 0.38m long by 0.02m wide by at least 0.26m high. In the angle between **010** and **011** a patch of yellow clay **020** can be seen sloping down to the NW. A single large prehistoric body sherd of pottery was noted within **020**. This was recorded, but not removed.

At the NW end of **010** was **009**, a roughly N/S arrangement of edge set slabs adjacent to the S end of **001** on this side. Context **009** consisted of two flagstones totalling 0.75m long, both with smaller 'chocking stones' against their E faces. The larger N slab was a badly decaying grey flagstone 0.5m long, 0.05m wide (although part of its E face has sheared off) and standing at least 0.75m high. The slab to the S was smaller and stood to a height of only 0.2m.

To the S **009** was overlain by **017**, so may possibly continue below this. At the N end of **009** the E and S edges of a cut **008** were identified, apparently running N/S, and with its N end (and possibly its W side) truncated by **003**. This seemed to be dug through **019**, which was banked up against **009**. Its fill **007** consisted of compact greasy black clay with occasional charcoal flecks throughout. This measured at least 0.64 m N/S by 0.24 m E/W, and was 0.08m thick in the side of **003**.

Within **007** two arrangements of edge set slabs formed low walls to a N/S channel 0.1m wide. To the E, **004** consisted of a single flagstone 0.43m long, 0.05m thick and at least 0.08m high. On the W side **005** was formed by two stones a total of 0.7m long. That to the N was larger, measuring 0.62m long by 0.09m thick by at least 0.11m high, while that to the S abutted the N end of **009**, continuing its alignment. A setting of four small thin flagstones laid horizontally, **006**, was recorded between **004** and **005**. These occupied a space measuring 0.42m N/S by 0.1m E/W; although the two stones at the N end appear displaced.

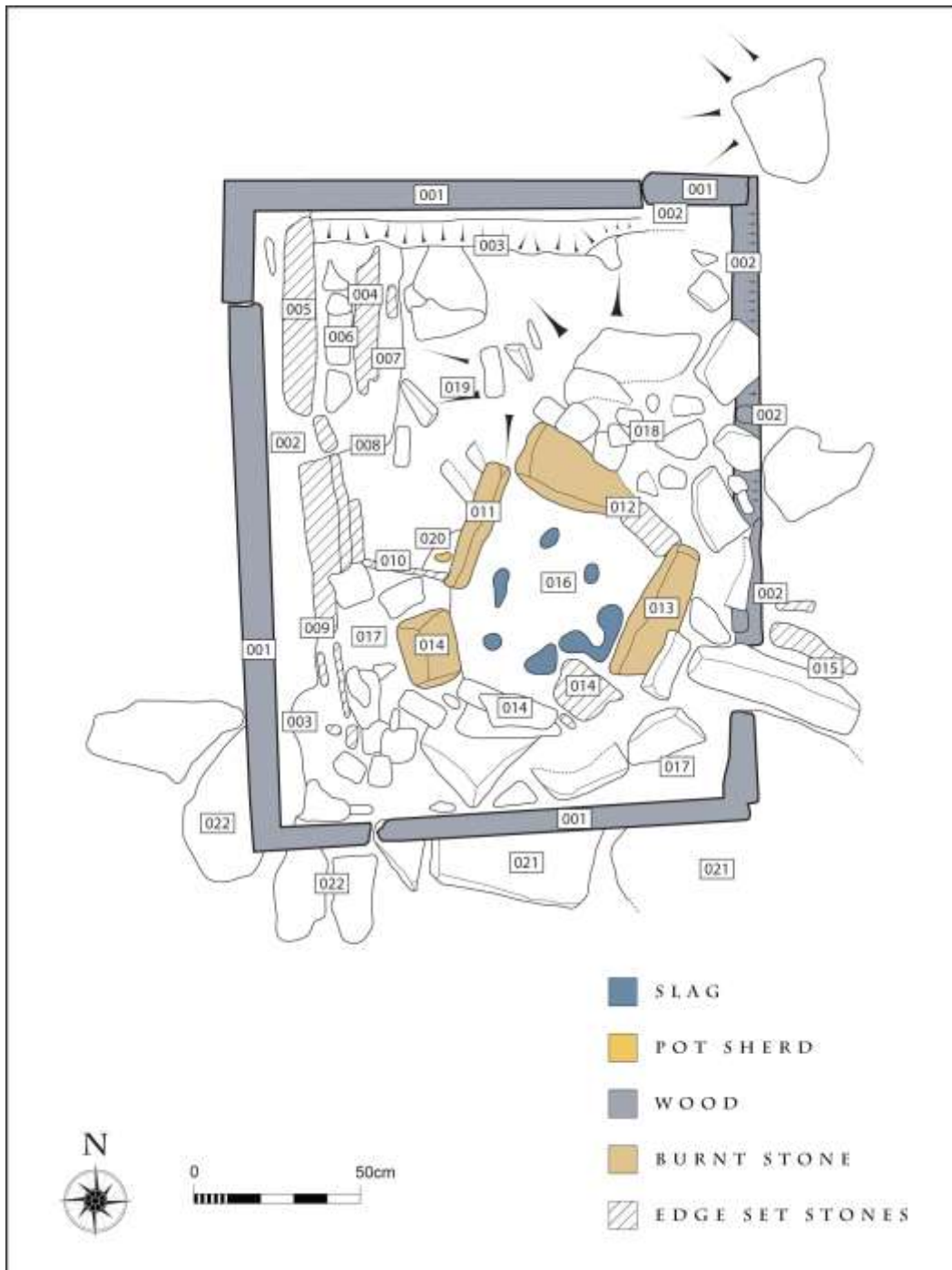


Figure 2: Post-excavation plan of the hearth.

CONCLUSIONS

The work undertaken at Mid Howe broch involved very limited excavation on an already partly excavated site - which necessarily limits interpretation. In spite of these caveats a tentative interpretation of at least some of the observed features is possible.

The site report is brief and so references to the hearth seem worth quoting in full:

The floor of the inner part of chamber G- that is, between the first- mentioned projecting slab in the east wall and the intruded cubicle at the back- is 1 foot 6 inches higher than that of the original one. The higher floor is paved and seems in places to have been supported with stones set on edge, because in the south- east corner it is hollow underneath, about 5 inches of ash- like material which had percolated through between the paving stones being found under them. In the centre of this part of the chamber is a hearth which was covered with masses of iron slag (fig. 19). The west and south sides are formed of large slabs set on end which have been badly fractured by heat. Running tangentially from the west edge of the hearth in a northerly direction are the remains of a drain- like structure formed of flags set on edge, with the bottom paved, measuring 8 feet in length. Only two slabs survive on each side, the central pair being opposite each other. They lie 4 ½ inches apart at the bottom and 6 inches at the top. The bottom of this structure is 1 foot 8 inches below the top of the hearth. It has been suggested that this may have been the flue for the air blast into the furnace, but owing to the fracturing and collapse of the stones by heat its complete course could not be traced.

In the angle between the inner end of the supposed flue and the hearth was a clay pot, 11 ¾ inches in height (fig. 47), sunk into the floor, its base being 2 inches deeper than the bottom of the flue. To the east of the hearth was a pocket in the floor, 1 foot 8 inches deep, filled with charcoal and ash." (Callander and Grant: 1934, p.475 - 6).

Figure 19 (*ibid* p.476) is a photograph evidently showing the hearth from the NW.

Unfortunately the photo is so murky that it adds little to our understanding. The report includes a site plan (*ibid* p.515) which shows chamber G with the caption 'hearth with slag' in it. The hearth itself has curiously little definition in this, but what seems to be **015** on its E side and **004**, **005** and **009** on its W side are depicted. Four sections through the site are also shown, with the top drawing, labelled 'section thro' broch, south to north facing west' (*ibid* p.517) showing what is labelled as the 'furnace room' at its right-hand (N) end. From left to right in this room what appears to be **015** is again shown leading up to a mound of soil with slabs poking out, evidently the hearth. The clay pot is shown and labelled to its immediate

right in a hollow, to the right of this is an upright slab (probably **005**), with further soil deposits to its right.

The hearth itself is a fairly simple box shaped structure, with all but its SW sides being of simple slab construction. The SW side appears to be built of more conventional dry-stone walling, sandwiched between two apparent 'pillar' stones, with that to the NW standing 0.25m higher than the rest of the hearth, while that to the SE appears broken off, leaving it level with the surrounding walls. This may indicate a functional difference on this side. The stones all appear burnt to varying degrees, but particularly the NW side, which is the only side which appears heat affected externally as well as internally. This may again indicate a difference in use for this side, perhaps hinting that this is the side from which a flue may have approached the structure.

Within the hearth, **016** appears likely to represent the final usage of the structure, as it is evidently heat affected and is rich in slag. Interestingly, the colour changes in **016** indicating its burnt nature vary across the hearth, with the E corner appearing the most affected, gradually decreasing to the W. The neutral term 'hearth' is applied here, as while it is evident from the ferrous rich slag recovered that some stage in the ironworking process is involved, without specialist analysis it is unclear if this is a furnace for the creation of iron, or represents evidence for the working of iron into tools.

Externally to the hearth **018** seems likely to represent partial collapse of the structure on its NE side. This overlay the clay rich deposit **019**, generally un-burnt, but with patches of heat affected material within it, which was matched to the S by **017**. Both these deposits were banked up against the hearth walls, and may represent evidence for earlier firings of the hearth.

On the SE side of the hearth **017** overlay **015**, which appears to be one side wall of a channel running away from the hearth at a good right angle. Outside the excavated area to the SE **015** can be seen to be a channel 0.4m wide which runs up to the E wall of the building. At the point where it reaches the wall a single capstone creates a covered channel at least 0.25m high. The interpretation of this feature is problematic; as it appears to respect the orientation of the hearth yet is aligned to run into the middle of **013**, the slab forming its NE side, so seems unlikely to be a flue. At its SE end, where it hits the wall there is a single

vertical slab forming its face, and this is slightly recessed from the walling to its immediate S. A practical function for **015** is hard to envisage as it is effectively sealed off at this end.

The SW side of **015** closely matches the NW edge of **021**, although not proving any stratigraphic interpretation. Context **021** is an area of paving formed by large slabs, which also seems to be sealed by **017**. To the immediate W of **021** a further area of paving **022** was differentiated by its use of smaller stones, and by being c. 0.1m lower. The relationship between these two surfaces is unclear, **022** again seems to run under **017**.

The most complex sequence was recorded on the W side of the hearth. Here a single (unburnt) edge set slab **010** runs from the hearth slab **011** at a rough right angle away to the NW. A small area of yellow clay **020** in the angle between **010** and **011** was noted to have a large prehistoric pot sherd within it. This area is the lowest point of the site, with the NE face of **010** and the NW face of **011** exposed. It seems likely that this is the spot from which the 'clay pot... sunk into the floor' was recorded. This was evidently removed, as it is illustrated (fig. 47, *ibid* p. 503) showing much of it to be missing. It is entirely possible that the sherd within **020** comes from this pot.

At the NW end of **010** was the large edge set slabs of **009**. These ran N/S and were much taller than any other edge set stones in the trench. Both **009** and **010** seem to be sealed by **017** to the S and **019** to the N, indicating that these features were in existence while the hearth was functioning. The alignment of **009** seems to be at least roughly coincidental with the junction of paving **021** and **022**, and possibly also with features further S (such as the E edge of the blocked door at the S end of the room). This may indicate that **009** represents a division of the room, although it is so close to the W wall of structure G that it is unlikely to have functioned as anything other than a corridor.

The N/S alignment of **009** also seems to be continued by **005**, the W wall of the small channel whose E wall is **004**. This seems to have been floored by small slabs **006**, and is surely the possible flue mentioned in the report. This mentions it running off the W side of the hearth, probably a reference to **010**, with the assumption that this is a single structure. However as noted above **004**, **005** and **006** seem to sit in a cut **008** which is dug through **019**. This shows that these features are not contemporary, although the later channel could of course have recycled already existing structures. As **019** is interpreted as debris from the hearth it is possible that this feature post-dates the use of the hearth.

The latest feature on the site is of course the modern cover. This is represented by cut **003** within which the low concrete wall **001** was built. On the S side of the hearth **001** has been built directly over the stones of **021** and **022**, without the need for a cut. The backfill of the cut **002** incorporated bits of wood, especially on the E side, where there seem to be at least two small posts inserted into the ground. Although in places **017** and **018** overlay parts of this cover this seems likely to represent localised disturbance of otherwise *in situ* deposits.

The work undertaken has demonstrated that the hearth is indeed *in situ*. Significant archaeological deposits remain within the hearth itself, but also in its immediate surroundings. The small part of cut **003** that was excavated indicates that these deposits continue outside the protected area. These deposits take the form of structural remains of some complexity, as well as soil horizons.

Although outside the remit of the present work, a superficial examination of the surrounding ground levels within structure G indicate significant variations. To the NE in particular soil seems to be banked up against the E wall of the building, suggesting the survival of archaeology in this area. To the S, the paving **021/ 022** seems to mark the base of excavation, but here the report indicates the existence of 'about 5 inches of ash like material' (Callender and Grant: 1934, p.475) under the paving. As noted in the introduction, the primary aim of the excavation seems to have been to put the monument on display. This presumably explains the unexcavated deposits, left so as not to destabilise the structural integrity of the site.

Any further work at the hearth would need to ensure that the structural evidence is not undermined. This would not apply to the hearth itself, as it would be incapable of standing without the deposits banked up against it internally and externally, and so would have to be dismantled, although it could of course be reinstated. The survival of archaeology at the site indicates that significant new information could be gleaned from any further work, but that this would need to be undertaken carefully to make the most of a limited archaeological resource. It should be noted that the two phase sequence given for the structures outside the broch in the report (*ibid* p.512- 3) is likely to be a simplification, with the significant structural differences between the E and W walls of building G hinting that these are not contemporary. Indeed the changes in alignment and structural form in the E wall suggest

that this single wall may be multi-phase. A programme of survey and building recording could go some way to resolving these issues.

Mid Howe broch is a site of national (and probably international) significance, and the demonstration that archaeological deposits remain here is of great importance. However this very significance means that any further work undertaken at the site must be carefully planned and executed.

REFERENCES

Callander, J.G. and Grant, W. G. (1934) 'A long stalled chambered cairn or mausoleum (Rousay type) near Midhowe Rousay, Orkney. With a description of the skeletal remains by Professor Alec Lowe', *Proc Soc Antiq Scot*, vol.68, pages: 444 - 516.

LIST OF CONTEXTS

No.	Description
001	Low concrete wall (fill of 003)
002	Fill of 003
003	Cut around hearth, filled by 001 and 002
004	E wall in 008
005	W wall in 008
006	Slab flooring between 004 and 005
007	Black silty clay fill of 008
008	N- S cut in NW corner of trench
009	Upright slabs, continuation of line of 005
010	Upright slab running E from 009
011	NW wall of hearth
012	NE wall of hearth
013	SE wall of hearth
014	SW wall of hearth
015	Upright slab running into the E side of the trench
016	Infill of hearth- burnt sand and slag
017	Tumble on S side of hearth
018	Tumble on NE side of hearth
019	Clay (burnt and un burnt) to N of hearth
020	Yellow clay containing a potshard on N side of 010
021	Large paving slabs to SE of site
022	Smaller paving slabs to SW of site

LIST OF DRAWINGS

No.	Type	Description	Scale
1	Plan	Trench following clean-up of hearth.	1:20
2	Plan	Overlay to (1) showing context numbers.	1:20

LIST OF DIGITAL PHOTOGRAPHS

No.	Description	From	Date
01	General shot of Broch taken from the car park	E	18/ 04/ 11
02	General shot of Broch taken from the car park	E	18/ 04/ 11
03	General shot of Broch taken from the car park	NE	18/ 04/ 11
04	General shot of Broch taken from the car park	E	18/ 04/ 11
05	General shot of Broch taken from the car park	E	18/ 04/ 11
06	Hearth pre-excavation	N	18/ 04/ 11
07	Hearth pre-excavation	SW	18/ 04/ 11
08	Hearth pre-excavation, detail of 016 within hearth	NW	18/ 04/ 11
09	Hearth cleaned up	NW	18/ 04/ 11
10	Hearth cleaned up	W	18/ 04/ 11
11	Hearth cleaned up	N	18/ 04/ 11
12	Hearth cleaned up	E	18/ 04/ 11
13	Hearth cleaned up	S	18/ 04/ 11
14	Hearth cleaned up	NW	18/ 04/ 11
15	Hearth cleaned up	N	18/ 04/ 11
16	Detail of channel formed by 004 and 005	W	18/ 04/ 11
17	Detail of hearth	NW	18/ 04/ 11
18	Detail of hearth	NW	18/ 04/ 11
19	Detail of 018 overlying 019	NE	18/ 04/ 11
20	Detail of 017	SW	18/ 04/ 11
21	View along 015 to hearth	SE	18/ 04/ 11
22	Slab 010 abutting 009	N	18/ 04/ 11
23	Context 020 at base of 010	NW	18/ 04/ 11
24	Pot sherd within 020	NW	18/ 04/ 11
25	Pot sherd within 020	NW	18/ 04/ 11
26	Hearth cleaned up	NW	18/ 04/ 11
27	Hearth cleaned up	NE	18/ 04/ 11
28	Hearth cleaned up	E	18/ 04/ 11
29	Detail of slag in 016 , against 013/ 014	SE	18/ 04/ 11
30	General shot of hearth	N	19/ 04/ 11
31	View along the line of 005/ 009	N	19/ 04/ 11
32	General shot of hearth	SW	19/ 04/ 11
33	Detail of paving 022	W	19/ 04/ 11
34	Detail of paving 021	S	19/ 04/ 11
35	View over hearth to line of 015	NW	19/ 04/ 11
36	View over hearth to line of 015	NW	19/ 04/ 11
37	General view of hearth and SE corner of room	NW	19/ 04/ 11