

Hrísheimar 2003

Interim Report



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Introduction

Aims and methods

The *Hrísheimar* farm is situated southeast of the lake *Mývatn*, about 500 m southeast of the farm *Heiði* (Map 1). The farm sits in a depression, surrounded to the north and west with large barren hills. On the eastern side of the farm a large boggy plane extends eastwards. The area south of the farm is rocky and barren, a result of a long-term erosion. The river *Bjarnastaðalækur* flows on the north and western side of *Hrísheimar*. The river originates southeast of the farm and flows to the north until it runs into the *Mývatn* Lake. At this point the river has changed its name and is called *Gautlandalækur*.

In 2000 a small-scale archaeological survey was made on the site to assess its potential for future research. In 2001 more preliminary work was done and the entire site was surveyed and test pits were excavated in selected areas. The survey recorded a total of 11 sites, 1 farm mound, a field boundary, 2 slag pits and 7 other structures. Two sites were completely eroded, four were in a bad state of erosion, two other were not eroded and the farm mound had only been eroded on a limited scale (Vésteinsson, Orri 2002).

The preliminary excavation revealed well-stratified midden deposits up to 60 cm thick. These deposits filled a semi-subterranean structure with partially intact floor layers and some surviving structural elements. Conditions of bone preservation were excellent and carbon dating of bone material collected during the 2001 season was dated to the 10th century (McGovern, T et al. 2002).

The main aim of the 2003 season was to excavate the areas that were in the process of being eroded and to excavate the midden and the structure that had partially been excavated in 2001. Further assessment excavations were intended in the area with the idea of more excavations on the site in the near future.

The methodology of excavation at *Hrísheimar* followed the methodology already established at the *Hofstaðir* site, i.e. single context excavation and recording. The site was divided into 5 x 5 planning areas and each archaeological unit was recorded and given a unique context number.

The excavation at *Hrísheimar* was a part of the now well-established *Hofstaðir* field school. The total number of students on the *Hrísheimar* site was five. Mogens Höegsberg from Denmark, who also was a site assistant. Mary Melnik from the USA, Juha Mikael Marttila from Finland, Alexandra Sanmark from Sweden and Gordon Punshon from the UK. In addition students from Brooklyn College (CUNY) spent a few days excavating as a part of the REU (Research Experience for Undergraduates) program.

The *Hrísheimar* field school and excavation were led by Ragnar Edvardsson on behalf of the FSÍ, as well as being led by other academics as Thomas H. McGovern (Hunter College, CUNY) who was in charge of the midden excavation. Jim Woollett (Graduate School and University Center, CUNY), Colleen Batey (FSÍ/Glasgow University), Ian Simpson (Stirling University), and Anthony Newton (Edinburgh University) also contributed greatly to the excavation.

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Excavation Results

There were two main excavation areas at *Hrísheimar*. One was 60 m west of the farm mound; the other was just by the farm mound on the eastern side of it. The areas were individually divided into smaller areas and each area was given an area code. The area west of the farm mound was given codes A, B, C and the other areas H and L. Each letter corresponds to structures within the larger areas. Test pits were also given individual codes (map 2).

A grid system was set out over the whole site with a total station. Areas A, B, and C were 150 m² in diameter and the lowest grid point was x495/y500. Area H was 30 m² in size and the lowest grid point was x575/y489. Area L was 22 m² in size and the lowest grid point x585/y500. Each test pit was 1 x 1 m in diameter. The total size of the excavated areas was 208m².

Areas A, B, and C

Ragnar Edvardsson

West of the farm mound there is a hill, which is completely eroded down to the glacial gravel. On top of this hill there are a few ruins badly damaged by erosion. The two northernmost ruins are completely eroded with only a few stones remaining. South of these ruins, 26 m, are four ruins that are in a better state of preservation.

Excavation trenches A, B and C were located over the four ruins. West of the four ruins, about 10-20 m, are the remains of a field boundary. The field

boundary extends from north to south, turning gradually to the east as it goes down a hill towards the boggy area east of the *Hrísheimar* site (Fig.28).

Area B was the northernmost excavation area, consisting of two planning squares, each 5 x 5 meters in diameter. Area A was south of area B, consisting of three planning squares. Area C was west of the southernmost square in area A and was one planning square in size (map 2).

In area B a small structure was visible in the surface. In area A a large structure was situated on a mound and south of it remains of a fireplace. In area C there was a small structure, which appeared to be a hearth or a fireplace of some kind.

Area A

Furnace 1, Group [109]

After the recording and removal of the eroded surface [101], [102] it became clear that all that remained of any archaeology in the two southernmost squares was that of a hearth or a furnace of some kind. This structure consisted of a small charcoal layer



Fig. 1. Area B at the beginning of the excavation.

[103] and stone feature around it [104] (fig.30). A number of stake holes became visible once the charcoal layer and stones had been removed [106]. The charcoal layer was mostly eroded away and only about 1,20 * 0,80 meters and the stones only remained on the north, west and south sides of the structure. The original size of the structure was probably about 2,30 * 1,40 meters in diameter. The shape and size of this structure was similar to the structure excavated in area C (see below) and is probably remains of an iron-smelting furnace. It was not possible to show any clear relationship with this structure and others nearest to it as the area surrounding it was completely eroded.

Group	Type	Phase
109	Furnace in south part of A.	2
200	19 furnaces in the northern part of A.	2
203	Hearth complex in B.	1
204	“Smithy” structure.	2
205	Stone walls in “Smithy” structure.	2
206	Post- or stake holes in “Smithy” structure.	2
207	Furnace in area C.	2

North of the furnace was a large mound, about 5x5 meters in diameter. This mound had for some reason eroded slower than the surrounding areas probably due to the man made structures on top of it. The sides of the mound were eroded down to the glacial gravel and all sides prehistoric tephra layers, among them H3, were clearly visible.

Once the surface of the mound had been cleaned, a number of features became visible. The most prominent feature was a stone wall [130] on the north side of the mound. The wall is oriented east to west but badly damaged by erosion and both ends had broken off. This made it impossible to determine whether the wall had continued in an east/west direction or had changed direction. The wall cut through few of the pits (see below) on the south side, which suggests a later date than the pits.



Fig.2. Furnace [109] in the south of area A.

South of the wall there were a number of deposits [111], [112], [114], [115] and [116] that were mixed with different materials, wood, turf, charcoal and wood ash. These deposits were interpreted as collapse from the wall north of the area as well as other activities.

Furnaces, group [200]

Under these deposits numerous of structural deposits and features related to a number of pits that had been dug into the mound, through the prehistoric tephra

layers. The total number of pits were 19, (15 main pits and 4 other intercutting the main pits). The sizes of these pits ranged from 60x50 cm to 20x20 cm in diameter. The two central pits and the one on the eastern side being the largest, the three smallest were located on the southern side. All the pits were circular to oval in shape and 10 – 40 cm deep. Two of these pits had flat stones laid out in the bottom with stones standing upright along the edges. In all the pits there were a charcoal and wood ash layers, from 5 – 20 cm thick. These layers all had small bits of slag and iron residue (fig. 31).

Area B

After the removal of the eroded surface in B [101] various structural features and deposits became visible. These features and deposits were limited to an area about 3 * 2 m in size in the northernmost planning square. The area surrounding these features had been eroded to the glacial gravel severing all connection with the structures in A.

Hearth [group 203]

In the northern end of B was a regular small stone structure 1*0,80 m in size. This structure was rectangular in shape and contained charcoal and a wood ash deposit [126], [129], and [131]. The charcoal deposit was rich in large pieces of birch wood and no other material could be seen within this deposit. These features had been badly damaged by erosion.

“Smithy” structure [group 2004]

Underneath the hearth structure in B was a rectangular stone structure, 3*2.10 m in diameter [group 205] (fig.33). The eastern wall consisted of stone and measured 3 m in length. The north and



Fig.3 Smelting furnace in area A under excavation. Note the wood ash deposit on the flat stones and the upright stone.



Fig.4. Area A at the end of excavation. Note the numerous pits on the mound.

south walls were also made of stone, however, only measured 2.2 m in length. The western wall was only 1.50 m long with an opening in the southern end measuring 1.50 in length. The thickness of the walls was between 20 and 30 cm. All walls had been damaged by erosion on the outside. There was a deposit [158], dark, compact and in places very thin. This deposit could not be defined everywhere within the structure and is possibly remains of a floor. Underneath this deposit there was another similar deposit [174] but more



Fig. 5. The “smithy” structure in area B. The darker material seen in the picture is the floor layer.

extensive and thicker than the previous layer. It was limited by the stonewalls on every side, was dark in colour and was very compact. Under deposit [174] was a layer of mixed earth and under it was a similar deposit but mixed more with charcoal [186], [187] and [197]. These deposits are probably remains of floor layers. The deposits were cut by a number of cut features and these features became clearer once the floor layer had been removed, as the cut features extended into the sterile earth underneath. In the north end of the structure two large cuts were recorded [188], [189]. The southern cut feature was 60 x 20 cm and was located just west of the north/south axis of the structure. The northern cut feature was about 20 cm north of the southern cut and it was up against the northern wall. This cut was about 20x20 cm in diameter and both features had flat stones in the center. Post- or stakeholes were recorded on both sides [group 206]. All the posthole cuts, followed parallel lines from north to south on both sides of the north/south axis of the structure. All these holes were small, the smallest 5x5 cm and the largest 10x10 cm in size.

Both north and south of the main structure two archaeological features were recorded. However both these features were in a bad state of preservation because of erosion. The southern feature consisted of two isolated stake holes (postholes) [209], [210] which are probably connected with the stake holes recorded within the structure. Both were cut into the sterile earth. The northern feature consisted of a single flat stone that had archaeological deposits underneath [211]. Any archaeological deposits that had been around this flat stone had been eroded away, making it impossible to connect it with other archaeological remains in the area.

Area C

Furnace 2 [group 207]

Only one archaeological structure was recorded in area C. This structure consisted of a number of features, deposits and cuts. A rectangular pit [195] had been dug into the ground and three large flat stones had been laid out in the bottom. On the sides large slabs had been placed upright, the upright stones were still *in situ* on the west and east sides but on the north and south sides they had fallen over [208] (fig.32).

Inside the pit and on top of the flat stones in the bottom various deposits were recorded [137], [171], [181], [193], [190]. These deposits consisted of burnt remains and it was clear that different material had been burned at different times. The deposits consisted of wood ash, charcoal, peat ash and all had small remains of slag and iron. The underside of the flat stones in the bottom all had a thick rusted iron residue.

Discussion

In areas A – C all archaeological features and deposits were removed, except for the furnace cuts, stones in furnace in C and the stonewalls of the structure in area B.



Fig. 6. Smelting furnace in area C at the end of excavation.

The archaeological evidence suggests two phases of activity in area A – C. It is likely that both of these phases date to the period AD900 –1000 or until the *Hrísheimar* farm was abandoned in the late 10th early 11th centuries. However, nothing was found during the excavation that can firmly date the areas to the 10th century. The dating is based on the radiocarbon dates acquired from samples taken in the midden deposit in 2001.

Phase 1. (Late 10th century)

The stone wall that was built on top of the mound in area A cuts through few of the furnace pits and therefore must be of a later date. Unfortunately, nothing can be determined from the archaeology about the function of this wall as a result of the heavy erosion that is in the process of destroying the wall.

In area B a hearth was built after the “smithy” structure had been abandoned. The function of this hearth is difficult to determine from the excavation data. Soil samples were taken from the deposits within the hearth and they may possibly give us a better understanding of the function of this particular hearth.

Phase 2. (AD900 – 980)

The earliest occupational phase in area A – C consists of 20 pits in area A, one single pit in area C and a rectangular structure in area B. The circular/oval pits on top of the mound in area A are remains of iron smelting furnaces that were used for processing iron ore. The two structures in the south part of A and C are also remains of iron smelting furnaces but are probably of a different type.

The function of the structure in area B is unknown but the archaeological evidence suggests a small hut that was used either for cleaning the bog iron prior to smelting or cleaning the bloom after firing. Post- or stakeholes were recorded within the structure, indicating that this hut may have had a temporary roof, either made of wood or hides.

Areas H and L

Areas H and L were approximately 10 m east of the farm mound. Area H was to the southeast closer to the mound and in 2001 a test pit had been excavated in the area. The pit revealed a well-stratified midden that was on top of a subterranean structure. Area L was 5 m east of area H and it too revealed a well-stratified midden that was on top of a structure of an unknown function.

The excavation in area L focused on the removal of the midden and no excavation on structures were carried out. The midden excavations, however, revealed a turf wall extending from north to south and probably is the southern end of building that is situated north of trench L. Another turf wall was revealed which extended from the east to west and was connected to the north/south wall. This wall disappeared under the south section of trench L. Further excavation is planned in this area for the 2004 season.

Pit house [Group 212]

The first stage of excavation in area H was the removal of the midden that was on top of the subterranean structure. The midden was sitting in a depression that had been cut [125] into the collapsed material from the subterranean building, or pit house. This cut was approximately 3x2.50 meters in diameter. The structural collapse [128], [144], [167] mainly consisted of turf material extending over an area 4*3 meters in diameter. Mixed in this collapse were the *landnám* tephra and fragments of wood. The turf in the structural collapse was similar to the turf collapse that had been recorded at the *Hofstaðir* site. The wood remains were poorly preserved and are remains of roofing and other structural elements. Underneath the collapse were mixed deposits [170], [179], [180], [182] that probably had accumulated shortly after the abandonment of the structure, prior to its collapse.



Fig. 7. The pit house after the removal of the midden deposits.

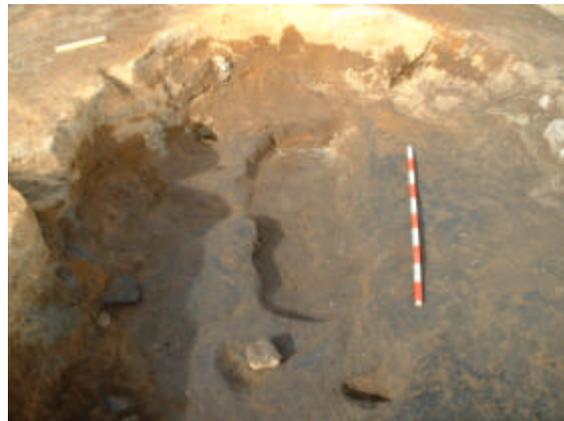


Fig 8. The rectangular pit in the floor of the pit house.

When these deposits had been removed a black charcoal layer became visible. This deposit was very compact, black in colour and was about 4x2.50 m in diameter (fig.34). The deposit extended across the inside of the pit house and was the floor of the building [192]. A number of features were recorded that were in or on the floor deposit and probably belong to the occupational phase of the pit house. The north part of the pit house contained a rectangular pit with rounded corners, 1x0.50 m.



Fig. 9. The floor of the pit house prior to excavation.

The pit was not cut into the floor as the floor deposit extended into it. The western side of the pit included a trench that extended from the west wall into the pit itself. South of the pit two postholes were recorded and both cut through the floor deposit. Northeast of the pit was a circular hole, also dug through the floor. The test trench excavated in 2001 had unfortunately damaged this hole. Along the east wall of the building a number of small stones were recorded. These stones were small and some of them were burned. In the southeastern part of the building a large flat stone was excavated, just north of the stone was a feature with a charcoal deposit inside. This feature is probably remains of a hearth or an oven of some sort. The entire floor was divided into 1x1 quadrants and each quadrant was excavated and sampled for further analysis.

Once the floor deposit had been removed a number of cuts and other features became visible that belong to the structural phase of the building. At this point it was late in the 2003 season and it was decided to leave what remained of the archaeological deposits and features for the 2004 season.

Discussion

There were at least two occupational phases in area H. The first phase belonged to the building of the pit house. The building had been constructed by the excavation of a shallow pit and turf walls erected on the edges of the pit. This structure was approximately 4 x3m.

The function of the pit house is still unclear and the analysis of the floor deposit and further excavations in 2004 should clarify this issue. Three loom-weights were found in the southern part of the building, which may suggest that it was used for weaving. It was also suggested during the excavation that the rectangular pit may have been dug to hold loom weights with the loom itself above the pit. However, there is no archaeological evidence from other sites to support this idea.

The final occupational phase of area H occurred as a result of the occupants digging a hole in the abandoned pit house ruins for rubbish.

The carbon dates from the midden above the pit house point to a mid 10th century date for the midden. The archaeological data suggests that some time elapsed between the abandonment of the pit house and the accumulation of the midden. This would

indicate that the building was built sometime in the late 9th century or early 10th century.

The Finds

Colleen Batey

A total of 179 finds units were recorded from this site in 2003. with at least 48 (26.82 %) of these being surface finds. As the site has been seriously eroding for a number of years and was actually located by the presence of industrial debris scatters, such a relatively high proportion of material for surface layers is not surprising. The nearby location of a massive slag heap and the suggested identification within the excavated archaeology of one of the structures as an area of industrial working (Area A-C) is confirmed in the artefactual material with 46 finds units of industrial debris having been recovered (making up 25.70% of the overall assemblage), with concentrations noted in layers 101 (Area A-C), 002 (Area H, probably a conflated deposit) and 054(Area L). In addition to the recovery of industrial debris, there are also 7 possible iron tools recorded as well as numerous nails and unidentifiable fragments of iron and 8 whetstones. It is clear from these elements that at least part of this overall site focused on metalworking activity.

IRON

Of the 67 finds units of iron recorded from the site as a whole (comprising some 37.43% of the overall assemblage), 33 are currently otherwise unidentifiable and a further 3 are indeterminate iron sheet fragments (SFs 3, 88, 89, one surface find and two from Site L). However, there are 7 tools from the assemblage: 3 from unstratified deposits (SFs 1, 23 and 71) and 4 (SFs 13,50,51,52) from Site A, the suggested industrial structure. SF 1 includes a broad flat metal piece which



Fig 10. A tool made of iron.

has irregular indentations along each long face. Although this could be accidental damage to a piece of metal sheeting, it is also possible that this is the damaged remnant of a saw blade. SF 23 appear to be the worn remains of an iron knife with tang, the blade is flat-backed and the cross-section a very shallow V (cf Ottaway 1992, 594 no 2842). SF 71 is an iron knife blade with part of the tang remaining, it is badly worn and damaged, in common with SF 23 it is also has a very shallow V-section at the blade. SF 13 could be a tangless punch (cf Ottaway 1992, 516, fig 197 eg 2219 or 2212), a metalworking tool. It is complete in length, but possibly sheered in section (now rectangular) and clearly shows hammerblows at its head. The three finds 50, 51 and 52 are probably originally from the same or similar item; its thick form with square section could suggest a punch or awl – type function (cf Ottaway 1992, 553, fig 222 eg 2712 or 2727) which Ottaway suggests had a leatherworking association. It is possible it may have been for working with wood as well. Although

tools are notoriously conservative in their development, it is possible they are of Viking/Early Medieval date.

There are 19 nails scattered through several contexts: with a small concentration of 8 in context 101 of Area A and single numbers elsewhere. There are 2 roves or rivet plates, one from context 045 (SF 99) and another from context 031 (SF 164), probably indicating the presence of either carpented wood or wood being recycled and the metal removed for reworking.

A small number of finds can be categorised as miscellaneous: SF 10 (context 101 from Site A) may be the tongue from a metal brooch for example (cf Egan and Pritchard 1991, 71, fig 43 no. 285) of Medieval or later date. This could have been used in horse harness and is not particularly chronologically or culturally sensitive. SF 26 (unstratified) has the appearance of a hook, but it is more likely to be simply a fractured metal piece. SF 32 (context 002, Area H) a perforated hasp with rivets remaining (cf Ottaway 1992, 626, fig 260 or 630, fig 262). SF 62 (unstratified) could be a fragment of a buckle, and SFs 111 and 112 (both from context 046, Area L) are both clasps or hooks, as illustrated by Ottaway (1992, 640, fig. 268 3474 or 3477).

COPPER ALLOY

There are two small fragments of copper alloy from the site, both unfortunately are unstratified surface finds; SF 4 is the fragmentary remains of a chape and SF 102 is a possible small patch from a copper alloy vessel. The chape is an unexpected find in this context. It is only the lower part and has very lightly incised decoration, it is crushed and worn and has been modified by the addition of an iron rivet which pierces front and back. Several similar pieces have been discovered in Iceland, all imports and within Viking pagan graves as complete examples (Eldjárn, K 2000). This example is probably most similar to the example from Ljárskógum (*op cit*, 332). The incomplete and remodelled form of this example from Hrísheimar would suggest that although its original context may have been a pagan grave (there are others from this locality, such as the magnificent example from Baldursheimur nearby, Eldjárn 2000), the damaged and incomplete form suggests possible recycling of the material, whilst the iron rivet suggests the need for repair following extensive use, and this is seldom seen in a grave context. It is undoubtedly Viking period in date, however, and compares with the antler comb, pins and whetstones discussed below as imported commodities to the site. The cauldron patch with two paper-clip rivets remaining is somewhat difficult to assign to a specific date range, but the isolated nature of the find does not necessarily indicate large-scale curation of this commodity for reworking, unlike the iron material.

LEAD

The single lead find, SF 103 from context 6 the lower midden in Area H, is an interesting piece. It is a line sinker of simple rolled form and of a type which has a long period of use. It is perhaps surprising, however, to find this in the lower midden material where it is associated with industrial debris, burnt wood and whetstone fragments indicative of a potential earlier dating in the site's sequence.

STONE

Thirty-nine finds of various stones have been recorded from all areas excavated at this site in 2003, including steatite, flint, jasper, basalt and Norwegian whetstone fragments. The stone comprises 21.8% of the overall assemblage. Of the 39 finds units there are 16 finds which are classed as "manuports" i.e. stones which are likely

to have been brought to the site deliberately. It is unclear whether this is actually likely in all cases, and indeed such small waterworn pebbles may well have been used as counters or gaming pieces. At this stage, prior to geological input, it is not possible to make further comment. Single examples of sandstone (SF 178 from context 45, Area L), jasper (SF 81, context 006, Area L) and possible slate (SF 66, context 110, Area A) add to the variety, so it is clear that exotic



Fig.11. Spindle whorle.

stones are being imported and this is confirmed by the 5 finds units of flint (SFs 2, and 73 as unstratified finds, 60 from 101, surface context and 163 and 169 both from context 202, Site L). Flint would have been used as a strike-a-light (as was jasper) and a number of examples of these have been recovered from Icelandic pagan graves (Eldjárn, K. 2000). Recovery from Area L would further confirm the zone of activity.

There are two vessel sherds of steatite in the assemblage from Area L, SF 107 from context 045 and SF 134 from 051. The small fragment 107 is from the rim of a vessel with smoothed inner and outer faces, and has broken at a rivetting point below the rim. There are traces of iron staining in the rivet hole. SF 134 is from lower down a vessel, probably not the same one as 017 and has traces of burnt deposit on the interior face. The exterior face is relatively smooth, but shows signs of pecking in the area of an *in situ* iron rivet. Although it cannot be certain from the sherds surviving, it is most likely that these are both from hemispherical vessels, imported from Norway. In the case of the larger sherd, SF 134 it may have been intended for remodelling, although this cannot have been the case for the very small SF107. These are most likely to have been Viking Age Norwegian imports to the area, but they will have been discarded some time later. A third item of soapstone was recovered from context 006 in area L, SF 83 is roughly half of a slightly domical spindle whorl. In Oye's categorisation from the Bryggen material, this would be a type A (Oye 1988, 38, fig. 11.7) in that it has an essentially flat base and a central drilled perforation. It is highly smoothed and shows no signs of having been reworked from a steatite vessel sherd, it is therefore possible that this was a Viking age import to the site.

There are three waterworn basaltic stone pebbles which have potentially enhanced natural perforations. These were all found together in Area H context 182 (SFs 155, 156 and 157). This represents extemporary utilisation of a local resource, in this case possibly for weights in a warp-weighted loom. Such utilisation is commonly recorded at several periods and the variations in form are discussed by Oye (1988, 58-68). There is usually a degree of debate about whether such weights could have served as fishing weights, but in the circumstances of Hrísheimar, where the three were discovered together in the pit house, it would be perverse to argue for such a function.



Fig. 13. Bone comb found in area L.

There are 8 whetstones from the excavations. SFs 11 and 15 from context 101 and SF 92 from 006 both Area A; SF 31 from context 002 Area H ; SF 101 from context 043 and SF 114 context 045, SF 128/120 from context 047, SF 140 context 0313 all from Area L. Without geological confirmation it is not possible to be certain of the identification of the stones involved here, but SF 92 appears very similar to the Norwegian Eidsborg series and both SF 114 and 140 appear similar to the Phyllite series, also from Norway. All whetstones are fragmentary and would have seen much use. They are chronologically usable only in that their geological source can be identified but the length of time before deposition is difficult to judge. The recovery of three examples from Area A, the suggested industrial structure, is as anticipated and those from Area L presumably associated with midden deposition are to be anticipated when the items are so badly broken and discarded. It is possible that the whetstones SF 101 and 128 both from Area L may be local stones pressed into service *in lieu* of potentially better suited imported stones.

MISCELLANEOUS ORGANIC MATERIAL

There is a single find of burnt wood, which was considered to be potentially artefactual. However, SF 179 from Area H is more likely to be round wood rather than tooled. There are also three finds of possible leather, SFs 86 (Context 4, Area H), 109 (Context 045, Area L) and 147 (Context 051, Area L). Further analysis of these pieces will be required to confirm the identification, but they have no obvious form.

BONE

The largest group of organic material is the bone, with 11 finds units. This includes two finds of teeth, SF 22 (Area A, surface) and 82 (Context 002, Area H) both are thought likely to be human. Two other examples are only possibly worked (SF 64 and SF 84). Amongst those items which are clearly worked, are 2 bone pins (SF 121 of 045 Area L and SF 128 of 048 Area L). Both are complete pins, probably of long bone shaft and with broad unperforated heads. No. 121 has a fully worked head with slight waisting and irregular dot decoration on the smoothed face. These could have served as hair pins or used in textile working (as suggested by Oye 1988, 85ff) The unperforated, broad heads imply a function as pins rather than as needles. It is probable that these may be Viking age in date, and a similar example was found in a Viking grave at Öndverðarnes (Eldjárn, K. 2000). In terms of the remaining worked bone, there is a fragment of long bone which has been cut into a roughly rectangular plate, but is broken on the rear face (SF 173 from Context 59, Area L) and a substantial piece of whalebone which has been worked to a tapering blunt end (SF 43 from Context 103 from Area A), it is possible that this may have been utilised as a

point for cultivation, but whalebone is not an ideal material for such activities since it is too soft.

SF 97 from Context 38 Site L is a cut length of walrus baculum which has been partially perforated at one end to allow hafting perhaps from an iron knife. This is a very dense bone suited to such a function, and may have been from an Icelandic or Greenlandic source. It is not however, highly worked which suggests use of a local resource rather than a Norwegian import.



Fig. 14. Bone pin found in area L.

The most diagnostic find from the organic material is an antler comb which is essentially complete. SF 77 was found in Context 045 in Area L, the midden, and is a Norwegian import of Viking period date. It is a single-sided composite comb, probably of antler, with 5 iron rivets and lightly incised linear decoration. In form it is very closely paralleled by several examples from the Icelandic pagan grave assemblage (Eldjárn, K. 2000, particularly the comb from Álaugarey). The date range in Scandinavia would be approximately late 9th – 10th century.

GLASS

There are three beads from the overall assemblage, SF 7 from Context 101 is a surface find from Area A as is SF 9. These are both broken in half, only part being recovered and are of simple circular form, SF 9 is heavily patinated but has a blue-green hue, and SF 7 appears to be dark blue, almost black. Types are very simple and can be paralleled amongst the pre-existing Icelandic corpus (Eldjárn, K. 2000). The third find to be originally identified as a bead, SF 153 is shattered and appears to be bone rather than glass. Its form is now unclear.

In conclusion, it is clear that there are a number of artefacts which can be considered as primary Viking age artefacts, the comb, whetstone fragments, steatite fragments, bone pin and fragmentary copper alloy chape. However, with the exception of the comb, the incomplete nature of the pieces suggests considerable usage of such resources which could indicate an unquantifiable period of usage. The comb from the midden, is apparently complete and would not normally be discarded without cause. Is it likely that it had gone out of fashion? Could it have been dug up elsewhere from a nearby pagan grave and discarded in the middens? Are the midden dumps related to the use of the nearby pit house enabling dating of the dumped material to identify the period of use in that structure? The large animal bone assemblage from the middens will assist in the more precise dating of the deposit which contained the comb and then it may be possible to understand something of the circumstances of its deposition.

Area A is clearly an industrial site, combining structural indications with industrial debris, tools as well as whetstone fragments. In terms of confirmation of dating, the fragmentary nature of the whetstone pieces as well as the potential conservative

nature of the tool assemblage need not necessarily indicate a Viking date for this activity. However, at this stage such a dating horizon cannot be counted out completely.

The Midden

Thomas McGovern, Jim Woollett

Description: Unit Location

The midden team set out its grid and units following the orientation of the original 2001 unit (magnetic N-S), subsequently discovering that the structures team had established its own grid using geographic N as grid north (when it was too late to alter the orientation of excavation units). This is not a major problem, but users should be aware that the midden units are all aligned with a magnetic N-S orientation while the structures plans will follow geographic N. All features were mapped on a fine scale by Total Station and Trimble GPS. Tom McGovern and Sophia Perdikaris supervised the first weeks of excavation, with Jim Woollett taking over from Sophia and taking on most of the excavation of the L unit personally.

Clearing Area H

The first task for the 2003 middens team was to better define the features associated with the area H midden and pit house. Making use of the willing labor of the REU team, a 4 x 5 m unit was unturfed, that soon expanded to 5 x 6 m to take in the entire structure as it emerged. Beneath the turf (context 001) a series of micro layers of



Fig. 15. Area H at the beginning of excavation.

inter-bedded, thin organic horizons and sterile, tan, windblown silt were encountered (collectively context 001). These appear to reflect successive stages of dune stabilization by groundcover plants followed by renewed deposition of wind blown silt (probably from the rest of the site deflating to the S and W). These could not be stratigraphically separated and seemed to be functionally equivalent natural events, so most of this deposit was removed by spading. Near the base of the 001 deposit (up to 65 cm thick in some parts of the unit H area) some

concentrations of well preserved animal bone were encountered, including caprines and cattle bone (context 002). This material definitely overlays both the emerging pit house wall top and the remains of the midden fill. Similar small concentrations of bone were encountered in similar stratigraphically equivalent Aeolian deposits in test units K, L, and Q. This material may be related to a later occupation (perhaps the following abandonment of the permanent farm) or it may be still later but vertically displaced by continued erosion and re-deposition of sediments and in fact relate to still later phases in the 001 sequence. In several places it was believed that the 1477 tephra (assigned context 030) was *in situ* well above the first cultural layers, but Anthony Newton suggested that 1477 had probably been taken up and redeposited

several times within the 001 aeolian deposit, and thus it was not an *in situ* tephra. All bone bearing portions of 002 were hand excavated and sieved (4 mm mesh).



Fig.16. The 2001 excavation trench.

(contexts 004 and 003) and the uppermost wall collapse (mainly randomly oriented structural turves with a great deal of grey-green tephra embedded within), cleaning



Fig.17. Area H during excavation.

down to the lower midden deposit 006 and the top of the lower wall collapse. At this point (July 30th) the excavations ended and area H excavation was turned over to the structures team

concentrations of ash and charcoal in corings during the 2002 visit, but results had been uneven, with many cores in the area showing only sterile silts. The objective in 2003 was to confirm whether or not any appreciable amount of intact cultural layers existed beneath the turf or if, in fact, this part of the site had been largely eroded away prior to the later deposition of the windblown silt and successive groundcover communities.

The first test pit (J) was a 50 cm x 1 m shovel test 50 cm to the E of 1004/1100. This **unit J** revealed a largely natural stratigraphy with 1477 tephra on top and H3 at the base, but an intermediate deposit of H3 revealed some disturbance and reversed stratigraphy. It would appear that some upcast with H3 embedded was moving at least this far from some nearby past excavation.

Beneath the 002 context we rapidly encountered the 004 upper midden deposit identified in 2001 as well as the distinctive upcast wall top of the pit house (context 010, tan subsoil mixed with large blotches of white H3 tephra). The profile (still tagged) of the 2001 unit was very helpful in clearing the remaining midden fill from the edge of the pit house (view from S). The placement of the original 2x2 m unit was a stroke of good luck, as it fit more or less squarely within the pit house area without severely clipping into the walls on either side. It was possible to peel back the upper midden fill

down to the lower midden deposit 006 and the top of the lower wall collapse. At this point (July 30th) the excavations ended and area H excavation was turned over to the structures team

Test Pits

As the work in area H continued, test units 0,50 x 1 m were dug along the turf-covered slope to the north and east of the H unit. This area had shown some



Fig. 18. View from S looking towards the N E corner of the expanded 2003 unit H area. Note how the medieval ground surface dips away to the right (E) and the multiple layers of silty organic windblown deposit become thicker to the E as well.

Test pit K was 50 cm x 2 m, located 3 m to the E of test pit J on the same line (approximate 1100 N). This test pit also showed 1477 and reached *in situ* H3 tephra at base, and showed no upcast tephra. Most of the deposit was laminated natural silt, with the same multiple fossil turf horizons described in the 001/002 contexts in area H. However, the lower portion (15-25 cm below surface) also contained some well preserved bone and fire cracked stones. This appears to be a low density midden similar to context 002 in the H area, and testifies to some

human activity down this slope (5-6 m E of the pit house in area H).

Test pit L was initially a 50 cm x 2m shovel test at approximately N 1104/ W1013. The unit hit a dense layer of bone and ash at approximately 55 cm below surface and was stopped at that depth.. A second test pit was opened at approx. N 1104/W1008 and this hit a similarly rich midden deposit at 35 cm below surface and was also



Fig. 19. Midden deposit in test trench L.

stopped. Clearly a significant *in situ* cultural deposit existed in this area below a thick drift of Aeolian deposit. The next few days saw the expansion of test pit L into a full 3 x 5 m excavation unit with its long axis running perpendicular to the slope. The test pit L rapidly became the focus of the second half of the 2003 midden team's work, and will be discussed in more

detail below. It was eventually connected to test pit Q by a long continuous trench.

Further north, a line of three small test pits were dug 5 m apart along the approximate line of the 1117 N midden grid.



Fig. 20. Test pits P, M, and N.

Test pit P (furthest uphill ca 1003/1117N) showed striated silt/organic horizons of the now familiar aeolian deposits and temporary turf stabilization phases. At 50 cm a clear culture layer was encountered across the whole unit, both dark deposit with many burnt bone flecks evident and an apparent line of three stones running across the unit (approx N-S orientation) these may well be simply fire cracked

stones however, they were left in place for further investigation. This is cultural material, possibly structural material as well.

Test pit M (midway down slope ca 1008W/1117N) a deeper deposit of natural striated aeolian silts approximately 50-60 cm deep, with a clear set of bedding angles parallel to the modern slope, probable bedding angle shift towards a level plane in the bottom 5-10 cm of this natural deposit. At 50-60 cm below surface a dense *in situ* turf construction (probably a major structural wall) was encountered. Unfortunately, this feature was penetrated by the midden team approximately 25 cm into the top of this deposit before realizing the nature of this cultural layer, thus there will be an intrusion at this point. The turf construction extends completely across the entire 50 cm x 1 m test unit and it was not possible to determine anything about the orientation of the wall or possible structure, but this would appear to be part of a major construction.

Test pit N (near base of slope ca 1013/1117 N) a surprisingly deep deposit given that the unit is only a few meters from the modern fence, again with 50-70 cm of striated aeolian silt immediately below the modern turf. Small bone flake concentrations and bits of displaced turf appear around 50-70 cm from surface, including a broad band of dark grey-green tephra at 62-55 cm from surface. This is not an *in situ* tephra but instead clearly in either upcast or (more likely) in a displaced structural turf. The cultural deposit is quite thick here, but it appears to be more likely to be displaced collapse than actual structure. An Oakfield core reached H3 at 139 cm from surface, establishing the lowest limits of the deposit. This unit is hard to interpret, but it is possible that it is mainly composed of reworked structural debris from upslope, or possibly from a nearby structure at the base of the slope.

Thus, the three small test units along the 1117 line (approximately in line with the center of the eroded farm mound to the W) each produced clear evidence of some sort of *in situ* cultural deposit, though each had a completely different character. These test pits did not provide a very wide view of deposits below the thick deposit of sterile silts, but they did demonstrate that some sort of intact archaeological deposits extend

very widely beneath the turf covered remnant along the E side of the site. Erosion has *not* removed all evidence here, and large scale excavation seems fully justified.

Unit Q began as a 0,50 x 1m test unit at ca 1018/1107, approx 5 m downslope from the NE corner of unit L. The objective of this unit was to both establish the limits of



Fig. 21. Areas L and Q under excavation.

the midden observed in unit L and to try to connect some *in situ* tephra directly to some midden layer. While clearly extensive and productive early layers were found, no clear traces of either the LNS or the later V-950 grey green tephra (except probably as inclusions in turf blocks). It was anticipated that by moving downslope away from the human activity and intense erosion nearer the crest a concentration of intact soils and tephra would be located. This deep pit (nearly 1.75 m total) provided the usual “telephone booth” working and observational conditions, and required expansion. The expansion eventually (thanks to hard work by visiting Stirling students) became a 5 m long trench connecting units L and Q. Cultural material did extend along the entire unit, and some *in situ* tephra were observed in the E end of Q, but it cannot yet be said at this time that we have a successful connection can be made between these to the archaeological stratigraphy. Part of the problem was the discovery of a well-built turf wall (making extensive use of the now familiar grey green tephra rich blocks) that cut across the foot of the midden deposits in L- it appeared literally centimeters beyond the former NE corner of the unit L. It is unclear whether this wall is structural or a yard wall, or how (or if) it connects in any way with the other walls observed in unit L or in the test pits to the North. It is clear that expansion of the units next year is necessary in order to gain a better understanding of this part of the site before moving aggressively to attempt to connect tephra with

midden layers. One is made grateful for the (in retrospect) easy tephra connections of the Sveigakot midden area M deposits.

Area L Investigations

As L test unit was expanded into a full scale 3 x 5 m excavation unit, it was possible to clear down to a bone and ash rich surface over the entire area.



Fig 22. Area L under excavation.



Fig.23. Area L seen from southwest.

This was clearly a major sheet midden deposit, and the initial work on it revealed exceptional bone preservation and pH readings around the neutral (pH 7.0) mark. Fish, bird and mammal bone have been recovered in staggering density, in both burnt and nearly fresh condition. There is a high concentration of fire cracked stone, ash and charcoal, but also many unburnt bones and artifacts. The general character of the deposit (and its high bone density) is very similar to the 004 and 003 contexts in the fill of the pit house H, but it is believed that one will see a much higher percentage of fish (both freshwater and marine) than in the 003 context already reported. One wonders what the temporal relationship of these two major deposits may be, and how to demonstrate

some stratigraphic relation between them.

The work in area L rapidly demonstrates that this part of the site contains major structural remains as well as dense midden. A mass of turf fragments (many containing large chunks of grey tephra) run in a band across the W (upslope) side of the unit, and are apparently intersecting with layers of midden (bones with near vertical bedding



Fig. 24 Dr Woollett draws profile on the NE side of the L unit. Note the exposed semiarticulated sheep skeleton lying against the steep bedding angle produced by the juncture of the emerging 043 wall and the midden deposit. The head of the sheep was missing but most of the skeleton was present.

angles, midden running under turf deposits). These prove to be a succession of turf wall collapses (contexts 034, 042) above what appears to be an *in situ* turf wall (040), with the now-usual deposits of midden being apparently included as the wall material collapses. Careful dissection of the upper (W) portion of the unit L reveals a wall running roughly N-S along the W side of the unit, with two distinct groups of midden material associated. One group spreads widely over the 040 wall top and spills downslope (E) over much of the unit (031, 035), or at least the W end. Another group of midden contexts are essentially restricted to the W side of the unit (036, 033) and lie entirely on the W side of the *in situ* wall element. This group may well be the top of fill of a structure extending into the profile to the NW and it was decided to essentially leave it in place for this year. Excavating deeper in this area will effectively have the team excavating a corner of a structure without being able to see the larger plan, a clear receipt for disaster.

Another lump of grey-green tephra rich turf (043) runs diagonally down unit L (roughly NW-SE) across the midden deposit. Initially it was believed that this was merely a chunk of wall collapse or turf wall reconstruction debris from the 040 wall above (W), as some midden material appears to run under it. However, as excavation continued, it was discovered that these apparent “run unders” are, in fact, again the result of melting of an *in situ* turf wall, and the 043 context steadily emerges as a substantial turf wall in place.

It gradually emerges that the layers on either side of this wall are different, and those to the S are apparently the fill of a room or other structure. This deposit is also thus only a partial view of a filled structure, and after confirming a clear structure edge in sight the decision was made to leave the full excavation of this side (S) of the 043 wall for a later season. The main midden excavation effort this summer thus takes place on the N side of the 043 diagonal wall, pulling layers down a steep slope in stratigraphic order.

At the base of the slope, it is apparent that there is a change in bedding angle developing, first a flattening of the very steep (but accurately excavated) bedding angle of the mid-unit and then a reversal, with a rise towards the wall we now know to be present running along the 1013 line at the east end of the present unit L.

The west end of the north profile of area L shows clear evidence of truncation of the cultural deposit by erosion prior to the deposit of the banded 001 sterile silts. This explains the lack of the expected medieval and early modern tephra above the culture layers and raises the issue of the actual date of the onset of the most massive local erosion.



Fig. 25. The north section in L. Upper part.

Finds in unit L include a very complete composite bone comb and two bone pins from the same context (045) several bits of steatite (including a partial spindle whorle) and a nice strike-a-light made of actual (thus imported) flint. Also a knife handle made (definitely) out of walrus baculum (penis bone).

All this makes one suspect that one is dealing with an early occupation, before they had time to wear out and lose their

imported goods. An important question is whether the walrus bone was Icelandic or imported.. Overall very reminiscent of the M midden material at Sveigakot.



Fig. 26 The north section in L. Lower part.

Bone material is incredibly rich, well preserved, and abundant. Approximately 8-9 bones have been collected which will amount to a couple of weeks work on what has become a fairly narrow strip of working midden. The contexts are the usual mix of activities, primary and secondary butchery waste, meal consumption debris, some industrial activity (slag, worked bone) and an abundance of fire place cleaning debris, many fire cracked

stones, burnt bone, wood ash and peat ash, and wood charcoal (including some very large pieces). The archaeofauna also includes many spring seasonal indicators (neonatal cattle and sheep, as well as many bird egg shell concentrations). This may

be chance or may again reflect some seasonality in major house cleaning events. As at Sveigakot and Hofstaðir, area G, there are many large and widespread layers but few small basket-dump sized deposits, leading one to suspect that midden formation may be the result of great bouts of household cleanliness rather than a daily regime of small scale dumping.

The bird record may be again interesting, as a great deal of shell (most unrecoverable as usual, but we did collect several concentrations) is being excavated. In one sq m there were no less than 6 egg-sized concentrations- all of the now usual white or pale blue egg. Bird bones are still overwhelmingly Ptarmigan (grouse), but of course, this is a very subjective observation that needs lots of laboratory confirmation.

Fish are also following what has become a familiar pattern, large amounts of freshwater fish (both charr and trout) represented by all bones of the skeleton (including some very large trout jaws, substantial animals). Smaller numbers of sea fish, represented by cleithra and tail vertebrae (some very well preserved haddock and cod cleithra).

Discussion

This deposit in area L is arguably one of the richest and most important middens in N Iceland, both in terms of its own antiquity and composition and in terms of its immense value for comparison with the large archaeofauna (of apparently precisely similar date) from Sveigakot and Hofstaðir. While Sveigakot certainly was a middle ranking farm in its earlier phases, it is hard to believe that a high status settler with wide settlement choices open to him (or her) would choose to locate so close to the great lava field to the east. Even if trees and groundcover were far different, the lava would still pose a limitation on the expansion of the farm. The site of Hrísheimar has no such natural limits and, in fact, is excellently situated with direct access to what were once wet meadows, trees, freshwater streams, lakes and upland pastures. Even without the evidence of the large-scale iron working uncovered by the structures team, and the evidence of the presumed grave mound nearby, it would seem that Hrísheimar had far greater possibilities and may well have housed settlers with very serious ambitions. We may thus expect that the story of the failure of these ambitions will be different in detail from the story of Sveigakot, and that a detailed comparison will provide important insights into the process of first settlement and early environmental impact.

Conclusions

Ragnar Edvardsson

It was expected, based on earlier surveys, that there would not be much archaeology left on the Hrísheimar site as the site had been exposed to centuries of erosion. It came, therefore, as a surprise to the excavators to unearth a substantial number of archaeological features and buildings that were in such a good state of preservation.

The production of iron had been known since the early surveys of 2000, as evidence by two large slag pits had been identified approximately 115 meters southwest of the farm mound. These slag pits were in an area that had completely eroded and large fragments of slag were scattered on the surface. During the 2002 season archaeological geophysical survey had also located another slag pit about 200 meters

east of the farm mound. The sizes of these slag pits indicated that iron had been produced on a massive scale at the site (maps.5 and 6).

During the Viking Age iron came from bogs and is often referred to as “bog iron.” Once the iron ore had been removed from the bog, it would be washed and roasted to remove all water. Iron smelting furnaces were the predominant method of extracting iron from iron ore. The general process of iron smelting includes bringing the furnace to a temperature between 1,000 – 1,300°C and at these temperatures the impurities in the iron form molten slag. The temperatures that these furnaces produced were not enough to melt the iron itself (map.3).

These furnaces were in use all throughout the Iron Age and they came in different sizes and shapes but all served the same purpose of extracting iron from ore. The first furnaces were a simple bowl shaped hole in the ground filled with charcoal, wood and iron ore. Later developments saw the emergence of a shaft furnace which was truncated cone around 1m high with a hollow cut under one side. These furnaces were known by earlier civilizations, such as the Greeks and the Romans.

A typical shaft furnace was built over a pit, lined with mud or clay and packed with charred wood and grass. On top of this material charcoal was added and finally the iron ore mixed with a charcoal charge. The function of the charred wood and grass was probably to provide carbon that would combine with the iron ore and produce steel. There were holes at the base of the furnace for bellows to pump air into the furnace.

Experiments in processing iron ore from bogs in shaft furnaces have shown that on average it took about 4 kg of charcoal to produce 1 kg of raw bloom. This shows that it took enormous quantities of wood to create enough charcoal for iron ore processing. (Coles, J. 1973)

The 2003 season positively identified an iron ore processing and iron-producing site in areas A–C. The number of furnaces, 19 small and 2 large, indicate that iron was being produced on a large scale and probably over a long period of time. The 19 bowl-shape pits in area A are either remains of a simple bowl furnace or a shaft furnace, as the actual shaft furnace would be torn down after use to get to the iron. However, the two larger furnaces in area A and C, with the stone lining and flat stones in the bottom, are of a different type and much larger than the others.

The iron ore was probably extracted from the bog east of the site. Bog iron is simply nodules of iron oxides and decaying vegetable matter that can be found in bogs and marshes. Iron ore will form in 20 years if the bog is left untouched. The production of iron on a large scale needed large quantities of wood for the production of charcoal and charred wood.

The area around the site at Hrísheimar is today barren and eroded. Woodlands are not visible in the vicinity (map5). However, it is very likely that the areas south and west of the site were dense woodland areas during the first century of settlement of the site (map 6). The production of iron on the scale presented at Hrísheimar would quickly have used up all the woodland around the site. Once the woodlands were gone there was nothing to hinder the rapid expansion of erosion across the landscape. Slowly but steadily erosion removed the fertile soil, causing pastures and fields to deteriorate and eventually disappear. This massive erosion of the site was probably the most likely reason for the abandonment of the *Hrísheimar* farm.

East of the farm mound there is a grassy area where no structures are visible on the surface. In this area two structures, a pit house and an unknown building, were identified. All the cultural layers in this area were under a thick accumulation of windblown material that had covered structures and cultural layers with approximately 1 m of soil.

A number of historic and prehistoric tephra layers were identified in the north section in areas L and Q. These tephra layers indicate that the midden deposit in L, which is above the structure in L, formed after V-950 tephra and stops forming sometime before the H-1158 tephra. After the H-1158 tephra there are no cultural layers on the site and the section clearly shows the massive erosion of the site from that time to the present (Magnús Sigurgeirsson, 2003). The carbon dating from the midden in H and the evidence from the tephra layers indicate that the Hrísheimar site was occupied from the late 9th century to the early part of the 12th century.

The Hrísheimar site is unique in many ways but especially because it is the first time in Icelandic archaeology that an iron processing and producing site has been examined in such detail. The importance of bog iron in early Icelandic society is often overlooked. The reason for this is probably because at later periods processing iron ore from bogs and producing iron fell out of use and imported iron took over. Bog iron became less important at later periods as a result of the lack of fuel to process and produce it and not because there was little bog iron in Iceland or that it was of such bad quality. As fuel supplies decreased drastically after AD1200 smaller amounts of iron could be processed and therefore the quality of it became worse. It is also likely that the smiths in Iceland after AD1200 could not produce steel, which was very important in the making of blades and cutting objects during the Medieval period. All these factors would eventually cause the skill and knowledge to produce good quality iron and steel from bog iron to be forgotten. At later periods bog iron was considered low quality and only usable for the most basic needs.

In the Viking Age good iron and especially steel was a high status item. A farmer who could process and produce good quality iron and steel could sell any surplus he had or trade it for luxury items. It is not likely that all farmers in Iceland had similar access to bog iron and therefore any farmer who had access to a bog, rich in iron ore and had the knowledge to process it, was in an excellent position to gain wealth from iron trade.

The archaeological evidence at *Hrísheimar* shows that the earliest occupants of the site were processing and producing iron on a large scale. It can thus be argued that the occupants were specializing in iron production and may have been supplying the neighbouring farms, even the *Mývatn* area, with a large percentage of the iron it needed. This would, without a doubt, put the occupants of the site in a unique position, making it possible for them to gain wealth and increase their social status.

Further research is needed on the actual farm mound and the buildings close to it in order to understand fully the development of the farm and its status during *Hrísheimar's* short-lived history. In the long history of Icelandic archaeology no similar farm has so far been excavated and there is no doubt that the *Hrísheimar* site will shed new light on early farming and industrial activity in Viking Age Iceland.

Drawings

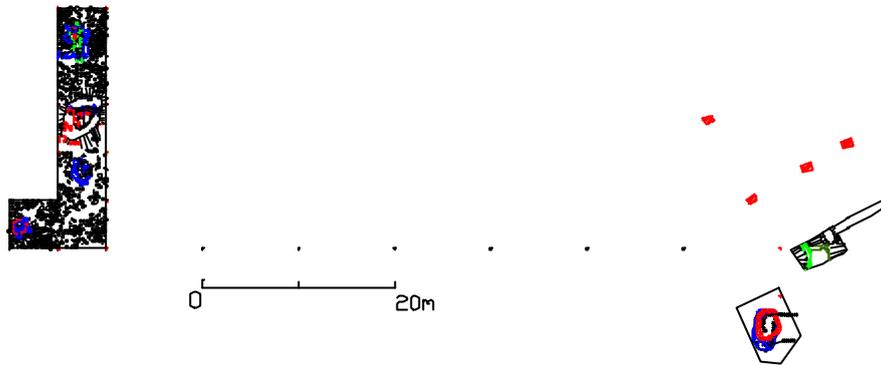


Fig. 27. Overview of the excavated areas.

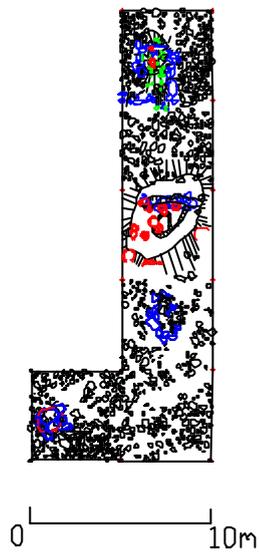


Fig. 28. Overview of areas A-C at the beginning of the excavation.

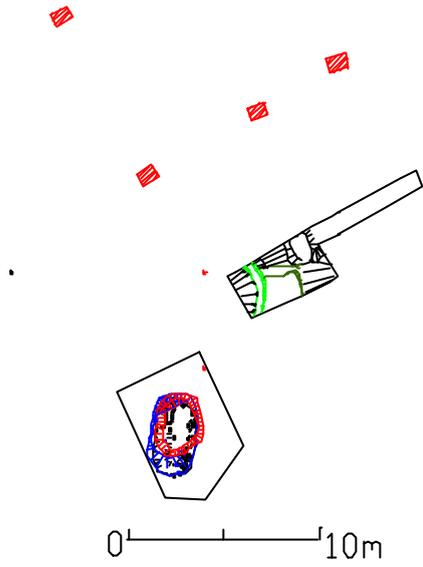


Fig. 29. Areas H, L and the test pits.

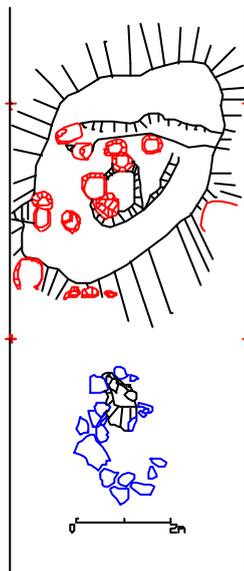


Fig. 30. Remains of smelting furnaces on the mound in A and remains of a larger furnace south of it.



Fig. 31. Smelting furnaces on top of the mound in A.

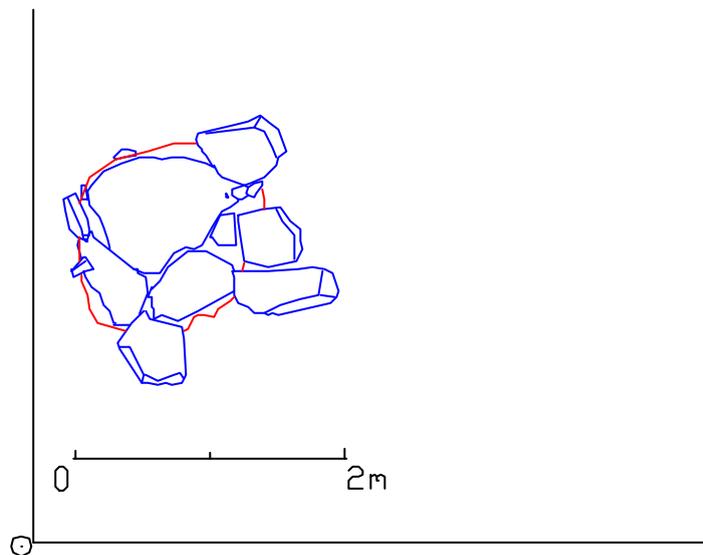


Fig 32. Large furnace in area C. Note the flat stones in the bottom and the upright stones.

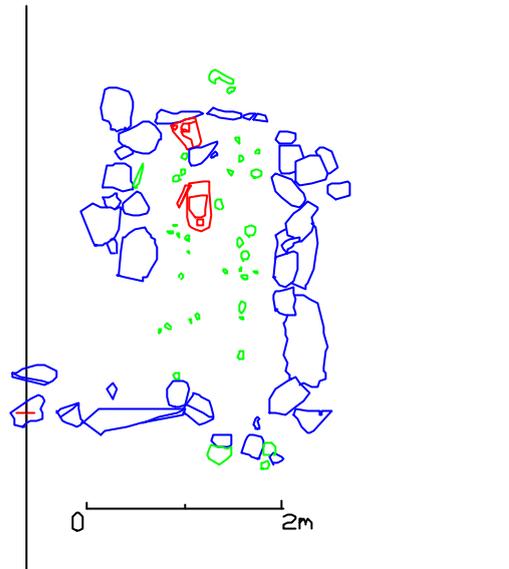


Fig.33. The structure in area B. The green colour represent stake- and postholes.

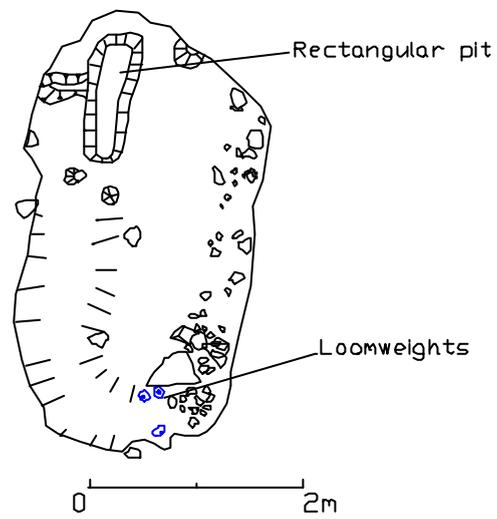


Fig.34. The pit house. The floor layer in the pit house.

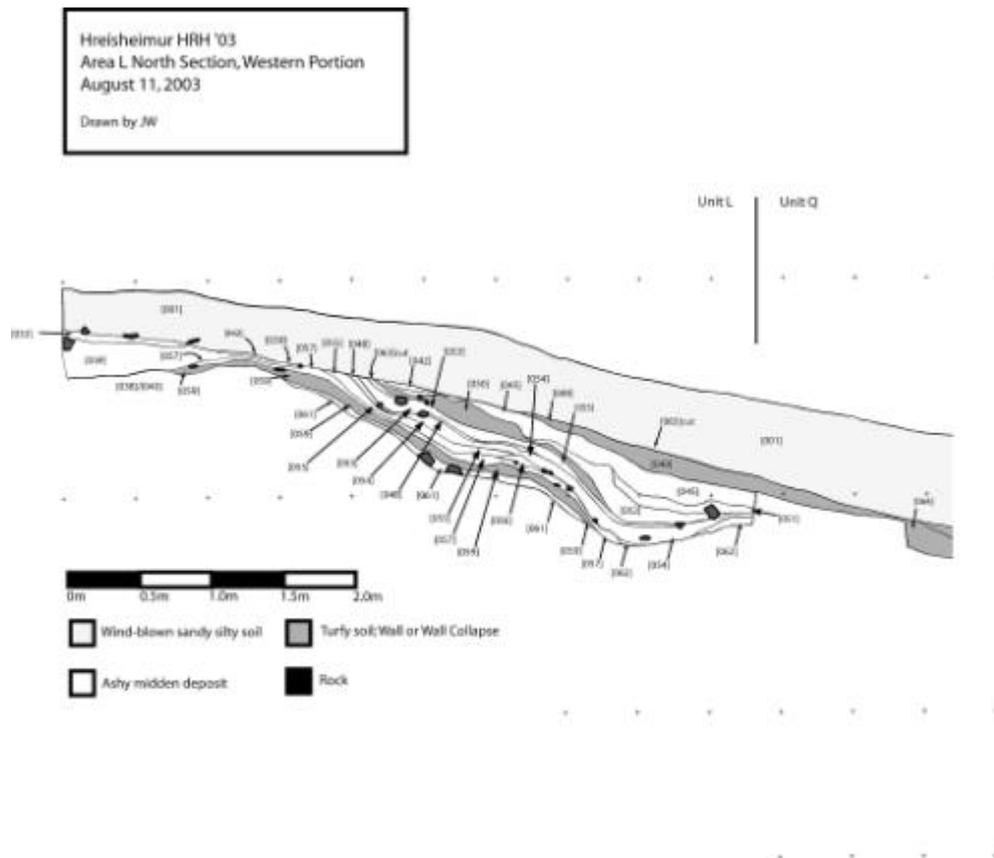


Fig. 35. The north section in area L. Upper half.

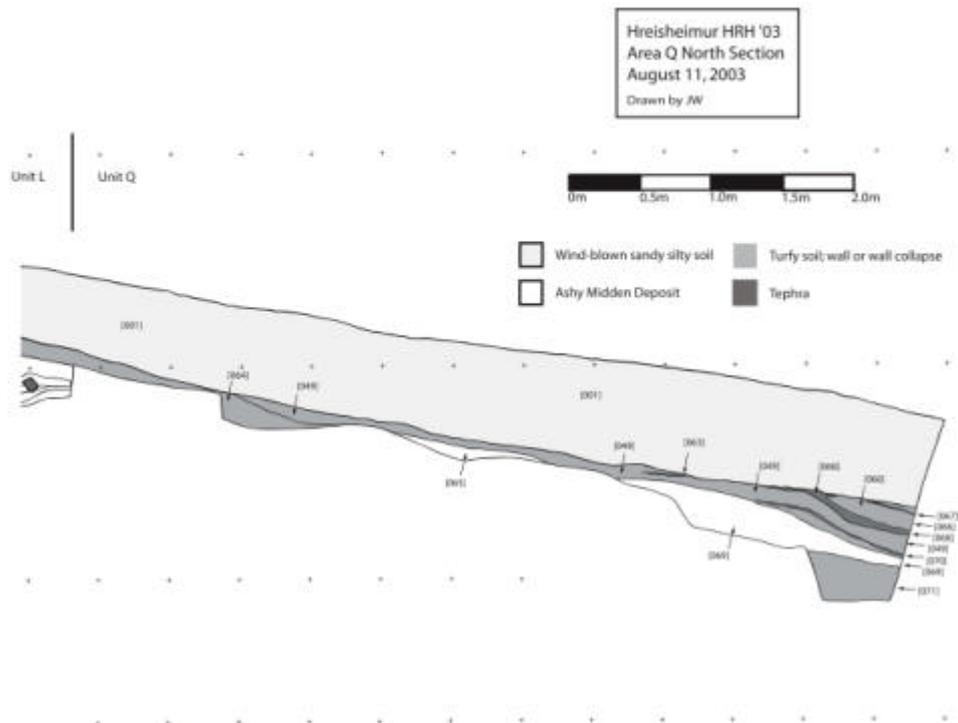
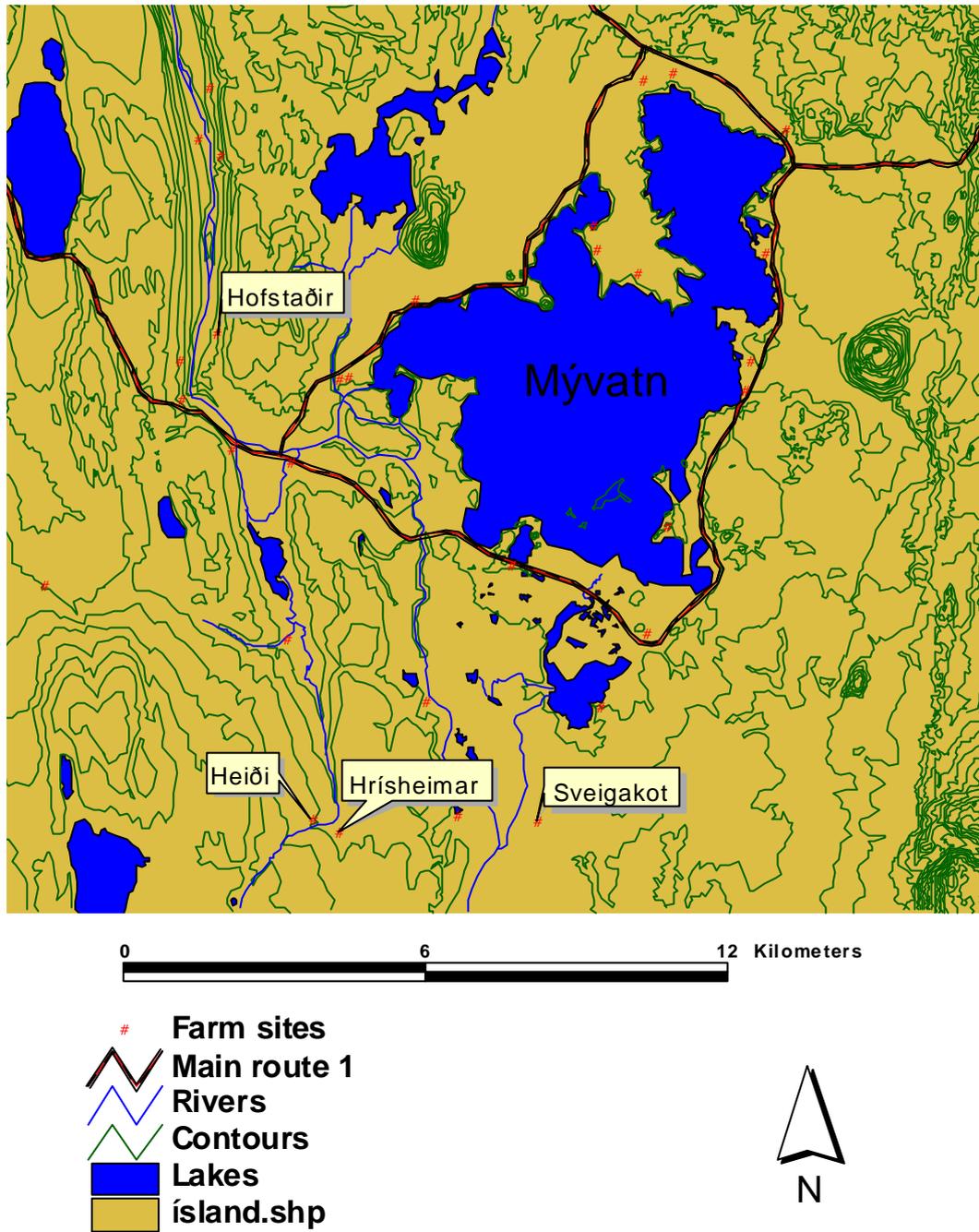
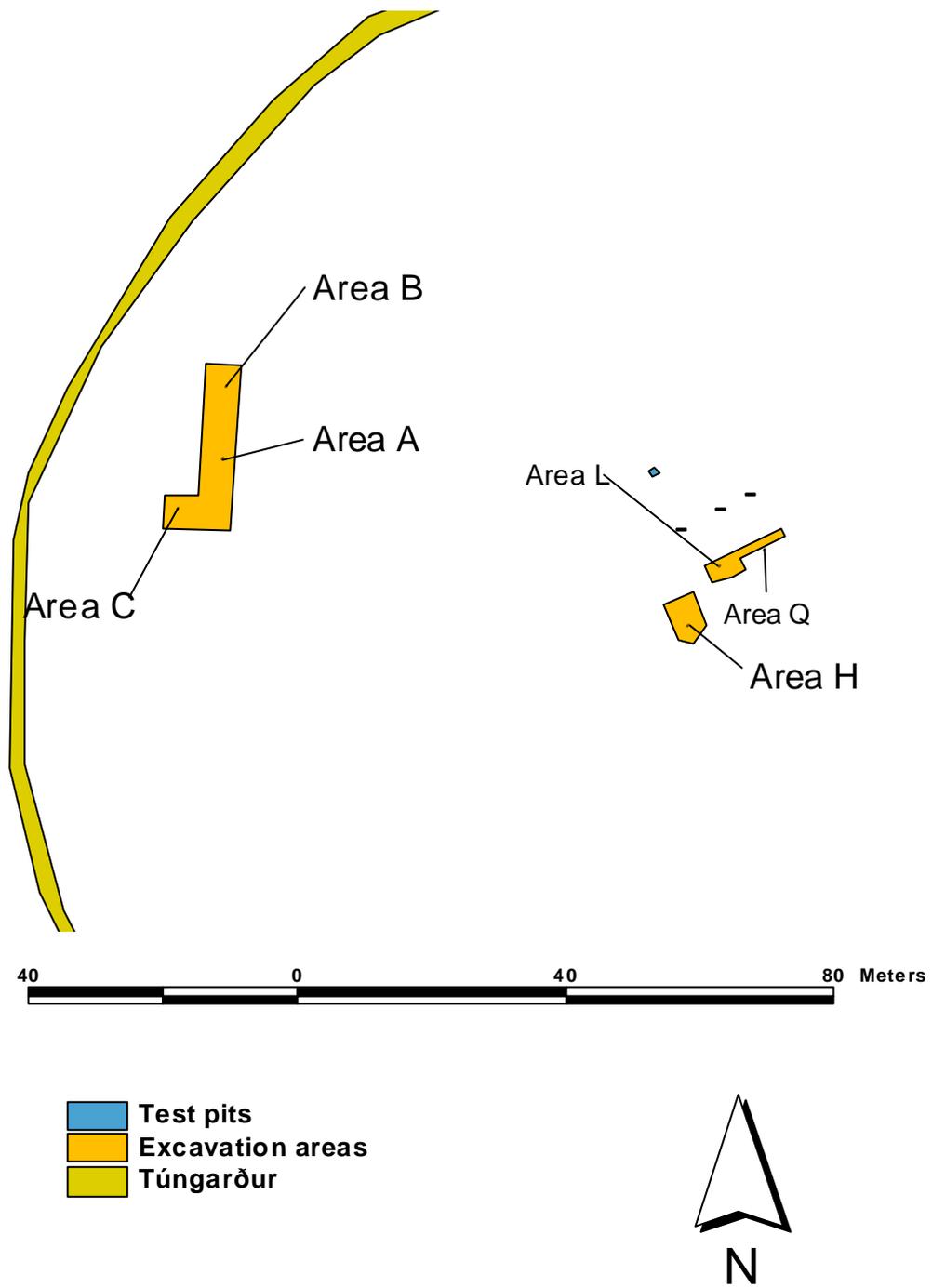


Fig. 36. The North section in area L. Lower part.

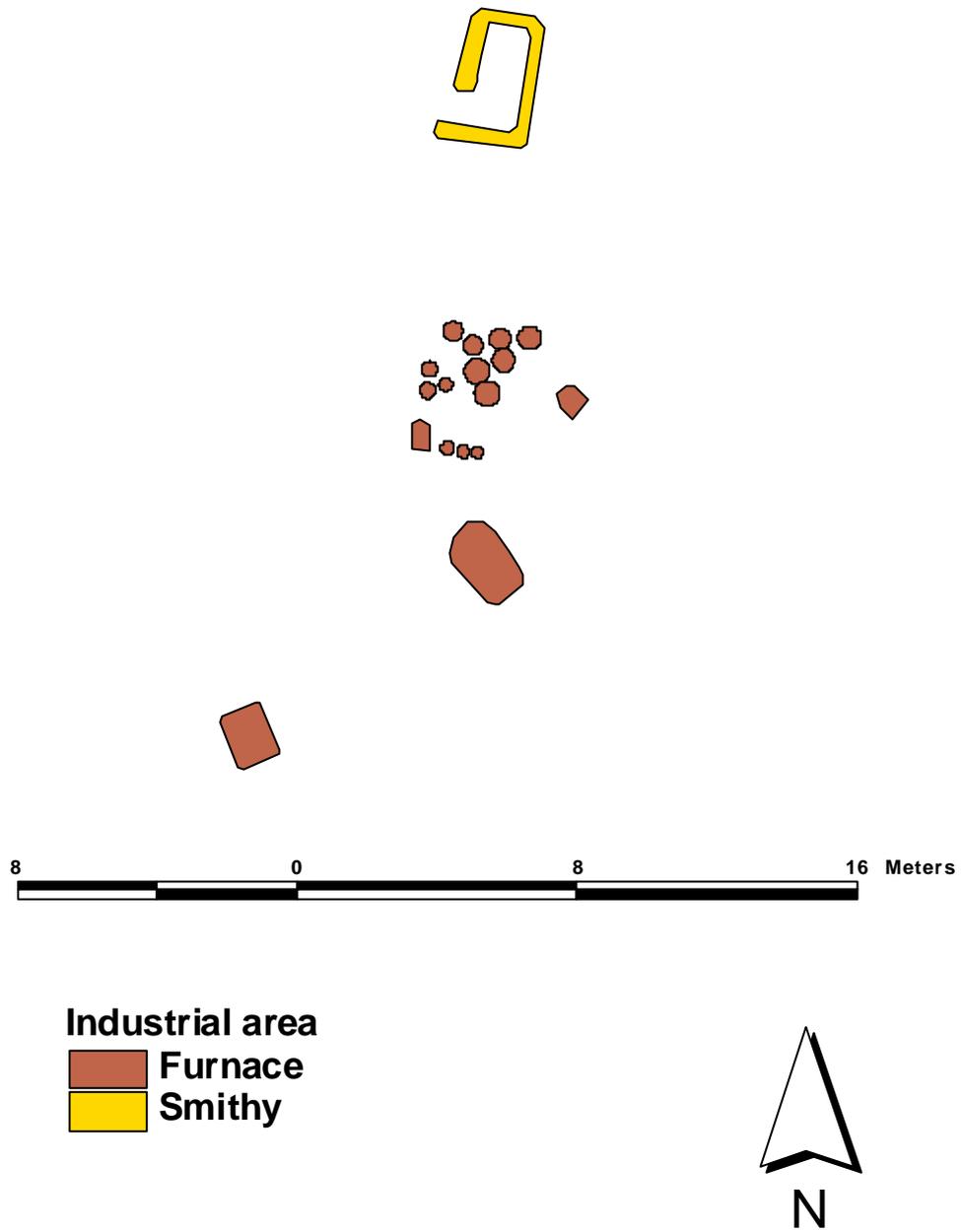
Maps



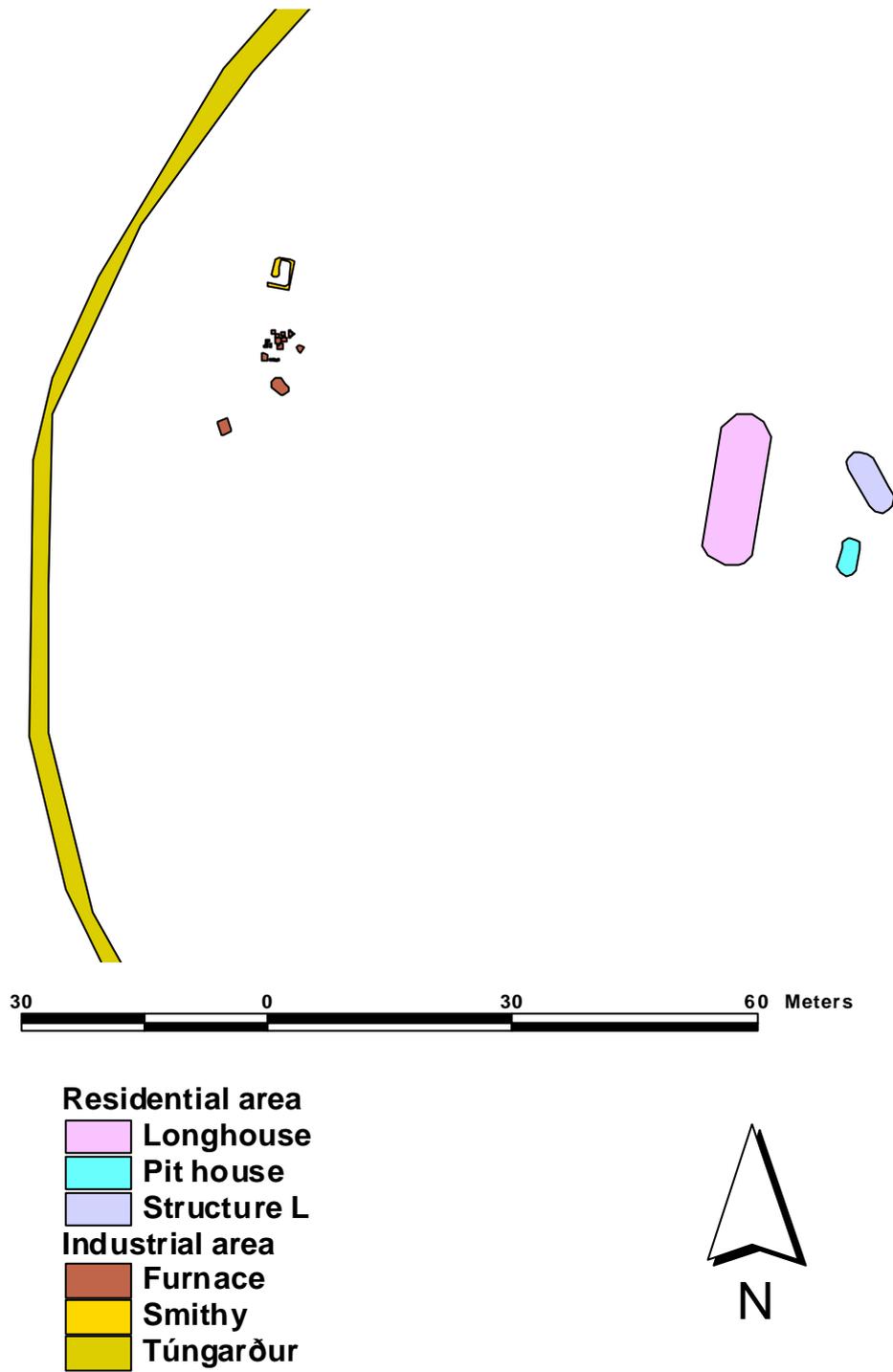
Map. 1. Location map.



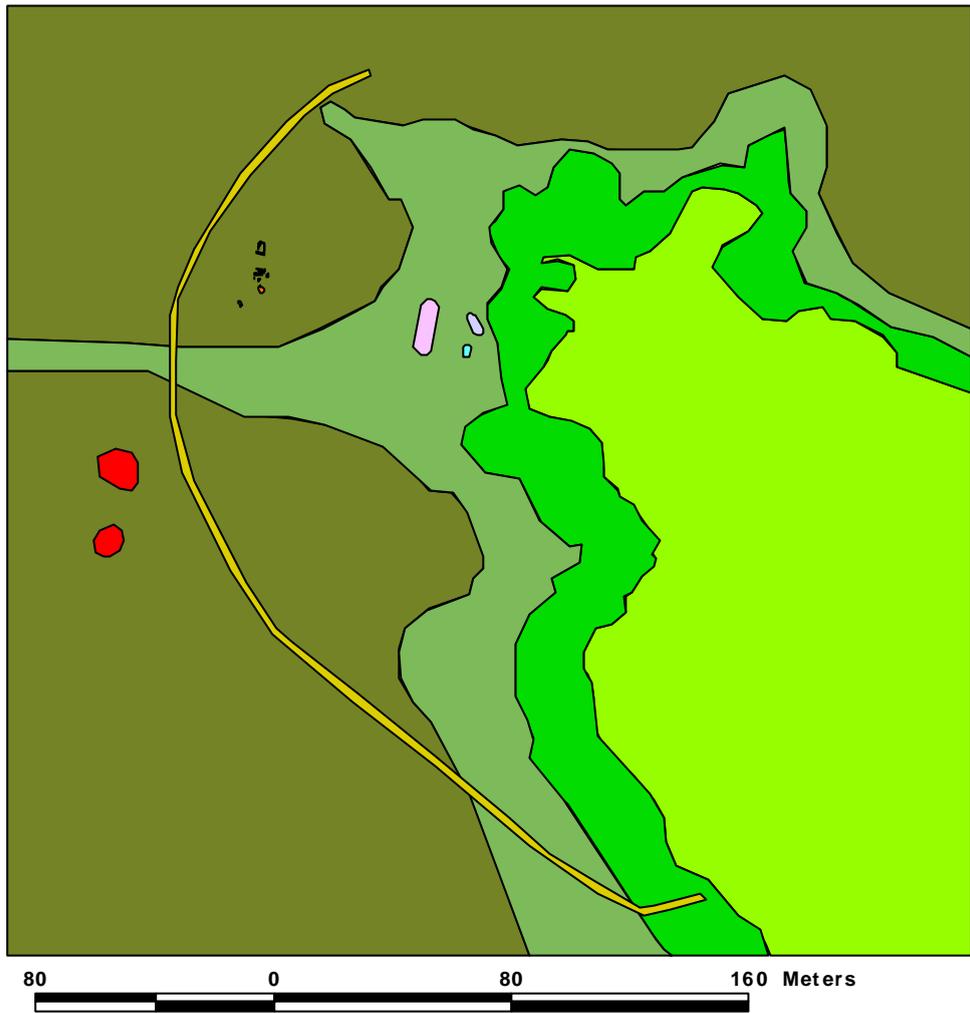
Map. 2. Location of the excavated areas within the Hrísheimar site.



Map 3. The iron processing and producing center at Hrísheimar.



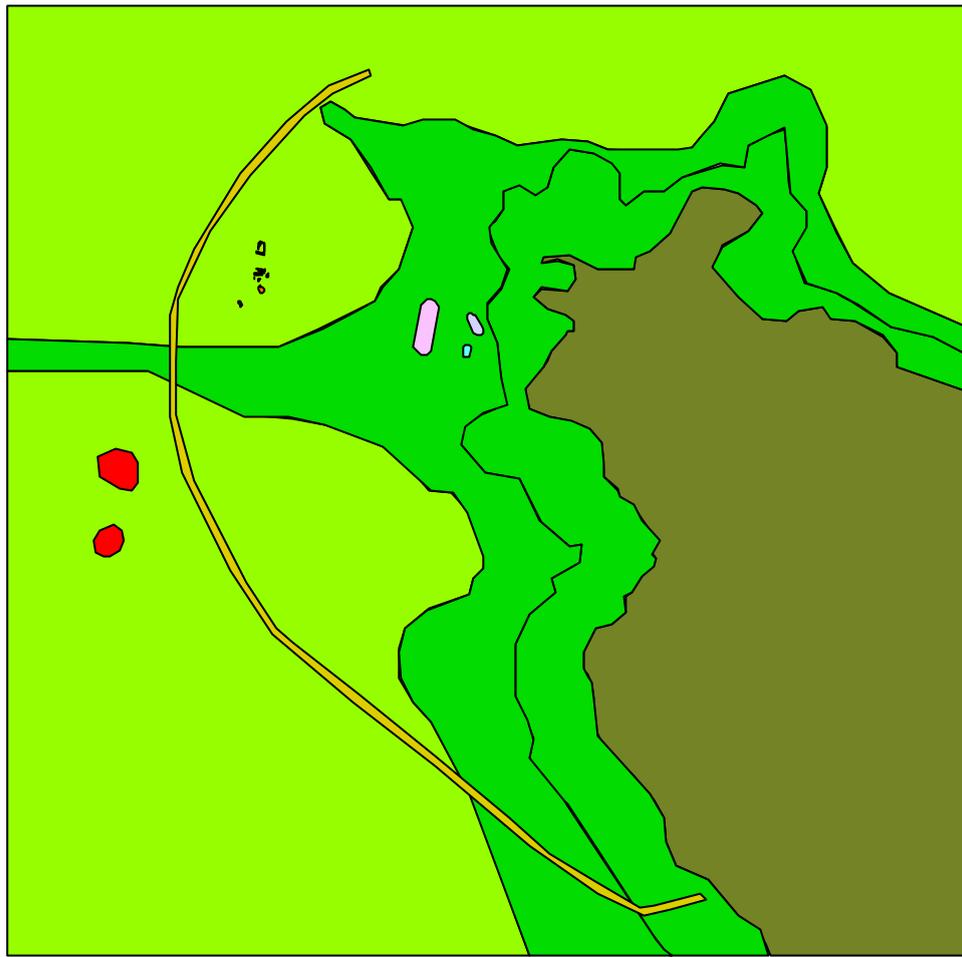
Map 4. The residential and industrial areas at Hrísheimar.



- Residential_area.shp**
- Longhouse
 - Pit house
 - Structure L
- Industrial_area.shp**
- Smelter
 - Smithy
 - Slag
 - Túngarður
- Vegetation zones**
- Bog
 - Eroded
 - Grass
 - Partially eroded



Map. 5. Present day vegetation zones at Hrísheimar.



80 0 80 160 Meters

- Residential_area.shp**
- Longhouse
- Pit house
- Structure L
- Industrial_area.shp**
- Smelter
- Smithy
- Slag
- Túngarður
- Vegetation zones AD900**
- Birch wood
- Bog
- Grass



Map. 6. Proposed vegetation zones at the beginning of settlement, c.a. AD900.

Appendices

a. Archaeological units

No	NoType	Area	Description	Type	Keyword
101	Deposit	A	Surface, eroded (light sandy surface)	Eroded interface	Aeolian
102	Deposit	A	Windblown. Eroded.	Eroded interface	Aeolian
103	Deposit	A	Charcoal deposit/eroded.	Woodash	Hearth
104	Group	A	Stones in fireplace	Stones	Hearth
105	Deposit	A	Dark brown/light turfish material on mound.	Turf	Collapse
106	Deposit	A	Stakehole	Turf	Posthole
107	Cut	A	Cut Features underneath fireplace.	Cut interface	Posthole
108	Deposit	A	Natural soil.	Loess	Aeolian
109	Group	A	Fireplace	Interface	Furnace
110	Deposit	A	Medium/darkbrown material with bits of turf.	Composite	Collapse
111	Deposit	A	Woody deposit	Woodash	Undefined
112	Deposit	A	Woody deposit	Woodash	Undefined
113	Deposit	A	Stones in wall N side of A/remains of turf.	Turves/Stones	Wall
114	Deposit	A	Dark brown/black layer. Remains of floor?	Organic	Floor
115	Deposit	A	Charcoal ash.	Woodash	Unknown
116	Deposit	A	Dark brown layer.	Mixed Silts	Unknown
117	Deposit	A	Turf mix/ fill of 118.	Turf fragments	Furnace
118	Cut	A	Cut feature. Furnace pit.	Cut interface	Furnace
119	Cut	A	Cut feature. Furnace pit.	Cut interface	Furnace
120	Deposit	A	Turfish layer. Mixed	Turf	Collapse
121	Deposit	A	Medium brown layer.	Mixed Silts	Unknown
122	Deposit	A	Turf mix fill of pit.	Turf fragments	Furnace
123	Cut	A	Cut feature. Furnace pit.	Cut interface	Furnace
124	Cut	A	Cut feature. Furnace pit.	Cut interface	Furnace
125	Cut	H	Cut for Midden deposit.	Cut interface	Pit
126	Deposit	B	Charcoal deposit in fireplace.	Charcoal	Hearth
127	Deposit	A	Structural collapse	Composite	Collapse
128	Deposit	H	Turf. Collapse.	Composite	Collapse
129	Deposit	B	Same as 126.	Charcoal	Hearth
130	Deposit	A	A wall.	Stones	Wall
131	Cut	B	Fireplace (last phase of mound)	Cut interface	Hearth
132	Deposit	B	Turf deposit into which fireplace was cut.	Turf	Unknown
133	Deposit	A	Dark brown floorish layer.	Composite	Floor
134	Deposit	C	Collapse from fireplace or kiln.	Composite	Collapse
135	Deposit	H	Bone? Deposit	Undefined	Unknown
136	Deposit	A	Dark brown deposit, inside a pit?	Dark earth	Furnace
137	Deposit	C	Mixed deposit inside kiln.	Composite	Collapse
138	Deposit	A	Pit. Fill in iron working furnace.	Composite	Furnace
139	Deposit	A	Pit. Fill in iron working furnace.	Composite	Furnace
140	Deposit	A	Pit. Fill in iron working furnace.	Composite	Furnace
141	Deposit	A	Pit. Fill in iron working furnace.	Composite	Furnace
142	Deposit	A	Pit. Fill in iron working furnace.	Composite	Furnace
143	Deposit	A	Pit. Fill in iron working furnace.	Composite	Furnace
144	Deposit	H	Turf collapse.	Turves/Other	Collapse
145	Cut	A	Iron working furnace.	Cut interface	Furnace
146	Cut	A	Iron working furnace.	Cut interface	Furnace

147	Cut	A	Iron working furnace.	Cut interface	Furnace
148	Deposit	H	Rock pile?	Stones	Unknown
149	Cut	A	Iron working furnace	Cut interface	Furnace
150	Cut	A	Iron working furnace	Cut interface	Furnace
151	Cut	A	Iron working furnace	Cut interface	Furnace
152	Cut	A	Stakehole	Cut interface	Posthole
153	Cut	A	Stakehole	Cut interface	Posthole
154	Cut	A	Stakehole	Cut interface	Posthole
155	Cut	A	Iron working furnace	Cut interface	Furnace
156	Deposit	A	Iron working furnace	Composite	Furnace
157	Deposit	H	Upcast	Undefined	Unknown
158	Deposit	B	Possible floor layer	Undefined	Floor
159	Deposit	A	Fill in a furnace.	Charcoal	Furnace
160	Cut	C	Cut beneath unit 137.	Cut interface	Undefined
161	Cut	A	Iron working furnace	Cut interface	Furnace
162	Cut	A	Iron working furnace	Cut interface	Furnace
163	Deposit	A	Stones within Furnace.	Stones	Furnace
164	Cut	A	Iron working furnace	Cut interface	Furnace
165	Deposit	A	Pit or a posthole.	Undefined	Unknown
166	Cut	A	Iron working furnace	Cut interface	Furnace
167	Deposit	H	Turf collapse	Composite	Collapse
168	Deposit	A	Woodish deposit. Fill.	Woodash	Furnace
169	Cut	C	Put dug for iron working furnace.	Cut interface	Furnace
170	Deposit	H	Charcoal deposit, truncated by T.Mc.	Charcoal	Collapse
171	Deposit	C	Deposit in furnace. Below cut 160	Undefined	Unknown
172	Cut	A	Iron working furnace.	Cut interface	Furnace
173	Cut	A	Iron working furnace.	Cut interface	Furnace
174	Deposit	B	Deposit underneath the floor.	Turves/Other	Unknown
175	Deposit	A	Fill in ironworking pit.	Charcoal	Furnace
176	Deposit	A	Stakehole	Composite	Posthole
177	Deposit	A	Possible pit	Composite	Furnace
178	Cut	A	Pit. Possible frost action?	Cut interface	Furnace
179	Deposit	H	Mixed layer, turf/pebbles upcast.	Composite	Upcast
180	Deposit	H	Mixed side fill overlying green floor.	Composite	Collapse
181	Deposit	C	Deposit under 171.	Composite	Furnace
182	Deposit	H	Tephra/turf mix. Collapse above floor.	Composite	Collapse
183	Deposit	A	Collapse from furnace.	Composite	Collapse
184	Deposit	A	Iron working furnace on eastern site.	Composite	Furnace
185	Cut	A	Iron working furnace on eastern site.	Cut interface	Furnace
186	Deposit	B	Charcoal/turf mix underneath 158.	Composite	Undefined
187	Deposit	B	Charcoal deposit.	Charcoal	Undefined
188	Cut	B	Cut for 186	Cut interface	Posthole
189	Cut	B	Cut for 187	Cut interface	Posthole
190	Deposit	C	Deposit below 181.	Undefined	Undefined
191	Cut	C	Cut	Cut interface	Furnace
192	Deposit	H	Floor in sunken hut building.	Composite	Floor
193	Deposit	C	Deposit below 181.	Woodash	Furnace
194	Deposit	H		Undefined	Undefined
195	Cut	C	Cut for 193	Cut interface	Posthole
196	Deposit	B	Upcast.	Undefined	Upcast
197	Deposit	B	Dark floor layer.	Composite	Floor

198	Deposit	A	Stone feature of the very north end.	Stones	Wall
199	Deposit	A	Charcoal deposit under 192	Charcoal	Undefined
200	Group	A	Furnaces in Northern part of A.	Composite	Furnace
201	Deposit	L		Undefined	Undefined
202	Deposit	L		Undefined	Undefined
203	Group	B	Hearth complex 2.	Composite	Hearth
204	Group	B	"Smithy" structure	Composite	Building
205	Group	B	Stone walls in "smithy" structure	Stones	Wall
206	Group	B	Post or stakeholes within "smithy" structure	Cut interface	Posthole
207	Group	C	Furnace 2 (area C)	Composite	Furnace
208	Group	C	Stones in Furnace C.	Stones	Furnace
209	Cut	B	Cut for post- stakes outside structure B.	Cut interface	Postholes.
210	Cut	B	Cut for post- stakes outside structure B.	Cut interface	Postholes.
211	Deposit	B	Small deposit north of structure B.	Composite	Undefined

b. Finds

No	Unit	Type	Material	Count	Date	ID	Notes
1	0		Iron	2	21.7.2003	JM	Badly eroded/Fieldwalk
2	0		Stone	1	21.7.2003	JM	Field walk
3	0		Stone	1	21.7.2003	MSH	Field walk
4	0	Chape	Copper alloy	1	21.7.2003	MSH	Field walk
5	0		Iron	1	21.7.2003	JM	Field walk
6	101	Slag	Iron	1	21.7.2003	JM	Surface find
7	101	Bead	Glass	1	21.7.2003	JM	Surface find
8	101	Nail	Iron	1	21.7.2003	Red	Surface find area A.
9	1	Bead	Glass	1	21.7.2003	N	AreaH, surface cleaning.
10	101	Nail	Iron	1	21.7.2003	JM	Area A surface cleaning.
11	101	Whetstone	Stone	1	21.7.2003	JM	Area A surface cleaning.
12	101		Stone	1	22.7.2003	JM	Area A surface cleaning.
13	101		Stone	1	22.7.2003	JM	Area A surface cleaning.
14	101		Iron	1	22.7.2003	GP	Area A surface cleaning.
15	101	Whetstone	Stone	1	22.7.2003	Red	Area A surface cleaning.
16	101	Slag	Iron	1	22.7.2003	JM	Area A surface cleaning.
17	101		Iron	1	22.7.2003	JM	Area A surface cleaning.
18	101		Iron	1	22.7.2003	Red	Area A surface cleaning.
19	101		Iron	1	22.7.2003	JM	Area A surface cleaning.
20	101		Iron	1	22.7.2003	Red	Area A surface cleaning.
22	101		Iron	1	22.7.2003	MM	Area A surface cleaning.
23	101		Iron	1	23.7.2003	JM	Loose find outside
24	101		Iron	1	23.7.2003	Red	Surface find. Field walk.
25	101		Iron	1	23.7.2003	GP	Cleaning
26	101	Hook	Iron	1	23.7.2003	FR	Loose find.
27	101		Iron	1	23.7.2003	FR	Loose find.
28	2		Stone	1	23.7.2003	FR	Loose find.
29	2	Slag	Iron	1	22.7.2003		Area H.
30	2	Slag	Iron	1	22.7.2003		Area H.
31	2	Whetstone	Stone	1	22.7.2003		Area H.
32	2		Iron	1	22.7.2003		Area H.
33	2	Slag	Iron	1	22.7.2003		Area H.
34	2	Slag	Iron	1	22.7.2003		Area H.
35	2	Slag	Iron	1	22.7.2003		Area H.

36	2	Slag	Iron	1	22.7.2003		Area H.
37	2	Slag	Iron	1	22.7.2003		Area H.
38	2	Slag	Iron	1	22.7.2003		Area H.
39	2	Slag	Iron	1	22.7.2003		Area H.
40	102	Nail	Iron	1	24.7.2003	AS	
41	101		Iron	1	24.7.2003	JM	
42	102		Stone	1	24.7.2003	AS	
43	103		Bone	1	24.7.2003	Red	Whalebone object
44	2	Slag	Iron	1	24.7.2003		Area H
45	2	Slag	Iron	1	24.7.2003		Area H
46	2	Slag	Iron	3	24.7.2003		Area H
47	2		Stone	3	24.7.2003		Area H
48	2	Nail	Iron	1	24.7.2003		Area H
49	2	Slag	Iron	1	24.7.2003		Area H
50	101	Nail	Iron	1	25.7.2003	GP	Surface cleaning.
51	101		Iron	1	25.7.2003	JM	Surface cleaning.
52	101	Nail	Iron	1	28.7.2003	AS	Surface cleaning.
53	101	Slag	Iron	1	28.7.2003	JM	Surface cleaning.
54	101		Stone	1	28.7.2003	JM	Surface cleaning.
55	101		Iron	1	28.7.2003	JM	Surface cleaning.
56	101	Nail	Iron	1	28.7.2003	JM	Surface cleaning.
57	110	Nail	Iron	1	28.7.2003	AS	Area A.
58	101		Iron	1	28.7.2003	JM	Surface cleaning.
59	101	Nail	Iron	1	28.7.2003	JM	Surface cleaning.
60	101		Stone	1	28.7.2003	JM	Surface cleaning.
61	101		Iron	1	29.7.2003	GP	Field walk
62	101		Iron	1	29.7.2003	GP	Field walk
63	101		Iron	1	29.7.2003	GP	Field walk
64	110		Bone	1	29.7.2003	MM	In a furnace pit.
66	110			1	29.7.2003	MM	
67	101		Iron	1	29.7.2003	Red	Surface cleaning
68	114		Iron	1	29.7.2003	AS	
69	115	Slag	Iron	1	30.7.2003	MM	In a furnace pit.
70	101	Nail	Iron	2	30.7.2003	JM	Surface cleaning
71	0	Knife	Iron	1	30.7.2003	JM	Surface find
72	0		Fe	1	30.7.2003	JM	Surface find
73	0	Worked	Flint	1	30.7.2003	MC	Surface find
74	117	Slag	Iron	1	30.7.2003	MM	In a furnace pit.
75	101		Iron	1	30.7.2003	JM	Surface cleaning
76	122	Slag	Iron	1	30.7.2003	MM	In a furnace pit
77	45	Comb	Bone	1	31.7.2003	JW	Area L.
78	136	Slag	Iron	1	4.8.2003	MM	
79	132		Iron	1	5.8.2003	JM	
80	132		Bone	1	5.8.2003	JM	
81	6		Jasper	1	23.7.2003		
82	2		Bone	1	23.7.2003		Human tooth
83	6	Spindle	Stone	1	24.7.2003		
84	3		Bone	1	24.7.2003		
85	2		Iron	1	24.7.2003		Area H
86	4		Leather	1	24.7.2003		Area H
87	0	Bead	Glass	1	24.7.2003		Surface find

88	31		Iron	1	24.7.2003		Area L
89	32		Iron	1	24.7.2003		Area L
90	2		Stone	1	24.7.2003		Area H
91	2	Slag	Iron	1	24.7.2003		Area H
92	6	Whetstone	Stone	1	24.7.2003		Area H
93	6	Slag	Iron	1	24.7.2003		Area H
94	43		Iron	1	24.7.2003		Area L
95	2	Slag	Iron	1	24.7.2003		Area H
96	6	Slag	Iron	1	24.7.2003		Area H
97	38		Bone	1	24.7.2003		Knife handle/penis bone.
98	45	Slag	Iron	1	24.7.2003		Area L
99	45	Nail	Iron	1	5.8.2003		Area L
100	45		Iron	1	5.8.2003		Area L
101	43	Whetstone	Stone	1	30.7.2003		Area L
102	0		Copper alloy	1	30.7.2003		Surface find
103	6	Net Sinker	Lead	1	30.7.2003		Area H.
104	48	Nail	Iron	1	1.8.2003		Area L
105	0		Iron	1	1.8.2003	Red	Surface find.
106	34		Iron	1	1.8.2003		Area L
107	45	Vessel	Steatite	1	5.8.2003		Area L
108	31	Nail	Iron	1	5.8.2003		Area L
109	45		Leather	1	5.8.2003		Area L
110	46		Iron	1	5.8.2003		Area L
111	46	Hook	Iron	1	5.8.2003		Area L
112	46		Iron	1	5.8.2003		Area L
113	46		Iron	1	31.7.2003		Area L
114	45	Whetstone	Stone	1	31.7.2003		Area L
115	47		Stone	1	1.8.2003		Area L
116	45		Iron	1	1.8.2003		Area L
117	45		Iron	1	1.8.2003		Area L
118	49		Iron	1	1.8.2003		Area L
119	47		Iron	1	1.8.2003		Area L
120	47	Whetstone	Stone	1	4.8.2003		Area L
121	45	Hair Pin	Bone	1	4.8.2003	JW	Area L
122	45		Stone	1	5.8.2003	JW	Area L
123	158		Iron	1	7.8.2003	JM	Area B
124	158		Iron	1	7.8.2003	JM	Area B
125	158		Iron	1	7.8.2003	JM	Area B
126	158		Glass	1	7.8.2003	MM	
127	161		Iron	1	7.8.2003	AS	Very coroded
128	48	Hair Pin	Bone	1	8.8.2003	TMC	Area L
129	180	Slag	Iron	1	8.8.2003	MM	Area H
130	182		Stone	1	11.8.2003	MM	Area H
131	48	Nail	Iron	1	8.8.2003	TMC	Area L
132	148	Nail	Iron	1	6.8.2003	JMS	Area H
133	53		Iron	1	8.8.2003		Area L
134	51	Vessel	Steatite	1	6.8.2003	GP	Area L
135	49		Iron	1	3.8.2003	JW	Area L
136	53		Iron	1	8.8.2003	JW	Area L
137	51			0	8.8.2003	JW	Area L
138	50		Stone	1	7.8.2003	GP	Area L

139	54		Iron	1	8.8.2003	JW	Area L
140	31	Whetstone	Stone	1	8.8.2003		Area L
141	38	Slag	Iron	1	30.7.2003		Area L
142	4	Nail	Iron	1	24.7.2003		Area H
143	6		Stone	1	24.7.2003		Area H
144	2	Slag	Iron	1	24.7.2003		Area H
145	6	Slag	Iron	1	24.7.2003		Area H
146	6		Iron	0	24.7.2003		Area H
147	51		Leather	1	6.8.2003	JW	Area L
148	45		Stone	1	6.8.2003		Area L
149	52		Stone	1	7.8.2003	TMC	Area L
150	50		Iron	1	7.8.2003	JW	Area L
151	0		Iron	1	7.8.2003	Red	Field walk
152	0		Iron	1	7.8.2003	Red	Field walk
153	182	Bead	Glass	1	12.8.2003	AS	Area H
154	182	Slag	Iron	1	12.8.2003	AS	Area H
155	182	Loomweigh	Stone	1	12.8.2003	MM	Area H
156	182	Loomweigh	Stone	1	12.8.2003	MM	Area H
157	182	Loomweigh	Stone	1	12.8.2003	MM	Area H
158	193	Slag	Iron	1	12.8.2003	MSH	Area H
159	54		Iron	1	13.8.2003	JW	Area L
160	54		Iron	1	13.8.2003	JW	Area L
161	52	Slag	Iron	1	13.8.2003	JW	Area L
162	54	Slag	Iron	1	13.8.2003	JW	Area L
163	202		Flint	1	13.8.2003	JW	Area L
164	31		Iron	1	13.8.2003	JW	Area L
165	54	Slag	Iron	1	13.8.2003	JW	Area L
166	54	Slag	Iron	1	13.8.2003	JW	Area L
167	202		Iron	1	13.8.2003	JW	Area L
168	202		Stone	1	13.8.2003	JW	Area L
169	202		Flint	1	13.8.2003	JW	Area L
170	201		Iron	1	13.8.2003	JW	Area L
171	53		Iron	1	13.8.2003	JW	Area L
172	54	Slag	Iron	1	13.8.2003	JW	Area L
173	59		Bone	1	13.8.2003	JW	Area L
174	57		Stone	1	13.8.2003	JW	Area L
175	54	Slag	Iron	1	13.8.2003	JW	1 bag from area L
176	54	Slag	Iron	1	13.8.2003	JW	1 bag from area L
177	54	Slag	Iron	1	11.8.2003	JW	1 bag from area L
178	45	Slag	Iron	1	5.8.2003	JW	Area L
179	6		Wood	1	5.8.2003	JW	Area H

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