

A summary of the stone artefacts from Ness of Brodgar excavations 2004-2016

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1. Introduction

A fine assemblage of stone tools has been recorded from the excavations 2004-2016 with total of 809 pieces of worked stone, 21 pieces of worn pumice, and 12 pieces of haematite and ochre recorded to date (Table 1). The definitions for each of the artefact types are given on the website www.orkneystonetools.org.uk. The excavation programme is still to conclude and consequently there is no overall phasing or interpretation of the site that would provide a setting for discussing the use of the tools. There follows a brief discussion of the most frequent types recovered so far and the general nature of the assemblage to date with some concluding remarks about the distribution of the stone tools.

2. The Stone tools

The common Neolithic tools such as cobble tools, stone discs and Skailk knives are found here together with a wide range of ground and polished stone (axes, maceheads and pillow stones), ground stone (spatulate tools and knives), anvils, polissoirs and grinding stones, and worked pumice and haematite (Table 1). The range of tool types indicate that a number of activities were carried out across the site most notably involving the manufacture of other artefacts by grinding and/or polishing as well as the subsequent use of the ground and polished tools.

2.1 Cobble tools

The range of cobble tool forms includes faceted cobbles, facially pecked cobbles and faceted and facially pecked cobbles as well as plain hammerstones, smoothers and polishers. Without a detailed program of experimental work to assess how the wear traces were produced it is not clear just what all these different forms of cobble tool were used for but the patterns of wear are common in Neolithic assemblages across Orkney and were most likely used in a similar ways between sites.

Igneous pounders are more specific to Ness of Brodgar (though they are also found at Barnhouse). These lumps of dyke rock have been worked by pecking to shape sub-spherical to wedge-shaped forms and they may have been used for heavy work e.g. to dress larger blocks of stone.

2.2 Skailk knives

The Skailk knives are large, robust stone flakes and about half of them have visible edge damage from use. Preliminary observations suggest this group of Skailk knives differs from other assemblages in Neolithic Orkney because the size range is

narrower (with the emphasis on larger flakes) and a greater proportion of the flakes were used. This may suggest that the flakes brought in from elsewhere to be used rather than being made on-site.

2.3 Stone discs

The stone disc is a common artefact at Ness of Brodgar. They are in general finely-made discs, oval to circular in outline and cluster between 80mm to 120mm in diameter with smaller and larger outliers. Additional modification is present on two of the smaller discs which have been ground to shape the edges and another one is decorated with incised lines in the form of a Brodgar Butterfly.

2.4 Axeheads, Maceheads and Pillow stones

There are 18 axeheads and four reused axehead fragments. Two possible blanks for axes were also identified. Most of the axes were made from grey igneous rock and there was also three of a highly patterned gneiss, two of banded siltstone, one made from a quartz cobble and a small chert/flint axehead. Most of the axes were found as complete objects and there were six fragments.

Some of the axe fragments were re-used – on two fragments the broken face had been used as a smoother leaving ground surfaces. Two other fragments were used as hammerstones.

Of the nine maceheads there were five cushion maceheads and four pestle maceheads. Most were fragments, broken across the shaft hole. One of the pestle maceheads was partially shaped but unfinished and there was no evidence for the manufacture of a shaft hole.

Two other tools have an uncertain attribution. A reflaked piece of aeolianite was originally ground to a flat oval cross-section and could be either an axe or a macehead. Another fragment could be from either a pillow stone or a macehead.

The pillow stone is a tool form unrecognised prior to excavations at Ness of Brodgar though in retrospect a few pieces from other sites have been reclassified to this form. These tools vary in the amount of shaping and finish and also in the choice of raw material. Closer analysis and comparison of these forms will hopefully distinguish patterns of shaping and working and determine how these tools were worked.

2.5 Stone balls

A carved stone ball was found in Structure 10. This was a simple form with six flattened knobs.

Two plain sandstone stone balls were pecked to an almost smooth finish with diameters of 73mm and 78mm. A third small ball may be a natural rhyolitic sphere. The fourth fragment is of igneous rock and may be part of an igneous pounder rather than a stone ball.

2.6 Spatulate tools and ground stone knives

The spatulate tools are the finest forms of ground stone from the site. Made from black siltstone, the long, slim, handled spatulates are unknown at other sites (with the exception of a fragment from Pool) though flat pebbles with spatulate-type grinding are known at Barnhouse and Pool. The developed forms at the Ness of Brodgar vary in shape and demonstrate individuality; those with fine, intact handles also capture a degree of daring as to how far to push the process of grinding and shaping.

The main feature of the ground stone knives is the creation of a long, gently curved edge through bifacial grinding.

2.7 Polissoirs, grinding stones, ground stones and anvils

A large selection of these tools were found attesting to the site as a manufacturing base for many other tools or artefacts. They vary in size from small handheld cobbles to large heavy blocks.

Many appear to have been decommissioned by pecking across the worked surface or, in the case of the quartz polissoirs they were destroyed by flaking. It will be interesting to explore whether this decommissioning occurred across the site at the same time, or piece-meal throughout the occupation.

2.8 Multi-hollowed cobbles

A range of materials were selected for these tools including grey, red and brown sandstones, igneous rock, quartzite and granite. Their characteristic wear traces of hollowed faces and/or edges and a broad band of pecking around the perimeter together with heavier damage on one corner suggests they were all used in the same manner and for a specific, yet unknown purpose.

Their shaping varies across the spectrum of tools and this is most likely because of the specific stage of use that the tool was at when deposited.

2.9 Other materials

Two fragments of Langdale tuff were found: one, a large squat mass-reduction flake most likely comes directly from the Langdale quarries whilst a flake from a polished axe was reused as a knife.

Rhyolite cobbles were coarsely flaked to form chopper-like edges around the cobble.

2.10 Structural stone

A number of large fragments of worked flagstone were found in Structure 10 which are likely to be part of a structural feature(s) or 'architectural furniture'. It is

recommended that these are examined together with some of the larger flaked stone bars (which may be structural rather than tools, see above) as part of the detailed analysis of the site's structures.

2.11 Worked Pumice

The pumice was used as an abrasive on materials as yet unknown. The use of these natural rounded lumps has altered the shape of the original surface to varying degrees. Light wear has produced slightly worn concave or convex faces whilst heavier or more protracted use has left angular lumps with skewed worn faces. Occasionally angled facets have been produced along an edge.

There is little evidence for grooves made on the surfaces of the pumice. Three pieces have finger-wide shallow grooves but none have the narrower grooves which might suggest the fine shaping or maintenance of needles, pins, arrow shafts etc.

The skewed wear on the pumice suggests some of it at least was used on a malleable surface such as hide. It's potential role in the shaping some of the finer ground stone objects such as the handled spatulate tools should be investigated too.

2.12 Haematite and Ochreous material

Five pieces of haematite retain worn facets and striations from rubbing the stone to release the pigment.

3. Discussion

The large assemblage of stone tools recorded at Ness of Brodgar to date is a consequence of the good survival of the structures from the Neolithic to the present as well as the extensive excavations both in time and area. At nearby Barnhouse the assemblage of stone tools had many features in common (and some not in common) with that from Ness of Brodgar but the assemblage is much smaller presumably because the structures had been robbed and the area of the site was much smaller.

The wide extent of excavation at Ness of Brodgar has meant that greater numbers of some artefact types have been collected - for example spatulate tools, pillow stones and multi-hollowed cobbles - which will allow us to explore their similarities and differences in more detail.

As well as finished tools such as axes, maceheads and spatulate tools there is a range of tools that were used to make them including anvils, grinding stones and polissoirs. At this site there was an emphasis on grinding and polishing to manufacture a range of stone objects (and probably artefacts of less durable materials).

Individuality is a key theme to be explored. For example the axes, pillow stones and multi-hollowed cobbles exhibit a range of different rock types. These different rocks would have been sought from further afield and brought to the site to be used - are

the rocks then representative of the wider community which used this site? Or perhaps they represent individual choices; a way of personalising a standard tool type.

Individuality is also demonstrated in the range of shapes produced within a single tool type. For example the spatulate tools differ in the shape of the spatulate end, how the handle joins the working end and in the quality of the grinding and these differences suggest that the tools were made by several different people and not to a single template.

4. Distribution

Although the structures are yet to be bottomed some observations can be made as to where these tools were deposited across the main part of the site (Figures 1 – 4). These graphs only show the quantity and types of artefact retrieved from the Structures; they should not be used to interpret the 'function' of the Structures because it is not yet known whether these tools were redeposited from elsewhere or used within the structures.

The graphs show that the stone tools of all types were deposited across the site. Certainly the larger Structures had an almost complete range of all the most common types. Structure 10 has the largest number of artefacts in most categories and there is a concentration of Skail knives, stone discs and axes here. Multi-hollowed cobbles are more frequent in Structures 8 and 12 whilst spatulate tools and pillow stones were common around Structure 8 and the Central Midden Area (CMA).

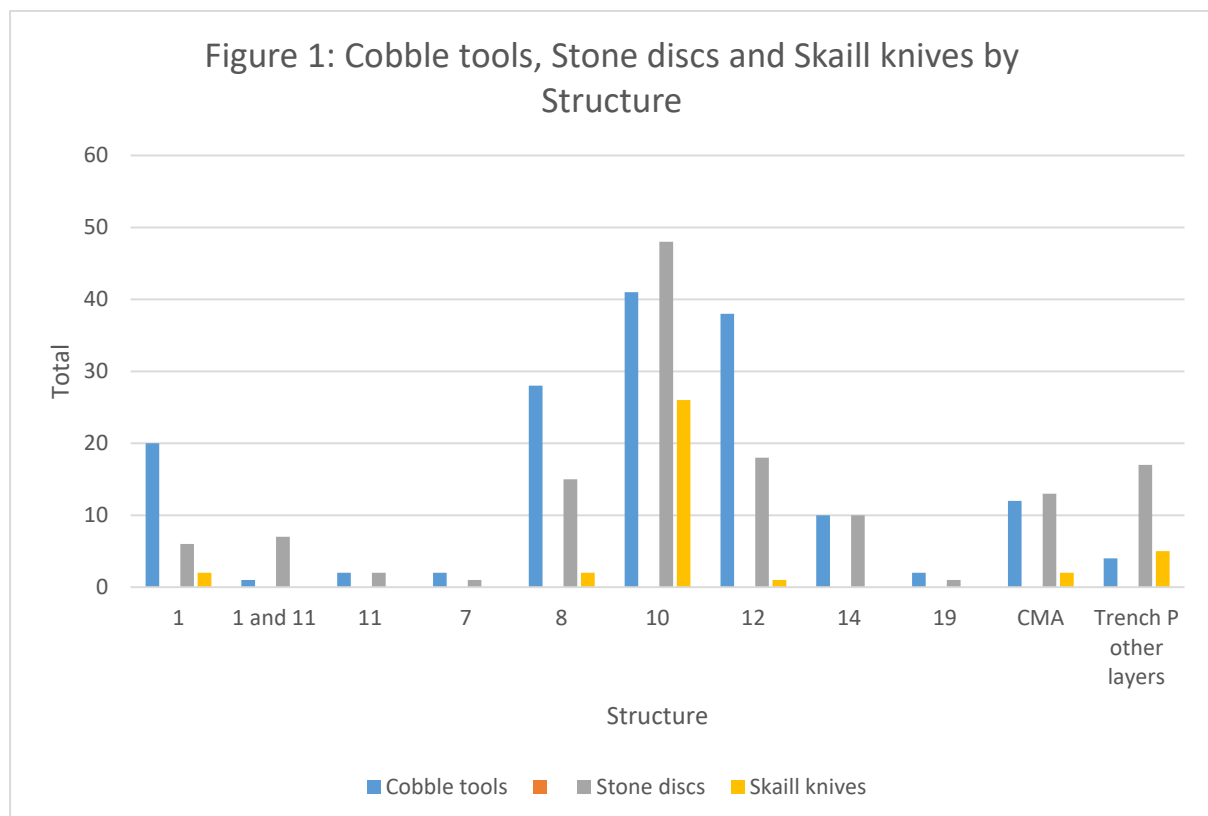


Figure 2: Types of cobble tool by Structure

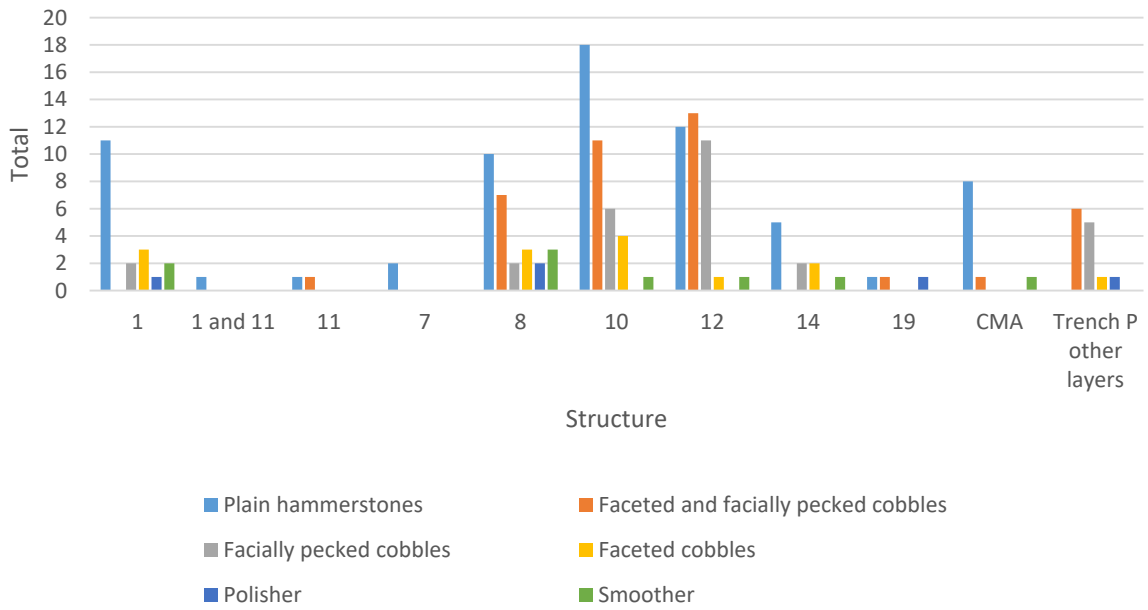
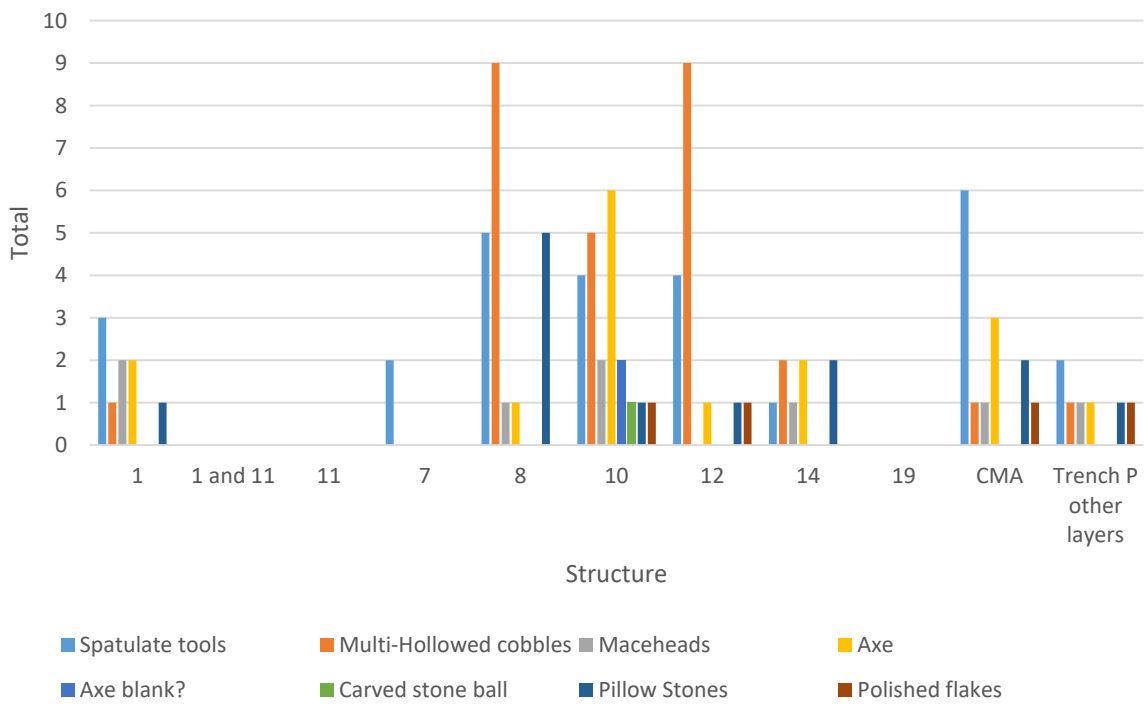
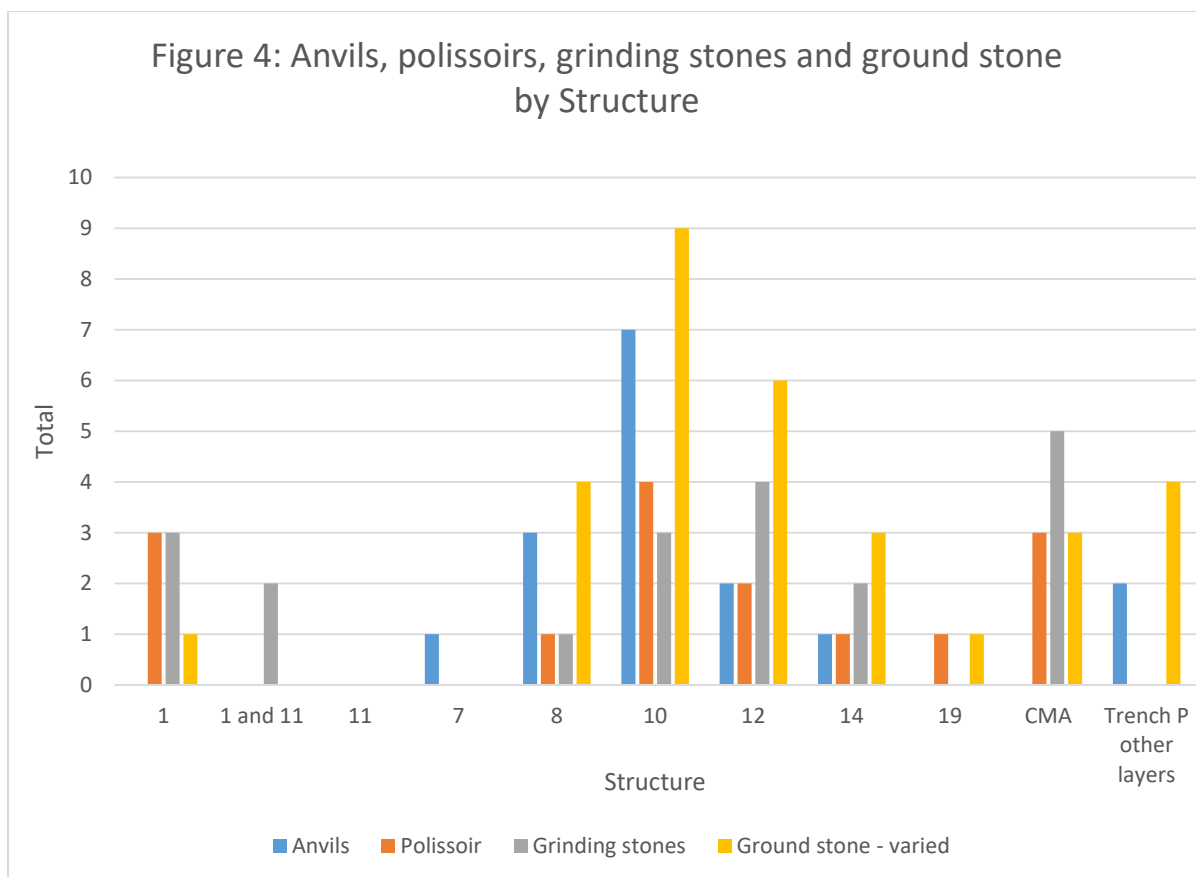


Figure 3: Selected stone artefacts by Structure





Stone finds from Trench T are relatively few compared to the assemblage from the main trench. However, there is a similar range of objects including Skail knives, stone discs and cobble tools as well as two complete axes, a fragment of a stone ball and spatulate tool and grinding stones and this would suggest the middens of Trench T were derived from activities in the main part of the site (Table 1).

5. Post Neolithic

Ard points and a probable 'heart-shaped' piece demonstrate later activity over the site during the Bronze Age/Early Iron Age. A fine schist haunch hone probably dates to the Norse period.

	Str 1	Str 7	Str 8	Str 9	Str 10	Str 11	Str 12	Str 14	Str 19	Other Tr P	CM A	Tr J	Tr L	Tr M	Tr N	Tr T	Tr R	Tr X
Cobble tools T=187	19	2	24	1	41	2	40	9	1	12	10	9	0	1	1	13	1	1
Igneous pounders T= 14	1	0	2	0	6	0	1	0	0	1	1	0	0	0	0	2	0	0
Smoothers and polishers T=17	3	0	6	0	1	0	1	1	1	0	2	1	0	0	1	0	0	0
Skail knives T=62	2	0	2	0	26	0	0	0	0	5	2	3	4	0	0	9	9	0
Chopper edge tool T=10	0	0	4	0	3	0	0	1	0	1	1	0	0	0	0	0	0	0
Stone discs T=157	13	1	15	0	49	2	18	10	1	17	13	1	5	0	1	9	2	0
Axeheads T=18	2	0	1	0	5	0	1	1	0	1	1	3	0	1	0	2	0	0
Axeheads re-used T=4	0	0	0	0	2	0	0	1	0	0	2	0	0	0	0	0	0	0
Axehead blanks? T=2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Pillow stones T=14	1	0	5	0	1	0	1	2	0	1	2	0	0	0	0	0	0	1
Maceheads T=9	2	0	1	0	1	0	0	1	0	1	1	1	0	0	0	0	0	1
Polished flakes T=5	0	0	0	0	1	0	1	0	0	1	1	0	0	0	0	0	0	1
Unassigned polished stone T=2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Carved stone ball T=1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Stone ball T=4	0	0	2	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0
Multi-hollowed cobbles T=26	1	0	7	0	5	0	7	2	0	1	1	0	1	0	1	0	0	0
Flaked stone bars T=18	0	0	1	0	5	0	0	1	0	7	0	1	0	0	0	3	0	0
Ard points T=3	0	0	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0
Flaked cobbles T=4	0	0	0	0	2	0	0	0	0	0	0	1	1	0	0	0	0	0
Grinding stones T=43	6	0	1	0	9	0	4	4	0	2	9	2	0	0	0	3	0	3
Polissoirs T=17	3	0	1	0	4	0	2	1	1	1	2	1	0	0	0	1	0	0
Anvils T=20	0	1	3	1	7	0	3	1	0	1	0	0	0	0	0	2	0	1
Ground stone T=32	2	0	5	0	5	0	8	3	0	3	2	1	0	0	0	3	0	0
Knap of Howar	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0

grinder T=1																		
Ground end and edge pebbles T=14	0	1	2	0	4	0	2	0	1	3	1	0	0	0	0	0	0	0
Spatulate tools T=45	3	2	7	0	8	1	5	3	0	4	8	0	0	0	0	1	0	3
Ground stone knives T=5	0	0	1	0	1	0	2	0	0	1	0	0	0	0	0	0	0	0
Quern T=5	0	0	1	0	0	0	1	2	0	0	0	0	0	0	0	0	1	0
Quern Rubber T=1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Stone beads T=8	3	0	0	0	2	0	1	0	0	1 (str 25)	1	0	0	0	0	0	0	0
Mortars T=2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Perforated stone T=8	1	0	1	0	1	0	2	1	0	2	0	0	0	0	0	0	0	0
Haunch hone T=1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Heart-shaped laminated stone T=1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Shaped laminated stone T=10	1	2	1	0	4	0	1	0	0	0	0	0	0	0	1	0	0	0
Hollowed stone T=5	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	1	0	0
Structural? T=15	0	0	0	0	8	0	0	0	1	4	1	0	0	0	0	1	0	0
Worked rhyolite T=22	1	0	1	0	17	0	0	0	0	0	3	0	0	0	0	0	0	0
Pumice T=21	0	2	0	0	2	1	1	3	2	1	6	0	0	0	3	0	0	0
Haematite and ochre T=12	1	0	0	0	3	0	4	0	0	1	0	2	0	0	1	0	0	0

Table 1: Stone tools from Ness of Brodgar excavations 2004-2016