

Revisiting Knap of Howar, Papa Westray, Orkney

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ABSTRACT

The Neolithic stone houses at Knap of Howar (Papa Westray, Orkney) are acknowledged as among the most complete in Northwest Europe. The site, a Property in Care, was first investigated in the 1930s and subsequently by Dr Anna Ritchie in the 1970s. The interpretation of the buildings as an Early Neolithic 'Unstan' settlement has been under review for some time, however, and fieldwork commissioned by Historic Environment Scotland provided the opportunity for reassessment and updating. Supported by new radiocarbon dating and stratigraphic information, activity in this area is attested potentially from the Mesolithic period through successive phases of Neolithic farming and settlement, culminating in the construction of the stone buildings in the latter part of the 4th millennium BC. This final phase occurred during a period of significant transition which saw the emergence of stone houses and Grooved Ware pottery, features which subsequently came to define the Orcadian Later Neolithic. The early adoption of such innovations on an outer isle illustrates that change was not restricted to the Orcadian Mainland. The final abandonment of this long-lived settlement is thought to have occurred sometime before 2900 BC and to have been linked to increasingly adverse environmental conditions which affected coastal locations across Orkney. The role of environmental change in reshaping both landscape and society at this time is likely to have been significant but remains yet to be fully investigated. The project was commissioned and funded by Historic Environment Scotland.

INTRODUCTION

DISCOVERY AND ANTIQUARIAN INVESTIGATIONS

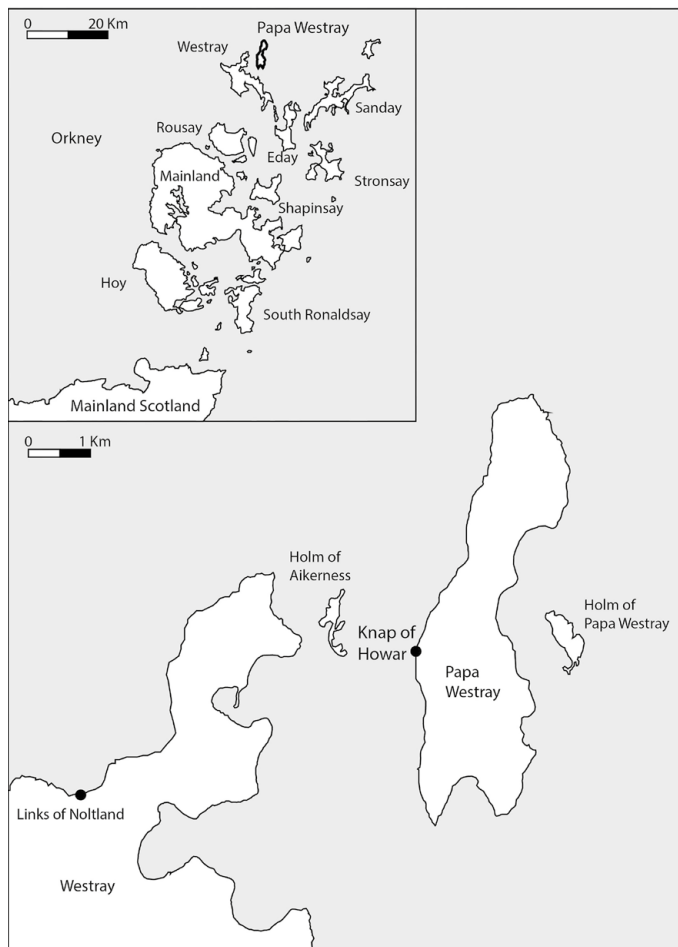
The site at Knap of Howar (NGR HY 483 518, Illus 1) is located on the coast edge and became exposed during winter storms in 1928 and 1929. It was first investigated by the laird, William Traill, in collaboration with William Kirkness, a keen local amateur archaeologist. During these explorations the buildings were emptied of their internal

deposits and a trench was excavated around much of the perimeter of the buildings (Ritchie 1984: 41). Although it could not be definitively dated, the settlement was ascribed a probable Iron Age date on the basis that the pottery and artefacts recovered were considered to be of comparable type. The site was taken into state guardianship in 1937. Some remedial consolidation of the walls was undertaken, a sea wall was built to protect the site from coastal erosion and the site was opened to the public (HES nd). The completeness of the buildings in combination with its attractive island

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ILLUS 1 Location map (© Crown Copyright: HES)

location has made it one of the most recognisable and well-visited archaeological sites in Orkney.

EXCAVATION IN 1973 AND 1975

Further consolidation works in 1973 and 1975 provided an opportunity for modern research and this was carried out under the direction of Dr Anna Ritchie (Ritchie 1984). These works included the excavation of surviving deposits within the buildings, along with an investigation of the external ‘middens’ and the wider hinterland by means of a series of test pits.

The findings identified two phases of prehistoric activity. Period I encompassed a lower level

of anthropic soils and was followed by Period II, during which the stone buildings were erected and further anthropic soils accumulated.

The sub-rectangular buildings were built from stone with internal timber posts used to support the roofs and internal fittings. They were interpreted as a house and a smaller workshop, connected by a passage, and thought to be of closely contemporary date (Ritchie 1984: 42). House 1 (9.5m by 4.7m internally) is divided into two rooms with a door at the west end. The western room originally contained a low stone bench running along one wall; the eastern room retained traces of a central hearth and contained a quernstone. House 2 (7.5m by 3.2m internally)

stands to the north of House 1 and is comprised of three rooms, with a doorway at the west end. The innermost room contains recessed 'cupboards' within the wall; the middle room contains a hearth. Deposits on the floors were interpreted as representing successive phases of activity. House 2 was partially blocked up and abandoned before activity in House 1 had ceased.

The stratigraphic connection between the buildings and the exterior deposits had largely been severed by antiquarian trenching and, on the basis of evidence then available, 'no cultural and no significant chronological difference' could be detected between Periods I and II (Ritchie 1984: 59). Accordingly, the material assemblages recovered from both periods were understood to be broadly contemporary with the use of the buildings.

The remains of domestic cattle, sheep and pigs, along with barley and the suggestion of wheat cultivation, indicate that this was a farming settlement. There was also evidence for the utilisation of wild resources such as hazelnuts, seabirds, shellfish and offshore fishing. A range of artefacts, including pottery and bone and stone tools of local manufacture, was recovered (Ritchie 1984: 54–7). The ceramic assemblage was diverse and was comprised of round-based pottery, including sherds of distinctive Unstan bowls, and some flat-based pottery and vessels with Grooved Ware attributes; all types being most numerous within the Period I assemblages (Henshall 1984a: 70).

Ten radiocarbon dates, produced from multiple-entity samples, placed human activity on the site between 3800 and 2800 cal BC (Ritchie 1984: 18). The stone buildings were thought to have been occupied between approximately 3500 and 3100 BC (*ibid.*: 5). The early dates, the presence of round-based pottery and perceived architectural similarities with stalled cairns gave rise to the notion of the site as an 'Unstan Ware settlement'. Though acknowledging that developed settlements such as Knap of Howar were unlikely to '... represent the homes of the first pioneering colonists' (Ritchie 1984: 39), no other earlier sites were then known and for many years it held the distinction of being the oldest known habitation

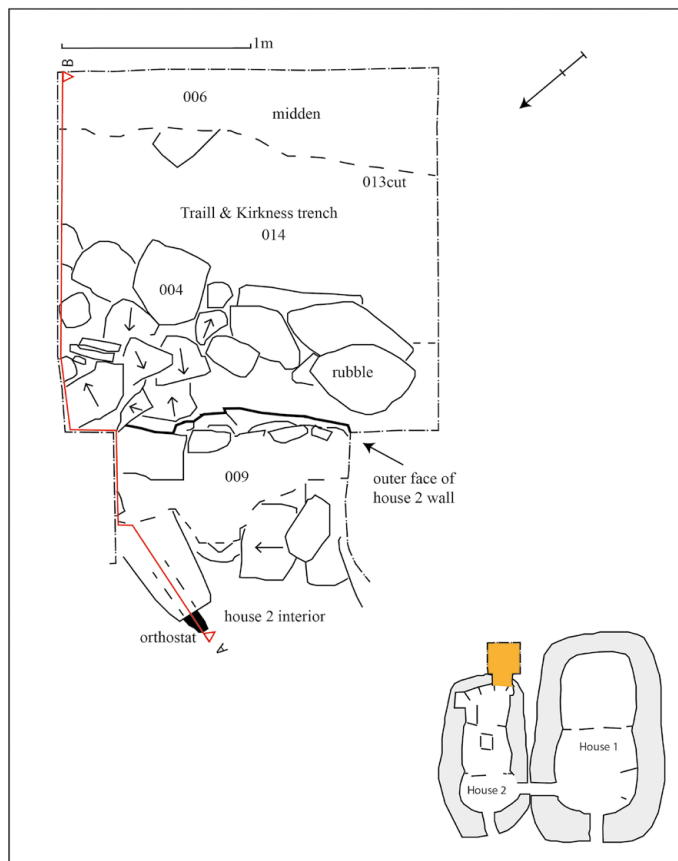
in Orkney; its small scale and apparently isolated location were regarded as a model for dispersed Early Neolithic settlement (eg Kinnes 1985: 27; Malone 2001: 45–56). This was set in contrast to the larger, nucleated Grooved Ware-using settlements of the Later Neolithic.

Following advancements in knowledge and technology, a new set of radiocarbon dates based on single-entity samples of known species was proposed (Ashmore 2000: 300). The samples were selected from material collected during the original excavations and subscribed to the stratigraphic sequence proposed by that work (Sheridan & Higham 2006). The results largely updated and confirmed the earlier findings.

Over the half century since the last excavation, there have been challenges to this orthodoxy, and earlier understandings of the site have begun to fracture. Based largely on the findings of their work on West Mainland, Richards & Jones (2016: 40) conclude that '... stone houses were not being erected in Orkney before as late as c.3300 cal BC'. Solely on the basis of the stone architecture, it was consequently asserted that the Knap of Howar houses are 'now revealed to be a later development' (Bayliss et al 2017: 1184 and fig 5). The rejection of earlier understandings of the site without any new supporting evidence left key questions unresolved, however. If the houses belonged to the Later Neolithic, post-3300 cal BC period, how then to explain the 'anomaly' of earlier radiocarbon dates and artefacts, including Unstan bowls, and also the apparent absence of Later Neolithic material? The opportunity to undertake new fieldwork was therefore welcomed and, fortuitously, this led to the recovery of materials suitable for radiocarbon dating. While it was not possible to re-examine the existing artefact assemblages, the new findings have provided the impetus for an overall reassessment of the site and its place in Orcadian prehistory.

NEW FIELDWORK

In May 2014 Historic Environment Scotland carried out structural repairs on House 2 (Illus 2 & 3). In conjunction with this, a 4m² trench was cut to investigate archaeological deposits underlying



ILLUS 2 Plan of trench. (© Crown Copyright: HES)

the south-east part of the building (Illus 4; Moore & Wilson 2014).

Fortuitously, this area proved not to have been adversely affected by antiquarian trenching. It is likely that an external rubble spread had been misidentified as the outer face of the House 2 wall and, as a result, trenching had stopped short of the actual wall face. Additionally, the stratigraphic resolution in this location was excellent and a full undisturbed sequence was preserved beneath the wall. This encompassed deposits on the inside and on the outside of the building and it extended through a series of underlying deposits down to the level of natural glacial clay (Illus 5 & 6). The findings identified three phases: Phase 1 is comprised of natural deposits, Phase 2 relates to early activity and Phase 3 is associated

with the construction and occupation of the stone houses.

Phase 2

Phase 2 comprised of three distinct deposits. The earliest of these was a silty clay soil (010) containing multiple lenses of sand and anthropic inclusions of shell and animal bone fragments. This was up to 0.2m deep and was identified as an old ground surface (OGS). This had been recorded previously in the wider site hinterland, although it had not been found beneath the buildings. Environmental analysis indicates that it developed under quite different circumstances than pertain in the area today: the presence of tree pollen and species of land and freshwater molluscs are suggestive of a scrub or woodland



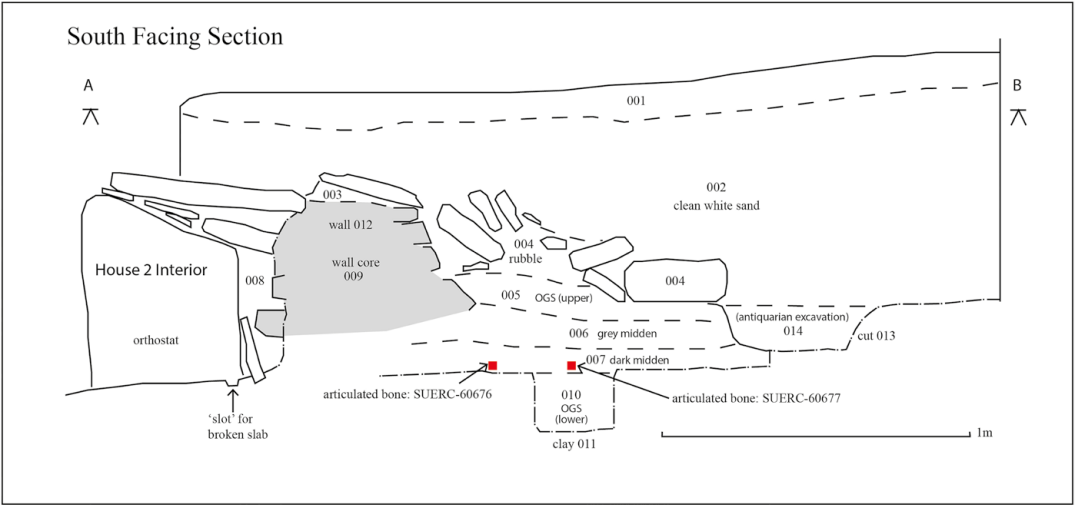
ILLUS 3 General view of site during works, House 1 in foreground. (© Crown Copyright: HES)



ILLUS 4 View of trench under excavation. House 2 wall visible behind rubble 004. (© Crown Copyright: HES)



ILLUS 5 View of recorded section. (© Crown Copyright: HES)



ILLUS 6 Main section, south facing. (© Crown Copyright: HES)

setting (Ritchie 1984: 53; Evans & Vaughan 1984: 106–8).

Evidence for the earliest permanent settlement in the area, in the form of arable cultivation, can be deduced from the presence of wheat pollen (Whittington 1984) and also in discrete deeper areas of the OGS which ranged from 0.17m (Test Pit 4; Ritchie 1984: 53) to 0.2m recorded here (context 010). Some of the many and complex processes involved in the formation of this deepened soil will have included the addition of domestic refuse, the incorporation of repeated influxes of blown sand, and the mixing of these deposits as a result of cultivation. These processes are attested by the presence of anthropic inclusions found within the OGS (010). Within the wider hinterland, the OGS was buried beneath a substantial accumulation of sand. A sample of organic soil from buried OGS located in Test Pit 16 c 0.45km to the north-east of the site (Ritchie 1984: 53) returned a radiocarbon date 3900–3370 cal BC (birm-817, Griffiths 2016: 260) and, although not clearly linked to an archaeological event, at a minimum, provides a *terminus post quem* for a major sand influx onto the area.

It is unknown whether there was any significant hiatus in settlement following this sand influx. The resumption of activity is indicated by subsequent anthropic accumulations seen in the deposits accumulating over the OGS which are indicative of a settlement located in the near vicinity. The lowest level of anthropic soil, clearly distinguishable from the OGS, was a grey-brown silty clay (007), up to 10cm in depth. This contained lenses of windblown sand with frequent inclusions of animal bone, including vole, together with shell fragments. It also yielded a fragment of pottery, a Skaill knife and three small pieces of flint. Two separate clusters of articulated cattle bone recovered from the lower boundary of this layer were sampled for radiocarbon dating. These produced dates of 3337–2943 cal BC (SUERC-60676, GU37621) and 3323–2920 cal BC (SUERC-60677, GU37622) respectively at 95.4% probability (see Table 1).

The uppermost deposit (006) was a c 0.10cm thick grey-brown silty clay with windblown sand

and inclusions of shell, and animal bones including vole. A small fragment of unworked pumice, and a single flint were also present. This formed the surface upon which House 2 was built.

Phase 3

The construction of the stone houses in Phase 3 marks the final period of settlement on this site. The Phase 3 deposits encountered within the trench included part of the south-east corner of the House 2 wall (012). Here, two separate wall core deposits were identified: both were anthropic sandy soils containing shell and animal bone including vole. The lower deposit (009) additionally yielded some pot sherds and a Skaill knife, while the upper deposit (008) contained more frequent stones. A contemporary ground surface (005), 0.1–0.15m deep, surrounded the exterior of the building. This was covered by a spread of rubble (004), probably derived from the collapse of the upper courses of the wall.

COMPARISON OF THE 1973/1975 AND 2014 FINDINGS

A variance was noted between the House 2 wall core deposits as recorded by the two excavations. The 1973/1975 work identified a single deposit and interpreted it as redeposited ‘Period I Lower midden’, described as a predominantly clay soil (Ritchie 1984: 45). The 2014 work, meanwhile, identified two wall core deposits, both of which were sandy soils. This discrepancy illustrates the inhomogeneity of the wall cores, and it implies that they incorporated material from more than one source. This is also borne out by a set of chronologically disparate radiocarbon dating results yielded by samples from a single wall core context (Ritchie 1984: 57, 118; Griffiths 2016: 259–60, and see below).

The lower old ground surface (010) seen in 2014 is directly comparable to that documented in the 1973/1975 excavations in test pits (1–5, 8–16 and possibly Trench III). Within the main 1973/1975 excavation trenches and in Test Pits 6 and 7 the OGS was not separately distinguishable, however. Instead, the lowest level of deposits here was recorded as ‘Period I lower midden’

TABLE 1
Radiocarbon dates (© Crown Copyright: HES)

Lab number	Material	Ref	Context	Radiocarbon yrs BP	$\delta^{13}\text{C}$			Calibrated range cal BC, 95% confidence
					$\delta^{15}\text{N}$	C:N		
Included in model								
SUERC-60676 (GU37621)	Cattle, adult, articulated subsideian tarsal	Moore & Wilson 2014	Context 007 lowest anthropic soil above OGS	4451±33	-21.3			3337–2936
					4.5			
					3.2			
SUERC-60677 (GU37622)	Cattle, juvenile, articulated 2nd phalange	Moore & Wilson 2014	Context 007 lowest anthropic soil above OGS	4419±33	-21.8			3326–2918
					4.9			
					3.3			
OxA-16475	Sheep bone	Sheridan & Higham 2006	‘Primary midden’ in wall core, House 1	4603±39	-21.7			3516–3116
					7.5			
					3.2			
OxA-16476	Sheep/goat scapula	Sheridan & Higham 2006	‘Primary midden’ below wall, House 1	4458±39	-20.1			3343–2937
					7.6			
					3.2			
OxA-16477	Sheep/goat humerus	Sheridan & Higham 2006	Secondary floor deposit, House 2	4420±39	-21.2			3329–2917
					6.3			
					3.2			
OxA-16478	Cattle metatarsal	Sheridan & Higham 2006	Secondary floor deposit, House 2	4510±39	-21.7			3363–3042
					6.4			
					3.2			
OxA-16480	Sheep foetal metatarsal	Sheridan & Higham 2006	‘Secondary midden’, Trench III	4633±41	-20.0			3523–3347
					8.0			
					3.2			

(Ritchie 1984: 53, fig 4, 49). The total depth of deposits recorded beneath the walls of the buildings by both the 1973/1975 and 2014 excavations was *c* 0.4m. This also correlates with the 'standard' depth of the 'Period I lower midden' found across the site (Ritchie 1984: 45). Although not stated, it is assumed that within this schema the OGS formed the surface upon which midden had developed and that the 'Period I lower midden' therefore incorporates the OGS and all subsequent accumulations over it, prior to the construction of the stone buildings.

The new evidence, however, reveals the 'Period I lower midden' was not in fact a single, homogeneous layer but rather a conflation of at least three separate layers: an OGS (010) and two successive anthropic deposits (006, 007) (Illus 6). The presence within each of these soils of numerous lenses of windblown sand indicates that they accumulated over an extended period and were the result of multiple depositional events.

Furthermore, the discovery that some of these anthropic deposits (007) extend into the interior of the building reveals that the footprint of House 2, at least, was not entirely scarped down to natural clay prior to construction (*contra* Ritchie 1984: 51). In consequence, the deposit previously identified as 'House 2, primary floor' and which was thought to have been generated entirely during the occupation of that building, is now thought to have been comprised of, or at least to have incorporated, deposits of much earlier date.

SUMMARY

In summary, the revision of the stratigraphy and site chronology has some important implications which cannot be reconciled with the previous assertion that no significant chronological difference was represented by the pre- and post-stone house construction deposits (Ritchie 1984: 44). Notably, the span of human activity prior to the construction of the stone houses (Phase 2, above) is now established to have been considerably more protracted. The cultivation of an OGS implies that there was a permanent settlement in the wider area. The subsequent accumulation of

'midden' is suggestive of settlement in the immediate hinterland. The depth and stratification of the accumulated deposits suggest that this took place over an appreciable duration.

The recognition of chronologically disparate deposits within the wall cores and the potential for such materials to have found their way into floor deposits inside the building have to be acknowledged. It is highly probable that spillage from the wall cores will have occurred on numerous occasions: in association with maintenance and rebuilding works in antiquity; in the interval between abandonment and the wall becoming engulfed by sand; from disturbance associated with antiquarian investigations; as a result of structural decay prior to the 1973 and 1975 excavations and, latterly, in association with the various consolidation works. It is also recorded that finds from the antiquarian excavations were often collected up on the wall heads and not taken off the site (Illus 7) (Ritchie 1984: 52). In consequence, residual materials are very likely to have become mixed into floor deposits. The use of unarticulated bone for dating is therefore problematic and requires that all legacy radiocarbon dates are treated with due caution.

RADIOCARBON DATING AND BAYESIAN ANALYSIS

Two sets of radiocarbon dates have previously been published. The first, which used samples of mixed animal bone (Ritchie 1984), was superseded by a second set which was based on single-entity samples of known species (Sheridan & Higham 2006). Both sets used samples collected during the 1973/1975 excavations and subscribed to the stratigraphic sequence proposed by that work. The revision of that sequence now renders this problematic. In particular, the 'Period I, Lower Midden' is now shown to be a conflation of all activities pre-dating the construction of Houses 1 and 2. There have also been substantial discrepancies in radiocarbon determinations produced on materials collected from the same context, for example bone from wall core in House 1, which yielded both the earliest and latest date



ILLUS 7 Traill and Kirkness excavations around House 2 – note artefacts laid on wall heads.
(© Crown Copyright: HES)

from the site (samples SRR347 and SRR452; see Ritchie 1984: 57, 118; Griffiths 2016: table 10.1, 259–60). Furthermore, the presence of residual material within the House 2 floor deposits cannot be ruled out and this introduces uncertainty as to the origin of the samples used for radiocarbon dating. In short, there is a likelihood that materials dated previously may not be closely related to the construction of the buildings and some may derive from a substantially earlier period.

NEW DATES

Two new radiocarbon results were obtained from the 2014 work (Table 1). The samples used articulated bone recovered from a known point in a clear stratigraphic sequence (Illus 6). They consisted of two separate articulated cattle feet, one from an adult and the other from a juvenile

animal (Dr S Fraser, pers comm). Both came from the lower boundary of context (007), the earlier of the two anthropic deposits underlying House 2.

The bones were uncooked and represent probable discarded butchery waste. Their survival in an articulated state argues in favour of taphonomic integrity, and their unweathered condition suggests that they were covered soon after deposition. They are interpreted as component parts of a domestic midden.

BAYESIAN ANALYSIS

Seren Griffiths

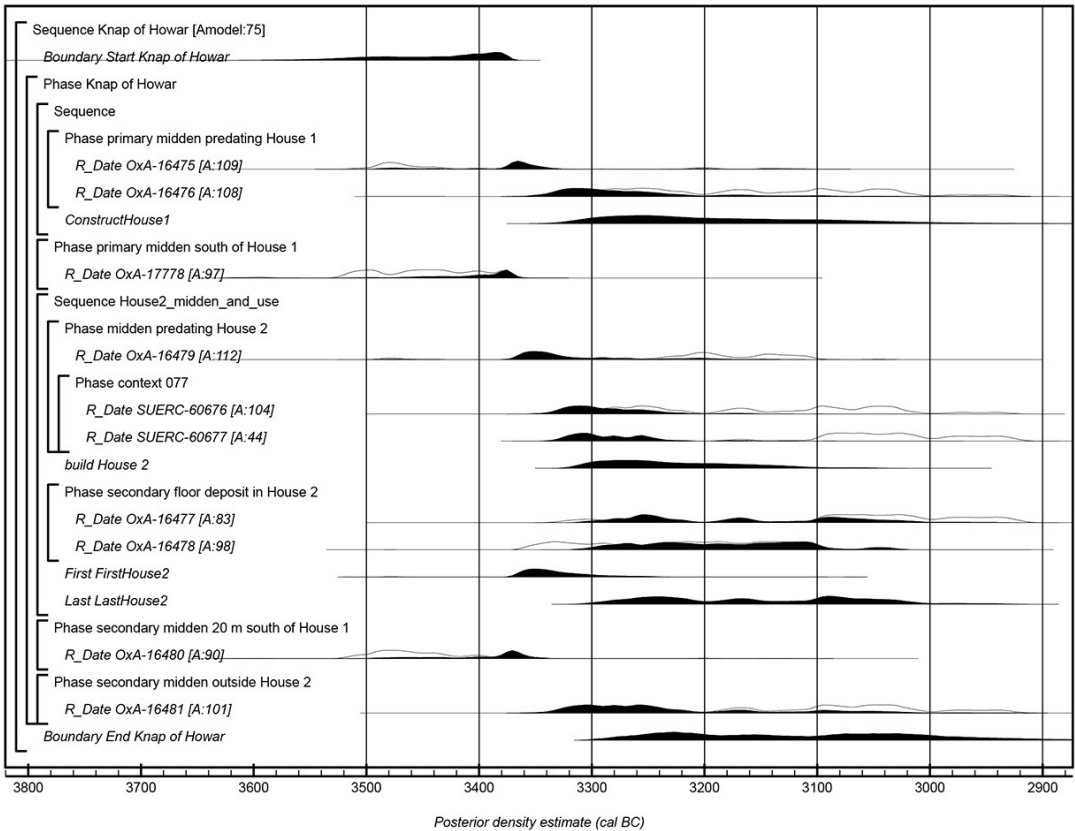
The new results have been included in the existing site-stratigraphic chronological analysis for the site (Griffiths 2016) with one revision, using the program OxCal v4.4 (Bronk Ramsey 2009)

and the IntCal20 calibration dataset (Reimer et al 2020).

In this slightly revised interpretation, we have reinterpreted the association of the result OxA-16479. This measurement was produced on a sample collected during the 1973/1975 excavations from a layer described as ‘primary floor deposit, House 2’. However, as noted above, this sample may be better understood as relating to activity that pre-dated the construction of House 2. In the revised analysis presented here, we have reflected this reinterpretation and have presented OxA-16479 as representing activity that pre-dated House 2. In the preparation of this report, we produced analyses with OxA-16479 as both pre-dating the construction of House 2, and as representing activity associated with the

use of this structure. The resulting outputs varied only by a couple of decades in the 95% and 68% ranges, so we present below only the results of this reinterpretation.

In addition to this slight reinterpretation of the association of OxA-16479, we have included the new results from this work (SUERC-60676 and SUERC-60677) as representing a phase of activity producing midden deposits, which occurred prior to the construction of House 2 (analytical code is included in Appendix 1: see supplementary material below). Using this approach (Illus 8), we estimate that House 2 was most probably built in the late 34th or 33rd centuries cal BC – in 3325–3105 cal BC (95% probable) or in 3310–3190 cal BC (68% probable; build House 2).



ILLUS 8 New and legacy radiocarbon results for the Knap of Howar. The analytical code in the appendix defines the analysis in OxCal (Bronk Ramsay 2009). (© Image Seren Griffiths)

This estimate for the construction of House 2 could be broadly contemporaneous with our estimate for the construction of House 1; we have estimated this event using the most recent calibration dataset of Reimer et al (2020) as occurring in 3335–2995 cal BC (95% probable) or 3310–3130 cal BC (68% probable; ConstructHouse1). The results from House 1 are less precise because we have no results from occupation deposits associated with the use of this structure – in contrast to the results on secondary floor deposits (OxA-16477 and OxA-16478) from House 2.

The two estimates for the construction of the structures could have occurred at the same time. If both structures were built at the same time, we can use the Combine function in OxCal to estimate that this activity occurred in 3315–3120 cal BC (95% probability) or most probably in the very late 34th to 33rd centuries cal BC, in 3305–3205 cal BC (68% probability; see Illus 9).

While we do not have any estimates for the use of House 1, we can recalculate the use of House 2 using the 2020 calibration dataset. Currently, the last estimate that we have for the use of this structure places it in 3305–3000 cal BC (95% probability; or 3280–3210 cal BC 29% or 3185–3150 9% or 3110–3030 30% probability; LastHouse2, Illus 8).

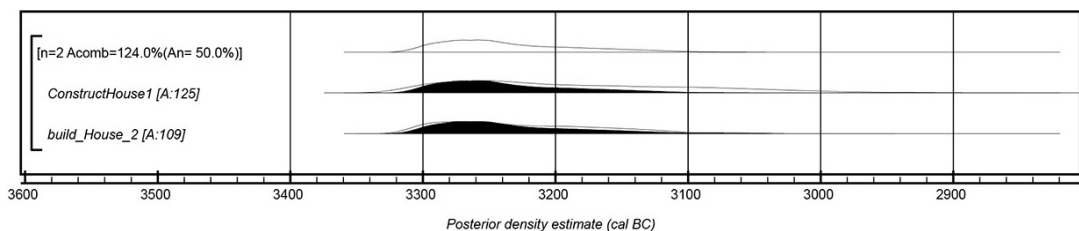
The radiocarbon dates obtained by this work suggest that – whether the structures were built as a single event or as two separate events – Houses 1 and 2 were most probably constructed in the 33rd century cal BC, potentially slightly

before our current estimates for the first use of Grooved Ware in Orkney in the 32nd century cal BC (Whittle 2018: 95).

DISCUSSION

The new work produced insights which, in turn, have occasioned a re-examination of site stratigraphy and chronology. It comes after an interval of some 40 years since Ritchie's excavations, which in turn, occurred some 40 years after the first exploration of the site. While Traill and Kirkness's account of their work was in keeping with the standards of the time and, more unusually, even included a large number of photographs and a 16mm silent film (Kirkness 1937), it nevertheless provided only a broad overview of their findings. It necessitated a considerable amount of detective work on the part of Ritchie to match up their findings with her work (Ritchie 1984: 41–2). By comparison, it is a testament to the excellent work undertaken by Ritchie and her team that it has proved possible to so readily integrate the results of this work with their excavation report. In this sense, the findings presented here can be seen as building on from and updating their work.

Much has changed in our understanding of the Neolithic in Orkney during the past half century. The significant increase in archaeological investigation in Orkney has provided a greater appreciation of the scale of early settlement (Richards & Jones 2016; Whittle 2018: 93) and many more radiocarbon dates are now available



ILLUS 9 Estimates calculated in the analysis shown in Illus 8 for the construction of Houses 1 and 2. These could be of the same age, and if both structures were constructed in one event we can estimate when this occurred using the Combine function in OxCal. (© Image Seren Griffiths)

(Griffiths 2016; Bayliss et al 2017). Artefact studies including the establishment of a chronological sequence for the pottery (MacSween 2007a: 322–6; MacSween et al 2015) have also progressed apace. The significance of mid-Holocene geographic and geomorphological change for early settlers in Orkney has been recognised (eg Wickham-Jones et al 2016; Wickham-Jones et al 2018), while the effects of adverse environmental conditions have been investigated at the level of individual settlements (Dockrill 2007; Hunter 2007; Sommerville et al 2007; McKenna & Simpson 2011). It is against this backdrop that the findings of this work are now discussed.

REVISITING THE SITE CHRONOLOGY

As the chronology of the Orcadian Neolithic was further explored, it became apparent that there were issues with the existing radiocarbon dates for the site (Ashmore 2000: 300). Accordingly, a new set of radiocarbon dates was commissioned, this time using short-lived, single-entity samples (Sheridan & Higham 2006). This also used material collected during the 1970s excavations, however, and, in consequence, the results were also interpreted with reference to the original stratigraphic schema. Bayesian analysis using these dates suggested that the structures could have been built prior to c 3300 cal BC (Griffiths 2016: 290).

New modelling which combines the legacy dates with the two new radiocarbon dates suggests a 33rd-century cal BC date for the construction of the houses (see ‘Bayesian analysis’ above). In view of the fact that the first Grooved Ware found on this site actually pre-dates the houses (see below), this is difficult to reconcile within the current chronological models for the emergence of Grooved Ware during or after the 32nd century cal BC (Whittle 2018: 95). It may be that current estimates for the first use of Grooved Ware in Orkney need to be revised; alternatively, the disparity may arise from the use of the legacy dates, where the potential for residuality in the sample material cannot be discounted, nor, on the basis of present evidence, can it be corrected.

Considered in isolation from the legacy dates, the new determinations can be used to infer that the earliest of the two anthropic spreads underlying the buildings had begun to accumulate by the late 34th or 33rd century cal BC and, by virtue of the fact that this layer lies below the buildings, also provides a *terminus post quem* for the construction of House 2. Factoring in the possibility that the midden appears to have developed over a protracted period, interspersed with multiple sand blow events, and taking into consideration that uppermost levels may have been truncated by levelling prior to house construction (see Ritchie 1984: 45), it is credible that the construction of House 2 could have occurred considerably later than the deposition of the articulated bone. One estimate, based on an analysis of the radiocarbon dates, places the construction during the 33rd century cal BC (see ‘Bayesian analysis’ above); an alternative, based on the presence of Grooved Ware below the houses, would suggest that it occurred during or after the 32nd century cal BC.

REVISITING THE POTTERY ASSEMBLAGE

The sequencing and dating of Orcadian Neolithic ceramics has been transformed by the extensive work undertaken at Pool (MacSween 2007a: 322–5) and the Bay of Firth sites (Jones et al 2016: 408–12) and by the Times of Their Lives project (Bayliss et al 2017). Reassessing the Knap of Howar assemblage in the light of these studies together with the new site findings is instructive. Though often described as an ‘Unstan Ware settlement’ (eg Hunter 2007: 64) the distinctive Unstan bowls actually constituted only 16% of the pottery assemblage (Davidson & Henshall 1989: 77) and, with one unstratified exception, came solely from contexts pre-dating the stone structures. The remainder of the assemblage contained a notable diversity of forms, fabrics and decoration. It included shell and stone tempered fabrics, round-based, baggy and at least two flat-based vessels, flat rims, some incised decoration and a small number with applied cordons, all of local manufacture (Henshall 1984a: 63–74). Some vessels with Grooved Ware ‘affinities’

were identified (Davidson & Henshall 1989: 77). The majority of these came from 'Period I' levels, pre-dating the stone houses (Henshall 1984a: 73, sherds 26, 30–32, 35, 38). While the specific trajectory of development at Knap of Howar cannot be fully reconstructed, the transition from round-based to Grooved Ware pottery is now more closely charted in sequenced assemblages at Pool, Sanday (MacSween 2007a: 322; MacSween et al 2015: 287–90) and several of the Bay of Firth sites (Jones et al 2016: 409).

On current evidence, round-based pottery is thought to have overlapped with Grooved Ware in Orkney between 3200 and 3000 cal BC, with Grooved Ware in use during or after the 32nd century cal BC (Bayliss et al 2017: 1184; Whittle 2018: 95). Notably, the majority of the pottery found at Knap of Howar, including most of the Grooved Ware, came from deposits pre-dating the construction of the stone buildings, indicating that the transition had already commenced before the buildings were erected. This places the appearance of Grooved Ware here among some of the earliest in Orkney. It would also appear to support arguments in favour of the evolution of Grooved Ware across the archipelago rather than their direct adoption from centre to periphery (MacSween & Clarke 2024: 45; *contra* Copper et al 2021: 82–3, and 2024: 59). As with Pool, however, the tempo and nature of the ceramic development at this site and the degree to which it mirrored that at other sites remains yet to be discerned (MacSween et al 2015: 302).

Unfortunately, we know very little about the range of pottery used in association with the buildings, because the internal deposits were largely disposed of into the sea during the antiquarian investigations. The report mentions only the presence of some shell tempered ware and a distinctive type of 'black pottery' which came from the underlying 'midden' (Traill & Kirkness 1937: 313, 316), which is likely to represent the Unstan bowls later identified by Henshall (1984a: 70). Traill and Kirkness were familiar with the findings of Childe's excavations at Skara Brae but, significantly, made no comparisons with the pottery from that site, instead likening their assemblage to Iron Age 'broch' wares. This would

suggest that the pottery which they found inside the buildings at Knap of Howar was not the distinctive Grooved Ware with applied decoration of the post-2900 cal BC period (MacSween & Clarke 2024: 45–6). It may instead find comparison with the flat-based undecorated ware from Phase 1 at Tofts Ness, Sanday (MacSween 2007b: 281) and with the undecorated and the tentatively incised wares of Phases 2.2 and 2.3 at Pool, Sanday, which are attributed to the last quarter of the 4th millennium cal BC (MacSween et al 2015: 303).

Revisiting other assemblages: voles, flint, stone and bone artefacts

While the existing assemblages were not re-examined as part of this project, there have been some new findings made since the last site publication. Further analysis of the lithics recovered during the 1973/1975 excavations, for example, supported the identification of a quartzite micro-lith of Mesolithic type from deposits underlying the buildings (Henshall 1984b: 86, fig 19.31; Wickham-Jones 1990). Although the chronology of their deposition is unknown, the co-occurrence of Mesolithic and Neolithic tool types here, and at a small number of other Neolithic Orcadian settlements (Wickham-Jones & Firth 2000: 125–6), is noteworthy.

The identification of vole (*Microtus arvalis orcadensis*) remains during the 2014 work adds a hitherto unknown species to the site (Dr S Fraser, pers comm). Their first appearance at the site was within the (radiocarbon dated) anthropic deposits underlying the stone buildings (006, 007). Based on extensive dating (Martinkova et al 2013: 5214) and subsequent modelling (Bayliss et al 2017: 1178, fig 4), it is currently thought that voles arrived in Orkney between 3455 and 3100 cal BC at 95% probability, probably 3315–3135 cal BC at 68% probability. The presence of voles in deposits below the stone buildings, therefore, further supports a construction date in the latter centuries of the 4th millennium BC.

A summary reassessment of the stone and bone artefact assemblages in the light of the new chronological and stratigraphic information was undertaken. This assumed (i) that Period I deposits represent an earlier phase of settlement;

(ii) that only artefacts found inside the stone buildings can confidently be ascribed to Period II; and (iii) it omitted all unstratified or poorly stratified items, such as those recovered from topsoil or from collections left on the wall tops during earlier antiquarian investigations. The findings indicate that the two most distinctive tool types, 'Knap of Howar' stone borers and 'Knap of Howar' grinders, appear to be chronologically discrete, with four out of five borers ascribed to Period I but all of the three grinders coming from Period II deposits inside the houses. Three of the more distinctive Period I bone tools, a cetacean bone hammer, an antler hammer and a handled 'spatulate' tool also in cetacean bone, were not replicated within the Period II assemblage and therefore may also represent earlier types. Three out of the four bone pins from the site came from Period II deposits inside the buildings, as did the two querns. Items such as bone awls and points appear to be more evenly distributed, while hammerstones and Skaill knives, though scarce inside the houses, are common to both Period I and Period II exterior deposits. The distribution of flint and chert, including working waste, and utilised pumice is more heavily weighted towards house interiors, but this possibly represents a functional bias, with certain types of activities being undertaken inside.

REASSESSMENT OF THE BUILDING SEQUENCE

The discovery of many more settlements belonging to the earlier Neolithic throughout Orkney in recent years has transformed understandings of the architecture of this period. In particular, a hitherto suspected but largely invisible primary phase of settlement has been identified in the form of timber buildings (Richards & Jones 2016: 16, 227–8). Bayesian analysis suggests that these early timber houses were often followed closely on the same site by stone buildings, with both types emerging and overlapping in use during the second half of the 4th millennium cal BC (Griffiths 2016: 275–81; Bayliss et al 2017: 1181).

The pattern of replacement of timber buildings in stone prompts the question whether an

earlier timber phase could also be present at Knap of Howar. The new dating, refinement of the stratigraphy and reassessment of the assemblages certainly lend substance to the potential for earlier buildings. It has been frequently noted that Ritchie's 'Period I midden' pre-dated the stone houses and was likely, therefore, to represent an earlier phase of settlement (Kinnes 1985: 27; Ashmore 1996: 45). The apparent lack of surviving stone remains lent support to the contention that an earlier building may have been made from timber (Richards & Jones 2016: 4–5).

With the benefit of many more documented examples now available for comparison, it seems likely that a concentration of stonework uncovered to the south-west of the site during the 1973/1975 excavations forms part of just such an earlier structure (Illus 10) (Ritchie 1984: 46 and fig 2). These remains are comprised of orthostats and paving, conceivably representing internal stone fittings. Too little was uncovered to determine the plan or to ascertain the composition of the walls, although it may have been built from timber or alternatively from turf, similarly to the earliest buildings at Pool (Hunter 2007: 63) and to buildings currently under excavation at Links of Noltland. It is possible that additional structural remains may survive within the estimated c 500m² of the surrounding external midden. Survey and assessment in the wider hinterland have identified further anthropic remains and artificially deepened soils which may be of contemporary date (Moore & Wilson 1998: 317–18, sites PWT 53 & 54; Harland & Gee 2022). It is apparent that the Knap of Howar houses form only the most visible elements of a long-settled landscape. The characterisation of early Orcadian settlement as comprised of dispersed households, based on the supposed early and isolated nature of the Knap of Howar stone houses, must also be revised, since these structures are shown not to be the earliest phase of settlement and, moreover, nucleated or clustered patterns of settlement have been identified in earlier periods, for example at Pool (Hunter 2007: 516).

While they can no longer be considered the earliest houses in Orkney, the Knap of Howar structures are still among some of the earliest



ILLUS 10 View of structural remains pre-dating House 1 uncovered during 1974 excavations (Ritchie 1984, Trench II). (© Courtesy of HES. Papers of Dr J N Graham Ritchie, and Dr Anna Ritchie, archaeologists, Edinburgh, Scotland)

stone walled buildings known. The dichotomy between timber and stone construction is perhaps an over-emphasis, since most such buildings, including these, are of hybrid construction and combine exterior stone or stone-and-turf walls with internal timber posts to support the roof and internal fittings. Their use of stalled features may be a conscious referencing of the architecture of the earlier tombs, (eg Richards & Jones 2016: 229), although, arising from a vernacular repertoire, it would perhaps be more surprising if there was no overlap. The use of timber roof supports, meanwhile, recalls the architecture of the earlier timber houses. The available evidence is equivocal on whether the double unit aspect was planned from the outset (Ritchie 1984: 52) or whether it followed ‘... a trajectory of single house expansion into double house units ...’ (Richards & Jones 2016: 232). Unlike many of its contemporaries, this household did not go on to form part of a larger nucleated settlement but was instead abandoned while the buildings were still largely intact. Whether this is an isolated case of localised ebb-and-flow in settlement or representative

of a more widespread pattern of displacement is, as yet, unknown. The nature and tempo of settlement development may have varied considerably across the archipelago (Bayliss et al 2017: 1185) and, in this location, adverse environmental factors also appear to have played a highly significant role. It seems probable that the houses at Knap of Howar were abandoned because their immediate landscape became uninhabitable due to advancing sand dunes.

Although situated today on separate islands, the contemporary and intervisible settlements at Knap of Howar and Links of Noltland lie on the same seaboard and probably occupied a single landmass during the Neolithic (Wickham-Jones et al 2018: fig 16.4). At Noltland extensive settlement remains extending from the mid-4th to the 1st millennium cal BC provide evidence of a considerable and sustained influx of marine sand onto the land during the Neolithic period (McKenna & Simpson 2011). This resulted in the regular inundation of fields and houses, which was severe enough to bring about the abandonment of buildings and the relocation of settlement away from

the most badly affected areas. A similar picture is indicated in many other locations throughout Orkney, for example on Sanday (Dockrill et al 1994; Hunter 2007: 515–16; Sommerville et al 2007) and at Bay of Skaill (de la Vega Leinert et al 2000). While there has been very little multi-disciplinary research yet carried out in Orkney to reconstruct mid-Holocene environmental change or the evolving configuration of the coastline (Wickham-Jones 2018), these changes have been associated with sea-level rise, high-energy coastal environments and an increase in the frequency and intensity of storms (Smith et al 2018). The impacts of environmental change on the humans, witnessed in the internal displacement of local populations alongside, for example, the need for adaption and inventiveness in architecture, agriculture and resource procurement, is likely to have been a significant catalyst for social and cultural change. As the evidence from Knap of Howar illustrates, far from being a late adopter of new ideas, it may be that the greater environmental stresses borne by geographically ‘peripheral’ communities, largely situated outside the Central Mainland, in fact provided them with an added stimulus to innovation.

CONCLUSIONS

A reassessment of the Knap of Howar now repositions the stone houses to the latter part of the fourth millennium cal BC. It identifies them as the final chapter of several centuries of Neolithic settlement on this site. The buildings are recognised as belonging to a distinctively Orcadian period of innovation, most visibly manifested in new architectural and ceramic forms, which occurred across the archipelago, and which prefigured the emergence of the more elaborate and better-known styles of the Later Neolithic as exemplified at Skara Brae, Barnhouse and Ness of Brodgar. The transitional period between the Early and Later Neolithic, ie the Middle Neolithic, c 3500–3000 BC, is increasingly recognised as a key area for understanding the impetus and dynamics of this change and, in this respect, the settlement at Knap of Howar and its

neighbour at Links of Noltland, both of which span this period, hold much potential for further research and discovery.

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