



ARO26: The complex history of a rural medieval building in Kintore, Aberdeenshire

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Contents

Abstract	5
Introduction	5
Site Location	5
Archaeological Background	5
Excavation Results	8
The building	8
Structures later than the building	11
Radiocarbon Dates	11
Specialist Reports	12
Pottery	12
Botanical Remains	13
Soil Micromorphology	16
Multi-element Soil Analysis	19
Discussion	20
Conclusion	22
Acknowledgements	22
Bibliography	22

List of Figures

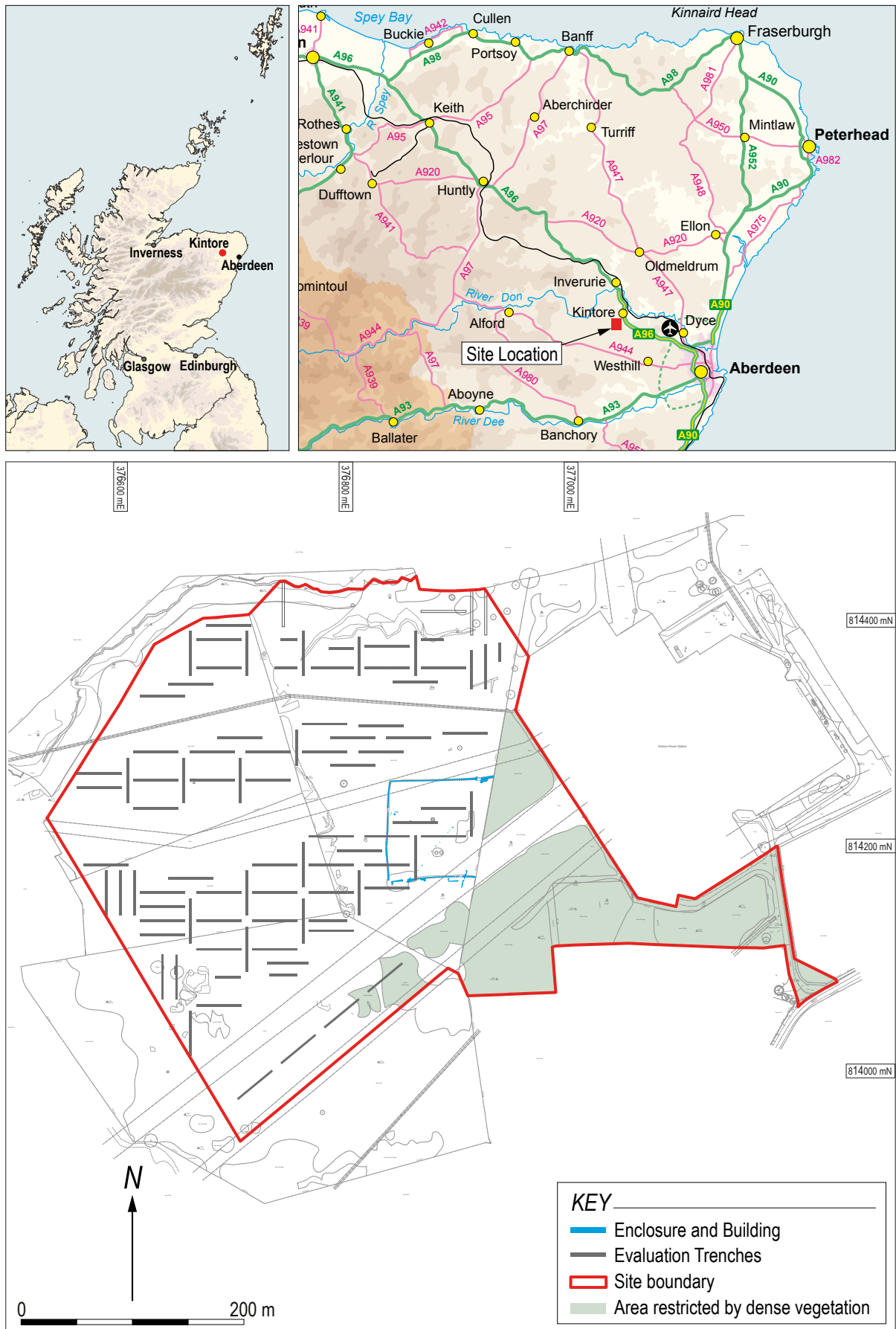
Figure 1: Location map with evaluation trenches	4
Figure 2: Topographic survey showing enclosure and associated features	6
Figure 3: Farmsteads and prehistoric and medieval sites close to the site	7
Figure 4: Plan of the excavated structure	9
Figure 5: East-facing section of gable posthole 014	10
Figure 6: South-facing section through posthole (055) in the floor of the building	10
Figure 7: South-facing section of slot 3 through drainage ditch 023	10
Figure 8: Suggested reconstruction of a byre-house	21

List of Plates

Plate 1: The structure after removal of turf and the cleaning of the wall stones 002 and 003	8
Plate 2: Working shot of during excavation of the walls and interior of the building	8
Plate 3: Section through wall 003 at slot F	8
Plate 4: Possible post-pad in the south wall of the structure (003)	10
Plate 5: Linear stone alignment (006) From south-east	11
Plate 6: Late medieval pottery from the building	12
Plate 7: Thin section K1 shows a sample through floor deposit 024	16
Plate 8: Thin section K2 (centre) shows (from base) natural deposit 054 and three laminated lenses making up floor sequence 027a (lower peaty, central sandy deposit, and upper clay-with-peat) and upper floor deposit 027b	17
Plate 9: Thin section K3 (right) shows (from base) natural deposit 031 and turf construction deposit 030	18
Plate 10: The Kintore building in its wider landscape	20

List of Tables

Table 1: List of sites close to the site	8
Table 2: Radiocarbon dates from the site	12



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Figure 1: Location map with evaluation trenches.

Abstract

Excavations by GUARD Archaeology Ltd in advance of construction at the Kintore sub-station extension revealed the remains of a turf and stone-built medieval building partly overlain by a large and more recent rectangular field enclosure. Sherds of pottery obtained from the floor of the structure suggest it was in use during the fourteenth and fifteenth centuries AD. However, its construction is similar to other excavated buildings dated to the early medieval period. Radiocarbon dates obtained from several features and deposits ranged from the Bronze Age, through the Iron Age to the medieval period, suggesting a high degree of disturbance within and around the area of the building. The structure is an uncommon survivor of rural settlement that is rarely excavated in Scottish archaeology.

Introduction

During September and October 2013 GUARD Archaeology Ltd in conjunction with Amey and on behalf of Scottish and Southern Energy conducted an archaeological evaluation on an area of ground proposed as part of the expansion of the Kintore Sub-Station, south-west of Kintore, Aberdeenshire (Hurl 2014; Figure 1). The work exposed the remains of a large rectangular enclosure with an adjacent small building (Figure 2). Further excavation and a topographic survey were undertaken between June and August 2014 (Kilpatrick 2014). The site was entirely excavated by hand, and although narrow slot trenches were dug through the structure, the bulk of it survives. After excavation the site was backfilled.

Site Location

Kintore sub-station, centred on NGR: NJ 7690 1420 is located north of Leylodge, south-west of the village of Kintore in Aberdeenshire, and 16 km to the north-west of Aberdeen. The excavated area was located to the immediate west of the sub-station in a field lying between 87 and 94.7 m OD, which was used for pasture. The area is topographically relatively flat but it slopes slightly down towards the east resulting in boggy conditions, with shallow peat deposits and wetland grasses within the enclosed area and the eastern half of the excavation area. The surrounding landscape is generally flat and comprises enclosed agricultural fields with

wooded areas to the north and tree belts to the east and south. Towards the north, the field falls steeply towards the Dewsford Burn located within a steep gully. The geology consists of Kemnay Pluton Granite overlain by till (British Geological Survey 2017).

Archaeological Background

Although no evidence of archaeological activity was known within the site boundary prior to investigative work commencing, several prehistoric sites are known in the area (see Figure 3 with Table 1). These include the remains of the Scheduled Ancient Monument of South Leylodge Recumbent Stone Circle (NRHE* NJ71SE3) (No.5) to the south-east of the site. Two standing stones, The Knock (NRHE NJ15SE6) (No 16) and South Leylodge (NRHE NJ15SE4) (No.17) lie to the south. Find spots to the north-west include a flint leaf-shaped arrowhead from South Cottown (NRHE NJ71NE55) (No. 14) and a stone axehead from Hall Forest (NRHE NJ71NE51) (No.10) A prehistoric funerary monument of a cist with an urn containing cremated remains was found at Tillybin (NRHE NJ71SE91) (No. 28) further to the south-west. Other possible medieval evidence include rig and furrow cultivation at Burnside Cottages (NRHE NJ7115SE100) (No.2) to the south of the site and at East Leylodge to the east (NRHE NJ71SE126) (No.4).

Recent excavations along the A96 (Alexander 2000) and at the site of Kintore Roman Temporary Camp (Cook and Dunbar 2008) revealed additional sites within the wider locale including Neolithic pits, Bronze Age enclosures and Roman field ovens, to name but a few. This information provides evidence of a widely used and populated landscape from the prehistoric period onwards.

A search of historic cartographic sources including that of the Roy Military Survey of Scotland (1747-55) revealed that prior to the nineteenth century the development area was open farmland with the small settlement at Laylodge to the south of the site depicted as seven small buildings surrounded by sparse woodland. During the nineteenth century, the extensive Harthill Plantation woodland occupied the site, although by the early twentieth century it had begun to be cleared. The enclosure and building were not depicted on any of the historic cartographic sources searched.

* National Record of the Historic Environment

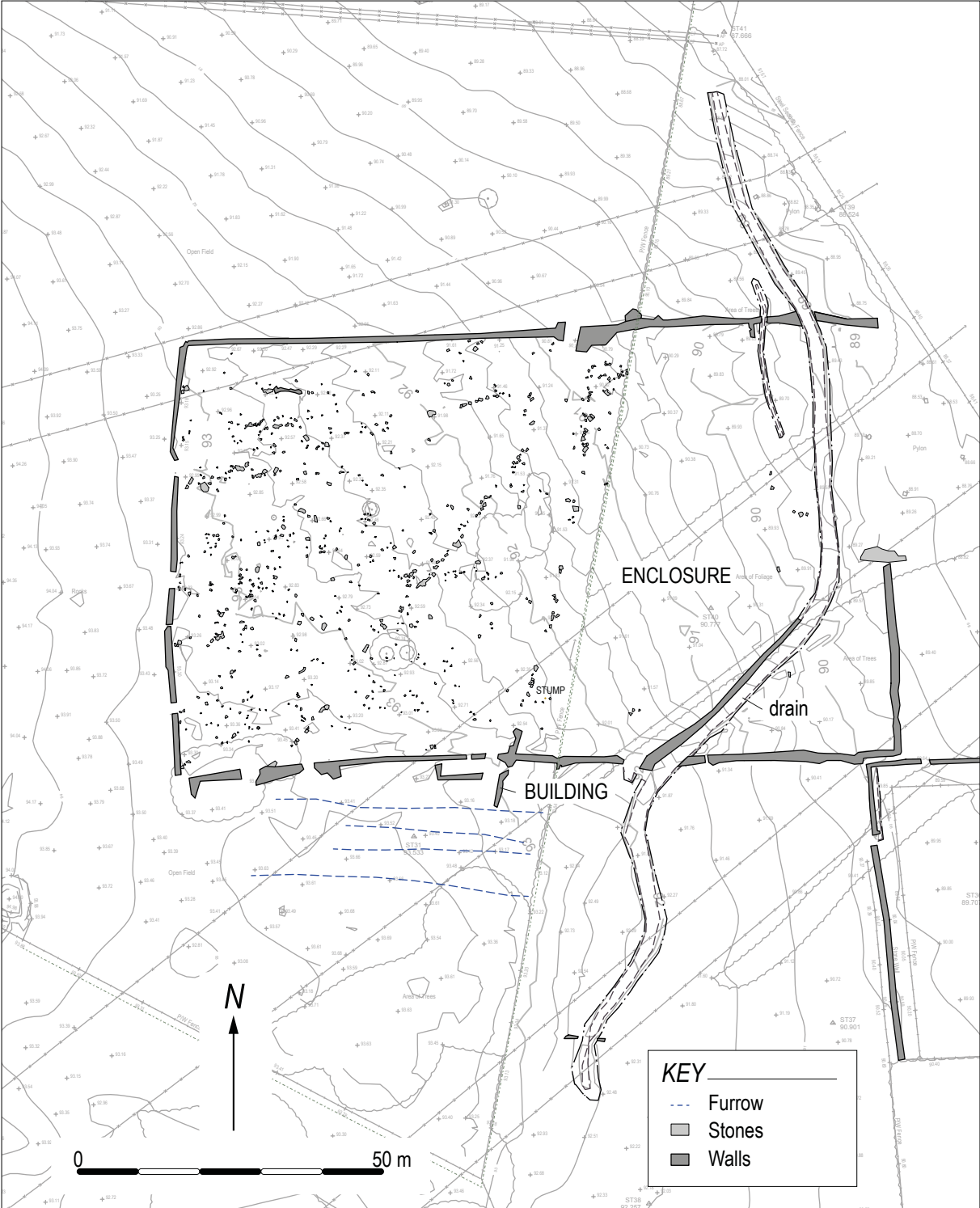


Figure 2: Topographic survey showing enclosure and associated features.

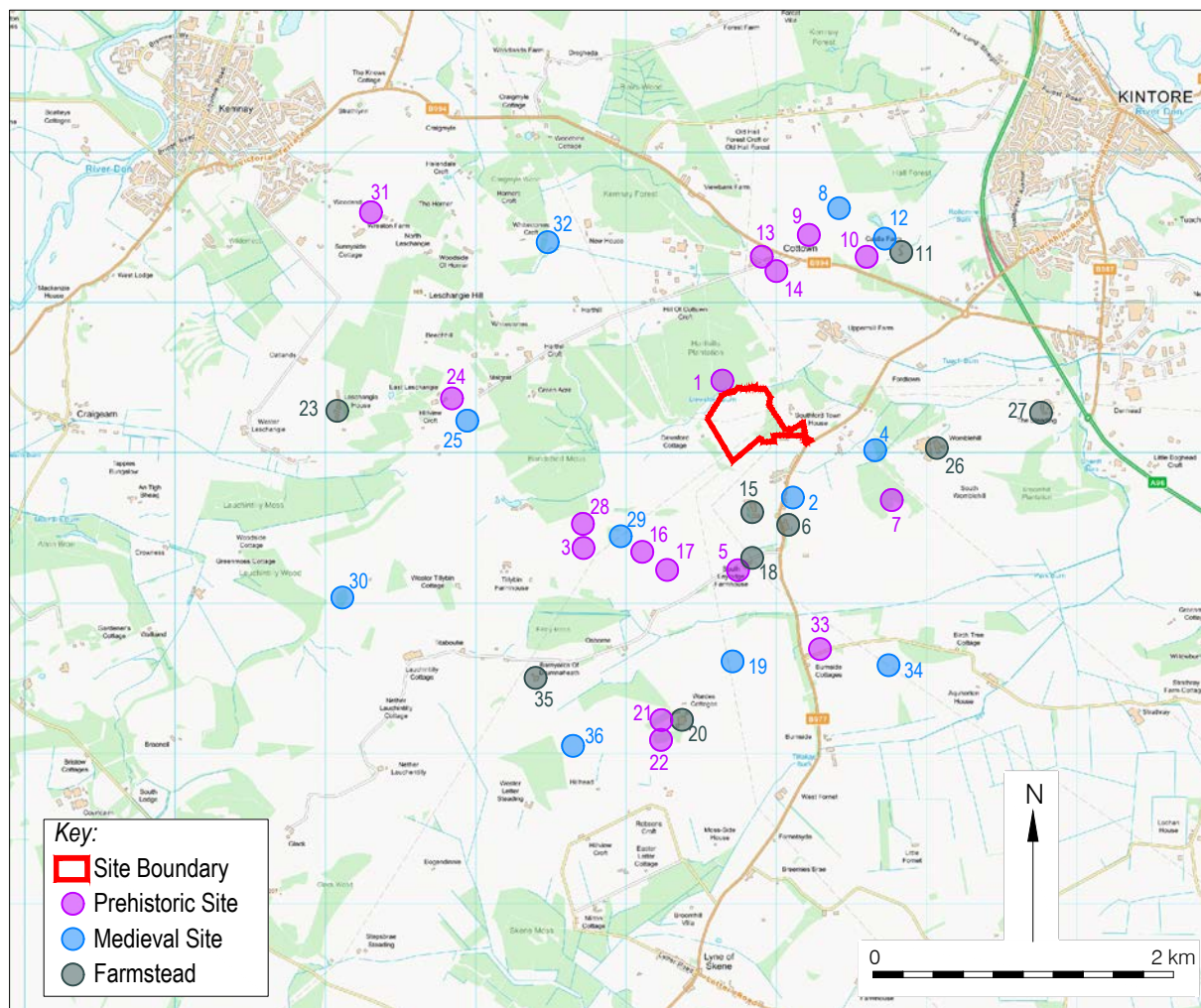


Figure 3: Farmsteads and prehistoric and medieval sites close to the site.

GAL ID	Site Name	Description	Easting	Northing	NGR
1	Harthills	Hut circle	376640	814480	NJ71SE 149
2	Burnside Cottages	Rig and furrow (medieval)	377110	813700	NJ71SE 100
3	Tillbin	Cist	375720	813430	NJ71SE 13
4	East Leylodge	Rig and furrow (medieval)	377670	814010	NJ71SE 126
5	South Leylodge	Recumbent stone circle	376670	813250	NJ71SE 3
6	East Leylodge	Farmstead (undated)	377060	813500	NJ71SE 76
7	Broomhill Plantation	Hut circle, enclosure, rig and furrow (medieval)	377771	813690	NJ71SE 90
8	Hallforest	Chapel	377420	815630	NJ71NE 22
9	North Cottown	Ring ditch	377220	815450	NJ71NE 114
10	Hallforest	Flint axehead	377600	815300	NJ71NE 53
11	Hallforest, Castle Farm	Farmstead (undated)	377810	815330	NJ71NE 117
12	Castle of Hallforest	Medieval tower (early 14th century)	377722	815427	NJ71NE 21
13	North of Cottown	Hammerstone	376900	815300	NJ71NE 187
14	South Cottown	Bronze chisel and flint leaf-shaped arrowhead	377000	815200	NJ71NE 55
15	North Leylodge	Farmstead (undated)	376840	813600	NJ71SE 75
16	The Knock	Standing stone	376110	813340	NJ71SE 76
17	South Leylodge	Standing stone	376280	813220	NJ71SE 77
18	South Leylodge	Farmstead (undated)	376810	813250	NJ71SE 78
19	Wardes	Rig and furrow (medieval)	376700	812600	NJ71SE 79
20	Wardes	Farmstead (undated)	376370	812220	NJ71SE 80
21	Wardes	Barbed and tanged arrowhead	376300	812200	NJ71SE 81

GAL ID	Site Name	Description	Easting	Northing	NGR
22	Wardes	Earthwork bank and hut circle	376260	812090	NJ71SE 82
23	Leschangie	Farmstead (undated)	374080	814280	NJ71SE 86
24	Easter Leschangie	Cinerary urn	374830	814350	NJ71SE 87
25	Todfold	Cross-incised boundary stone (early medieval)	374960	814210	NJ71SW 136
26	Womblehill	Farmstead (undated)	378080	814030	NJ71SE 89
27	Broomhill	Farmstead (undated)	378750	814260	NJ71SE 90
28	Tillybin	Cist and urn	375720	813430	NJ71SE 91
29	The Knock	Rig and furrow (medieval)	375970	813440	NJ71SE 92
30	Lauchintilly	Rig and furrow (medieval)	374110	813040	NJ71SE 95
31	Sunnyside	Cinerary urn, hammerstone	374300	815600	NJ71SE 96
32	Whitestones Croft	Cross -incised boundary stone (early medieval)	375480	815410	NJ71SE 99
33	Burnside Cottages	Standing stone	377300	812690	NJ71SE 102
34	Burnside	Enclosure and hut circle	377760	812580	NJ71SE 103
35	Drumnaheath	Farmstead (undated)	375380	812500	NJ71SE 106
36	Drum Hill	Rig and furrow (medieval)	375650	812050	NJ71SE 107

Table 1: List of sites close to the site.

Excavation Results

The building

The principal focus of activity on the site was a small, rectangular building with low stone walls (003) that was found beneath a covering of turf and topsoil (001) and a lower fibrous, silty deposit (007, 010 and 026), originating from its collapsed walls and roofing. It would have measured c. 17 m in length externally and c. 14.6 m internally, with a overall width of c. 5.4 m and an internal width of 3.5 m. The structure is abutted by a large rectangular stone-built enclosure (002) and is cut through by a drainage ditch (023), (Figures 2 and 4; Plates 1 and 2). The building is orientated east/west, and was constructed of boulder and cobble walls c. 1.1-1.3 m in width, which survived one or two courses high (Plate 3). The southern and western walls survived best because of the presence of internal facing stones. There were no foundations to its walls as they sat directly on the subsoil surface (028). The interior deposits of the building rested on brown/grey silty-turf (048, 057 and 069), which was also used as packing between the wall stones.

The longer south wall was slightly bowed and contained a possible post-pad (Figure 4; Plate 4), but the west gable was slightly rounded in shape. Both the north and east walls had been disturbed or largely removed by later activities, which included the construction of the large stone enclosure. The eastern half of the structure was also badly disturbed by the excavation of a drainage ditch (023). No entrance to the structure was identified.



Plate 1: The structure after removal of turf and the cleaning of the wall stones 002 and 003.



Plate 2: Working shot of during excavation of the walls and interior of the building.



Plate 3: Section through wall 003 at slot F.



Figure 4: Plan of the excavated structure.



Plate 4: Possible post-pad in the south wall of the structure (003).

Two postholes (014 and 056), were located at either internal corner of the western gable. Their diameters were c. 0.47 m and 0.5 m with depths of 0.2 m and 0.17 m (Figure 5). Cobbles were used as packing that supported the posts positioned in the postholes (Figure 4). The robbed-out northern wall contained a posthole (042) with a stone setting. It measured 0.22 m in diameter but survived only 0.08 m in depth.

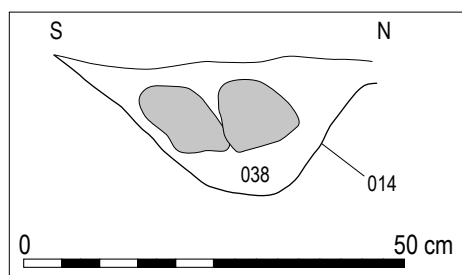


Figure 5: East-facing section of gable posthole 014.

The internal area of the structure, to the west of drainage ditch (023), contained a floor deposit (024), which comprised brown silt with stone and charcoal, but which had been penetrated by roots from the turf and topsoil. It was 50 mm deep in the central area, presumably where footfall was most active, up to 180 mm in depth beside the walls, and three sherds of pottery (SF 6, 8 and 9), were found within it. On its surface, but lying close to the robbed-out northern wall in the middle part of the structure, was a dark pink-

brown deposit of clayey-silt (008). This deposit possibly represented the remains of clay, which would have coated the internal surface of the walls, and contained pottery sherd SF 4.

Very little charcoal was recovered from soil samples retrieved from the floor deposit (024) and from the fills of the three postholes, and much of the identified organic material comprised turf, which might have originated as roofing material that collapsed onto the floor of the structure following abandonment. Below the floor deposit (024) were two postholes (071 and 055; Figures 4 and 6), with diameters of 0.3 m and 0.4 m, and a depth of 0.18 m. A small but shallow deposit of dark silty clay (066) was found nearby, which contained fragments of oak charcoal. Although these features were interpreted as earlier than the structure, no datable material was recovered from them.

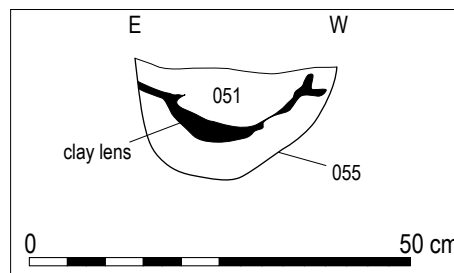


Figure 6: South-facing section through posthole (055) in the floor of the building.

Against the northern side of the structure was a green/brown silty deposit (075) whose extent was truncated by the field drain (023) (Figures 4 and 7). East of the latter, was a floor deposit of dark-brown silt (027) that measured 2.4 m by 2 m in extent and 80 mm in depth. The deposit lay above a possible old ground surface (073), which in turn overlay the grey silty-clay subsoil (054/079). Many small boulders and cobbles (005), derived from the collapsed remains of the eastern wall of the structure (003) and the later enclosure wall (002), overlay this deposit.

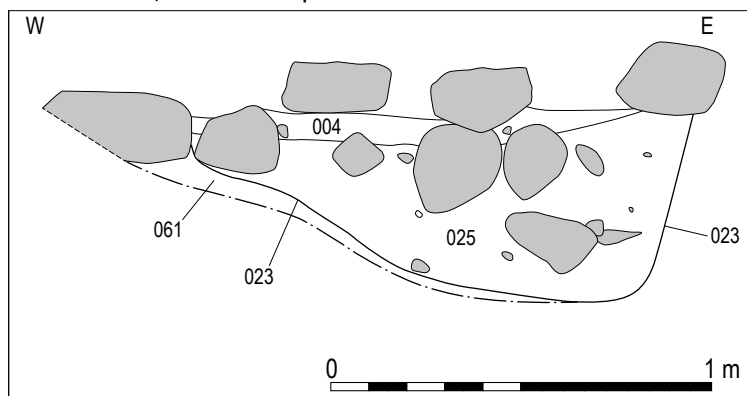


Figure 7: South-facing section of slot 3 through drainage ditch 023.

Structures later than the building

Following the abandonment of the building, a large rectangular enclosure (002) was constructed, which largely removed the structure's northern wall (003) (Figures 2 and 4). The enclosure measured 87 m by 94.7 m and encompassed an area of 8,238 m². Its boulder and cobble walls were 0.8 m - 1.2 m in width survived only two or three courses in height. Large stones formed the wall faces, with a core of smaller stones and silty-turf. It was built on an old turf deposit comprising green/brown silt (031, 046 and 070). The enclosure contained a thin belt of planted woodland at its eastern end, but otherwise it was boggy with waterlogged areas and thin peat deposits. It was not examined further.

Evidence of more recent activities across the project area included the cutting of several linear drainage ditches across the field and through the enclosure wall at several points (Figure 2). These were noted as linear alignments of upcast stone (006) (Plate 5). One ditch (023), truncated the building and its upper fill contained two sherds of pottery (SF 1 and 5), similar to those found within the building, from where they probably derived. A number of small trenches (A-E and G) were excavated to explore the breaks in the enclosure wall and the upcast stone alignments.



Plate 5: Linear stone alignment (006)
From south-east.

South of the enclosure and building was a discrete area of undated broad rig and furrow.

Radiocarbon Dates

Eight radiocarbon dates were obtained from individual features and deposits within the building. These were to aid its interpretation and

provide comparison with other similar structures in the local and wider area (Figure 3, Table 2). Due to the constraints of the samples only a limited number of features could be dated. Charcoal fragments were obtained from a posthole (056), the floor/occupation deposits (024 and 027), several other deposits within and outside the building (075 and 026), and below the enclosure wall (046). The dates returned varied widely from the Bronze and Iron ages through to the medieval period, suggesting the site had previous phases of occupation. However, an alternative view of the radiocarbon dates is that they are the result of the burning of peat, or of the use of peat in construction, which could have been considerably older than the structure.

The earliest dated activity was obtained from two radiocarbon dates from a possible floor/occupation deposit (027) near the eastern gable of the building (003), and also from the eastern side of the drainage channel (023), which cut through this area. The radiocarbon dates returned from birch charcoal fragments (027), of 1750-1619 cal BC to 1260-1054 cal BC (Table 2), suggest occupation of the site during the middle to late Bronze Age. The same deposit (027) also produced an early medieval radiocarbon date of 565-651 cal AD and two sherds of fourteenth-fifteenth century AD pottery (SF 10 and 12). The variation in dates from this one feature, suggests the possibility that older materials, such as peat was being burnt within the building.

Radiocarbon dating of the charcoal fragments from the floor (024) located at the western end of the building, returned an early Iron Age date of 550-401 cal BC. Another early Iron Age date of 540-396 cal BC was obtained from hazel charcoal found within posthole (056). This was interpreted as hearth waste. Despite the prehistoric radiocarbon dates from both the floor and the posthole, the building was probably a medieval construction based on its structural style and the excavated pottery fragments, which provided a terminus ante quem for the use of the building. A fragment of hazelnut shell from a deposit (075) west of drainage ditch (023) but within the building, provided a medieval period date of c.1493-1602 cal AD, consistent with the date of the pottery sherds (see Will below). A radiocarbon sample obtained from the deposit (046) below the enclosure wall (002) provided an early Iron Age date of 298-364 cal BC.

Sample	Material	Context	Description	Un-calibrated	Calibrated 1-sigma	Calibrated 2-sigma	$\delta^{13}\text{C}$ relative to VPDB
SUERC-68734 (GU41606)	Corylus	18	Fill of posthole 056	2384±26	485-401 cal BC	540-396 cal BC	-24.5‰
SUERC-68735 (GU41607)	Betula	26	Possible turf deposit within eastern area of structure	1512±29	536-602 cal AD	529-618 cal AD	-27.4‰
SUERC-68736 (GU41608)	Betula	24	Floor deposit to west of ditch	2413±29	516-409 cal BC	550-401 cal BC	-26.5‰
SUERC-68737 (GU41609)	Alnus	46	Possible old soil below enclosure wall 002	2330±29	407-384 cal BC	268-364 cal BC	-28.5‰
SUERC-69656 (GU42152)	Betula	27	Floor deposit to east of ditch	3388±30	1695-1641 cal BC	1750-1619 cal BC	-28.9‰
SUERC-69655 (GU42151)	Betula	27	Floor deposit to east of ditch	2954±30	1216-1121 cal BC	1260-1054 cal BC	-25.8‰
SUERC-68741 (GU41610)	Betula	27	Floor deposit to east of ditch	1448±29	594-644 cal AD	565-651 cal AD	-27.4‰
SUERC-68742 (GU41611)	Corylus	75	Possible old soil deposit to east of ditch	291±29	1522-1575 cal AD	1493-1602 cal AD	-27.0‰

Table 2: Radiocarbon dates from the site

Specialist Reports

The complete specialist reports can be found in the site archive.

Methodologies

The pottery sherds were examined, weighed and recorded according to guidelines and standards produced by the Medieval Pottery Research Group (MPRG 1998 and 2001) but no scientific analysis was undertaken.

Bulk environmental samples were processed by Guard Archaeology Ltd. using a Siraf style water flotation system (French 1971). The resultant light fraction or 'flot' from each sample was dried before examination under a low powered binocular microscope typically at x10 to x20 magnifications. The heavier 'residue' portion of each sample was dried and then sorted by eye, with potentially carbonised material subsequently identified. All identified plant remains including charcoal were removed and bagged separately by type.

Wood charcoal was examined using a high powered Vickers M10 metallurgical microscope at magnifications up to x200. The reference photographs of Schweingruber (1990) were consulted for charcoal identification. Plant nomenclature utilised in the text follows Stace (1997) for all vascular plants apart from cereals, which follow Zohary and Hopf (2000). The term 'seed' is used in the broadest sense to include achenes, nutlets and so forth.

Pottery

by Bob Will

Introduction

Eight sherds weighing 108g, were recovered from the archaeological investigations at Kintore and all date to the late medieval period. There are three base sherds: SF 1 and 5 from the upper fill of the drainage ditch (004), and SF 8 from the lower floor deposit (041). In addition, there are five body sherds, SF 4 is from the north-west corner of the building (008), SF 6 is from the upper floor deposit (024), SF 9 is from the lower floor deposit (041), and SF 10 and 12 are from floor deposits (027), at the eastern end of the building.



Plate 6: Late medieval pottery from the building.

Scottish Medieval Redwares

All the sherds recovered were in a Scottish Medieval Redware fabric. This type of pottery was produced from the thirteenth to fifteenth centuries and is found across most of Scotland, where it seems to have been made at a number

of different production sites. Scottish Medieval Redware has recently been the subject of an extensive research programme funded by Historic Scotland (Haggarty et al 2011).

The sherds from Kintore are all in a similar fabric and may be from the same vessel, probably a jug. The fabric is a smooth, pale orange colour with few inclusions, although some of the thicker sherds have voids possibly from air bubbles or organic material that has been burnt out during firing. The five body sherds all have a similar green/brown coloured glaze and there are spots of glaze on the underside of the three base sherds. Spots of glaze on the underside of vessels are quite common and indicate that the vessels were stacked upside down in the kiln where the glaze has dripped onto the base from the vessel stacked on top during firing. The three base sherds, although they do not join, indicate a flat base with angled sides to the vessel. One of the sherds from the centre of the base has clear throwing marks indicating it was made on a potter's wheel. One of the body sherds (SF 6) has part of a circular pad attached to the exterior of the body. This may be applied decoration or the remains of where a handle had been attached. All of the sherds have a purple finish on the exterior surface where the glaze has not been applied and this may be a 'heat skin' resulting from the kiln rather than a deliberate applied slip or glaze.

Given the type of smooth fabric and glaze, the sherds appear similar to a group of redware fabrics found in Aberdeen and referred to as 'Late Medieval Transitional (LMT) Wares' which have been dated to the late fourteenth or fifteenth century (Cameron and Evans 2001). This small assemblage therefore is likely to date to the fourteenth or fifteenth century and is similar to other medieval pottery from the surrounding area. Unfortunately, the small number of sherds and lack of a complete vessel or vessel profile limits further investigation.

Botanical Remains

by Diane Aldritt

Introduction

A total of 59 bulk environmental samples from the project area were fully analysed for carbonised plant macrofossils and charcoal. They include a single sample from the south side of

the enclosure wall. The environmental samples produced a fairly small assemblage of carbonised plant material which consisted mainly of a narrow range of wood charcoal together with a few concentrated caches of heather stems. Some of the samples produced large amounts of decayed turf fragments heavily mixed with silty sediment, perhaps originating from decayed roofing material or turf foundation pads for the walls, whilst other samples were heavily contaminated by modern material and more clearly related to relatively recent woodland clearance and earth moving activity in the vicinity.

Results

The environmental samples produced a small assemblage of carbonised plant material (Archive - Tables 3-5), which consisted of wood charcoal, often recorded in trace amounts from within the structure. The evaluation trenches produced three quite large concentrations of oak charcoal, possibly related to more recent woodland clearance activity or perhaps earlier fire pits, although no finds were present to confirm this. Preservation of the charcoal was generally quite poor with many of the fragments degraded and heavily damaged by iron panning, probably caused by wet soil conditions or bioturbation. Small concentrations of charred heather stems in some of the floor deposits in the structure may be related to collapsed roofing material or originate from peat being burnt as fuel. A single very small fragment of hazel nutshell from within the structure interior (075) could be intrusive from trample, or provide a scarce trace indication of the use of this wild resource. This sample produced a later medieval date of 1493-1602 cal AD (SUERC-68742 – GU41611) indicating it may have been contemporary with the use of the structure.

The volumes of carbonised material per sample were generally very low with <2.5 ml present in most samples and some proving sterile of any burnt remains. Across the structure, the highest amount recorded was 2.5 ml and this consisted of charcoal fragments. Modern material was abundant in the samples and included roots, twigs, fragments of very fresh looking wood, modern seeds, fungal spores and earthworm egg capsules, probably due to the very stony, wet and turf-rich nature of the site and shallowness of the features. The general matrix of many of the

samples, with decayed turf and modern plant remains suggested fairly recent, perhaps post-medieval, activity and mixing taking place.

The building

Postholes

Sample 002 (018) from posthole (056) within the building contained a small amount of heavily iron-panned charcoal and a few heather stems. The charcoal was identified as *Corylus* (hazel) possibly the trace remains of a post burnt in-situ but more likely to be hearth waste that has been swept into the hole along with other detritus. The sample submitted for radiocarbon dating returned an early-middle Iron Age date of 540-396 cal AD (SUERC-68734 – GU41606).

Three flots from (038) the fill of posthole (014), consisted of large amounts of earthy turf and soil lumps, within which were three very small trace fragments of heather stem.

Sample 017 (044) from posthole (042) contained a single fragment of oak charcoal, possibly from a burnt post or other structural timber, or burnt waste. Sample 23 (050) from possible posthole (071) was sterile containing only turf fragments.

Floor deposits

A number of samples were taken from compacted floor and trample deposits within the building (see McLeod below). Sample 10 (024) produced an accumulation of heather stems mixed in with a small amount of charcoal identified as *Corylus* (hazel) and *Betula* (birch). This material could be fuel waste from peat and charcoal burning but may also contain a structural element including roof collapse and flooring materials. A fragment of birch from this sample produced an early Iron Age radiocarbon date of 550-401 cal BC (SUERC-68736 – GU41608).

Similarly a number of samples from the eastern end of the floor (027) produced mixtures of heather stems and charcoal. Samples 012, 022, 024 and 049 contained varied amounts of oak, birch and hazel charcoal mixed through with occasional finds of heather. Three samples produced various date ranges from the latter part of the early Bronze Age 1750-1616 cal BC (SUERC-69656 – GU42152), the middle Bronze Age 1260-1054 cal BC (SUERC-69655 – GU42151),

and the early medieval period 565-651 cal AD (SUERC-68741 – GU41610). A further possible turf deposit (026) with *Betula* (birch) charcoal, at the eastern end of the structure was radiocarbon dated also to the late Iron Age/early Pictish period 529-618 cal AD (SUERC-68735 – GU41607).

This part of the building would appear to have been a more focused area of burning activity, perhaps near a hearth, or certainly where the waste material came to rest, as the lower levels of the floor (040), toward the south wall of the structure contained small amounts of oak and some concentrations of heather.

Other deposits

At the base of the building wall (003), sample 032 (057) produced a small amount of oak charcoal, possibly fuel waste or a burnt structural timber. A number of samples from the drainage ditch (023) failed to produce anything of interest, and natural deposits (046 and 054) produced only small amounts of charcoal, mainly oak, which was possibly scatter from woodland clearance or other burning.

The enclosure

From deposit 046, possibly an old ground surface below the enclosure wall 002, a sample of *Alnus* (alder) charcoal was radiocarbon dated and produced a middle Iron Age date range of 364-268 cal BC (SUERC-68737 – GU41609).

Three flots from sample 001 (002) at the south side of the enclosure wall produced abundant modern plant material and roots in a very silty sample. Numerous fragments of dry decayed turf were present perhaps from a rotted stack or wall, or from the foundations of a stone wall. The plant material was modern in appearance.

Analysis of Results

Gathered resources

A single very small fragment of hazel nutshell was found in (075), an interior deposit of the structure. This is likely to be a chance occurrence, as material burnt accidentally with hazel wood cut for fuel, or material trampled into the muddy floor during the use of the building, was probably not particularly significant. However, it could be contemporary with the later use of the structure.

Agricultural economy

There were no carbonised cereal grain or weed seeds present in any of the samples to suggest the agricultural economy associated with the building or the enclosure.

Fuel and building resources

The excavation of the building produced only trace amounts of charcoal, suggesting limited burning activity taking place overall, although there may have been a greater focus of burning in the eastern end of the structure. A combination of oak, hazel and birch charcoal was recorded from within the building along with occasional caches of heather stems. A single fragment of alder from turf (046) below wall (002) was probably intrusive, but alternatively could have been brought in with (old) peat to level the ground before the construction of the structure.

Small caches of heather stems were also found within the structure, possibly originating from peat burnt as fuel. The main clusters of burnt material were in the eastern end of the building in deposit (027), with small amounts to the south, suggesting perhaps an area for a hearth or more focused burning activity. Both the charcoal and heather could represent structural elements such as collapsed roofing material.

The building consisted of stone walls built on turf foundations and there was widespread use of turf in its construction. Turf was particularly notable in (038), where it appeared to have infilled an empty posthole (014), and interestingly in sample 028 (051) from posthole (055), the turf had a high inorganic element, and was probably compacted floor material. Indeed, the postholes acted as very effective traps for turf, with (050) from (071) also containing a large amount. Floor sample 024 (027) also contained a concentration of decayed and trampled turf.

Some of the turf however, may represent fairly recent infill, as large amounts of modern plant remains were present in some of the samples. It is also possible some elements of the structure could be more recent, perhaps post-medieval, or represent re-use of a partially collapsed dwelling as a cattle byre or sheep pen.

Later use of the building

The samples, produced a range of charcoal types and a few concentrations of heather stems from within the floor deposits, but much of this area had probably also been disturbed by recent activity and animal burrowing given the large amounts of intrusive modern material mixed with turf. It is possible the structure had been re-used post-abandonment as an animal shelter, particularly the evidence from the trampled and mixed nature of some of the floor and other deposits. It could also have been infilled with turf (from the collapsed roof or from later activity), or contained elements that were later in date, perhaps post-medieval.

Comparison

Evidence for medieval rural settlement in Scotland remains quite rare, so the excavation of the late medieval building and adjacent enclosure at Kintore provided an important opportunity to examine its construction, layout, and accompanying activities occurring at the site. The Kintore building construction was similar to the later phases (fourteenth to fifteenth centuries) at Rattray, Aberdeenshire (Murray and Murray 1993) where stone replaced earlier timber built structures. Dickson and Dickson (2000, 193) noted that in the fourteenth century at Rattray a rectangular building with thick clay walls burnt down leaving charred heather thatch over two oak timbers. Evidence for the use of peat for fuel at Rattray was also found, mainly relating to pottery kilns, but unfortunately no other environmental information, such as any indication of the types of cereal agriculture being practiced was recovered.

Some eighteenth to nineteenth century farm buildings have been shown to simply have cut turves held in place by wooden pegs, whilst others have turf overlain by cereal straw and held in place by ropes (Holden 1998, 25). From an archaeological point of view the collapse of roofs of this nature can produce up to 1 m of detritus within a structure, which overtime decays to form a mixture of turf, plant material, wood and sedimentary elements - the sediment largely deriving from the inorganic component of the turf. Similarly flooring materials, possibly made up of packed earth with straw coverings, turf from wall decay, hearth waste and soot will also become compacted into the floor.

Soil Micromorphology

By Jo McKenzie

Introduction

Three Kubiëna (K) samples for micromorphological analysis were taken at three separate locations within the building during the excavation (Figure 2). Two of these K1 and K2 were located centrally within the two floor deposits, (024) to the west and (027) to the east. While the two deposits are divided by a later drainage ditch, marked differences in their structure were noted during the excavation. This was tentatively ascribed to the wetter conditions within the lower-lying deposit (027). A third Kubiëna sample (K3), was taken through deposits (030 and 031), beneath the later stone enclosure wall (002), which were interpreted as a potential turf/soil embankment and underlying natural silt.

Results

Mineralogy of the deposits

The mineralogical profile of all the deposits is dominated by local quartz and feldspar, with a smaller proportion of dark minerals (biotite and hornblende), and small rock fragments, mainly granitic in origin, with perhaps a more varied larger rock fragment input in the wall construction deposit (030). However, the relative proportions of coarse minerals and especially rock fragments between the deposits are interesting. It is notable that the deposits interpreted in the field as being of 'natural' origin (031) and (054) show the finest mineral fraction that is largely dominated by silt and fine sand.

The coarse mineral profiles of the western floor deposit (024) and upper eastern floor deposit (027b) are strongly similar, showing a far coarser texture with more frequent rock fragments than the very different lower eastern deposit (027a). This implies the input of materials from similar locations, or similar soil/sediment contexts created both deposits. While this does not necessarily indicate contemporaneity between (024) and (027a), one interpretation is the deliberate addition of coarser materials in order to create a more hard-wearing, sandier and possibly more easily draining surface into the building than would have existed at its eastern end.

The turf constructed platform (030) is more mineralogically similar to the coarser floor deposits than to either of the siltier 'natural' deposits, or the richly peaty lower floor (027a). It may have derived from areas of peaty turf with a higher coarse sand content.

The floor surfaces: construction and use (024, 027a, 027b)

The two thin sections representing the two separate floor deposits (K1-024) and (K2-027) show a range of features which inform on their construction and use, and also indicate significant differences in the stratigraphy and potentially the use of the building at the east end versus the west end.

In the west, the section through deposit (024) was thicker than >750 mm and shows a very similar micromorphological profile to the upper portion of the east section (027) (Plates 7 and 8). While the two may not be contemporary, an earlier series of deposits existed in the eastern part of the floor. These comprised a denser, more organic sequence of finely laminated events (027a) which contrast dramatically with the sandier, less compacted, non-laminated deposits seen above at (027b) and to the west (024).



Plate 7: Thin section K1 shows a sample through floor deposit 024.

The lower, earlier eastern deposit (027a) separates into three distinct lenses. Immediately above the 'natural' deposit (054), the basal band of almost pure, dense, fibrous peat shows a distinct horizontal lamination (and some coarse sand presence), which may indicate trampling and preparation of this initial stage of floor activity, though no soil pedofeatures indicative of

this are present. Frequent carbonised material, including wood charcoal, indicates human influence. Some potential mixing and certainly extensive biological reworking of this material and the organic groundmass surrounding it, may be a factor in the high organic content of (054). Some deliberate addition of organic material to this deposit is also indicated.

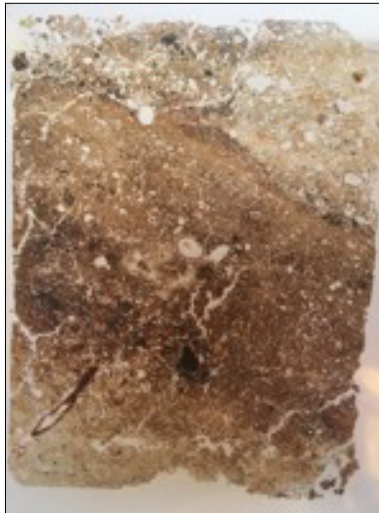


Plate 8: Thin section K2 shows (from base) natural deposit 054 and three laminated lenses making up floor sequence 027a (lower peaty, central sandy deposit, and upper clay-with-peat) and upper floor deposit 027b.

Above this peat lens, a slightly sandier, thicker deposit of more extensively reworked material is present. Faint lamination is seen throughout, indicating a more gradual build-up of material, likely through use, as well as the deliberate addition of materials to create a surface. However, soil pedofeatures indicative of trampling/compaction are rare to absent. The extensive plant residue content is more fragmented and degraded, and more varied in structure, with patches of differing colour groundmass and concentrations of phytoliths and diatoms. This indicates inputs from a wider range of source areas.

Above this, a thin upper lens of laminated fibrous peat, very similar to that seen at the base of the floor sequence, is present and associated with patches of clay concentration. This appears to come from a different source area to the lower peat lens. The peat shows a strong horizontal lamination, which may indicate the spreading and preparation of material, and fuel residue materials increase in concentration. It is possible that this distribution indicates more direct

human action at these upper and lower points of the sequence, and the deliberate preparation of surfaces of fibrous peat, possibly mixed with fuel residues, with a less intensively 'managed' phase of accumulation between these points. However, peat and/or wood ash are absent.

A drastic change in deposit structure is noted above this at (027b), and is paralleled at the western end of the building (024). Both of these deposits are very similar, comprising generally fine silty sand with frequent rock fragments within a densely reworked, very richly organic groundmass. It also contains frequent plant residues, including peat at a range of decompositional stages, frequent spores, large fungal sclerotia (an indicator of rotting wood), and phytoliths and diatoms. Patchy, variable groundmass in both indicates a likely range of source areas for these organic inputs, such as wetter, likely more diatom-rich peaty areas, drier, sandier turves and rooty subsoil. Compared to the densely peaty (027a) lenses, the sandier nature of both (024) and (027b) would have provided a more hard-wearing and likely more well-draining surface for activities within the building. The thinner surface profile at the centre of the building compared to the areas against the walls, interpreted as use-wearing (Kilpatrick 2014, 13) implies that a harder surface was required.

Differences between (024) and (027b) exist. Rock fragment mineralogy differs slightly, with (024) showing significantly more biotite-rich rock fragments, perhaps indicating different source areas for input materials. A second difference is represented by the most significant feature of the analysis. Several patches of lighter organic groundmass within (027b) contain calcitic spherulites – distinctive calcium carbonate features which are positive identifiers for the presence of herbivore dung. These are rarely noted in archaeological deposits, being easily lost from free-draining deposits, and are more likely to survive in sediment conditions at pH 7.5 or higher (Durand et al 2010, 172). The presence of these features is therefore significant, indicating a dung presence which may represent a far more extensive portion of the inputs into east floor deposit (027b) than indicated by these relatively few examples. Extensive assessment failed to find calcitic spherulites within the very similarly-structured west deposit (024), although it should

also be noted that it might be more likely for spherulites to survive in the drier conditions noted in the west end of the building than in the lower-lying east. These features may well indicate a genuine difference in input type, and a potential difference in use, with the east end of the building used as a byre. This fits with initial suggestions for the use of this lower-lying portion of the building.

Additional small differences between (027b) and (024) may be of significance, such as the slight increase in carbonised and heated materials in the western half, some of which also show a slightly banded distribution, which may represent individual ‘throws’ of material across a surface. They may indicate a more domestic series of activities, although no hearth was identified within the building, and no bone or other indicators for domestic or industrial activity were present in any of the thin sections.

The wall construction platform (030) and (031)

Two deposits of very different texture but showing a range of similar features make up this sequence: ‘natural’ deposit (031), and (030) above it. The latter was interpreted during excavation as a turf or soil platform for the construction of the enclosure wall (002). Thin section analysis indicates that this interpretation is a likely accurate representation of (030), and that it is possible that (031) may at least partly also represent a similarly augmented deposit and or subsoil material.



Plate 9: Thin section K3 shows (from base) natural deposit 031 and turf construction deposit 030.

Context (030) is similar to floor deposits (024) and (027), with a fairly coarse silty sand deposit featuring frequent rock fragments, with a richly organic groundmass containing frequent plant residues showing a range of structures and decompositional stages, spores and fungal sclerotia, and silica bodies. The groundmass is notably patchy, ranging in colour from light to dark, with concentrations of siltier, sandier and more clayey material indicating a range of source areas and organic residue types. This sample (030) shows a tendency to an overall darker, more reddish-brown groundmass than either of the floor deposits. The organic and paler (031), possibly indicates a relatively high input of purely organic peaty material. Discrete inclusions of extant and partially degraded peat fragments are also present, as well as accumulations of dark brown, discrete patches of organic-with-silt with a rounded, rolled appearance – interpreted as more degraded peat-rich inclusions. Some of these are associated with small char and carbonised fragments, and with notably large fungal sclerotia. However, intact deposits of fibrous peat such as those seen within floor deposit (027a) are absent, and this, coupled with the presence of larger rock fragments, makes it more likely that the materials sourced for this construction were nearer to turf sods, containing a mixture of organic and mineral materials, including intrusive pebbles and coarser grains. No structural evidence for the placement of turf sods was seen, and there was no preferential sorting of either minerals or organic fragments within the deposit.

Many of these organic features are also seen in (031) below, though within a deposit which is notably finer in texture and with a far paler, less variable groundmass colour. While it is likely that (031) represents a subsoil-type deposit, the high organic content and small carbonised fragments, indicates at least some incorporation of organic material into the deposit. It may be that extensive biological reworking has contributed to some mixing, but a clear boundary between the deposits is seen in thin section. It appears that (031) may have been augmented in some way with some of the range of organics seen in (030) above.

Multi-element Soil Analysis

By George McLeod

Soil/sediments and their properties reflect the environment in which they have been formed. The recovery of known anthropic sediments from archaeological contexts has the potential to provide archaeologists with vast amounts of culturally valuable material, whilst allowing them to understand complex site formation processes related to the endeavours of past anthropogenic processes and the wider palaeo-environment.

One hundred bulk soil samples were collected from two different contexts (024) and (027) within the building, along with nine bulk soil control samples from the areas immediately adjacent to, and within, the building. The contexts (024) and (027) were interpreted as an earthen floor which appeared to be homogeneous throughout its depth. (024) is at the western end of the building and (027), which was topographically lower, at the eastern end (Kilpatrick 2014). XRF was employed in this study to help to ascertain the function or functions of this building; if there had been human occupation and if this had been in combination with animal rearing and/ or crop production.

Areas that have seen past human occupation and settlement have increased intensity of certain elements within the soil. zinc (Zn) in association with lead (Pb) and tin (Sn) could be related to metal working in the area (Cook et al 2005). Previous site activity, such as soil augmentation for agriculture and disposal of organic waste, lead to elevated levels of phosphorus (P), barium (Ba) and manganese (Mn) while analysis of magnesium (Mg), calcium (Ca), strontium (Sr) and potassium (K) are indicators of sites used for settlements (Entwistle et al 1998). Areas with increased concentration of iron (Fe) and manganese (Mn) can be related to the application of pigments to dwellings or to areas used for butchery (Entwistle et al 1998; Wilson et al 2008; Parnell et al 2002).

Interpretation

The use of multi-element analysis allowed for direct comparisons to be made between the elemental concentrations of the samples taken from within the building and the control samples from the surrounding area. It also allowed a

comparison to be made between the contexts (024) and (027) of the building.

The analysis found that there were significant differences between the samples collected from the building and the control samples. The elements that displayed significant difference were Ba, Rb and Ca. When the Tukey test was run to test for difference between inside the building and outwith it (Control samples), it was found that only Ba and Rb demonstrated significant difference. Ba can be an indicator of accumulation of organic waste and Rb can be an indicator of settlement in the form of crofts (Wilson et al 2008).

Tukey testing also demonstrated that there was significant difference between the two contexts within the building (024) and (027) (Figure 2). The elements that showed significant difference in the two contexts were Ba, Rb and Ca. The highest concentration of Ba from either context was found in samples A4 and A5 from context F024 and the lowest from S4 and R5 (Figure 3). The highest concentration of Rb from either context was found in samples A5 and I5 from context (024) and the lowest was found in samples D3, J5 and S4. The highest concentration of Ca from the Trench samples came from D3 and C4 which are both within context (024) and the lowest concentrations were from samples Q6 and P2 which are also both from context (024) (Figure 2).

Conclusions

The use of XRF analysis demonstrates the benefit of using multi-elemental analyses over phosphate analysis. The information gained provides a fuller understanding of the sample contexts in relationship to several elements not just the phosphorus content. The results from this analysis demonstrated that there was no significant difference in the Phosphorus content between either end of the building and between the control samples and the trench samples. The elements which showed significant differences were barium, rubidium and calcium. These elements are all useful indicators of settlement and the deposition of organic waste. It would appear from this analysis that there was a higher concentration of these elements at the western end (024) of the building. However, these concentrations were still lower than the mean concentration for the control samples.

Discussion

The excavation at Kintore revealed the partial remains of a rectangular stone and turf-built building of medieval date. This is a rare survival in Scottish archaeology as so few structures of this date have been identified and excavated. This is predominantly due to the lack of identification of them in the landscape, the result of their construction using perishable materials such as clay and turf, and changes in land-use which have led to their destruction. The latter includes ploughing, forestry and construction, where the stone of these buildings has been systematically removed over time, or the buildings replaced with new structures, or adapted to different uses.

The survival of the Kintore building, despite being partially damaged and robbed, might be due to the marginal nature of the ground it sits on. The land is boggy in areas and contains a large amount of stone, both above and below ground, which would have hindered ploughing activities. The Statistical Accounts of Scotland of 1845 for Kintore Parish refers to stone strewn land as 'wasteland' and given over to forestry plantations where it is "better adapted for that purpose than for cultivation" (Simpson 1845, 662). The planting of the extensive Harthill Plantation to the east, suggests that this area was classed as such.

Similar medieval buildings to the Kintore structure that have been excavated have tended to be situated in more upland or low-lying areas with little or no development. These include the early medieval structures at Glenshee, Perth and Kinross located at 360-380 m OD (Strachan and Sneddon 2015), Pitcarmick, Perth and Kinross (Carver et al 2012) at over 300 m OD, while the undated Dowglen Hill platform settlement in Dumfries and Galloway (NMRS NY38NW43) lies at c.150 m OD. The Kintore building is situated on lower lying ground at only 87-94 m OD (Plate 10), while the medieval fermtoun at Norton on the outskirts of Edinburgh lies between 74-78 m OD (NMRS NT17SW 56). The rural settlement site at Springwood Park, Kelso in the Scottish Borders is located on a river terrace at c. 45 m OD. This latter site was only discovered after ploughing revealed medieval pottery scatters (Dixon 1998). The last three sites, although located on lower lying ground, have seen little or no development until recent times, as has the Scheduled medieval 'lost' village of Eldbottle in East Lothian

(Hindmarsh and Oram 2012) at 29 m OD, where a programme of excavation with limited test pitting was conducted in 2006.



Plate 10: The Kintore building in its wider landscape.

The dating the Kintore building was initially problematic to decipher. This was due to the wide range of radiocarbon dates obtained from features and deposits within its interior, from the second millennium BC to the second millennium AD, and the dearth of datable artefacts recovered. However, the building appears to have been abandoned post-fifteenth century AD, based on radiocarbon dating and fragments of a Scottish Medieval Redware jug found within it. The lack of evidence of any earlier structures or artefacts relating to the prehistoric dates indicates that their presence might be due to other factors, including the use of (older) peat as a fuel or building resource. Peat deposits are known to exist locally, therefore its use as a fuel and possible building material is not an unreasonable supposition.

The surviving walls of the building were constructed directly on the subsoil surface with no foundations, a common feature of medieval rural buildings. The doorway, however, was not identified at Kintore in either of the long walls because of their ruinous condition (Plate 10).

Stone is a readily available resource in the area and was probably collected from the surface or the subsoil. Turf would also have been easily dug from the surrounding landscape and the amount of evidence for turf found on the floor of the building suggests that it might also have been used as a roofing material. The use of turf as a building material had widespread use in Scotland with more recent examples including the Hebridean black houses (Walker and McGregor 1996, 99). The attained height of the walls at Kintore is unknown but excavation of the twelfth-

fourteenth century AD buildings at Springwood Park revealed stone walls, at c. 0.4 m in height, supporting clay (or turf) walls above. Several patches of clay were found internally near to the degraded north wall of the Kintore building. This might suggest that clay could have been used during construction of the upper parts of the walls, which have not survived. Alternatively, clay could daubed the internal face of the structure to make it wind and water tight. The few fragments of heather stems recovered from soil samples suggest that heather might also have been used as a building material, most probably on the roof.

The presence of shallow postholes besides the walls at the west end of the structure indicates the roof was supported by a timber cruck A-frame, a feature of pre-improvement buildings. Elsewhere, the frames may have been positioned in the wall, as demonstrated by the post-pad (Plate 4). Only trace amounts of oak and hazel charcoal were recovered from the postholes suggesting these species might have been used as part of the structural roofing elements, with turf forming the roof covering. At Springwood Park in Kelso (Dixon 1998) a wider range of building material was identified, including elm, alder, oak and ash wood. As well as Springwood Park, cruck frames were also present at Pitcarmick (Carver et al 2012) where they too were positioned in the walls. Other examples include the cruck barn at Priorlynn, Canonbie (NMRS NY37NE 122.02) and the cruck-framed cottage at Torthorwald, near Dumfries (NMRS NY07NW 30).

The overall shape and construction of the Kintore building is similar to other excavated examples, such as buildings C1 and E1 at Pitcarmick, Perth and Kinross (Carver et al 2012), where the remains of narrow, elongated turf and stone byre-houses with rounded ends were partially excavated (Figure 8). These buildings were also constructed of stone placed directly on the subsoil surface with additional turf layers. The Pitcarmick byre-houses were slightly longer at 18-22 m compared to 17 m, and wider at 8 m compared to 5.4 m than the Kintore building.

Radiocarbon dates from Pitcarmick revealed several phases of use commencing in the Pictish period (seventh-ninth centuries AD), then falling out of use prior to re-occupation in the medieval period (eleventh-twelfth centuries AD). Two early medieval radiocarbon dates (sixth-seventh centuries AD, see Table 2) were found in the disturbed eastern side of the Kintore building. According to Cook (2011, 211), few radiocarbon dates from settlements of this period have been discovered north of the River Forth and he suggests this might be due to settlement remains being located under existing farms and therefore not excavated. The presence of these dates at Kintore might suggest that occupation of the site commenced during the early Pictish period, and like at Pitcarmick, it fell out of use until being re-occupied during the medieval period. However, the lack of artefacts and securely dated features might suggest that these early results may be the result of the use of peat as a fuel.

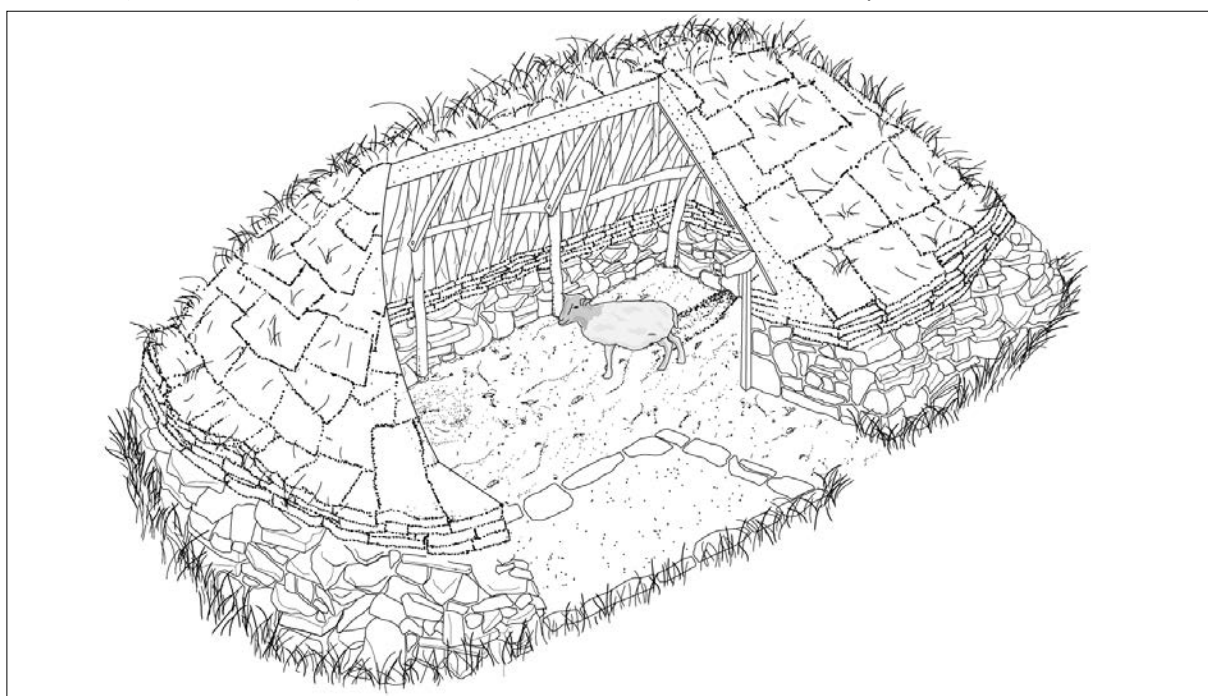


Figure 8: Suggested reconstruction of a byre-house.

The main difference between the Kintore structure and Pitcarmick buildings was the better preservation of the latter and especially of their internal arrangements. The latter structures were divided into two, with a living end containing a hearth, and byre end with a central drainage slot. This traditional division of byre/living end was a common feature of pre-improvement rural buildings in Scotland, but due to the limited survival of the Kintore building the internal arrangements did not survive. The absence of internal structures and finds, excepting the sherds of a pottery jug make its function difficult to interpret with certainty.

The soil micromorphology results, suggest that there were differences between floor deposits at either end of the building. The west end was associated with domestic activities and the east end was richer in herbivore dung, and therefore indicating the internal divisions in the building. In spite of the lack of a central drain, the east end of the building lay at a lower level than the west end, with the slope aiding drainage if animals were housed there. The lack of firm domestic evidence, apart from the thirteenth-fifteenth century jug fragments, may suggest that the building was also a byre-house, although this may only have been during its later stages of use.

Unlike other excavated sites where a wide variety of artefacts and eco-factual material was recovered to aid interpretation, Kintore provided very little evidence. The presence of herbivore dung suggests that animal husbandry was practiced but there was no evidence for crop production. The area of undated rig and furrow to the immediate south of the building might indicate the growing of crops that post-date the use of the building.

A further consideration is the isolated position of the Kintore building, as many of the other sites mentioned above are associated with other structures. During the topographic survey, no other remains were observed which might be associated with this structure. The date of the overlying enclosure is unknown, although is presumed to be post-medieval in date due to it being later than the building, which was abandoned during or after the fifteenth century AD. The presence of a tree stump in the building and the planting of the Harthill plantation in

the nineteenth century, would suggest that it is pre-nineteenth century in date and its large size would suggest that it might have been used as a post-improvement animal paddock.

Conclusion

The archaeological work at Kintore revealed evidence of a likely early medieval rural building identified as a possible byre-house through comparison with other similar structures. This is a rare structure in Scottish archaeology, built of stone, with a crook A-frame and turf, as so few of them have survived or been subject to archaeological investigation. The radiocarbon dates from the site most likely indicate the use of (old) turf or peat both in its construction and as a likely fuel source, and highlights issues of dating these structures. This recently excavated example, in spite of its poor condition and general lack of material cultural evidence, adds further insight into pre-Reformation settlement in Scotland and to the small body of work already produced on these buildings.

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The project archive has been deposited with National Monuments Record for Scotland and Aberdeenshire Council HER. Full specialist reports can be found in the site archive.

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