

**PRIMARY SCHOOL SITE
MIDMILL
KINTORE
ABERDEENSHIRE**



Archaeological Excavation

Carried out 4th December 2013

by

Murray Archaeological Services Ltd



Report No: MAS 2013-29 A

by

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1. Background

- 1.1 A Planning Application (APP/2013/1727) was granted permission for the erection of a new primary school and associated sports fields, parking, access and landscaping on a green field site at Carnie Road, Midmill, Kintore, Aberdeenshire.
- An archaeological condition was applied to this application in the context of Scottish Planning Policy (PAN 2/2011, SPP, SHEP).
- The condition required that no development should take place before the implementation of a 7-10% archaeological evaluation.
- 1.2 Murray Archaeological Services Ltd was commissioned by Aberdeenshire Council to undertake the work.
- 1.3 The evaluation was undertaken on 28th November to 3rd December 2013 and reported in December 2013.
- 1.4 A small area of prehistoric activity survived in one of the evaluation trenches (Illus 2: Trench 2) and required excavation. In view of the small scale of the intervention required, Aberdeenshire Council instructed MAS Ltd to undertake the field element of this work directly following the evaluation on December 4th 2013. The present report covers the results of the excavation and related post-excavation work.

2. The Site

2.1 The site lies within an almost closed loop of the Tuach Burn to the S of Kintore and E of the B994 road into the village.

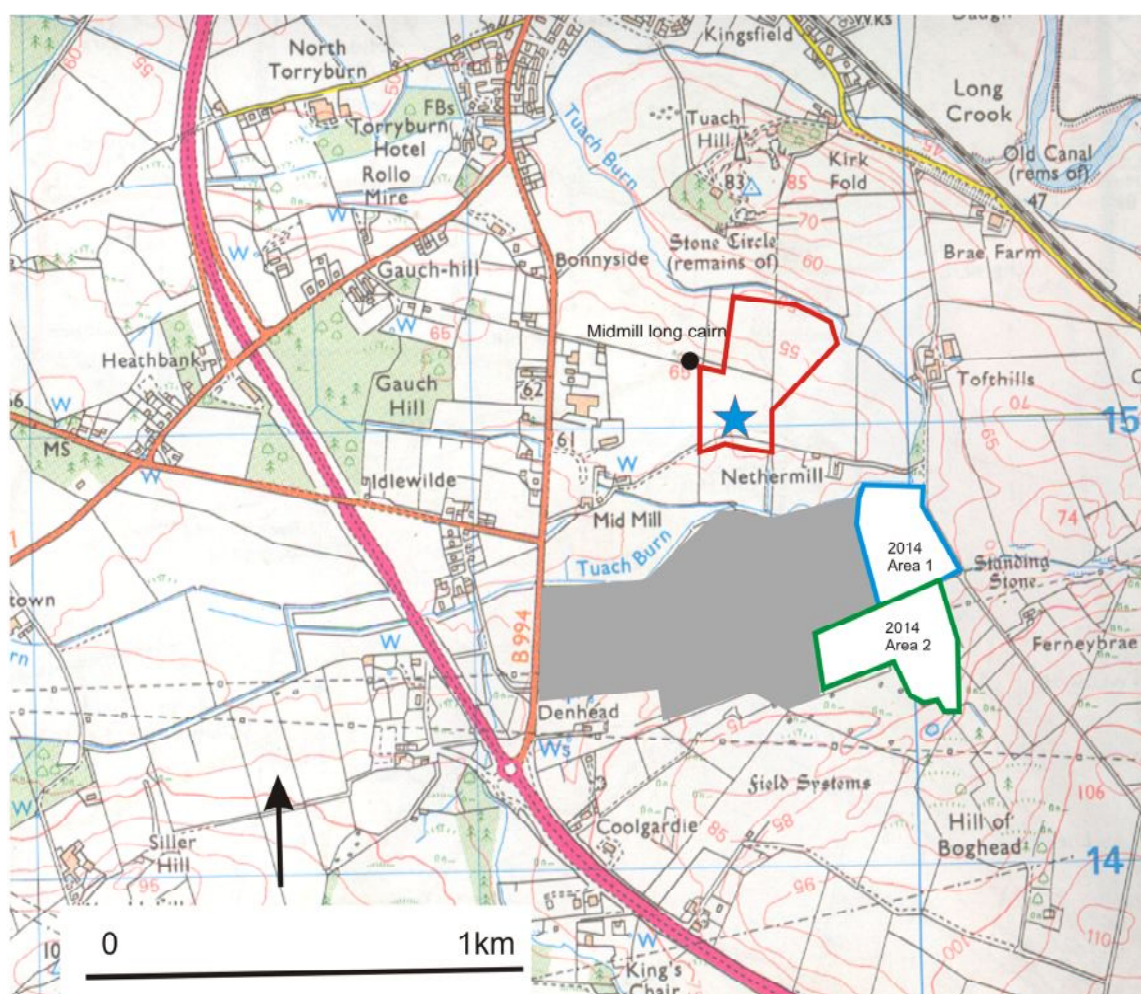
Parish: Kintore.

Map ref: The excavation was centred on: 379590, 815037.

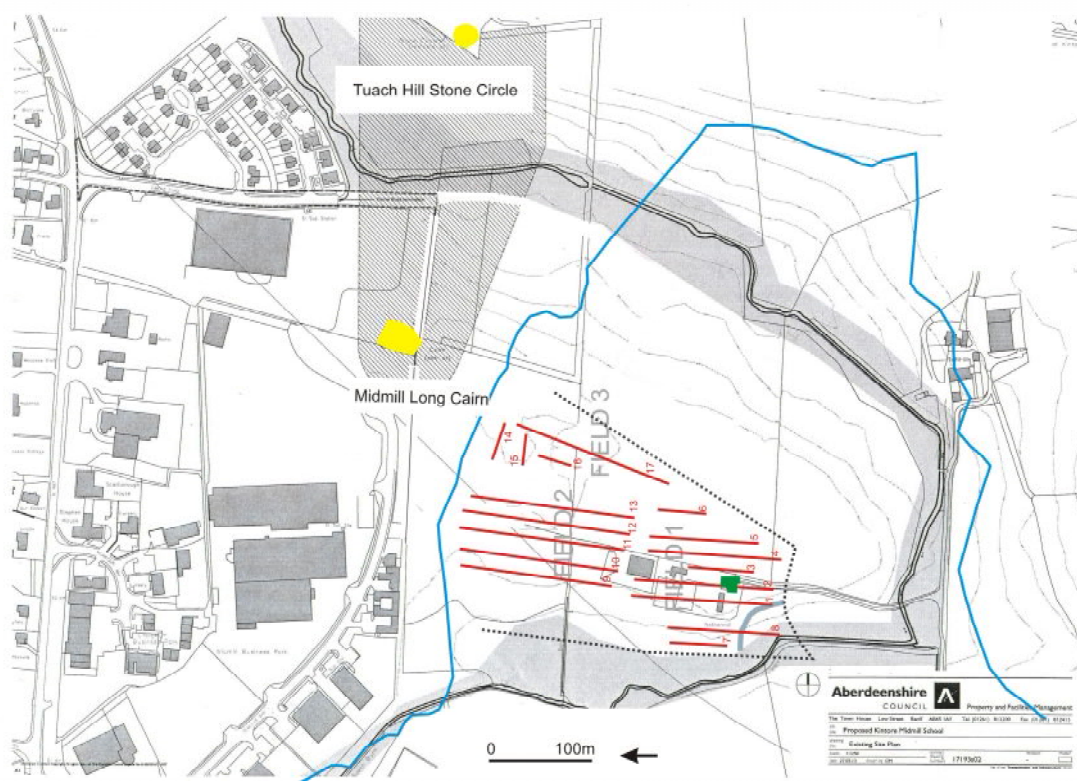
3 Methodology

3.1 The cultivated topsoil was removed by a full slew excavator with a 2m wide toothless ditching bucket. Any possible features were cleaned and excavated by hand.

3.2 All mapping was done with a Magellan Mobile Mapper 120 GPS and Glonass.



Illus 1 Location of site in relation to previous evaluations at Midmill. © Crown Copyright, All rights reserved. 2013. License No 100049810



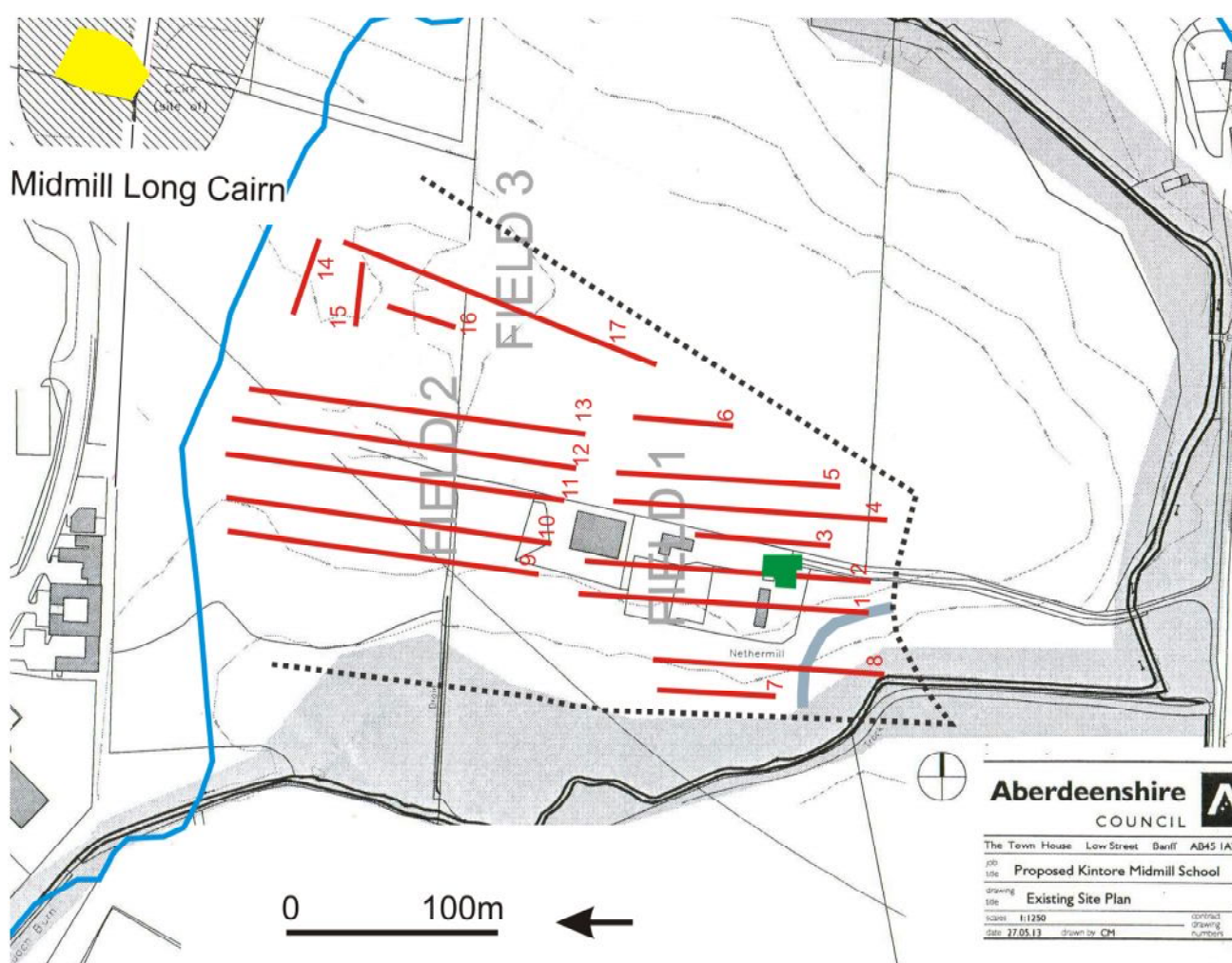
Illus 2 Location of the excavation (green) and evaluation (trenches in red) in relation to Midmill long cairn and Tuach Hill stone circle. Based on plan courtesy of Aberdeenshire Council. Survey based on Ordnance Survey digital map data, © Crown Copyright, All rights reserved. 2013. License No 0100031673



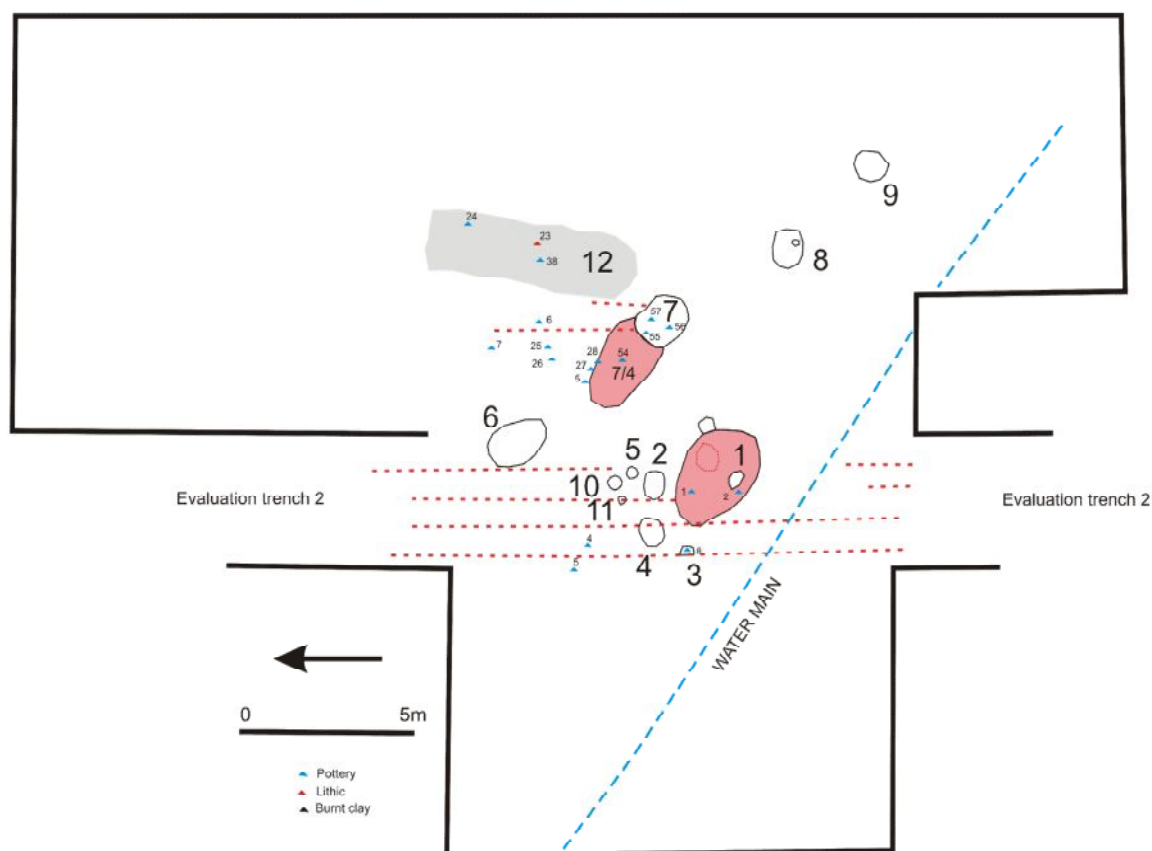
Illus 3 Features as first observed in evaluation trench 2

4 Results of the Excavation

During the evaluation, Evaluation Trench 2 had revealed a small number of prehistoric features (contexts 1-6) surviving in an area some 4 x 2m. No features or finds were recorded from either of the flanking evaluation trenches (Trenches 1 and 3). The features were only sealed by c.300mm of topsoil and had ploughmarks running across them. They had survived because all were fairly deeply cut into the natural. A water main trench had cut away the area to the S. However, the lack of any wider spread of small finds either in the vicinity of these features or elsewhere on the evaluation suggests that there was a low level of prehistoric activity outside this immediate area. Subsequently an area 12m N/S x 6-16m E/W was opened up, centered on the features in Trench 2.



Illus 4. Area of excavation (green). The evaluation trenches (red). Note palaeochannel (pale blue) at S end of trenches 1 & 8. Based on plan courtesy of Aberdeenshire Council. Survey based on Ordnance Survey digital map data, © Crown Copyright, All rights reserved. 2013. License No 1000410404



Illus 5 Plan of excavated area with plough marks (water main to S of blue line)

Two hearths, two pits and a number of small shallower features were found clustered within an area 5 x 4m and defined on the E by an arc of grey discolored sand c. 800mm wide and c. 60mm deep (12) associated with prehistoric material. Two smaller pits (8, 9) were 2-3m away to the SE.

Hearth 1 was 1.4 x 1.2m of deeply fire-reddened sand, coloured to c 50mm depth and baked to a hard crust. A stone lay on one edge. Some fragments of charcoal, burnt bone and hazelnut and two sherds of pottery lay on the surface. The second hearth (7/4) comprised a similar area of hard baked reddened sand c 1.1 x 0.75m and 50mm deep, also with charcoal and fragments of burnt bone. A pit 7, 700 x 730mm and 650-700mm deep, appeared to have been cut through the E edge of the hearth, or was possibly contemporary with it. The lower fill of the pit (7/3) was rich with charcoal and burnt clay fragments, burnt bone, grain and hazelnut (Sample 1: Timpany below), burnt flint and 1 sherd of pottery. The fill appeared to have been tipped or scraped from the W - the direction of the hearth. This fill was sealed by a layer of clean sand (7/2) also tipped in from the W. The burnt base of the hearth was sealed by the same layer (7/1) which filled the top of the

pit; a grey pink sandy soil with some charcoal and some burnt bone. Both pit and hearth may have been out of use, or in their final use, when 7/1 was deposited.



Illus 6 Hearth 7/4 (with section through it to LHS of N arrow) and pit 7



Illus 7 Pit 7 (hearth was to LHS)

The other main feature in this area was a second pit (6). It was 0.90 x 0.40-0.50m and 690mm deep with fairly vertical sides, except at the NW edge where it had been cut by a plough line. The main fill (6/2, 6/3) was charcoal rich with burnt stones, burnt bone, hazelnut, much burnt grain and burnt flints. Pottery in the fill included some large pieces that appeared to have been placed up the edge of the base of the pit. A flat stone and several vertical pieces of charred wood (oak) were also up the E side of the pit and may have formed a lining – or may have been the first fill thrown into the pit. The basal fill, especially on the E side (6/4) comprised a thin layer of burnt stones with sand.



Illus 8 Pit 6. W half excavated.

The smaller features (2-5, 10-11) were clustered between hearths 1 and 7/4 and pit 6. All were deeply plough truncated and, with the exception of context 4 which was 320 x 450mm and 130mm deep, they were less than 180mm diameter and 50-70mm deep. The fill of all these features was the same grey stained sand with occasional charcoal and small fragments of burnt bone. Pottery was only found in features 3 and 4.



Illus 9 Pit 6. E half excavated showing stone against side with vertical burnt timbers behind



Illus 10 Pit 6. Detail of burnt timbers against E side

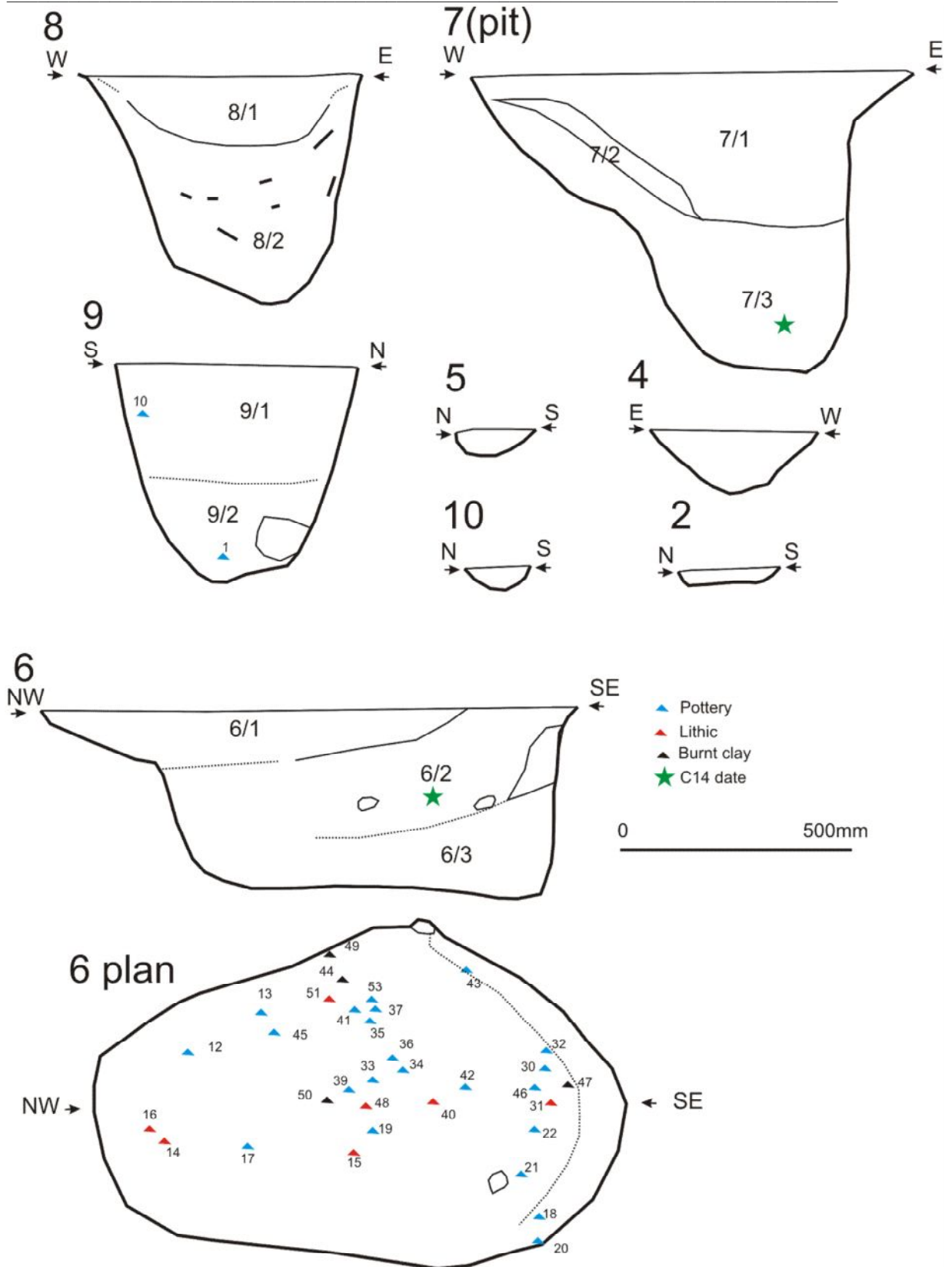
The two outlying pits, 8 and 9, were 600 x 500mm and 490mm deep and 540 x 380 and 460mm deep respectively. Both had nearly vertical sides and very charcoal-rich lower fills with grain and hazelnut identified in feature 9 (Sample 4: Timpany below). Several stones lay against the side of 9. A number of sherds of the same pot were through the fill of 9 but only 1 sherd of pottery was found in the upper fill of 8.



Illus 11 Pit 8



Illus 12 Pit 9



Illus 13 Sections of prehistoric features

5 Radiocarbon dates

Two radiocarbon samples were submitted for dating, one each from pits 6 and 7. (Contexts see Illus 13).

Sample 1 from Pit 7 context 7/3 (SUERC-51245) was charred grain of Emmer wheat and was dated to 3694-3523calBC (95.4%).

Sample 2 from Pit 6, context 6/2 (SUERC-51246) was charred grain of Emmer wheat and was dated to 3701-3527calBC (95.4%).

6 The Finds

Table 1 Small find numbers by context

Context	Pottery	Lithics	Burnt clay lumps
1/1	1,2,68		
3/1	8		
4/1	29		
6/1	12,13	14,16	
6/2	17,18,19,20,30,32,33,34,35,36,37	15,31	
6/3	21,22,39,41,42,43,45,46,53,62,63,64,65	40,48,51	44,47,49,66,50
7/1	27,28,54,55,56,57, 59		5,67
7/3	61	71	60,69,70,72
8/1	9		
9/1	10 (5sherds)		
9/2	11 (5 sherds)		
12/1	24,38	23	
Plough lines	3,4,6,7,25,26		

Table 2 Totals by context

Context	Pottery	Lithic	Burnt clay
1/1	3		
3/1	1		
4/1	1		
6/1	2	2	
6/2	11	2	
6/3	13	3	5
Totals pit 6	31	7	5

7/1	7		2
7/3	1	1	4
Totals pit 7	8	1	6
8/1	1		
9/1	1 (5 sherds)		
9/2	1 (5 sherds)		
12/1	2	1	
Plough lines	6		
Overall totals : 70	50	9	11

Note SF 58, 52 were not artefacts when examined.

6.1 **The lithic assemblage** *Torben Bjarke Ballin*

INTRODUCTION

A small flint assemblage (17 pieces) was recovered, mostly deriving from pits associated with hearths (15 pieces from Pit 6 and one from Pit 7), whereas one piece was retrieved from the fill of a small hollow (Context 12). Nine of the 15 pieces from Pit 6 are refitting parts of one disintegrated flint scraper. The purpose of the present report is to characterize the lithic artefacts in detail, with special reference to raw-materials and typo-technological attributes. From this characterization, it is sought to date and discuss the finds. The evaluation of the lithic material is based upon a detailed catalogue (see below) of the lithic finds from Kintore Primary School.

KEY DEFINITIONS

The definitions of the main lithic categories are as follows:

Chips: All flakes and indeterminate pieces the greatest dimension (GD) of which is $\leq 10\text{mm}$.

Flakes: All lithic artefacts with one identifiable ventral (positive or convex) surface, $\text{GD} > 10\text{mm}$ and $L < 2W$ (L = length; W = width).

Indeterminate pieces: Lithic artefacts which cannot be unequivocally identified as either flakes or cores.

Generally the problem of identification is due to irregular breaks, frost-shattering or fire-crazing.

Chunks are larger indeterminate pieces, and in, for example, the case of quartz, the problem of identification usually originates from a piece flaking along natural planes of weakness rather than flaking in the usual conchoidal way.

Blades and microblades: Flakes where $L \geq 2W$. In the case of blades $W > 8\text{mm}$, in the case of microblades $W \leq 8\text{ mm}$.

Cores: Artefacts with only dorsal (negative or concave) surfaces – if three or more flakes have been detached, the piece is a core, if fewer than three flakes have been detached, the piece is a split or flaked pebble.

Tools: Artefacts with secondary retouch (modification).

CATALOGUE

(Measurements are generally in millimetres; only exceptional pieces were measured with one decimal)

Pit 6, Fill 6/ 1

SF 14 Tip fragment of *leaf-shaped arrowhead* (23.7 x 18.3 x 2.2mm); fine-grained, light-grey flint. Invasive retouch covers both faces completely. Originally, SF 14 may have been a relatively large, slender point of Green's Type 1C/2C (Green 1980, 70-71). Broken across by blow to the centre of one face. The outermost tip has also broken off, but it appears to have been repaired by adding an oblique truncation. Possibly used secondarily as a knife?

SF 16 Tertiary *soft-hammer flake* (12 x 7 x 1mm); fine-grained, light-grey flint. The use of soft percussion suggests that this 'flake' may technically be a failed microblade.

Pit 6, Fill 6/2

SF 15 Distal fragment of *scale-flaked knife*, based on tertiary macroblade (23.1 x 12.0 x 2.6mm); fine-grained, discoloured (white) flint. A neat cutting-edge was formed along the entire left lateral side by semi-invasive retouch (c. 4mm deep). Heavily crazed and all-over vitrified. Right lateral side and parts of the dorsal face broken off due to exposure to fire.

SF 31 Fragmented tertiary *rough-out for leaf-shaped arrowhead* (37.7 x 24.7 x 4.7mm); fine-grained, light-grey flint. Invasive retouch covers both faces completely. One corner of the tip has broken off. Clearly defined as rough-out, as the spurs between the main detachments are (almost) all intact. Compare with finished piece SF 14, where the spurs were removed by fine trimming.

Pit 6, Fill 6/3

-
- SF 40 Right lateral fragment of tertiary *hard-hammer flake* (37 x 22 x 7mm); fine-grained, discoloured (white) flint. Crazed and pitted. The entire left lateral side has broken off due to exposure to fire.
- SF 48a Tertiary *chip* (≤ 10 mm); fine-grained, light-grey flint. Probably part of refit sequence 48i, h, g, d, e, f (disintegrated due to exposure to fire).
- SF 48b Tertiary *chip* (≤ 10 mm); fine-grained, light-grey flint. Probably part of refit sequence 48i, h, g, d, e, f (disintegrated due to exposure to fire).
- SF 48c Tertiary *chip* (≤ 10 mm); fine-grained, light-grey flint. Probably part of refit sequence 48i, h, g, d, e, f (disintegrated due to exposure to fire).
- SF 48d Tertiary indeterminate *piece with edge-retouch* (11 x 9 x 2mm); fine-grained, light-grey flint. The retouched area of SF 48d fits on top of the retouched area of SF 48e – probably a scraper fragment. Confirmed refit sequence 48i, h, g, d, e, f (disintegrated due to exposure to fire).
- SF 48e Secondary indeterminate *flake with edge-retouch* (23 x 21 x 3mm); fine-grained, light-grey flint. Inverse blunting of the left lateral side. Straight to slightly convex, steep scraper-edge at the distal end. Confirmed refit sequence 48i, h, g, d, e, f (disintegrated due to exposure to fire).
- SF 48f Tertiary indeterminate *flake with edge-retouch* (16 x 17 x 2mm); fine-grained, light-grey flint. Inverse blunting of the left lateral side. Confirmed refit sequence 48i, h, g, d, e, f (disintegrated due to exposure to fire).
- SF 48g Secondary *indeterminate piece* (19 x 12 x 6mm); fine-grained, light-grey flint. Confirmed refit sequence 48i, h, g, d, e, f (disintegrated due to exposure to fire).
- SF 48h Secondary *indeterminate piece* (18 x 13 x 5mm); fine-grained, light-grey flint. Confirmed refit sequence 48i, h, g, d, e, f (disintegrated due to exposure to fire).
- SF 48i Secondary *indeterminate piece* (18 x 21 x 4mm); fine-grained, light-grey flint. Confirmed refit sequence 48i, h, g, d, e, f (disintegrated due to exposure to fire).
- SF 51 Secondary *hard-hammer flake* (22 x 19 x 4mm); fine-grained, light-grey flint. The cortex is abraded and smooth, identifying the piece as having been struck from a pebble-based core.

Pit 7, Fill 7/3

- SF 71 Proximal fragment of secondary *bipolar flake* (23 x 15 x 4mm); fine-grained, discoloured (pink) flint. Crazed and pitted due to exposure to fire. The cortex is abraded and smooth,

identifying the piece as having been struck from a pebble-based core. Very fine chipping along left lateral side indicates that the piece was used prior to deposition.

Context 12 (hollow), Fill 12/1

SF 23 Tertiary *chip* ($\leq 10\text{mm}$); fine-grained, red flint.

SUMMARY AND DISCUSSION OF LITHICS

As shown in the report's catalogue, the assemblage includes 17 pieces of worked flint, but after refitting of the constituent parts (nine pieces) of a disintegrated scraper, the numerical size of the assemblage shrunk to only nine pieces (Table 3). Seven lithic artefacts were recovered from Pit 6, whereas one was found in Pit 7 and one in Context 12 (a small hollow). The sub-assemblage from Pit 6 includes three unmodified flakes (one burnt), one leaf-shaped arrowhead (SF 14), one rough-out for a leaf-shaped arrowhead, one scale-flaked knife (burnt), and one disintegrated short end-scraper (burnt), whereas Pit 7 yielded one flake (burnt) and Context 12 one simple chip.

Table 3. General artefact list.

	<i>Pit 6</i>	<i>Pit 7</i>	<i>Context 12</i>	<i>Total</i>
Chips			1	1
Flakes	3	1		4
Leaf-shaped arrowheads	1			1
Leaf-shaped arrowheads, rough-outs	1			1
Scale-flaked knife	1			1
Short end-scrappers	1			1
TOTAL	7	1	1	9

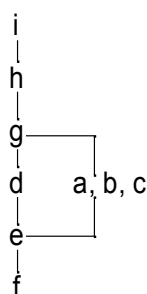
The debitage includes one chip and four flakes. The latter were technologically identifiable as one soft-hammer flake, two hard-hammer flakes and one bipolar flake.

Leaf-shaped arrowhead SF 14 (23.7 x 18.3 x 2.2mm) is the tip fragment of a well-executed, relatively large and slender (Green's Type 1C or 2C; Green 1980, 70-71), but due to its fragmentation, it was not possible to determine whether it was originally a round-based or double-pointed specimen, or whether it might have been kite-shaped. The outermost part of its tip has broken off, and oblique truncation of this fracture suggests that the piece may have been used secondarily as an *ad hoc* knife.

SF 31 (37.7 x 24.7 x 4.7mm) is a fragmented rough-out for a probably round-based leaf-shaped point. Its status as a preform is defined by the fact that its edges have not been evened out

by removing and trimming the spurs between the individual flake removals (this form of trimming is clearly demonstrated by completed arrowhead SF 14). SF 15 (23.1 x 12.0 x 2.6mm) is the distal fragment of a blade-based scale-flaked knife. It has full semi-invasive retouch along its left lateral side, and it is heavily burnt/vitrified.

It was possible to conjoin nine pieces of burnt flint (SF 48) to form one short end-scraper. This implement was based on an indeterminate flake (the proximal end is missing) from a pebble, and it has a straight to slightly convex working-edge at its distal end. Its left lateral side had been blunted by inverse retouch, probably to protect the user's fingers. Illus 14 shows a 'refit matrix' of how the individual pieces were conjoined.



Illus 14 Matrix of the refitted scraper SF 48, including pieces SF 48a-i. The outermost piece is at the top of the diagram and the innermost piece at the bottom. The individual pieces are characterized in the catalogue above.

Most of the flint is light-grey, and only the small chip (SF 23) from Context 12 is red. The fact that flint from Aberdeenshire is frequently red or honey-coloured suggested that the site's flint could be exotic (for example imported into the region from primary deposits in north-east England; Ballin 2011). However, one flake (SF 51) and one scraper (SF 48) from Pit 6 have abraded pebble cortex, as has the flake (SF 71) from Pit 7, indicating that the site's flint may have been procured from local shore deposits. The curvature of the cortical surfaces also suggests a relatively small pebble size, which again supports the notion of local procurement. Although some Yorkshire flint was occasionally procured from secondary deposits, the English flint was usually traded in the form of fairly large pieces (ibid.).

Several pieces show signs of having been exposed to fire. Flakes SF 40 and 71 (from Pits 6 and 7, respectively) display discolouration, crazing and pitting; although end-scraper SF 48 (Pit 6) is neither discoloured nor crazed, the total disintegration of this piece is most likely a result of exposure to fire; and scale-flaked knife SF 15 (Pit 6) is not only discoloured, crazed and pitted, but vitrified. Vitrification, or superficial melting, of the flint is most commonly experienced in

connection with cremation burials, where lithic artefacts followed the deceased onto the pyre (eg, Skilmafilly cremation cemetery, Aberdeenshire; Ballin 2012), but it cannot be ruled out that lithic artefacts might also become vitrified in connection with other processes requiring exceptionally high temperatures, such as the deliberate destruction of wealth by fire (cf. Larsson 2011).

As several of the artefacts are burnt, and some severely so (eg, SF 15), it is thought that the lithics may have been deliberately exposed to fire and subsequently ritually deposited (as part of a funereal or non-funereal ceremony) with other groups of artefacts, such as pottery. This suggestion is supported by the fact that the collection includes a high proportion of tools, and that several of these are high-status pieces based on the investment of above-average amounts of time and effort, such as leaf-shaped arrowheads (completed and roughed-out), as well as a blade-based scale-flaked knife.

The lithic assemblage includes a number of diagnostic elements, such as leaf-shaped arrowheads. Leaf-shaped arrowheads are generally associated with the Early Neolithic period (Green 1980; Butler 2005; Saville 2006), and the fact that the blade-blank of the scale-flaked knife is relatively broad (12mm) indicates a date in the second half of the period. Blade-based scale-flaked knives are encountered throughout the Neolithic period (cf. Manby 1974, 80-89), although not in the very earliest phases, where the blades tend to be quite narrow (cf. Garthdee Road, Aberdeen – the radiocarbon dates from this site indicates settlement during the first half of the Early Neolithic period [SUERC 8607-09, 8613, 8616-17]; Ballin forthcoming; Murray forthcoming).

6.2 The Pottery

INTRODUCTION

The pottery has been catalogued by context (Appendix 3). Vessels were identified where a rim was present or where there were other individual identifying factors such as fingertip fluting. Miscellaneous, often small and abraded, bodysherds which could not be assigned to a specific vessel have been catalogued but not given vessel numbers.

Where a vessel could be identified in different features it has been given a vessel number for each feature and cross-referenced.

FABRICS

Three main fabrics were apparent:

- *Vessels 1, 5, 6 and 8*

A micaceous coarse sandy mid brown/grey fabric with abundant quartz inclusions. The body thickness was between 8 and 14mm. The vessels were large/very large with indication of a rounded base in one basal wall sherd. Vessels 1 and 5 had thick plain upright rims, vessel 6, only represented by a single rimsherd, appeared to have a more rolled rim. The rim diameters could not be estimated from the available sherds. One sherd of vessel 5 showed some surface smoothing and possible fingertip fluting.

- *Vessel 2*

Vessel 2 was only represented by a single bodysherd with a vessel thickness of 11mm. It was a micaceous fine sandy fabric with occasional small quartz grits. The core was brown with grey surfaces. It was externally smoothed with pronounced fingertip fluting.

- *Vessel 4=7=9 & Vessel 3*

Two vessels were of fine to very fine micaceous dark brown/grey sandy fabric. Sherds were small but they appeared to be from medium to small vessels.

Vessel 4=7=9 had a wall thickness of 4-6mm and was burnished internally and externally. The rim was slightly everted.

Vessel 3 was similar, with a wall thickness of 6mm but had a plain upright rim and distinct finger marks on the inside of one sherd.

CONTEXT

A total of seven to nine vessels were therefore identified. Some vessels were identified in several different features/contexts.

Vessel 1 was in Pit 6, contexts 6/2 and 6/3. This reinforces the impression during excavation that these contexts merged into one another. Context 6/2 was radiocarbon dated (SUERC-51246) to 3701-3527calBC (95.4%).

Vessel 5 was in Pit 9 contexts 9/1 and 9/2 and in Pit 7 context 7/1.

Vessel 4=7=9 was found in Pit 6, context 6/1, Pit 7 context 7/1 and in a plough line dragged from Pit 7.

DISCUSSION

All the pottery found lies within the tradition described by MacSween (2008, 175) as Neolithic round-based pottery. The lack of complete profiles makes identification of the vessel form

difficult but the fine vessels *Vessel 4=7=9* & *Vessel 3* would comfortably fit with finer walled vessels found at Forest Road, Kintore, for example V402 found with thicker-walled vessels such as V290 in pit P25 radiocarbon dated to 3780-3630 cal BC (MacSween 2008, 174-5, fig 139, 141). The relatively large coarse fabric vessels (Vessels 1, 5, 6 and 8) from the present site can also be paralleled by V10 from ST14 at Forrest Road, radiocarbon dated to 3800-3500 cal BC or V237 from possible building ST07 (MacSween 2008, 178, fig 141). Fingertip fluting, seen most clearly on Vessel 2 from the present site, is also a feature of this period (MacSween, 2008, 178, V125, fig 140).

The range of the two radiocarbon dates, 3700-3500 cal BC, from the present site correspond well with the dates for this comparative material within the first part of the Early Neolithic B, defined at Forest Road as 3800-3100BC (Cook and Dunbar, 2008). They also correspond to the development of regionalisation dated by Sheridan (1997, 219-220; MacSween, 2008, 181) to c 4000-3500 cal BC.

The thicker coarser vessels from the present site also appear similar in fabric and shape to some plain wares found alongside typical decorated Impressed Wares from the nearby site at Midmill, which were identified by Lochrie (2013, 32) as of the Impressed Ware tradition. The lack of decorated Impressed Ware from the present site however suggests they were not contemporary. The Midmill sites with this pottery were domestic sites (Murray & Murray 2013: Areas 2 and 3) but lacked suitable material for radiocarbon dating – Lochrie dated the pottery to 3500-2900BC on the basis of dated Impressed Wares from elsewhere. As Impressed Ware in northeastern Scotland is considered to have evolved from the earlier Neolithic (Sheridan, 1997, 221) it is possible that the Kintore primary school site may represent a stage in this transition.

6.3 Burnt clay/daub

Lumps of burnt clay were found in three contexts, in pit 6 context 6/3 (SF 44, 47, 49, 50, 66), Pit 7 contexts 7/1 (SF 5, 67) and 7/3 (SF 60, 69, 70, 72). The burnt clay lumps had been fired hard. All showed traces of some form of vegetable temper. There were also surface impressions, the clearest being a sharp impression of split/plank wood on SF 47 from pit 6; pit 6 also contained burnt pieces of oak plank wood in the primary fill.

The pieces were not large enough to reconstruct but it does appear likely that they derive from a structure, possibly the cover of an oven or kiln of some sort.

7 Palaeoenvironmental Assessment of Bulk Samples *S. Timpany*

INTRODUCTION

During the course of the excavation bulk soil samples were taken from features in order to retrieve palaeoenvironmental and archaeological materials. Environmental remains recovered from the samples at Kintore may shed more light on the function of these features, providing dating evidence and tell us more about the activities, economy and diet of the peoples who inhabited this site compared to that of the nearby site at Midmill.

This report presents the results of the bulk sample assessment of samples taken from pit features [contexts 6, 7 and 9]; two of which [6 and 7] were located next to hearth features, together with the identification of a burnt timber sample (sample 3) from Pit 6. A total of three bulk samples were taken from the site and all were processed for assessment. The aims of the assessment were to:

- Assess the presence, preservation and abundance of any palaeoenvironmental materials within the samples.
- Assess the potential of the material to inform on activities associated with the pit features, together with economy, wood fuels, arable farming, cultivation methods and diet.
- Assess whether there is any suitable charred plant remains available from Pits 6 and 7 to provide radiocarbon dating materials.
- Identify the wood species of the burnt timber.

Tables 4-6 are in Appendix 4.

METHODOLOGY

Bulk Sample Processing

Samples were processed in laboratory conditions using a standard floatation method (*cf* Kenward *et al*, 1980). All plant macrofossil samples were analysed using a stereo-microscope at magnifications of x10 and up to x100 where necessary to aid identification. Identifications were confirmed using modern reference material and seed atlases including Cappers *et al* (2006).

Charcoal Identification

A charcoal identification was undertaken for Sample 3, in order to confirm the observation by eye that the wood was oak (*Quercus* sp.) and on two roundwood non-oak fragments in Sample 2. For identification the charcoal sample was fragmented along the radial, tangential and transverse sections using a razor blade and then mounted on a slide and examined under a microscope at x100 and x400 when required. Wood sections were identified using features described by Schweingruber (1978, 1990). Ring curvature was measured using the keys by Marguerie and Hunout (2007) and Ludemann and Nelle (2002) to denote timber size.

RESULTS

The results of the sample processing are provided in Tables 4 (Retent finds) and 5 (Floatation finds). Suitable material for Accelerator Mass Spectrometry (AMS) radiocarbon dating is also identified within each table, with an overview of all materials suitable in Table 6. All plant remains were preserved through charring.

Charred Plant Remains (CPR)

Charred cereal grain is present in all of the processed samples (1, 2 and 4), with a large quantity of grain contained within Sample 2 (Tables 4 and 5). The overall assemblage appears to contain a fairly equal representation of naked barley (*Hordeum vulgare var nudum*) and emmer wheat (*Triticum dicoccum*); with only Sample 3 observed to contain slightly more emmer wheat than naked barley. Sample 4 was also found to contain a small quantity of rachis fragments and represents the only form of cereal chaff recovered from the samples (Table 5). Preservation of the grain was good to poor with breakage being the most common form of poor preservation in all samples. Sample 1 also had evidence of grain having prolonged exposure to heat, giving some grains an almost cinder-like appearance. The poor preservation of some grain meant that they could not be confidently identified to species level and have been given a probable prefix (cf.), these being probable naked barley (cf. *Hordeum vulgare var nudum*) and probable emmer wheat (cf. *Triticum dicoccum*). Where grain preservation was too poor to identify beyond being grain they have been labelled indeterminate cereal grain (*Cerealia* indet.).

Together with the charred cereal grain, CPR of wild taxa was also recorded, all of which appear to be arable weed species (Table 5). A small range of taxa were observed in the overall assemblage consisting of: mustards (*Brassica/Sinapis* sp.), docks (*Rumex* sp.), brome (*Bromus* sp.) and possible brome (cf. *Bromus* sp.), together with possible chickweed (cf. *Stellaria* sp.).

Small quantities of charred fragments of hazel (*Corylus avellana*) nutshell were present in samples 1, 2 and 4 (Table 4), with the greatest volume recovered from Sample 2 (1.02g).

Wood charcoal fragments were present in abundant quantities in Samples 1, 2 and 4 with maximum fragment size ranging from 1.0 to 2.8cm (Tables 4 and 5). Wood charcoal fragments of suitable size and condition for identification/dating purposes have been recovered from all samples. The majority of charcoal fragments within the samples were <0.5cm in size and this is reflected in the small quantity of charcoal fragments available for identification/dating in comparison to the quantity of charcoal present. Visual inspection of charcoal fragments suggests the assemblage consists of predominantly oak charcoal in all samples, including that of charred timber sample 3. The only non-oak charcoal retrieved was within Sample 2 in the form of large roundwood fragments (up to 2.0cm). Two of these fragments were identified as being hazel wood of small and medium-sized timbers, such as branch wood. The oak charcoal from Sample 3 was identified as being from large sized timber, such as trunk wood.

OTHER FINDS

Prehistoric pottery sherds were recovered from two samples (1 and 2), from fills of pits [7 and 6]. The same two samples also contained burnt bone fragments with the more sizeable fragments retrieved from Sample 1, which had a maximum size of 1.6cm and therefore may be identifiable to at least mammal size. A small quantity of cinder was also found within Sample 2.

DISCUSSION

The samples are discussed below by the main themes coming out of the assessment results.

Cultivation and wild food resources

Significant quantities of charred cereal grains were recovered from each of the three pits [6, 7 and 9] sampled, with Pit [6] in particular containing a very rich assemblage of grain. Assessment results (Tables 4 and 5) indicate that emmer wheat and naked barley were the main cereals being cultivated. Both of these cereals are associated with Neolithic agriculture in Scotland (Bishop *et al*, 2009) and have been recovered from sites such as Crathes, Aberdeenshire (Murray *et al*, 2009), Durris, Aberdeenshire (Russel-White, 1995) and Kinbeachie, Highland (Barclay *et al*, 2001). The large quantity of grain recovered from the pit fills is the opposite to previous excavation results at the nearby site of Midmill where only a small quantity of naked barley grains were recovered from a group of pits (Timpany and Masson, 2009), which dated to the Early Neolithic period (Murray and Murray 2013). The recovery of rachis fragments from Pit [9]

(Sample 4) indicates that small-scale crop processing was also taking place. The small quantities of arable weed seeds present are likely to represent a mix of unwanted materials removed during processing, together with some that slipped through to possible grain drying and/or consumption stages (Hillman, 1981; Jones, 1984).

The recovery of hundreds of charred grains from Pit [6] (Sample 2) suggests there may have been some form of grain drying accident leading to the disposal of a large amount of grain into the pit. Such events have previously been recorded during the Neolithic in Scotland, such as at Wyre, Orkney where large numbers of charred grains, principally of naked barley were recovered together with the remains of a possible supra-structure used for drying from a potential granary associated with Neolithic building [03] (Lee and Thomas, 2012). However, a great number of charred grains, largely of emmer wheat were also recovered from excavations at Balbridie, Grampian (Fairweather and Ralston, 1993) suggesting that such large quantities of grain can also be retrieved from domestic deposits. The potential for an earthen structure to be present at Midmill was put forward by Murray and Murray (2013) based on the evidence for domestic activity, similarly at Kintore Primary School the large quantity of grain together with processing evidence would suggest that some form of settlement was probably situated near to the site.

Together with the cultivated grain recovered from the pit features, small quantities of hazel nutshell fragments were also retrieved, presenting evidence for the collection of wild foodstuffs alongside the domestic. The quantities of nutshell fragments recovered, with a maximum weight of 1.02g (Pit 6, Sample 2) were much smaller than those recorded in the pits from Midmill where a maximum weight of 27.1g was found within Pit [76] (Timpany and Masson, 2009).

Comparison of the two pit groups seems to suggest a heavier reliance on wild foodstuffs at Midmill in comparison to those from Kintore Primary School where cultivated foodstuffs were dominant.

Fuel use and structural evidence

The main taxon identified from the charcoal fragments, across all samples was oak, indicating this to be the main tree type utilized for fuel wood. Sample 2 from the fill of Pit [6] was the only sample to contain non-oak charcoal, which were present as roundwood fragments of up to 2.0cm in size. Burnt timbers of oak present within the same pit feature (Sample 3) are suggested to have been used to deliberately line the pit, abutting which was placed an upright stone slab, prior to

the fill deposits (Murray pers comm.). It is suggested that the non-oak roundwoods may also have formed part of some possible wattle structure/platform associated with grain drying, the remains of which were put into the pit. Identification of two of the non-oak fragments shows they represent small to medium-sized branch wood of hazel. The oak charcoal from Sample 3 was identified as large-sized trunk wood. Pollen studies from across Aberdeenshire (Tipping, 2007) have demonstrated that both oak and hazel would have been present in wooded areas across this landscape during the Neolithic and therefore easily resourced for fuel wood and construction materials.

Domestic waste

The overall assemblages from the three pit features suggest that their contents are mainly domestic waste; although there is some suggestion that objects, such as burnt timbers and pot sherds were deliberately placed into Pit 6 with some care (Murray pers comm.). The presence of a mixture of charred grain, charred nutshell, charcoal, burnt animal bone and pottery sherds within Pits 6 and 7, located near to hearth features all point to the disposal of domestic waste. Pit 9 which was not located near a hearth is slightly different in that it didn't contain any burnt animal bone, suggesting the bone may be associated more with the hearth activities. No pottery sherds were recovered from Sample 4 taken from this pit, but a large number of sherds (probably of the same pot) were removed during excavation (Murray pers comm.). The presence of rachis fragments within only this pit provides evidence of small-scale cereal processing waste and thus it may be that the waste from Pit 9 is more associated with the preparation of foods, than those of Pits 6 and 7.

CONCLUSION

- The sample assessment has shown that the main cultivars from the site were emmer wheat and naked barley with Pit 6 in particular containing a large volume of charred grain.
- Small quantities of rachis fragments recovered from Pit 9 suggest some small-scale processing also took place.
- The charred grain assemblage from the site is consistent with a Neolithic date.
- The presence of a small quantity of charred hazel nutshell indicates wild foodstuffs were also collected and consumed alongside cultivated plants.

-
- Charcoal fragments recovered and identified indicate a limited range of wood types with only oak and hazel present. The hazel roundwoods within Pit 6 may represent the remains of some form of structure/platform associated with drying cereal grain.
 - Burnt bone fragments are present within both pits 6 and 7 associated with hearths suggesting the cooking of meats.
 - There is suitable material present in each sample for AMS radiocarbon dating in order to provide a chronology for the site.

STATEMENT OF POTENTIAL

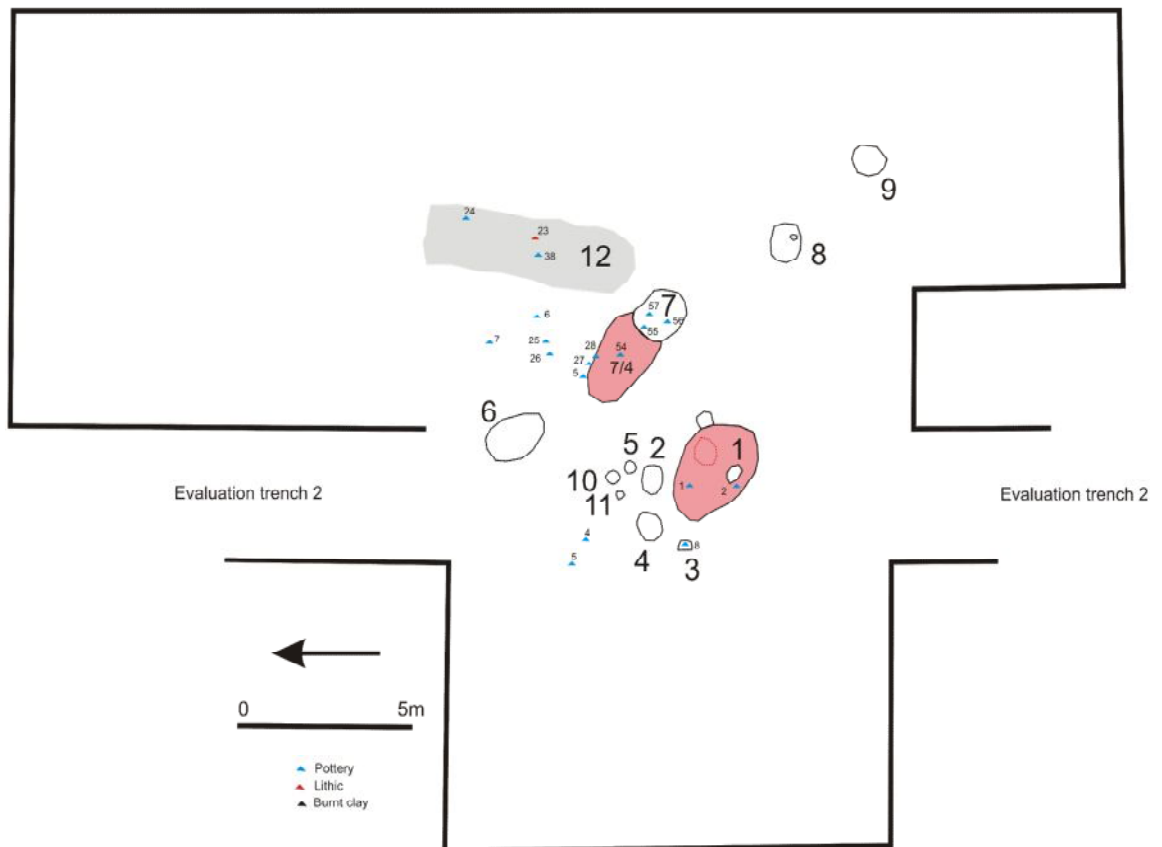
The large quantity of charred cereal grains recovered from the site, together with arable weed taxa and rachis fragments indicates there is potential to inform further on the associated cultivation activity, such as growing conditions, harvesting techniques and processing methods, which would also provide a valuable compendium for other Scottish Neolithic sites. The need for greater understanding of cultivation practices during the Neolithic in Scotland has been put forward as a key research question for future work by the Neolithic ScARF panel (ScARF 2012a). The assemblage from Kintore Primary School could add valuable information to this and to the importance of Neolithic pit assemblages and arable weed seed information, together with the distribution of agriculture in the Neolithic as highlighted by the Science ScARF panel (ScARF 2012b).

8 Discussion

The small group of features excavated on the site may perhaps be the remnant of a small building at least 4-5m across, with the arc of discoloured sand (12) possibly indicating the edge of a round/oval structure. The outlying pits/post-pits 8 and 9 may have been a part of it, or may have been just outside it; the only difference in fills was the lack of burnt bone and the presence of grain processing waste noted in the environmental sample from feature 9. The pottery links between 9/1, 9/2 and 7/1 indicate that they were contemporary. It is possible the structure, if such it was, may have extended further S and W but this side of the site had been totally destroyed by

the insertion of a water mains trench some years ago. The site was badly plough truncated with a scant 300mm of ploughsoil over the top of the hearths. There was no evidence of a wider spread of artefacts around the perimeter of the features but this may be indicative of the short survival of prehistoric pottery in active plough soil. The rather low numbers of lithics within the pits also suggest a lithic scatter might not be presumed.

The two radiocarbon dates show that pits 6 and 7 appear to be closely contemporary and in use c 3700-3500 cal BC which is within the range Cook and Dunbar (2008, 51) describe as Early Neolithic B (ENB) in the excavations at Forest Road Kintore. As there was no stratigraphic link between the pits it is not clear if they or the two hearths were in operation on the same occasion or if they were a year or so apart.



Illus 15 Plan without plough marks



Illus 16 The site looking SE. The curve of context 12 can be seen as a greyish arc on the LHS, with pit 6 in front of it. The pale fill of the water main can be seen on the RHS.

The site of the possible structure is suggestive. It stood, within a bend of the Tuach Burn, on a small ridge just above a paleochannel which, prior to field drainage, may have been a stream (or at least boggy ground) (Illus 3, 4, 17).



Illus 17 Features in relation to palaeochannel (marked by arrow)



Illus 18 Features in relation to Midmill long cairn

Similar contemporary clusters of features excavated at Forrest Road (Feature ST07: Cook and Dunbar, 2008, 67-8) and at Deer's Den, Kintore (dated 3800-3650 cal BC: Alexander 2000, 17) have also been interpreted as the plough truncated remains of possible buildings. However, the structure on the Primary School site lacks the very concentrated scatter of artefacts found on slightly later possible house sites at the nearby Midmill sites Areas 2 and 3 (Murray & Murray 2013); this may suggest that the present structure was only in use for a more limited period.

The environmental evidence (Timpany above) suggests that the fills of pits 6 and 7 derive from a domestic context with abundant charcoal, grain, burnt bone and some wild food such as hazelnut. The pottery also appears to be domestic. The lithics include a high proportion of tools.

There is also such an abundance of burnt grain in pit 6 that Timpany has suggested that some type of grain drying 'kiln' may have been within the structure. The possibility of a fire-related activity is supported by the burnt oak planks set up the side of pit 6 and by the burnt daub with plank impressions from the same pit. The pit itself showed no evidence of in situ heating and it is probable that the contents of both pit 6 and pit 7 derived from the two hearths (1 and 7/4) – the association being particularly clear with Pit 7 where the lower charcoal fill had clearly been put in from the direction of the hearth 7/4.

During excavation it was thought that the burnt planks, a stone and some pieces of pottery lying against the E side of pit 6 had been deliberately placed as a lining (illus 9, 10). However, the planks had clearly not been burnt in situ so they were placed there after burning; it is not possible to decide if there was an intention/ritual aspect to this placement.

Ballin (above) suggests that the burnt lithics within pits 6 and 7 are a possible indicator of ritual burning/ destruction of wealth by fire - certainly as well as some unburnt flints there are a number showing extreme heat up to the point of vitrification.

The evidence can be interpreted as ritual deposition of *deliberately* burnt 'wealth' after a building went out of commission- it can equally be interpreted as the burying of burnt materials, with or without any ritual intent, after an *accidental disaster* with some sort of grain drying kiln. An accidental disaster seems a fairly reasonable possibility given that some grains had been not just charred but reduced to cinder.

The upper fills of pits 6 (6/1) and 7 (7/1) and 9, with pottery links between them, may be post-destruction rather than primary – a general spread of disturbed material that had been in or around occupation deposits or building debris that has been otherwise destroyed by ploughing.

This small site and its possible structure provide another fragment of evidence of the complexity and continuity of the interlinked domestic and ritual activities within the prehistoric landscape around the Midmill area of Kintore.

References

Alexander, D 2000 'Excavation of Neolithic pits, later prehistoric structures and a Roman temporary camp along the line of the A96 Kintore and Blackburn Bypass, Aberdeenshire', *Proceedings of the Society of Antiquaries of Scotland* 130: 11–75.

Ballin, T.B. 2011: *Overhowden and Airhouse, Scottish Borders. Characterization and interpretation of two spectacular lithic assemblages from sites near the Overhowden Henge*. British Archaeological Reports British Series 539. Oxford: Archaeopress.

Ballin, T.B. 2012: Lithic artefacts. In M. Johnson & K. Cameron: An Early Bronze Age Unenclosed Cremation Cemetery and Mesolithic Pit at Skilmafilly, near Maud, Aberdeenshire. *Scottish Archaeological Internet Reports (SAIR)* 53, 23-26.

Ballin, T.B. forthcoming: The lithic assemblage. In H. Murray & C. Murray: *Garthdee Road, Aberdeen*.

Barclay G J, Carter S P, Dalland M M, Hastie M, Holden T G, MacSween A and Wickham-Jones C 2001 'A possible Neolithic Settlement at Kinbeachie, Black Isle, Highland'. *Proceedings of the Society of Antiquities of Scotland* **131** 57-85.

Bishop R R, Church M J and Rowley-Conwy P A 2009 'Cereals fruits and nuts in the Scottish Neolithic'. *Proceedings of the Society of Antiquities of Scotland* **139** 47-103.

Butler, C. 2005: *Prehistoric Flintwork*. Stroud: Tempus.

Cappers, R T J, Bekker, R M, & Jans, J E A 2006 *Digital seed atlas of the Netherlands*, Barkhuis Publishing and Groningen University Library: Groningen.

Cook M & Dunbar L 2008 *Rituals, roundhouses and Romans: Excavations at Kintore, Aberdeenshire 2000-2006. Vol 1: Forest Road*. STAR: Edinburgh.

Fairweather A D and Ralston I B M 1993 'The Neolithic timber hall at Balbridie, Grampian Region, Scotland: the building, the date, the plant macrofossils'. *Antiquity* **67** 313-323.

Green, H.S. 1980: *The Flint Arrowheads of the British Isles. A detailed study of material from England and Wales with comparanda from Scotland and Ireland*. BAR British Series 75(i). Oxford: British Archaeological Reports.

Hillman G 1981 'Reconstructing crop husbandry practices from charred remains of crops', in R Mercer (ed) *Farming practice in British Prehistory*. Edinburgh University Press, Edinburgh 123-162.

Jones G E M 1984 'Interpretation of archaeological plant remains: Ethnographic models from Greece', in W van Zeist and W A Casparie (eds) *Plants and Ancient Man* Rotterdam, Balkema 43-61.

Kenward, H K, Hall, A R and Jones, A K G 1980 'A tested set of techniques for the extraction of plant and animal macrofossils from waterlogged archaeological deposits'. *Science and Archaeology* **22**, 3-15.

Larsson, L. 2011: The ritual use of axes. In V. Davis & M. Edmonds (eds): *Stone Axe Studies III*, 203-214. Oxford: Oxbow Books.

Lee D and Thomas A 2012 'Early Neolithic settlement on Wyre'. *Current Archaeology* **268** 12-19.

Lochrie, J 2013 'The Prehistoric pottery' in Murray & Murray 2013, 30-45.

Ludemann T, Nelle O 2002 Die Waelder am Schauinsland und ihre Nutzung durch Bergbau und Koehlerei. Freiburger Forstl. *Forschung*, vol. 15. Freiburg. 139 pp.

MacSween, A 2008 'The Prehistoric Pottery', in Cook, M and Dunbar, L. *Rituals, Roundhouses and Romans, Excavations at Kintore, Aberdeenshire 2000-2006: Volume 1: Forest Road*, Scottish Trust for Archaeological Research, 173-89.

Manby, T.G. 1974: *Grooved Ware Sites in Yorkshire and the North of England*. Oxford: British Archaeological Reports.

Marguerie D and Hunout J Y 2007 'Charcoal analysis and dendrochronology: data from archaeological sites in north-western France'. *Journal of Archaeological Science* **34** 1417-1433.

Murray H K & Murray J C 2013 *Midmill Industrial Estate, Kintore, Aberdeenshire: Archaeological Evaluations and Excavations 2007-2012*. Unpublished report MAS 2013-10 in archive at Aberdeenshire SMR and NMRS.

Murray H K, Murray J C and Fraser M 2009 *A Tale of the Unknown Unknowns: a Mesolithic pit alignment and a Neolithic timber hall at Warren Field, Crathes, Aberdeenshire*. Oxbow Books, Oxford.

Murray H K & Murray J C forthcoming: *Garthdee Road, Aberdeen*.

Russel-White C J 1995 'The excavation of a Neolithic and Iron Age settlement at Wardend of Durris, Aberdeenshire'. *Proceedings of the Society of Antiquities of Scotland* **128** 9-27.

Saville, A. 2006: The Early Neolithic Lithic Assemblage in Britain: some Chronological Considerations. In P. Allard, F. Bostyn & A. Zimmermann (eds): *Contribution of Lithics to Early and Middle Neolithic Chronology in France and Neighbouring Regions* 1-14. Oxford: British Archaeological Reports. 1494.

ScARF 2012a Sheridan A and Brophy K (eds) *Neolithic Panel Report* Scottish Archaeological Research Framework: Society of Antiquaries of Scotland. Available online at <http://tinyurl.com/d73xkvn>

ScARF 2012b Milek K and Jones R (eds) *Science Panel Report* Scottish Archaeological Research Framework: Society of Antiquaries of Scotland. Available online at <http://tinyurl.com/d967gsz>

Schweingruber F H 1978 '*Microscopic Wood Anatomy: Structural Variability of Stems and Twigs in Recent and Subfossil Woods from Central Europe*'. Kommissionsverlag Zücher AG, Zug

Schweingruber F H 1990 '*Microscopic wood anatomy*' (3rd edition) Birmensdorf.

Sheridan, A 1997 'Biggar Common, 1987-93: an early prehistoric funerary and domestic landscape in Clydesdale, South Lanarkshire', *Proceedings of the Society of Antiquaries of Scotland*, 127, 185-253.

Timpany S and Masson D 2009 *WGI-07: Midmill, Kintore, Aberdeenshire: Sample Assessment Report*. Unpublished Client Report. Headland Archaeology Ltd.

Tipping R 2007 'Chapter 4: Environmental History' in Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS) *In the Shadow of Bennachie. A Field Archaeology of Donside, Aberdeenshire*. The Society of Antiquaries of Scotland and The Royal Commission on the Ancient and Historical Monuments of Scotland, Edinburgh 25-44

Appendix 1: Catalogue of digital photographic records

(Supplied to Aberdeenshire SMR)

Digital frame number	Content
Kintore Primary School	
01	Field 1 looking NE. Trench 1 in foreground.
02	Field 1 looking NE. Trench 1 in foreground. Tuach Hill in background.
03-04	Trench 2, looking N. Context 1 in foreground
05-07	Trench 2. Context 1 details.
08	Trench 2, looking N.
09-012	Trench 2. Context 1 sectioned.
013-020	Excavation area (Area A) looking W
021	Excavation area (Area A) looking E
022	Area A contexts 9 (foreground) and 8 (right background)
023-026	Context 8 section
027-029	Context 9 section
030-033	Context 6 section
034-036	Field 2 looking N to Tuach Hill
037-038	Field 2 looking NW to Tuach Hill
039-041	Area A looking E. Context 1 centre (by arrow) Modern water main trench across bottom RHS
042-044	Area A looking SE. Context 6 centre foreground
045	Area A. Context 1,4
046	Context 6 foreground, context 7 behind
047	Field 3. Trenches 14-17 looking N
048-049	Field 3. Trenches 14-17 looking NW Tuach Hill behind
050	Field 3. Trenches 14-17 looking S
051	Field 3. Trenches 15-16 looking SE
052-054	Field 1. Trench 6 looking N. Tuach Hill in background

055-058	Area A. Context 7 section
059-061	Area A. Burnt sand beside context 7
062-063	Area A. Context 6 almost fully excavated with stone lying against charred timbers up E side.
064-065	Area A. Context 6 almost fully excavated with charred timbers up E side
066	General view Area A
067-070	Area A looking NW to Midmill long cairn. Ranging rods in features 9,8,7,6 (from foreground backwards).
071	Area A looking SW. Ranging rods in features 6,7,8,9 (from foreground backwards).

Appendix 2: Context data

Context No	Description	Interpretation
1	Burnt spread. 1.40 x 1.20m	Base of hearth
1/1	Thin skim of charcoal <3mm depth with burnt bone frags, and hazelnut shell frags.	
1/2	Possible post-pit through 1/3 with fill of 1 /2. Diam 200 x 240mm. Depth 290mm	
1/3	1.40 x 1.20m. Hard baked sand to c.50mm depth. 1 stone on edge	
2	400 x 180mm. Depth 30-40mm. Slight heat-pinking at S edge	Possibly edge of 1
2/1	Grey sand with some charcoal. 1 frag burnt bone	
3	180 x 180mm charcoal stained sand cut by plough line	

4	450 x 320mm Depth 130mm. Irregular oval. W side cut by plough line.	
4/1	Grey sand. Some lumps charcoal. Fragment of burnt stone.	
5	160 x 150mm Depth 50mm. Oval.	
5/1	Grey stained sand with some charcoal. Frag burnt bone	
6	Ovoid. 900 x 4-500mm. Depth 690mm. Vertical sides. At N edge is shallower bit c100mm deep but no difference in fill	Pit
6/1	Dark grey sand with some charcoal	
6/2	Dark grey sand with frequent charcoal and some burnt stones. This was on surface at S side in plan	SAMPLE 2 C14: (SUERC-51246) was charred grain of Emmer wheat and was dated to 3701-3527calBC (95.4%).
6/3	Looks like 6/2 but very slightly softer and less gritty. At base on E side 6/3 lay against a flat stone which rested vertically up side of pit. Behind stone were burnt timbers 6/5 and some vertically placed pieces pottery (SF20, 21,65)	SAMPLE 3
6/4	Thin layer, especially on E of burnt stones with some sand	
6/5	Burnt timbers up side of pit on E. 80-150mm wide and < 200mm high.	
7	At first visible as an oval spread (7/1) with some of the fire-reddening visible at the edges.	

	When 7/1 was excavated the hearth (7/4) became distinct from the pit 7. Pit 700 x 730mm. Depth 650-700mm.	
7/1	Grey/pink sandy with charcoal and some frags burnt bone. This spread over the hearth (7/4).	Top fill of pit and spread across the hearth area
7/2	Thin layer clean sand in from W	Fill of pit
7/3	Black charcoally with much burnt bone. Also appears to be in from W	Lower fill pit. SAMPLE 1 C14: (SUERC-51245) was charred grain of Emmer wheat and was dated to 3694-3523calBC (95.4%).
7/4	Intense red-burnt sand. 1.10m x 0.75m . Depth 50mm	
8	600 x 500mm. Depth 490mm. Sides almost vertical	Post-pit/pit. Possibly post-pit with post removed and occupation material fallen in.
8/1	Light grey/buff sandy soil	Topsoil mix
8/2	Dark grey/brown sandy with much chacoal including some quite big bits	
9	Ovoid. 540 x 380mm. Depth 460mm. Sides nearly vertical. 1 stone on N side in 9/1 and 1 stone on N side in 9/2 (on section). 9/1 merges to 9/2.	Post-pit/pit
9/1	Dark grey sandy soil with some charcoal	
9/2	Dark grey sandy soil with frequent charcoal, including hazelnut.	SAMPLE 4

10	Diam 130mm. Depth 70mm	
10/1	Grey sand with charcoal	
11	80 x 100mm Depth 30mm	
11/1	Grey sand. No charcoal	
12	Hollow c0.80 x 3m. 60mm deep.	
12/1	Grey sand	

Appendix 3 Pottery catalogue

Vessel #	SF#	Context	Sherd#	Fabric	Condition/ surface treatment	Th (mm)	Rim	Description
	PIT 6							
1	21,11,53,62-65	6/3	14	Micaceous coarse sandy with abundant quartz inclusions. Mid brown/grey	-	10-15	3	Plain upright rim. Large vessel. Indications of round base
2	42	6/3	1	Micaceous fine sandy with occasional small quartz grits. Brown core, grey surfaces.	Externally smoothed with fingertip fluting	11		Bodysherd only
-	39, 41, 43, 45-46	6/3	5					Fragments, spalled.
1	20	6/2	1	Micaceous coarse sandy with abundant quartz inclusions. Mid brown/grey		14		= Vessel 1.
-	33	6/2	1	Micaceous fairly fine sandy with quartz inclusions. Buff/brown	-	10		Bodysherd only
3	17-19, 34-36	6/2	6	Micaceous fine sandy fabric. Dark brown/grey	Smoothed internally & externally. Distinct finger marks on inside 1 bodysherd	7	1	Plain upright rim.
-	30, 32, 37	6/2	3					3 fragments
4=7=9	12	6/1	1	Micaceous v fine sandy fabric. Dark brown	Burnished internally & externally	4		Bodysherd
-	13	6/1	2	Spalled. Micaceous sandy with quartz inclusions		-		Bodysherds
	PIT 9							
5	10	9/1	5	Very micaceous coarse sandy with abundant inclusions. Mid brown/grey	1 sherd shows smoothing and possible fingertip fluting	8-11	1	Upright rim. Plain large vessel.
5	11	9/2	5 +frag	Very coarse micaceous		8-11		

				sandy with abundant inclusions. Mid brown/grey				
	PIT 7							
5	57	7/1	1	Very coarse micaceous sandy with abundant inclusions. Mid brown/grey		10	1	
6	59	7/1	1	Very coarse micaceous sandy with abundant inclusions. Mid brown/grey		12	1	Rolled rim fragment only. Fabric as V5
-	27-28, 55-56	7/1	4	Very coarse micaceous sandy with abundant inclusions. Mid brown/grey		10		Fabric as V6. Could belong to V 5 or V6. V small body sherds
7=4=9	54	7/1	1	V fine micaceous sandy fabric. Brown	Smooth external surface	6	1	Slightly everted rim. V similar to V4, possibly same vessel
-	61	7/3	1	Coarse micaceous sandy with quartz inclusions. Brown		11		Bodysherd
	OTHER CONTEXTS							
-	1, 2, 68	1/1	3	Coarse micaceous sandy with quartz inclusions. Brown		12		Bodysherds very abraded from base of ploughsoil
-	29	4/1	1	Spalled abraded sherd				
-	9	8/1	1	Spalled abraded sherd				
-	24	12/1	1	Coarse micaceous sandy with quartz inclusions. Brown		11		Bodysherd
-	38	12/1	1	Coarse micaceous sandy with quartz inclusions. Brown		7		Bodysherd
8	4	Plough	1	Coarse micaceous sandy with abundant quartz inclusions. Mid brown/grey		15	1	Plain upright rim. Vessel like V1
9=4=7	6	Plough	1	V fine micaceous sandy fabric		6	1	Probably =V7

-	3, 7, 26	Plough	3	Coarse micaceous sandy with inclusions. Brown/grey		8-9		Bodysherds
-	8	Plough	2	Thick coarse sandy with abundant inclusions. Brown/grey				Bodysherds
-	25	Plough	1	Fine sandy some inclusions. Brown	Smoothed externally	6		Bodysherd

Appendix 4 Environmental samples data

Context Number	Sample Number	Feature	Sample Vol (l)	Ceramic	Burnt bone	Charred Cereal grain	Charred Hazel nutshell	Charcoal		Material available for AMS Dating	Cinders	Comments
				Pottery				Quantity	Max Size (cm)			
				PH	Mammal							
07/03	1	Basal fill of Pit [07]	8	++	+++	+	++ (0.67g)	++++	2.1	Hazel nutshell +, Charcoal ++, Burnt bone +		Charcoal is oak, cereal grain is largely degraded and consists of <i>Triticum dicoccum</i> (emmer wheat) + and <i>Cerealia indet.</i> (Indeterminate grain) +. Burnt bone fragments up to 1.6cm
06/02	2	Third fill of Pit [06]	2	+	++	+++	++ (1.02g)	++++	2.0	Charred grain +++, Hazel nutshell +, Charcoal +	+	Charcoal is a oak but includes non-oak roundwood fragments. Grain is a mix of <i>Triticum dicoccum</i> ++ and <i>Hordeum vulgare var nudum</i> (naked barley) +++
09/02	4	Basal fill of Pit [09]	2			+	++ (0.52g)	++++	2.8	Charred grain +, Hazel nutshell +, Charcoal +		Charred grain is <i>Triticum dicoccum</i> + and <i>Horedeum vulgare var nudum</i> +. Charcoal is oak.

Key: + = rare (0-10), ++ = occasional (11-50), +++ = common (51-100) and ++++ = abundant (>100)

NB charcoal over 0.5cm³ is suitable for identification and AMS dating

Table 4: Retent sample results

Context Number	Sample Number	Feature	Total flot Vol (ml)	Cereal grain					Other plant remains	Charcoal		Material available for AMS	Comments
				<i>Hordeum vulgare var nudum</i>	<i>cf. Hordeum vulgare var nudum</i>	<i>Triticum dicoccum</i>	<i>cf. Triticum dicoccum</i>	<i>Cerealia</i> indet.		Charcoal Quantity	Charcoal Max size (cm)		
07/03	1	Basal fill of Pit [07]	50	++	+	++	+		<i>Rumex</i> sp. +, <i>Brassica/Sinapis</i> sp. +	++++	1.0	Charred grain ++, Charcoal +	Charcoal is oak.
06/02	2	Third fill of Pit [06]	250	++++		++++		++	<i>cf. Bromus</i> sp., <i>cf. Stellaria</i> sp., <i>Brassica/Sinapis</i> sp. +	++++	1.9	Charred grain +++++, Charcoal +	Charcoal is oak. Sample contains clumps of charred grain adhered together.
09/02	4	Basal fill of Pit [09]	75	++	+	+++	++		<i>Rachis</i> fragments +, <i>cf. Bromus</i> sp. + <i>Brassica/Sinapis</i> sp. +	++++	1.9	Charred grain +++, Charcoal +	Charcoal is oak.

Key: + = rare (1-10), ++ = occasional (11-50), +++ = common (51-100) and ++++ = abundant (>100)
NB charcoal over 0.5cm³ is suitable for identification and AMS dating

Table 5. Flotation sample results

Kintore Primary, Aberdeenshire, material suitable for radiocarbon dating

Sample	Context	Short-lived material	Medium-lived material	Long-lived material
1	07/03	Hazel nutshell, Emmer wheat, Naked barley	Burnt bone	Oak charcoal
2	06/02	Hazel nutshell, Emmer wheat, Naked barley	Hazel charcoal	Oak charcoal
3	06/03			Oak charcoal
4	09/02	Hazel nutshell, Emmer wheat, Naked barley		Oak charcoal

Table 6. Material suitable for radiocarbon dating