A possible Iron Age stack yard and a souterrain at Abernethy Primary School, Abernethy

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with a contribution by M Hastie

Introduction (Illus 1)

The site is located on the eastern edge of Abernethy, Perth and Kinross (NGR NO 1925 1655). A bennethy is situated in an area of prime agricultural land and, although archaeological excavation has generally been restricted to small evaluations and watching briefs within the town, there is plentiful evidence for the occupation of the surrounding area in the prehistoric period. A number of sites have been identified through aerial photography (Illus 2). These lie to the north of Abernethy on the coastal plain and it is unclear whether this reflects the true distribution of sites or merely ground conditions. To the north-east of Abernethy, three cropmarks have been recorded clustered around the Roman legionary fortress of Carpow, which dates to the early 3rd century. These three sites, Gillies Burn, Clunie Field and Easter Clunie (N M R S N o S N O 21 N W 46, 63 and 64 respectively), all comprise probable roundhouses and associated souterrains. None of these have been excavated and hence their relationship with the fortress remains unknown. Further probable souterrains have been identified through aerial photography to the north of Abernethy at Fingask, Muirhead and Wallacetown (N M R S N o S N O 11 N E 100, 102 and 103 respectively).

The excavated site lay outside the projected limits of medieval Abernethy, approximately 200m to the east of the tower, at the junction of Main Street and the A913. Occupying approximately 1 ha of pasture, it lay at the bottom of a north-facing slope at 30m OD.

A preliminary evaluation in response to a planning condition placed on the development had identified what appeared to be cobbled surfaces in two trenches at the south-western end of the area. The remaining trenches encountered no archaeologically significant deposits (SUAT 2000). Based on these findings, Perth and Kinross Council’s Archaeology Service prepared a brief for the works which specified full archaeological excavation of an area measuring approximately 1500m² at the south-western end of the site (Area A), where the archaeological potential was thought to be greatest. A watching brief was to be maintained during works on the remainder of the site (Area B).

Results

Underlying the topsoil was a thick hillwash deposit. The depth of this deposit varied from 0.6 to 1.4m, being deepest at the south-western corner of the site. This deposit was removed by machine and was found to seal the following features: eleven stone surfaces; a linear feature and 51 discrete cut features (Illus 3).

Area B (designated as a watching brief) was partially stripped without archaeological supervision. Several large boulders were lying on the surface when the watching brief began, indicating that archaeological deposits or features had already been disturbed. Due to time constraints placed on archaeological work in Area B, the identified features had to be excavated and recorded rapidly even with extended periods of ‘down-time’ (to record features) having been agreed with the main contractor.

Datable artefacts were recovered from only one secure context: an isolated spread of burnt material in Area B containing fragments of medieval pottery. Dating, therefore, rests largely on the results of radiocarbon testing and the environmental assemblages.

Stone features (Illus 3 and 4a)

Ten distinct stone structures were concentrated in the centre, N and N E of Area A, with an eleventh, identified during the watching brief, lying to the SE. These features generally consisted of sub-rounded boulders and slabs laid to present a definite, if uneven, surface. These were set into a possible buried topsoil horizon, which in turn sealed several pits and post-holes cut into the natural subsoil.

There was considerable variation in the size and shape of the stone features. Most were irregular but two were roughly circular (042 and 058). The smallest (059) was under a metre across, while the largest (001) was around 6m long. They were all constructed using undressed stone; the only exceptions being a fragment of a quern stone (Illus 7) and a possible pivot stone (Illus 8) used in Surface 001.

Some of the stone surfaces showed signs of plough damage, but this occurred only on the most prominent stones and did not appear to be extensive enough to be consistent with the surfaces’ having been heavily disturbed by the plough. Therefore, it is probable that they were largely intact and represent discrete structures, rather than the remnants of a single, massively disturbed surface.

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Illus 1 Site location.
The soil layers below the stones were typically 0.25m deep and contained small pieces of fired clay and charcoal. Several features were sealed under the stone surfaces (see below). In the case of the surfaces and post-holes at the northern limit of the site, there is a possible relationship; several post-holes appear to form a pair of parallel lines, which seem to coincide with the edges of Surfaces 056, 058 and 059.

**Structure (Illus 3)**

A large snaking linear ditched feature (145) was exposed in different places within Area B and at different times during the course of the watching brief. It measured approximately 38m in length and ranged from 0.5 to 3.8m in width and 0.15 and 0.45m in depth. This feature started as a narrow, shallow gully initially running southwards before making a right angled turn to the west. It then turned 90∞ and widened to approximately 3m before narrowing again and meandering firstly north and then westwards.

Due to time constraints and the circumstances in which the feature was found, it was only possible to excavate a series of narrow slot trenches across this structure. A very uneven floor built of large water-rounded boulders, laid on or set into the natural subsoil was uncovered lining the base of [140]. The slot excavated to the south [144] of this did not encounter any such surface but instead exposed tumbled stones at each side, presumably wall footings.

The northern section of the feature appeared to be a single broad ditch on the surface, but excavation revealed it to be a pair of ditches (122/124 and 120/126), which became narrower and shallower as they ran northwards. It was not possible to locate the point at which they bifurcated.

The feature was filled with a very dark greyish brown sandy clay loam, which appeared to be homogenous with very little variation along its length. Of the samples taken from the excavated slots only one yielded sufficient suitable material for radiocarbon dating; a barley grain from deposit 141 at the souterrain’s southern end gave a radiocarbon date of cal AD 20–250 (GU-9634).

**Other features (Illus 3 and 4b)**

Forty-eight cut features were identified and excavated within Area A. Of these, 17 were found under the stone surfaces. The majority appeared to be isolated pits or post-holes, although six (004, 006, 008, 010, 012 and 014) are thought to form a possible rectangular post-built structure, measuring 6 x 1.5m. These post-holes varied in size from 0.35 to 0.7m in diameter and from 0.13 to 0.27m in depth. All had near vertical sides and two had the possible remains of post-packing. Charcoal from Post-hole 004 was dated to cal AD 770–1000 (GU-9632).

Of the remaining features, three have been dated. Pit 107, which was covered by one of the stone surfaces, yielded a radiocarbon date of 3619–3122 cal BC (GU-9633). The fill of this feature was very stony and rich in charcoal, but there was no indication of burning in situ. Post-hole 83 was dated by means of radiocarbon to 400–110 cal BC (GU-9635). The other dated feature was a shallow clay lined pit (032), which contained spelt/emmer wheat, naked and hulled barley and oats, an assemblage that indicates a Bronze Age/Iron Age date.
Illus 3 Site plan.
A possible Iron Age stack yard and a souterrain at Abernethy Primary School, Abernethy

Illus. 4a Plan of stone surfaces. 4b Plan of cut features and stone surfaces.
Three pits were identified during the watching brief. These were clustered around Structure 145 and may be contemporary. There is, however, no dating evidence to support this and the three pits were all quite different in character and size. Both Pits 128 and 137 were approximately 1m in diameter, but while Pit 137 was 0.18m deep, Pit 128 was 0.64m in depth. Given the latter’s small diameter it is unlikely that it could have been dug much deeper, which suggests that the feature and, by extension, the surrounding area had not been severely truncated. Pit 133, at 2.3 x 1.4m and 1m deep, was considerably larger and appeared to have filled in naturally.

A burnt spread (118) extended beyond the northeastern limit of the site. This dump of material contained 14 sherds from a locally produced White Gritty Ware jug dating to the 13–15th century (Julie Franklin pers comm). A pitch or resin type substance, attached to charred wood stems was recovered from the environmental sample.

Radiocarbon dates

Of the 34 samples taken, 12 contained material suitable for AMS dating and four were selected. These were taken from Post-hole 004 (GU-9632), Pit 107 (GU-9633), Souterrain 145 (GU-9634) and Post-hole 83 (GU-9635). These were measured at the University Of Arizona AMS Facility. The results are presented in Table 1.

Table 1 Radiocarbon dates from Abernethy School. Calibrated age ranges are based on OxCal 3.9.

<table>
<thead>
<tr>
<th>lab no.</th>
<th>context</th>
<th>material</th>
<th>years BP</th>
<th>iC13</th>
<th>calibrated 1s</th>
<th>calibrated 2s</th>
</tr>
</thead>
<tbody>
<tr>
<td>AA-46472/GU-9632</td>
<td>5 Post-hole 4</td>
<td>grain: barley indet.</td>
<td>1140 ± 45</td>
<td>-23.7</td>
<td>cal AD 780–980</td>
<td>cal AD 770–1000</td>
</tr>
<tr>
<td>AA-46474/GU-9634</td>
<td>141</td>
<td>grain: barley indet.</td>
<td>1880 ± 50</td>
<td>-24.6</td>
<td>cal AD 70–220</td>
<td>cal AD 20–250</td>
</tr>
<tr>
<td></td>
<td>142 (souterrain)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AA-46475/GU-9635</td>
<td>82 Post-hole 83</td>
<td>grain: barley indet.</td>
<td>2205 ± 50</td>
<td>-25.1</td>
<td>360–200 cal BC</td>
<td>400–110 cal BC</td>
</tr>
</tbody>
</table>
Environmental evidence

Mhairi Hastie

Bulk soil samples, 34 in total, were taken from a range of features across the site. Charred plant remains (charcoal, cereal grains and weed seeds) were recovered from most samples, though, with few exceptions, these amounted to less than 20 identifiable plant remains per sample.

The cereal remains were generally poorly preserved, but were dominated by barley grains (Hordeum vulgare), with both naked and hulled forms present. Oat grains were also present in the majority of samples, but preservation was such that they could only be identified to the level of Avena sp.

The main variation in the assemblage is in the distribution of wheat grains, with emmer/spelt wheat grains (Triticum dicoccum/spelta) identified in two samples, Contexts 033, the fill of clay-lined Pit 032, and 061, the matrix for most of the stone surfaces. Glume base fragments (chaff) from spelt were also present in Context 033 (see below). One tentatively identified bread/club wheat grain (Triticum aestivo-compactum) was recovered from Context 134, the fill of Structure 145. One possible rye grain (cf. Secale cereale) was recovered from Context 138, also in Structure 145.

Clay-lined Pit 032 contained the only chaff fragments recovered from the site. There are two possible explanations for the presence of cereal chaff:

i The main cereals identified, spelt/emmer and hulled barley all require special processing in order to remove the hulls (e.g. Hillman 1984). They were often stored in the hulled form since this protects the grains from pests and rot, and the hulls removed only when the cereals were needed. The grain was parched in order to make the hulls brittle and so enable their removal through pounding or rubbing. This process requires heat and often produces charred grain and chaff fragments through accidental burning. The burnt cereal and chaff remains may then have been discarded into the clay-lined pit.

ii Following the threshing and sieving stages of crop processing, small fragments of chaff and grain-sized weed seeds occasionally remain in the cereal crop. Ethnohistorical evidence (Hillman, 1981) indicates that this material was removed by hand and then discarded. The recovery of small quantities of burnt chaff, from the clay-lined pit, may indicate this practice was being carried out on the site. The chaff and weed seeds being discarded onto the domestic fire and then the ash from the fire dumped into the clay-lined pit.

The weedy or wild taxa assemblage was limited to one or two identifiable seeds per sample. The species present are largely associated with waste/disturbed ground and grassland. Small quantities of charred hazelnut shell were also recovered and a small piece of vesicular material adhering to fragments of roundwood hazel (Corylus avellana) charcoal. This latter material came from a spread of burnt material (118), the sole medieval context on the site, and is thought to be pitch/resin adhering to firewood.

As well as charred plant remains, several samples also yielded small quantities of metalworking debris. In most cases, these debris were limited to one or two very small slag spheres, which may well be intrusive. More substantial pieces of slag were recovered from Pit 128 and Context 148 in Structure 145.

The interpretation of these remains is incorporated into the phasing and discussion below.

Chronology

Any interpretation of the chronology of the site is severely limited by the dearth of artefacts recovered from secure contexts and the limited extent of the stratigraphic relationships across the site. However, some phasing can be suggested using the little evidence available. The excavated features can be split into:

Phase 1: Neolithic

A single fire pit (107), which contained large pieces of charcoal, was dated to 3650–3100 cal BC (GU-9633). This isolated feature lay in the centre of Area A, under one of the stone surfaces. The charred plant remains recovered from the sample are likely to have been produced in the course of crop or food processing nearby. No further features could be related to this phase.
Phase 2: late Bronze Age/Iron Age

In the absence of evidence otherwise, most of the small cut features, including those lying under the stone surfaces, are likely to date to the Bronze and/or Iron Age. This is based on two features: Post-hole 83, which contained charcoal dated to 400–110 cal–BC (GU-9635), and clay-lined Pit 32, which contained a charred grain assemblage consistent with such a date. The absence of stratigraphic relationships and dating evidence preclude any further sub-division of this phase. No structures could be identified, although there is a possible double line of post-holes at the northern limit of Area A, of which Post-hole 83 is a part.

Carbonised chaff recovered from Pit 32 may be taken to be indicative of some crop processing occurring on site at this time, though the fact that only one feature contained such material indicates that this may have been on quite a small scale or that it may have been occurring beyond the limits of the current site.

Phase 3: Iron Age

This phase comprises most of the features identified in the course of the watching brief: Structure 145 and Pits 128, 133 and 137. As no datable artefacts were recovered from these features, this is based solely on their proximity to each other. A barley grain from the souterrain yielded a radiocarbon date of cal AD 20–250 (GU-9634). It should be noted that the grain did not come from anything that could be termed an occupation deposit and hence cannot be interpreted as an exact indicator of when the feature was in use.

Metalworking debris was recovered from one context in Structure 145, with hammerscale being present in very small quantities in several contexts across the site. However, no features that could be related directly to metalworking were identified and the quantities of such debris were insufficient to be taken as indicative of metalworking on site.

The stone surfaces, although undated, may well belong to this phase. The stone used in their construction is identical to that used in Structure 145 and the two appear to respect each other. The former may, however, merely be the result of the stone having come from the same source or reuse of stone robbed from the structure or vice versa.

Phase 4: early historic

A six-post structure (004, 006, 008, 010, 012 and 014), dated to cal AD 770–1000 (GU-9632), is the only feature dated to the Early Historic period.

Phase 5: medieval

The medieval period is represented by a thin spread of burnt material at the site's northern limit and the presence of quantities of 12–15th-century pottery in the topsoil. The latter is indicative of the manuring of farmland with domestic rubbish, suggesting the site by this time had been given over to agriculture.

Discussion

Following the results of the evaluation, it was expected that the excavation would reveal a large stone surface, possibly sealing earlier cut features, with a few discrete outlying features. Given the history of Abernethy and the lack of artefacts recovered, it was anticipated that the stone would date to the Early Historic period. However, this was not the case. Rather than falling neatly into the envisaged date range, the excavated features fall into at least five phases spanning some 4,500 years, with the dates being almost entirely reliant on radiocarbon testing.

As outlined above, features dating to the Neolithic and Bronze Age/Iron Age were present on site, but it is difficult if not impossible to identify coherent structures among them. It is only in the later phases that any sense can be made of the structures on the site.

In plan, the ditched structure is strikingly similar to the souterrains found at Dalladies, Kincardineshire, in particular to Dalladies 2 (Watkins 1980: 134, Figure 6) and, to a lesser degree, that at Newmill (Watkins 1980b). The examples at these sites were up to 1m and 1.95m deep respectively, whereas that at Abernethy was no more than 0.5m deep. The similarities in plan and other dimensions, however, lead to this structure being interpreted as a variation on the same theme.

As at Dalladies the structure comprised a curving ditch, initially narrow but widening at the centre and apparently bifurcating after this bulge. In both cases, the basal dimensions of the ditch were surprisingly narrow if they were to have served as passageways and there was considerable variation in their profile.

It could be suggested that the shallowness of the Abernethy example results from severe truncation—ground levels in the area of the souterrain had been reduced before the watching brief began and it is therefore impossible to define how severely truncated the structure was. That some disturbance had occurred is undoubtedly, as a number of large boulders of the type used in the souterrain's construction were lying on the surface at the start of the watching brief. However, a pit (128) located to the W of the souterrain was of such depth and narrow diameter that it could not easily have been dug a great deal deeper, suggesting truncation was limited. If this is so, the structure must have been only partially subterranean or else had a very low roof. This, coupled with the absence of potential stone roofing slabs, suggests that there may have been a wooden superstructure. At Dalladies 2, several post-holes were identified, and it is entirely possible that such features were present but did not coincide with the limited interventions excavated. Watkins argued that the souterrain at Newmill had a pitched wooden roof projecting above the ground surface (1978b, 195–6). If this was the case at Abernethy and reasonably unhindered movement was...
to be allowed the superstructure would have projected considerably above the ground surface.

One of the excavated trenches encountered anything that might be termed an occupation deposit. The floor of the feature must have been kept clean as otherwise some accumulation could be expected to have formed over the slabbased floor and, where the floor was not paved, some degree of trampling ought to have formed as people walked on the sandy gravel. It could be argued on the basis of this that the souterrain was not entered frequently, which might go some way to explaining why little effort was expended on levelling or packing the floor. It should, however, be noted that Armit (1999, 586) quotes two examples of roofed souterrains that have been open for at least 100 years where there is little sign of material accumulating naturally.

Unlike Dalladies and Newmill, there was no evidence that the structure had been deliberately backfilled and nor was there any sign of the frequently burnt ‘souterrain abandonment horizon’ that has been identified at many of the souterrains of ‘southern Pictland’ (Armit 1999). Instead, the fills appeared to be fairly homogenous along the feature’s entire length and, being very similar to the overlying colluvium, seemed more consistent with the structure’s having filled in naturally.

The stone surfaces at Abernethy are undated, but there are close parallels with other sites dating to the late Iron Age. The interpretations, however, differ. Stone surfaces were recorded in association with the souterrains at Dalladies 2 (Watkins 1980a, fig. 4) and Newmill, Perth and Kinross (Watkins 1980b). At Dalladies 2 the surface was thought to be infilling for an inconvenient hollow relating to a post-built roundhouse (Watkins 1980a, 125). At Newmill, alongside a well-preserved souterrain, two rough stone surfaces were found. Like those on the current site these were constructed using ‘selected water-worn stones of the same sort as had been used in the souterrain’s construction ... [These were] very substantial [and] of inconvenient thickness’ (Watkins 1980a, 194). One surface was only 0.8m across while the second was 7.5 by 3m. The latter also sealed a series of post-holes and Watkins related this larger surface to the last roundhouse built in the settlement, which he envisaged ‘as having a partly paved floor’ (ibid, 194). No negative features can be related structurally to the surfaces at Abernethy.

Two similar stone features were recorded at Castle Park, Dunbar. Again, these were securely dated to the Iron Age but were interpreted as staddles, where harvested corn was stacked, suggestion of their being floors for huts being discounted partly on the grounds of their small size, less than 3m in diameter (Perry 2000, 33). These examples are considerably smaller than most of the present examples.

There may also be a further, more local, parallel. An evaluation carried out in advance of a housing development on the western edge of Abernethy identified ‘a discrete irregular stone surface, 3 x 2m, consisting of a layer of stones lying on and embedded into the subsoil’ which was interpreted as a stack stand ‘probably dating to the 19th century’ (Dunbar 2001).

It is difficult to accept the stone surfaces at Abernethy as being the remains of domestic flooring, as they were extremely uneven and would have been unsuitable to walk on. Instead the interpretation of the surfaces as being related to crop-processing fits neatly with the evidence from the rest of the site: the only artefacts found that relate to this phase are the quern fragments incorporated into Surface 001 and the surfaces lie adjacent to a souterrain, which have been interpreted as having been built for grain storage (Barclay 1980 and Armit 1999). An unstratified quern stone (Illus 8) was also recovered during the watching brief. The precise function of the individual surfaces, however, remains unclear, as the smaller ones are unlikely to have served the same purpose as the larger areas.

There is limited evidence of other activities taking place around the site. Metalworking debris were recovered from several contexts, but the quantities of such material seem insufficient to be taken as a good indicator that metalworking actually was being undertaken on site.

There is no evidence for the function of the six-post structure that stood on the site in the Early Historic Period. Given its small dimensions, it is possible that this also represents the base of a rick or similar structure rather than a building. This structure appears to mark the end of the site’s use for anything other than straightforward agriculture, with pottery being introduced by way of manuring.

Armit (1999) has argued that the Antonine occupation of southern Pictland, which includes Abernethy, may have lead to an explosion in the numbers of souterrains in the area. The military presence, he reasons, provided a market, and thereby an impetus for surplus production, as well as imposing the stability that is necessary for the production of an agricultural surplus. He argues that many souterrains were built to store this surplus, which was traded with the occupying forces. With the withdrawal of the Roman army, probably during the AD 160s, the raison d’être of many souterrains disappeared, along with the pax Romana. Consequently, according to this model, many souterrains fell out of use in the latter part of the 2nd century AD, perhaps as a result of the upheaval wrought on local society by the Roman withdrawal and subsequent internal unrest and Roman incursions. Armit cites several examples where souterrains were apparently deliberately decommissioned ‘with a degree of ceremony and care’, typically accompanied by a dark charcoal-rich ‘abandonment horizon’ (1999, 586).

It must, however, be noted that many souterrains did not meet a catastrophic end. For instance, the recently excavated example at Shanzie (Coleman and H Unter 2002) appears to have been left to fill in naturally and there are several phases of cutting at Dalladies 2, which is inconsistent with a short-lived requirement for such structures culminating in their destruction.

The radiocarbon date (cal AD 20–250) for the souterrain at Abernethy slots it neatly into the chronology
**Illus 7** Quernstone from stone surface 001.

**Illus 8** Pivot stone from stone surface 001.

**Illus 9** Unstratified quernstone.
of Armit's model— if the nature of the fills does not, suggesting contemporaneity with the Agricolan temporary camp at Aberargie or even the legionary fortress at Carpow, which is thought to have been built in AD 208 during the Caracallan campaign against the Maeatae in southern Pictland (Dore and Wilkes 1999, 571). As this date relates to a disuse deposit, it is feasible that it fell out of use as a result of the collapse of the market following the Roman withdrawal or was abandoned in the face of the Caracallan campaign and the daunting military presence at Carpow.

The souterrain at Abernethy is the first to have been investigated in northern Fife, though sixteen are known through aerial photography (Armit 1999, 578, Illus. 1), with at least six potential examples within 5 km (NMRS No 11N E 100, 102 and 103 and NO 21N W 46, 63 and 64). The situation in this part of northern Fife was not significantly different from that in the Carse of Gowrie, immediately across the River Tay, where there is a dense concentration of souterrains. As with the Carse of Gowrie, this area of Fife is prime agricultural land and there was a sizable Roman presence, consequently all the deterministic factors that Armit argues lead to an explosion in souterrain construction in southern Pictland were present in this area of Fife. It could thus be expected that the known sites may be a small fraction of those actually present, the difference in density perhaps being attributable to the differing geology of the two areas affecting the visibility of cropmarks.

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Anon, Pictish Chronicle

SUAT Ltd., 2000 Archaeological Evaluation at Proposed Site of New Primary School Main Street, Newburgh Road, Abernethy (unpubl. client report, SUAT Ltd).

Abstract

Headland Archaeology undertook a programme of archaeological works in advance of the construction of a new primary school at Abernethy, Perth and Kinross. This comprised the excavation of part of the site around two paved areas identified by an earlier evaluation, followed by a watching brief on topsoil stripping on the remainder of the site. The excavation identified further paved surfaces—thought to represent an Iron Age stack yard—and a number of pits, including a firepit, which yielded a Neolithic radiocarbon date, and several which probably also date to the Iron Age. A watching brief on the remainder of the site identified further pits of unknown date and a Dalladies 2 style souterrain, dated to the first–third centuries AD. The project was sponsored by Perth and Kinross Council.

Keywords

Crop processing
Neolithic
Iron Age
Early Historic
Medieval
Souterrain
Stone surface

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