

An oval enclosure at Burnside, Blairgowrie, Perth and Kinross

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with contributions by Mike Cressey, Clare Ellis, Mhairi Hastie and Melanie Johnson

Introduction

This paper presents the results of the excavation of a ditch-defined enclosure to the N of Burnside, near Blairgowrie (NGR: NO 15374 43382; Illus 1–2), at c 55m OD. The enclosure was oval with a longitudinal alignment running approximately WSW–ENE. It had two entrances, one to the E and the other to the SW. The enclosure ditch was cut into the free-draining sand and gravel subsoil. Pit features were present both within and outside the enclosure.

The enclosure and associated features had all been truncated through modern agricultural ploughing, bioturbation and erosion. The degree of truncation could not be determined, but was more severe on the N side.

There are a number of other enclosures, as yet undated, identified as crop-marks in the vicinity of the Burnside enclosure, and it may be that these form a coherent class of structure.

Circumstances of discovery

The enclosure was initially identified through aerial photography (NMRS No NO14SE 22, photographed by CUCAP in 1964 and subsequently) and lay within an area of proposed quarrying. The Centre for Field

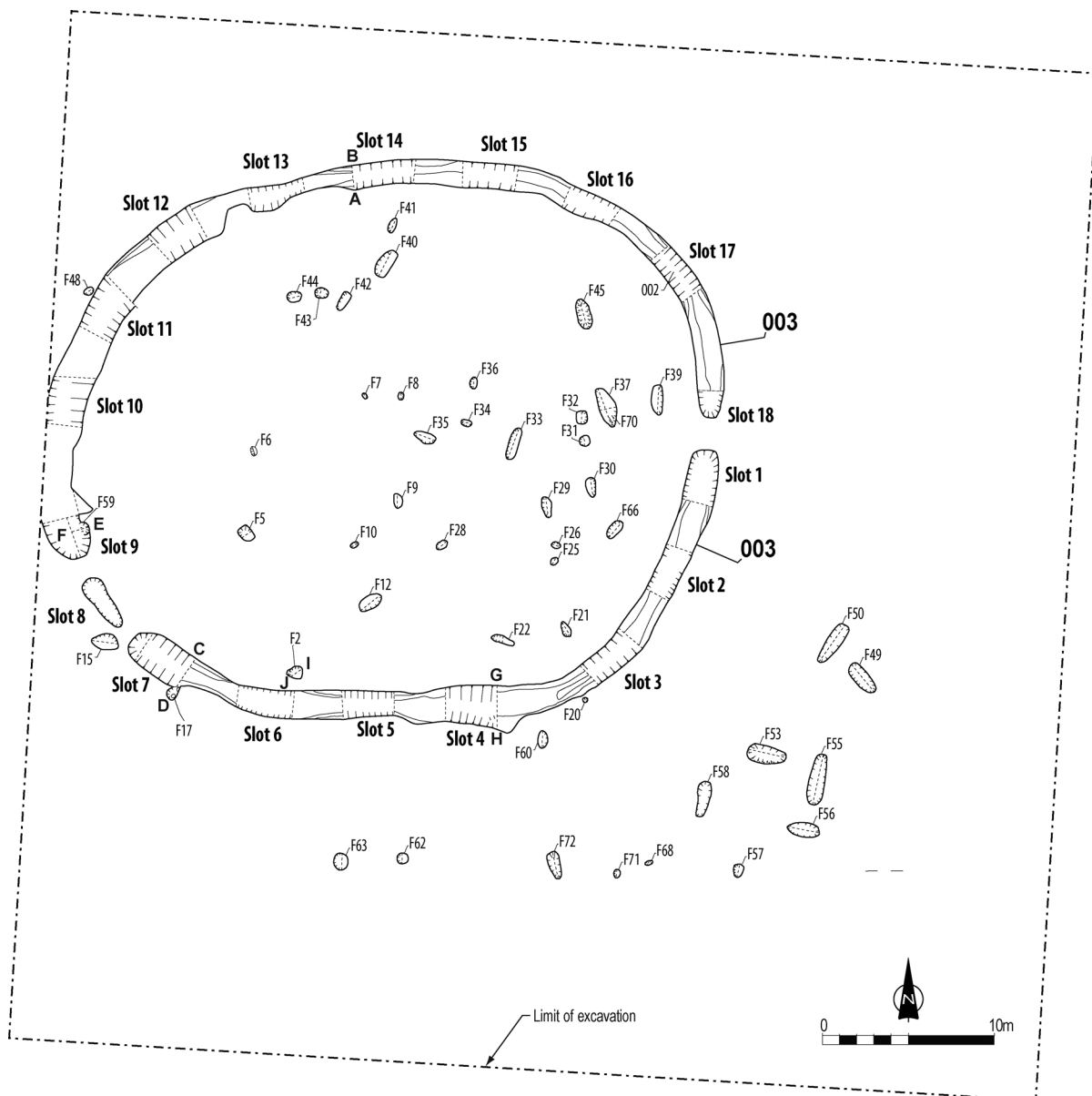
Archaeology of the University of Edinburgh (CFA) was commissioned to evaluate the enclosure in 1991, and undertook a geophysical survey which revealed the form and dimensions of the feature (Neighbour 1991). In order to ground-truth the cropmark evidence and the geophysical results, an evaluation by trial trenching was subsequently conducted, which confirmed the geophysical results and refined the dimensions of the ditch as well as identifying internal features (Hamilton and Armit 1991). Consent for gravel extraction was granted with a condition to excavate the enclosure should the proposed working affect it. The site was subsequently fenced off with a *cordon sanitaire* of c 3000m², and full excavation eventually took place in 2007. The excavation was commissioned and funded by Laird Brothers (Forfar) Ltd.

Working methods

An earth-moving machine equipped with a smooth-bladed ditching bucket removed the topsoil to reveal the subsoil surface. The full extent of the enclosure was uncovered, along with a number of internal and external features. All features were fully excavated by hand.



Illus 2 The enclosure pre-excavation, from the west.



Illus 3 *Post-excavation plan of the enclosure and pit features.*

Eighteen slots, each c 3m long, were excavated around the ditch to give best overall coverage (Illus 3). Each slot was numbered and the contexts within them given a slot prefix followed by a numbered identifier. Other features were assigned feature numbers. Longitudinal and transverse sections were excavated in each ditch slot in order to increase the chance of discovering putative post-holes within the fills of the ditch. A similar excavation strategy was adopted for the isolated pits.

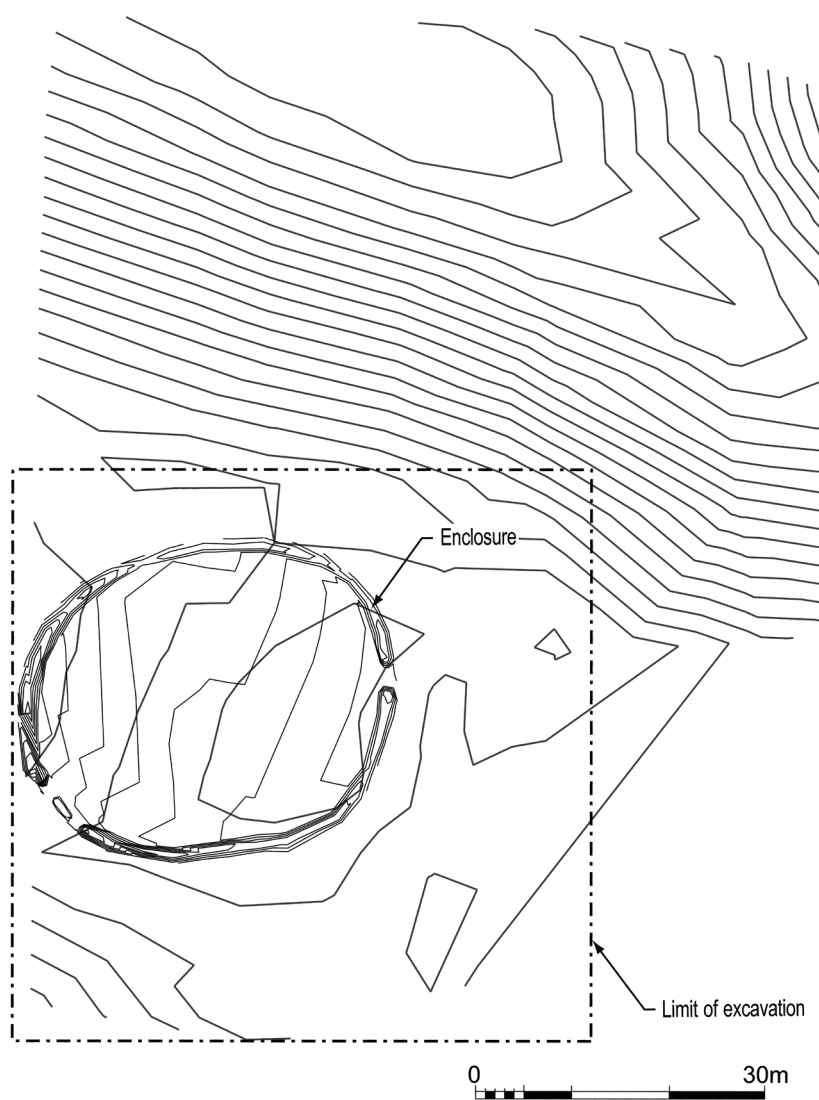
Archaeological results

The excavation uncovered the enclosure ditch and 48 individual features both within and outside the ditch (Illus 3). All the pits and the ditch were negative features cut into the subsoil and were sealed by c 0.3m of topsoil. There was no spatial patterning within these other features indicative of structures. It was evident that the features were heavily and horizontally truncated,

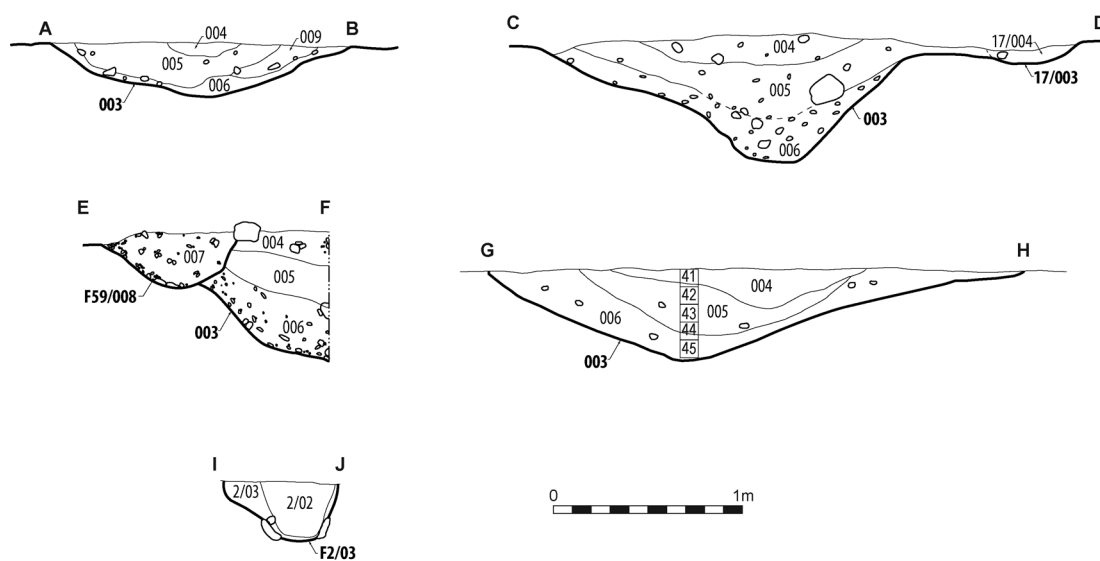
particularly the enclosure ditch on its northern side where proximity to the break of slope and the loosely compacted sandy subsoil had led to erosion. Indeed, a contour survey showed that the enclosure is situated on a knoll, the top of which was a relatively flat plateau (Illus 4).

The enclosure ditch

The enclosure ditch 003 was ovate in plan and defined an area measuring 26.3m E-W and 22m N-S. The ditch varied in dimensions, due to the degree of truncation, with the best preserved sections being on the southern and western sides of the enclosure. The cut for the enclosure ditch varied from steep to shallow-sided (Illus 5 A-B, C-D, E-F and G-H). On its N and NE sides the ditch was cut into fine, loosely compacted, yellow-orange sand 002 and was heavily truncated. Here, the cut of the ditch had a shallow U-shaped profile, which was c 1.6m wide at its top,



Illus 4 Contour survey.



Illus 5 Sections of ditch 003 (A-B, C-D, E-F, G-H) and F2 (I-J).

0.55m wide at its base and had a depth of 0.3m (Slot 14, Illus 5 A–B). On its E, S and W sides the ditch was less truncated, and the subsoil was sandy gravel 002. The ditch on these sides was more steeply sided with a narrower base and was 2.2m wide at its top, 0.3m wide at its base and 0.6m deep (Slot 7, Illus 5 C–D). There was no evidence of recutting, or of post-holes or other features, within the ditch.

Three principal deposits filled the ditch. The primary fill was mid-brown sandy silt 006. The secondary and bulk of the ditch fill was reddish-brown sandy silt 005. The upper deposit of bright orange sandy gravel 004 was much denuded in places. In the N and NE section of the ditch a sandy gravel fill 009, varying in colour from orange to reddish-brown, appeared to have slumped in from the outside of the ditch after the initial silting 006, and was partially sealed by the later deposit 005 (Slot 14, Illus 5 A–B).

The enclosure had two entrances, each defined by a gap between the terminal ends of the ditch. The eastern entrance was 2m wide and that on the SW side was 5m wide. A shallow length of ditch, measuring 3m x 1.1m and 0.28m deep, was cut into the subsoil between the two terminal ends of the ditch that created the SW entrance (Illus 3).

External and internal features

Forty-eight pits were discovered. Thirty-one features inside the enclosure were grouped to the N, S and E and 17 features lay to the S and SW of the enclosure. The features did not show any spatial patterning that could be interpreted as characteristic of structural remains, and no evidence was found to suggest their function(s). The majority of the features had a single sandy gravel fill although some of the large features had silting present in their base, suggesting that they had been left open for a period before the main and quicker depositional event took place. The features ranged in size from 2.7m by 0.85m and 0.3m deep (F50) to 0.22m x 0.23m and 0.12m deep (F20). One of the pits, F2 appeared to have a post-pipe impression within its fill (Illus 5 I–J).

One small oval pit, F59, with dimensions 0.2m x 0.5m and 0.15m deep, was cut through the fill of the south-western terminal end of the enclosure ditch in slot 9 (Illus 5 E–F). No other relationships between features were identified. Only one feature can be tentatively dated by typological association: F55, outside the enclosure to the SE, contained a rim sherd of Neolithic pottery.

Pottery

Melanie Johnson

One rim sherd of handmade prehistoric pottery weighing 22g was recovered, from the upper fill of an external pit F55, to the SE of the enclosure.

The rim is rounded and externally thickened to form a beading of uneven thickness. Its diameter is not

measurable but the sherd is up to 7mm thick. The fabric is hard and well-fired, brown in colour throughout. The fabric contains mica and 2% small quartz grit. The surfaces are burnished. Laminar fracture on the interior indicates the position of the coil junction for the rim section. The sherd is in good condition, with just a little abrasion on the edges.

The vessel belongs in the earlier Neolithic tradition, comprising plain carinated bowls often with burnished surfaces, typified by, for example, the assemblage from Biggar Common, South Lanarkshire (Sheridan 1997) and discussed by Cowie (1993) and more recently by Sheridan (2002). This tradition generally dates to the first half of the fourth millennium BC.

The sherd was recovered from the upper fill of pit F55, an elongated pit lying to the exterior of the enclosure. A solitary sherd, however, cannot be used to provide a reliable date for this feature.

Palaeoenvironmental analyses

Mike Cressey and Mhairi Hastie

Methodology

During the excavation 74 bulk soil samples, ranging in size from 2 to 11 litres, were taken from all significant deposits for palaeoenvironmental analysis. Samples were selected from the lower fills of the features in order to reduce the risk of contamination with intrusive material.

A system of flotation and wet sieving was used to separate the archaeological material from the soil samples. Initially the floating debris was collected in a 250µm sieve and, once dry, scanned using a low-powered microscope (magnification x10–x200) to identify the archaeological material. Material remaining in the flotation tank was wet-sieved through a 1mm mesh and air-dried before being sorted to identify any remaining significant material.

Results

Composition of flots

The majority of flots contained only low concentrations of wood charcoal. Two poorly preserved cereal grains were found in Sample 22 (F55), the same feature that contained the pottery sherd. Only broad identifications could be achieved for these, both being identified as possible wheat (*Triticum* sp.). The origin of the cereal remains is unknown and neither grain is suitable for AMS dating. No further archaeological palaeoenvironmental remains were identified.

Wood charcoal

The charcoal is well preserved but very amorphous in shape with only two fragments identifiable as branchwood. The rest is a product of fragmentation prior to or during deposition. The assemblage is

non-abraded showing that it has not undergone translocation within the soil profile. Fourteen contexts have been assessed and only seven contained charcoal greater than 4mm. The rest were sterile.

The basal fill 006 of slot 1 contained the highest volume of charcoal (2.9g). *Quercus* sp. (oak), *Fraxinus excelsior* (ash), *Betula* sp. (birch) and *Corylus avellana* (hazel) are represented, albeit in very low amounts. All are native to Scotland and prevalent on brown forest soils typical of the Scottish Lowlands. In general terms the charcoal assemblage is too small to make any interpretations, but domestic fuel or land clearance are the likely origins of the charcoal.

Radiocarbon dating

Only one sub-sample of hazel charcoal, from the primary fill 007 in slot 14, was suitable for submission for radiocarbon dating. A single date of 4500 BP (3360–3080 cal BC at 2 σ) was returned. This date falls within the period of the early Neolithic, as does the single sherd of pottery recovered from F55. It is difficult to determine the security of these dates as the fills that the pottery and charcoal were recovered from were loose, dynamic and subject to a large degree of bioturbation. Both the pottery sherd and charcoal may be intrusive or residual. However the most parsimonious interpretation is that the enclosure witnessed Neolithic activity.

Soil tests

Clare Ellis

Five kubiena samples were sub-sampled from a sequence of two (Illus 5 G–H) which were taken through the ditch fill sequence, Slot 4. The samples were prepared for thin section analysis by G. McLeod at the Department of Environmental Science, University of Stirling using the methods of Murphy (1986). The samples were described using a polarizing microscope following the descriptive terminology and methodology of Bullock et al (1985) and Fitzpatrick (1993). A range of magnifications (40x–400x) and constant light sources (plane polarised light – PPL, cross-polars – CPL, circular polarised light and oblique incident light – OIL) were used in the descriptions.

The objectives of the analysis were to determine the nature of the ditch fills and the mode of deposition of the ditch fills. The following presents a summary of the full technical report, which is available in the archive.

There was surprisingly little variation in the sedimentary characteristics of the sampled contexts. All were sandy silt, although the lowermost sandy silt 006 was poorly sorted while the remaining context 005 was moderately sorted. The sandy silts were moderately compact with the porosity varying between 20 to 10%. Organic matter was largely absent from the sediments and occurred as very few single cells, very few roots,

very few charcoal fragments and minimal collidic organic matter within the matrix material.

The ditch sediments had been subject to intensive post-depositional bioturbation. This has resulted in the destruction of the original sedimentary fabric and has largely prevented the distinction of separate contexts when examined in thin section (Ellis 1998). Consequently it has not been possible to determine the mode of sediment deposition and accumulation. However, broad changes up the profile include a slightly reduced rock fragment content, a gradual change from a reddish brown to brown matrix (this is probably due to an increase in the amount of humic acid staining), an increasing in the intensity of bioturbation and the occurrence in the uppermost context of very few clasts of probable topsoil. The similarity in composition of the contexts demonstrates that they were derived from a shared source, which is assumed to be the up-cast of the enclosure ditch. It is clear from the dearth of anthropic indicators (ie charcoal, ash, bone, ceramics etc) within the ditch fills that the source was not subject to contamination by waste material (eg domestic refuse) during the life of the enclosure. It is probable that the charcoal fragments were either blown into the ditch and/or incorporated into the sediments through the action of soil biota, in particular earthworms.

Post-depositional processes were dominated by the activities of echytraeid as well as earthworms. The presence of common partially and wholly infilled channels demonstrates that a large portion of the bioturbation occurred after the accumulation of the ditch sediments.

The very few well compacted sandy silt clasts in 005 are interpreted as remnants of ditch excavated natural that have escaped reworking by soil biota. Similarly the thin coating of matrix material on many of the rock fragments and mineral grains is indicative of considerable physical disturbance of the sediment, as would be experienced during ditch excavation, prior to its subsequent re-deposition.

Discussion

Site formation

The soil micromorphological analysis suggests that the bioturbation of the deposits within the ditch occurred post-deposition, and that these deposits derived from a single source, that of the upcast material originally excavated from the ditch. Some of the material from the excavated ditch appears to have been placed on the outside of the ditch, as indicated by the slumping of material (009, Illus 5 A–B). The lack of contaminants within the deposits filling the ditch may either be interpreted as evidence that the upcast material from the ditch was used to backfill the ditch within a relatively short period nor that neither domestic or industrial activity had occurred on the site.

With the exception of pit F59, which appeared to cut the ditch and its upper fill, all the other features respected the ditch. The fact that they respected the ditch does not necessarily mean that they were contemporary. The ditch may have been backfilled but was still visible as an infilled ditch, and easily avoided during the pit excavations. Alternatively the same evidence can be used to suggest that the ditch and some or all of the pit features *were* contemporary as they did not intercut, and further, based on the radiocarbon and artefact typological evidence, that the ditch and at least one pit had a Neolithic origin.

Some of the pits, (F12, F21, F42, F43, F50, F53, F55 and F70) had silt-based basal deposits overlain by a bulk deposit. Interpretation of this depositional sequence suggests that the pits were left open for a period and that their thin basal fills represent a period of weathering after which the pits were backfilled. Although, in plan, the pits do not appear to describe the foundations of a structure, one of the pits, F2 appears to have a post-pipe impression within its fill (Illus 5 I–J). Further, the post had either collapsed or was pulled out towards the NE, as indicated by the shallower cut on that side of the feature. Two features appear to have been infilled by natural depositional means, as indicated by their multiple fills: F40 had three fills and F49 had four. Alternatively the material used to backfill the features derived from multiple sources, or reflects post-excavation weathering and contamination as the excavated material from the pit lay exposed for a period of time. The other pits were filled with single deposits of sandy silts and gravels. These deposits reflect the composition of the existing subsoil and were probably back-filled within a relatively short time.

The enclosure sits on what is now a relatively flat-topped knoll. The contour survey and visual inspection of the surrounding area suggests that the top of the knoll has been reduced, probably through the dual actions of weathering and ploughing. If the top of the knoll had not undergone the same degree of erosion and truncation as it displays now, then the pit features may have been excavated through a considerable amount of subsoil, and the ditch, if contemporary with the pits, would have been excavated around the knoll. However this scenario seems unlikely as the material originally on the outside of the ditch, based on the slumping of 009 (Illus 5 A–B), or what would have been the downslope side of the ditch, yet the excavated material did not wash down slope but was re-deposited within the ditch. The interpretation here is that the topography of the site, i.e. a relatively flat plateau reduced by erosion, was the topography that was encountered by the archaic excavators of the pits and ditch.

The function of the enclosure and associated features

With the exception of F55, from which a sherd of Neolithic pottery and two cereal grains were recovered,

none of the features contained any artefacts upon which an interpretation of their function could be based.

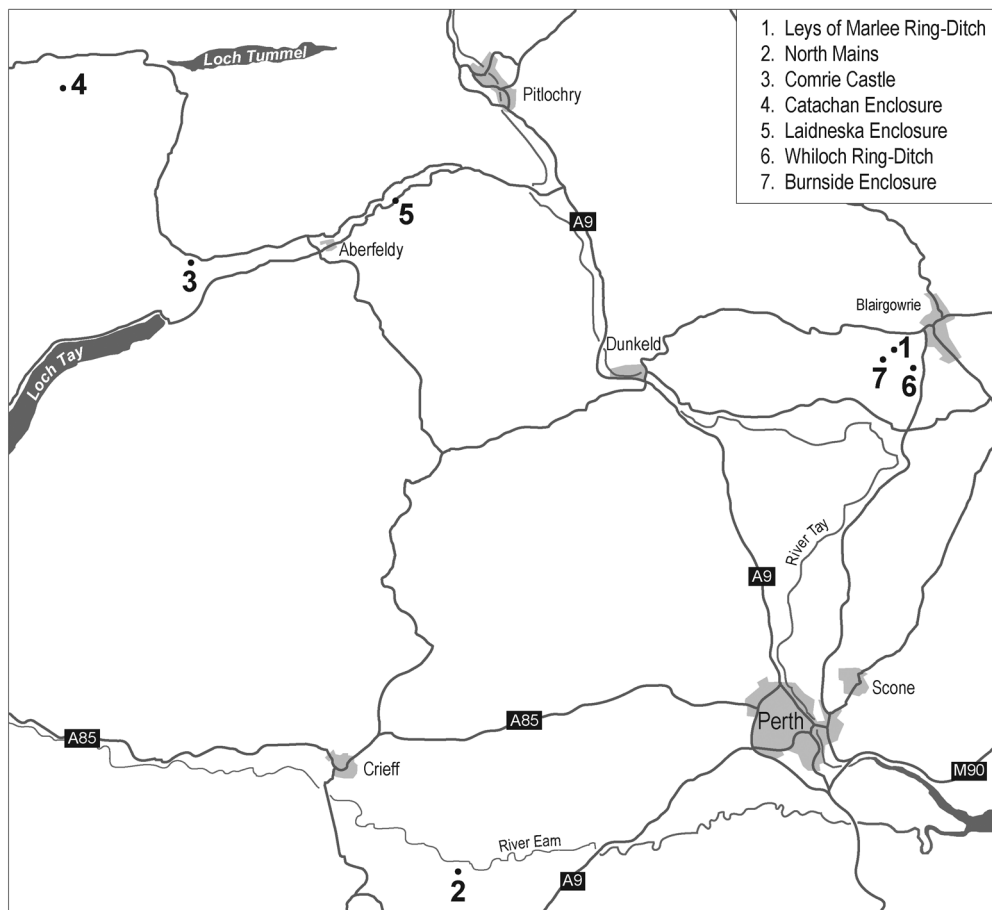
The almost complete absence of what may be termed a 'domestic artefact assemblage' of pottery sherds, spent fuel and calcined bone coupled with the fact that only one of the pits looked like a post-hole in profile and there were no distributions of features indicative of structural foundations, suggests that this was not a domestic site. Even if the site were not in use for a long time, one would perhaps expect more cereal grain, pottery sherds and abraded charcoal from domestic activities. There is however the possibility that the group associated with the site were aceramic.

If the site were not domestic in function, did it have an industrial or economic purpose? The poor artefact assemblage may either be taken to suggest that the pits and ditch did not have an industrial or economic purpose, or conversely that the economic and industrial activities did not require the use of tools or artefacts. If the latter is the case then perhaps the enclosure with its restricted south-western entrance had a pastoral function, such as a livestock corral. With this interpretation it is difficult to see what the function of the pits may have been. It is unlikely that they were animal burials – not only were no animal bones recovered, something that maybe accounted for by the acidic nature of Scottish soils, but issues of hygiene and disease suggest that livestock were probably not buried within livestock corrals. There was no evidence of clay linings within the pits to suggest they might be interpreted as drinking hollows.

The evidence of material slumping in from the outer side of the ditch suggests that the purpose of the ditch was not defensive, as one would expect the obstacle of an earthen bank, if indeed this was where 009 derived, to be on the interior of the ditch. Also the lack of what appears to be the foundation for any defensive superstructure at the otherwise undefended entrances suggests the ditch's purpose was not defensive. The lack of post-holes within the ditch, and its width, preclude the feature being a foundation trench for a wooden palisade.

Comparative evidence

Burnside enclosure is one of a number of cropmark enclosures recorded by aerial photography in the environs of Blairgowrie (Illus 6), all undated. They can be oval, round or rectilinear in form, are found in different topographical situations, and vary in their dimensions. The historical function of these monuments is often difficult to determine because of their variability and lack of supporting evidence, either from excavations or association with other more diagnostic cropmarks. Where interpretations of function have been offered they fall into at least three groups: domestic, where the remains of circular structures interpreted as possible roundhouses are located within enclosures; barrows, where no recognisable entrances could be identified such as Leys



Illus 6 Distribution map of crop-mark enclosures identified within Perth and Kinross.

of Marlee ring-ditch; or henges, such as the excavated cropmark at North Mains, Strathallan (Barclay and Tolan 1990), and unspecified enclosures where function cannot be determined.

Burnside enclosure shares some morphological traits with a number of these ditch-defined cropmark enclosures, although there can be considerable variation in size. Burnside enclosure was itself first described from aerial photographs as being an enclosure 36m by 30m with a possible entrance to the ENE. On excavation the true dimensions of the enclosure were revealed to be 26.5m by 22m with two entrances. The Comrie Castle cropmark, a circular enclosure, is described as c 37m in diameter with a possible entrance on the N side (NMRS No NN74NE 107). The Catachan enclosures, each with a diameter of c 37m, were situated on a steep west-facing slope (NMRS No NN75NW 12). The ditches of these enclosures were 1.5m wide, similar in size to the 2m wide ditch at Burnside. Some ditch-defined cropmark enclosures were bigger, such as the Laidneska farmstead, described as half an oval enclosure which measured c 65m by 20m (NMRS No NN85SE 62), while the Whitloch ring-ditch enclosure had an internal area of 50m² and was found on the shore of Whitloch, the SE side formed by the loch shore itself (NMRS No NO14SE 38).

Neolithic activity is well attested in the landscape around Blairgowrie, not least the truly monumental earthwork known as the Cleaven Dyke to the SW of Blairgowrie (Barclay and Maxwell 1998). Several monuments surviving as cropmarks and thought to be 'ritual' in nature are listed in the National Monument Records of Scotland (NMRS) and the local authority Sites and Monuments Records (SMR) in the Blairgowrie environs, and include the Leys of Marlee ring-ditch (NMRS No NO14SE 68). This site is described in the NMRS as a possible barrow, as it has no obvious entrances. As the Burnside enclosure has two entrances it is unlikely to have been a barrow. Although some of the pits are reminiscent of grave cuts, particularly those outside of the ditch, there was no evidence that they had ever been used to inter a body. Certainly no grave goods were recovered. Also the silting episode in the bottom of the pits suggests that the pits were left open for a period before being backfilled, again something not in keeping with the interment of a body.

The overall morphology of the Burnside enclosure is similar to the Type II Henges in that the structure is ovate and is elongated along the asymmetrical axis of the opposed entrances. In unimproved farmland, henges are usually found in conjunction with an outer bank. Burnside exhibits some of these Type II henge

features and shares similar characteristics with the North Mains Henge (Barclay 1983). Both occupy flat-topped knolls, something also noted at the henge at Balfarg, Markinch, Fife, where the ditch skirts around the outside of the knoll creating a central platform (Mercer 1981). At Burnside and North Mains, the axis of opposed entrances is off-centre to the middle of the enclosure. There was a partially surviving external bank at North Mains, of which there is little evidence at Burnside other than the depositional sequence in the ditch as determined through excavation. The deposits that fill the ditch are thought to share the same origin as the material excavated from the ditch during its construction, suggesting that this material lay in proximity to the open ditch, perhaps forming a bank. Similar asymmetrical depositional sequences have been reported elsewhere, eg the Balfarg henge (Mercer 1981).

However there are also differences between the Burnside and North Mains enclosure, principally in scale, associated monuments and the finds assemblages. The size of the Burnside enclosure, 26.3 by 22m, is similar in range to that of the ditched component of the henge at North Mains, 32 by 35m; although including its bank the overall diameter of North Mains is 65m (Barclay and Tolan 1990). At North Mains there were other associated monuments including a large round barrow and a timber ring with associated ring-ditches. The finds were also extensive and included both cremation and cist burials and a pottery and worked stone assemblage. At Burnside there were no other known associated monuments and the finds assemblage was extremely poor. North Mains was undoubtedly a ritual landscape, expressed both in architecture and artefacts; there is no convincing evidence that this was the case at Burnside enclosure.

Conclusion

Burnside enclosure remains an enigmatic monument, possibly Neolithic in origin and of uncertain function. Nevertheless this enclosure is not unique; a range of morphologically similar – even if functionally different – sites are known from aerial photography particularly concentrated along the low-lying valley bottom. These sites are variously described in the NMRS as enclosures, barrows and henges. However there are a number whose function remains unknown. Future work should aim to characterise these enclosures through test excavations in order to establish whether we are dealing with a morphologically coherent type of monument, or whether these monuments were designed and constructed with a variety of intended purposes.

The excavation of Burnside enclosure has demonstrated that interpretation from aerial photographs can be difficult, for instance in the estimation of size and number of entrances.

The excavations have also demonstrated the need for a dating programme of ditched enclosures. A range of dating techniques may be applicable, such as OSL dating. Whilst dating may not provide us with clues as to the function of these features, at least it would allow us to locate them within a defined archaeological epoch. From there questions of function would be more informed.

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Abstract

In 2007 CFA Archaeology Ltd (CFA) excavated an ovate ditched enclosure in Blairgowrie. The enclosure measured c 26m by 22m and had two entrances. The enclosure is hengiform in plan with a suite of internal and external features. A charcoal sample from the basal fill of the enclosure ditch returned a radiocarbon date of 3360–3080 cal BC, indicative of Neolithic activity. A single sherd of early Neolithic pottery was discovered in an external pit.

Keywords

cropmarks
enclosure
Neolithic
Perthshire
palaeoenvironmental
pottery

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