Prehistoric pits, Bronze Age roundhouses, an Iron Age promontory enclosure, Early Historic cist burials and medieval enclosures along the route of the A92, Dundee to Arbroath

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Introduction

During three separate phases, in March 1998, November 1999 and February to March 2000, an archaeological evaluation and several subsequent targeted excavations were undertaken by the former Centre for Field Archaeology (CFA) of Edinburgh University, now CFA Archaeology Ltd. This fieldwork was commissioned by Angus Council in advance of proposed major upgrading and dualling of the A92 between Claypotts, on the eastern outskirts of Dundee (NGR NO 4525 3205) and Elliot, just west of Arbroath (NGR NO 6205 3950), a distance of 19km. The proposed upgrading of the A92 closely followed the line of the present trunk road along most of its route from Dundee to Arbroath. In addition, four grade-separated junctions, a bypass at Muirdrum, and link roads to Barry and Carnoustie were to be constructed.

The majority of features located during the evaluation were of post-medieval date, comprising evidence of rig and furrow cultivation and subsequent agricultural improvements. However, significant archaeological features and areas of archaeological interest were also discovered (Rees and Cameron 1998a; 1998b).

After consultation with the commissioning body and the local authority archaeologist, a programme of excavation was determined. In all, five sites were excavated. One of these, Ardownie souterrain, has been published separately (Anderson and Rees 2006).

Illus 1 Location map for all sites.
Illus 2 Cotside: location map and site plan.
The route of the A92, Dundee to Arbroath

Cotside West, Carlogie, Auchennie and Elliot are published here, together with two areas from the evaluation which could not be investigated further (Barry Manse, and the section of the route between Mains of Kelly and Three Mile Wood in Balcathie).

These reports are presented from west to east, starting with Cotside to the west of Carnoustie, and finishing with Elliot on the edge of Arbroath (Illus 1).

**Cotside medieval enclosure**

This report describes the results of an excavation of a putatively medieval rectilinear double-ditched feature at Cotside, near Barry (NGR NO 5292 3403). A large area was opened in order to define the full extent and character of the remains noted during the evaluation and to retrieve artefacts securely to date these remains. The trench measured 15m x 25m. Topsoil consisted of a mixed dark brown sandy silt and varied in depth from 0.35 to 0.5m.

The site lies immediately beside the A930 to the south of Cotside Farm (Illus 2). It is on the edge of an extensive sand dune system now taken up by the MOD’s Barry firing range, comprising raised beach and marine deposits of windblown and tsunami-deposited sands which obscure peat deposits overlying Lower Old Red Sandstone of the Devonian series (Macaulay Inst 1982). The area is low-lying (at <10m OD), level and cultivated land.

**Illus 3 Cotside: ditch sections.**
Archaeological results

A segment of double-ditched rectilinear enclosure was identified (Illus 2 and 3). It had been cut into soft yellow sand and appeared to continue outwith the trench to the north-east and under the road to the north-west. The enclosure was made up of several elements.

A steep-sided linear feature (001), interpreted as the inner ditch, was aligned NE to SW for a distance of 14m. This ditch then turned 90° to the north-west and continued for 5.5m, where it terminated. A further, similar, ditch (004) continued the same alignment after a gap of 2m. This ditch continued under the edge of the trench. The terminals of the ditches were shallow and rounded. The gap is assumed to define the entrance to the enclosure and is also present in the outer ditch.

Ditch 001 had a maximum depth of 0.65m but was shallower, 0.35m, towards the terminal. Ditch 004 had a maximum depth of 0.49m and became steadily shallower over the 3m before it terminated. This ditch had a gentle U-shaped profile. It varied in width between 0.8 and 1.4m.

Ditches 001/004 were filled with wind-blown sands that showed significant laminations in section. In general there were two main fills, each containing smaller lenses and staining. The upper fill consisted of a compacted, fine, medium brown sand. This fill frequently contained shallow lenses of more organic darker brown sand. The lower fill was made up of laminated pale and medium brown fine sand. A shallow darker, compacted layer was present at the bottom of the fill sequence and was formed by mineral staining at the rounded base of the cut. An occasional lens of very pale windblown sand was identified within the upper fill sequence and was formed by mineral staining at the rounded base of the cut. An occasional lens of very pale windblown sand was identified within the upper section of the ditch fill. A single find, a fragment of clear modern glass, was recovered from the upper fill of this ditch. During the evaluation stage, sherds of 15th-century pottery were identified from the fill.

The outer ditch of the enclosure appeared as a vestigial linear trace around the outside of the more substantial inner ditches. It extended for almost 15m on a SW–NE orientation, before sharply curving to the north-west and continuing for c 6m. Ditch 002 ran roughly parallel to (and 2m outside) ditch 001, and ditch 005 ran parallel to (and 2.5m outside) ditch 004. The entrance gap in the outer ditch (between 002 and 005) was c 4m. There was a distinct terminus to ditch 005, but ditch 002 had no clearly defined end. Ditch 002 had a maximum depth of 0.35m but was shallower, 0.2m, close to the entrance gap. Ditch 005 was similarly shallow with an average depth of just under 0.2m. The ditch had a gentle U-shaped profile. It varied in width between 0.8m–1m. The outer ditch was shallower than the inner, but displayed the same basic profile and stratified wind-blown sand fills.

A narrow, meandering gully (003) was located running between the inner and outer ditches and partially across the entrance. It is unclear whether this feature was associated with the enclosure. The feature was shallow, with an average depth of 0.1m and a width of 0.15–0.2m. It was visible for a length of slightly under 10m. The feature had a rounded cut profile and was filled with fine wind-blown laminated sands. It had no clear terminus to the northern end and was not visible in the northern trench section.

A short and poorly-defined linear feature (006) was identified to the south of the enclosure. This had a depth of 0.05m–0.08m and was only 1.5m in length. It may have formed part of the enclosure but was possibly only the remains of an animal burrow.

The finds

Pottery

George Haggarty

Two sherds, both body sherds of a single Scottish White Gritty Ware vessel, were collected from fills of the inner ditch during the evaluation. A third was the basal angle sherd of a Scottish Medieval Redware jug with a thumbed base, and was unstratified. All three are dated to the 15th century.

Stone

Adam Jackson

One coarse stone artefact (SF 27, subsoil surface), a cobble tool whetstone, was identified. Manufactured from a pebble of fine mica schist, this artefact is of expedient form showing no evidence of modification prior to use. It is an elongated, irregular cigar-shaped pebble with sub-oval section (L 112mm; W 21mm; T 20mm; Wt 110g). Evidence of its use as a whetstone is largely concentrated to one face where grinding has created a smooth facet. Faint striations are visible running parallel to the long axis. Such artefacts are relatively common on Scottish sites of later prehistoric and later date, so it is not possible to draw any conclusions as to chronology.

Discussion

The excavation at Cotside has documented the character of the site and advanced its interpretation. Initially it was thought that the site could represent a rectangular structure, however the lack of postholes, stones, internal features or artefacts suggests that this site rather represents evidence of an enclosure.

The site had been dated to the late medieval period on the basis of sherds of 15th-century pottery which were retrieved from a ditch fill during the evaluation stage. The modern, unabraded glass shard found within an upper fill of the same ditch could be intrusive or may indicate that the ditches survived as shallow earthworks until they were finally filled in the later post-medieval period.

The exact function of these ditches is difficult to determine, but they must have defined and enclosed a space. There are no traces of structures visible on the
ground within this space, or on the aerial photographic coverage. It is possible that the enclosure was for holding stock, but there is no evidence of a palisade or fence to contain animals. A hedge might not have left any trace however, even with pollen analysis (M Cressey, pers comm). There is limited evidence from the ditch fills to suggest that natural filling may have occurred from the outside of both ditches (see sections A–B, C–D, M–N), suggesting that banks may have been located here; if so, this is more in keeping with an enclosure for livestock than for any form of defence. The excavation of rural medieval or later sites is relatively rare in Scotland but parallels for this type of enclosure in the region can be recognised in the aerial photographs. For example the comprehensive study of this type of evidence which has been carried out for the Lunan Bay area reveals several such small rectilinear enclosures near Newbarns, Ironhill and Corbie (Pollock 1985, illus 28, 29, 36). These sites remain unexcavated and therefore undated; if they are similar to the Cotside enclosure, then this site has at least provided some insight into their nature. The site at Barry Manse (infra) has also produced features of apparent medieval date which, when taken together with Cotside, represents a considerable addition to the medieval archaeological record. The site recorded here, though not closely dated, provides useful information which may gain greater importance as future work in this area is conducted.

Barry Manse medieval features

During the 1998 trial trenching, shallow gullies containing medieval pottery were revealed in the grounds of Barry Manse, Barry, near Canoustie (Rees and Cameron 1998). Subsequently, the road corridor was re-aligned and no further work was required at this site, but the evidence from the evaluation is presented here as a contribution to the medieval archaeology of the area.

The site was located directly in front and to the north-west of Barry Manse on a slight rise within what would have been its front lawn (Illus 4). The Manse itself is also located on a low mound within a large flat plain which would take it above the level of the frequent floods which occur in this area. The raised area upon which the house was sited would always have made it an attractive location for settlement.

A T-shaped trench was excavated, measuring 21m E–W, 19m N–S and 1.5m in width (Illus 4). Topsoil of 0.35m in thickness overlay a buried ploughsoil of the same depth. These layers contained flecks of coal, shale fragments and occasional pottery. Subsoil was a fine sand. The evaluation identified at least four intercutting ditches and short sections of a further three features.

Ditch 1167 was the latest of the group of features with a stratigraphic relationship. It ran for 11m across the site on an approximately E–W alignment, and cut three earlier ditches. Its section varied from a shallow ‘V’ at the centre to U-shaped at either end and was 0.1 to 0.25m in depth (Illus 5, A–B, E–F, J–K, N–P). It was filled with a fine silty sand (1168) which produced pottery sherds of 14th to early 15th-century date. At the western end of its exposed length, ditch 1167 cut ditch 1199 which ran on a NE–SW alignment across the trench. This ditch was 0.35–0.4m wide, 0.08m deep, and 10.75m in exposed length. It had a shallow U-shaped cut (Illus 5, C–D), which was filled with a fine silty sand (1166) containing a residual worked flint, a medieval or later brass mount and two sherds of 12th-century pottery. At the centre of the exposed length of ditch 1167, ditch 1165 ran approximately NW–SE for 4.8m, although it bifurcated just to the NW of 1167. Again, it had a shallow U-shaped section (Illus 5, G–H), 0.45–0.85m wide and 0.1–0.15m deep, and its silty sand fill (1164) contained a whetstone of uncertain date. To the east end of the trench, ditch 1167 cut ditch 1201, which ran parallel with ditch 1164, was up to 0.6m in width and 0.25m in depth and again contained a silty sand fill (Illus 5, L–M).

To the north of this group of features, a short section of broad ditch (1203) was exposed running approximately parallel with 1167. It was 2.2m wide and 0.34m deep with sloping sides and a flat base (Illus 5, Q–R). The fill (1202) was a mixture of fine wind-blown sands with frequent lines of grey sand, and produced one sherd of 14th-century pottery. A similar ditch was found 20m to the south; 1207 was 1.4m wide and 0.25m deep with sloping sides and a flat base and had a fill of brown silty sand (1206). A circular feature 1205, possibly a pit or the terminal of another ditch, was identified in the south side of the trench but was not excavated.

The finds

Medieval pottery
George Haggarty

Table 1 shows the distribution and types of the thirteen sherds collected. To date there is no good evidence of a White Gritty Ware (SWGW) industry north of the River Tay. Therefore most of this white firing pottery may come from the kiln sites thought to be located around St Andrews, except for the two joining later 12th-century sherds SF 26 and 28, which might be from the area around Kelso, although the fabric is unusual and just might be local. All the Scottish red ware (SMRW) sherds come from north of the Tay but are difficult to provenance, although towns like Arbroath and Montrose and even Aberdeen might be candidates.

Small finds
Fraser Hunter

Whetstone SF 21. Perforated end of a broken pendant whetstone, with a biconical perforation (min D 3mm), 8mm from the end. Smoothing scars from manufacture on the end. The stone is a quartz-mica schist; while not local to the
Illus 4 Barry Manse: location map and site plan.
immediate area, it could have been brought in by glacial action (B Jackson, pers comm). Pendant whetstones are typical finds from the later Iron Age onwards, and are particularly common in the Norse and medieval periods (e.g. Perth; Ford 1987, 147–9). L 15mm, section 8.5 x 6mm. Fill 1164 of curving feature 1165.

Mount SF 29. Cast flat brass. Waisted, with one end expanded (the edges decoratively shaped) and the other split into two lobes, one lost in an ancient break. No sign of how it was attached or used, but it is likely to be a medieval or post-medieval decorative mount. 16 x 15 x 1mm. Ditch fill 1166.

Glass
K R Murdoch

A part lip and neck from a wine bottle in dull mid-green with moderate flaky denaturing was recovered from the buried soil. It is a shortish (74mm) splayed neck with twist striations. There is a neatly tooled thin-section horizontal string ring with a 2mm wide ‘groove’ below an out-turned lip. A date of c 1690 is suggested.

Chipped stone
Graeme Warren

A secondary irregular flake fragment in honey-coloured pebble flint, showing edge damage (22 x 12 x 6mm) was collected from ditch fill 1166 (SF 35). It is undiagnostic.

Discussion

The intercutting ditches identified in this small trench excavation presumably represent medieval enclosures. The finds indicate activity on the site from the 12th century, and the presence of pottery which may have originated in Kelso could indicate a degree of long-distance contact at this period. The presence of several different pottery vessels in the ditch fills probably indicates that settlement was not far away, perhaps on the site of the Manse itself. There is a suggestion that medieval activity here could be related to the documented presence of a grange belonging to Balmerino Abbey (D Hall, pers comm), although of course it is difficult to relate this to the features in such a small, narrow trench evaluation.

Table 1 Medieval pottery from Barry Manse.

<table>
<thead>
<tr>
<th>context</th>
<th>SF</th>
<th>fabric</th>
<th>number</th>
<th>notes</th>
<th>date</th>
</tr>
</thead>
<tbody>
<tr>
<td>ditch fill 1166</td>
<td>26</td>
<td>SWGW</td>
<td>1</td>
<td>body sherd, straight-sided jar, Kelso Abbey type but in what looks like a local fabric: large plates of mica</td>
<td>c 1150–75</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>28</td>
<td>small body sherd, straight sided jar, same vessel as SF 26</td>
<td>c 1150–75</td>
</tr>
<tr>
<td>ditch fill 1168</td>
<td>23</td>
<td>SMRW</td>
<td>1</td>
<td>body sherd</td>
<td>14th / early 15th c</td>
</tr>
<tr>
<td></td>
<td>24</td>
<td>SWGW</td>
<td>2</td>
<td>body sherds, 1 sherd large lumps of quartz</td>
<td>14th / early 15th c</td>
</tr>
<tr>
<td></td>
<td>31</td>
<td>SMRW</td>
<td>1</td>
<td>body sherd</td>
<td>14th / early 15th c</td>
</tr>
<tr>
<td></td>
<td>32</td>
<td>SWGW</td>
<td>2</td>
<td>body sherds, 1 green-glazed externally</td>
<td>14th / early 15th c</td>
</tr>
<tr>
<td>ditch fill 1202</td>
<td>33</td>
<td>SMRW</td>
<td>1</td>
<td>body sherd, green glazed on exterior</td>
<td>14th c?</td>
</tr>
<tr>
<td>subsoil surface</td>
<td>22</td>
<td>SMRW</td>
<td>1</td>
<td>basal angle sherd, jug</td>
<td>14th / early 15th c</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>SWGW</td>
<td>2</td>
<td>1 body and 1 basal angle sherd, jug</td>
<td>15th c</td>
</tr>
<tr>
<td>buried soil</td>
<td>34</td>
<td>SMRW</td>
<td>1</td>
<td>everted rim sherd, small jar, local as very micaceous</td>
<td>late 12th / early 13th c</td>
</tr>
</tbody>
</table>
The broad ditch at the northern end of the trench appears to run parallel with an extant field boundary, which is depicted on the 1865 OS map of the area, and it may be an earlier manifestation of this feature. Interpretation of these features is limited due to the nature of the excavation, and it is unfortunate that there was no opportunity to investigate them further.

Carlogie prehistoric and undated features

A spread of pits and other features was identified during the evaluation at Carlogie, in a field to the east of the existing A930 road on the northern outskirts of Carnoustie (NGR NO 5625 3568). Excavation was confined to the area of the roadline and consisted of a trench 100 x 10m aligned approximately N–S (Illus 6).

The trench was sited within a fairly level field with a slight knoll towards its southern end. The topsoil consisted of a dark brown, sandy, organic soil and varied in depth from 0.25m to 0.5m. This overlay a buried soil which varied in depth from 0.1m just downslope from the knoll, to 0.4m in the lower lying part further north. This buried soil comprised a sandy, reddish compact soil which was only present in the central part of the trench. The subsoil comprised a mixed sand and gravel with some areas of fine sand and others of fairly coarse gravels.
Within the northern 25m of the trench were 13 separate pit features of various sizes but with common characteristics. The pits were of sub-circular plan, semicircular to sub-oval in profile, and with a blackish, sooty, sandy ash fill with occasional flecks of charcoal. In all of the features, the edges of the fill appeared to merge with the subsoil, making it difficult to define their upper limits satisfactorily. There did not appear to be any identifiable pattern to the features, and none appeared to be post-holes. The features varied in size from feature 017, which measured 2.1m x 1.2m by 0.15m in depth, to feature 003 which was 0.45m in diameter by 0.08m deep.

Within the next 25m of trench there was only one feature present. This comprised a slot (033) with a U-shaped profile and a small possible stake hole located within its terminus. Aligned NW by SE, the slot measured 7.65m in exposed length, 0.7–0.8m wide and 0.55m deep. The slot was more clearly visible in section at the eastern edge of the trench where it cut the buried soil.

Further to the south were three shallow circular pits (037, 041, 043). These features produced three fragments of unabraded prehistoric pottery. They contained a higher quantity of stone than any other excavated features, and had diameters of 0.6 to 1.02m and depths of 0.17m to 0.42m respectively. Emerging from the side of the trench was a shallow slot (047) similar to slot 033 further to the north. At the base of the terminus of 047 was a small, flat, fairly fragile fragment of reddish sandstone. This was placed in a similar location to the stakehole in 033, but appeared to be too fragile to be a post pad. A small sherd of prehistoric pottery was recovered from the fill of this feature. A wide, shallow linear feature (073) may simply have been a natural hollow filled by ploughsoil.

At the south-eastern corner of the trench was a shallow pit (065). Other features excavated within the southern end of the trench included four large pits filled with a mixed deposit of material not unlike the topsoil with ash and soot mixed throughout it (063, 077, 079, 083). Also found within this area was a trench aligned approximately N–S which had been cut alongside the Carnoustie road, presumably to hold a cable or pipe.

Prehistoric pottery
Catherine McGill

The small assemblage of prehistoric pot recovered from Carlogie consists of five sherds and one small fragment, weighing 137.5g, representing a minimum of two, very fragmentary, vessels. These can be tentatively dated to the Late Neolithic. Full details are available in the excavation archive, deposited with the NMRS.

Two shallow pits (041 and 043), each produced fragments of single vessels, constructed from slightly different fabrics. These two vessels were handmade and carefully finished by wet-smoothing prior to firing. None of the sherds was worn, indicating their deposition occurred soon after breakage.

Vessel 1 (fill 042) was represented by one rim sherd and three body sherds. The body turned towards the rim, which was expanded and roughly flattened, creating internal and external lips. A single diagonal impressed groove occurred on the exterior of the rim sherd.

Although the orientation of the single rim sherd representing Vessel 2 (fill 044) was unclear, it appeared to derive from a fairly upright, straight-sided vessel. The very top and inside of the rim had been finger-smoothed leaving two distinct flat bands separated by a slight ridge. The higher of these bands, located on the top of the rim, was decorated with two fingertip impressions. This sherd had fairly extensive sooting on its exterior, which may result from use as a cooking vessel, but could equally be a by-product of firing.

In terms of form alone, parallels for these vessels are to be found amongst Neolithic, particularly coarse Late Neolithic, assemblages from the east of Scotland. For example, the rim of Vessel 1 is comparable to Late Neolithic vessels P42 from the A96 bypass of Kintore (Alexander 2000, 45, illus 26) and P83 from Balfarg (Barclay and Russell-White 1993). Vessel 2 is a less common form, but a superficially comparable vessel appears in the Neolithic assemblage from Bannockburn (Cowie 1993, 36, illus 6.2). Although the decoration occurring on the sherds is too limited to be incontrovertibly indicative of Impressed Ware, it is notable that sherds with fingertip decoration, both random and patterned, occurred in the Impressed Ware assemblage at Balfarg (for example, P93, P94, Barclay and Russell-White 1993).

The combination of the coarseness of the vessels, their form and decoration indicates a Late Neolithic date, although the fragmentary nature of the remains necessitates a note of caution. Late Neolithic assemblages have been associated with radiocarbon determinations falling largely within the first half of the 3rd millennium cal BC (see Cowie 1993, 21).

An additional, heavily worn fragment recovered from slot feature 047 is undiagnostic. It is identical in fabric to, and may be a displaced part of, Vessel 2.

Charcoal assessment
Mike Cressey

Methodology for this assessment is as described for Auchrennie (see below). Identified species included hazel, oak and pine. The assemblage is poor and includes only small fragments, providing little information beyond the presence of the normally expected species. A full list is available in the excavation archive.

Plant macrofossils
Mhari Hastie

The carbonised plant remains, recovered from 19 samples from the pits, were extremely sparse and poorly preserved. Only four samples contained any carbonised plant remains other than wood charcoal. One possible
Vicia/Lathyrus sp. (pea/vetch) seed was recovered from pit 009. Other plant remains consisted of a small number of poorly preserved and abraded seeds that could not be identified to species. The origin of the carbonised plant remains is unclear and they are unlikely to be directly associated with the features from which they were recovered. The quantity of plant remains retrieved from the samples is not sufficient to allow detailed discussion.

**Discussion**

Following the initial site evaluation it was thought that the site represented a small scale settlement characterised by a spread of negative features. However, the lack of definite post-holes or artefacts identified by the current excavation suggests that this interpretation is less certain. The excavation has demonstrated the similar character and nature of many of the features, although no stratigraphic links between any of them could be ascertained.

It remains difficult to characterise the site with so few artefacts or definable structural components. Of the artefacts that were recovered, the unabraded prehistoric pottery includes Late Neolithic types; however it must be remembered that, while diagnostic, these datable artefacts were only recovered from two features which may be unconnected with any of the others.

The function of the pits and slots is difficult to determine, although the pits appear to contain ash deposits. There were no traces of structures identified within this trench, and none was detected on aerial photographic coverage. Nevertheless, the site as recorded provides some useful information which may gain greater importance as future work is conducted in this area of Angus.

**Roundhouses at Auchrennie, Muirdrum**

**Introduction**

Trial trenching in March 1998 along the route corridor revealed this previously unrecorded site. It is located on the farmland of Auchrennie, at c 50m OD above the steep slope east of the Monikie Burn at Batties Den, c 500m west of Muirdrum and adjacent to the extant road (Illus 7; NGR NO 5583 3691). The site has open views towards the SE and the NW, and lies within undulating, fertile arable farmland. It is located on beds of Devonian Old Red Sandstone overlain by drift geology consisting of till boulder clay and morainic drift (Macaulay Inst 1982).

Three machine-dug trial trenches exposed what appeared to be the plough-truncated remains of a timber-built roundhouse and associated paving, pits and post-holes, together indicating the presence of a prehistoric settlement or farmstead. The site was fully excavated in February and March 2000, within a single trench measuring c 17m by 15m that encompassed the full extent of the features identified in the trial trenches. Topsoil was removed by earth-moving machinery, with all subsequent excavation conducted by hand. All identified archaeological features were fully excavated and bulk sampled, with additional Kubiena tin samples taken from the fills of certain features to allow soil formation processes to be further investigated.

The topsoil consisted of a mixed dark brown sandy loam, generally 0.3–0.35m thick. Subsoil beneath the topsoil consisted of orange sandy gravel. The subsoil surface had been scored at regular intervals by the plough. All surviving archaeological remains were preserved only as negative features cut into the subsoil. There was no evidence for the survival of buried soils or occupation deposits. The dispersed nature of the archaeological features meant that there were few stratigraphic connections between them.

The excavation recorded what are interpreted as the remains of two overlapping timber-built structures (Structures A and B), with very few other features identified.

**Structure A**

The larger, western structure was the better preserved. It had a penannular ground plan with an entrance on its south-east side. Its surviving remains comprised the post-holes defining its wall, which appear to represent at least two structural phases and presumably formed the main supports for a roof; elements of a discontinuous ring-ditch present around the periphery of the interior; and a scatter of internal pits and post-holes including a distinctive large rectilinear pit.

**Wall-lines and entrance**

The wall-line of Structure A was defined by a complex ring of post-holes (Illus 7; running clockwise from the south-west these are: 017/033, 034, 041, 036, 001, 002/047, 004, 006, 005, 008, 009, 010, 011, 014/022/052, 037/053, 048/051/055, 045, 044/056). The post-holes varied in surface diameter from c 0.4m to 0.8m and in depth from c 0.2m to 0.55m, and had very similar sandy silt fills containing charcoal flecks. There was no clear evidence for any stone packing, either in situ or disturbed, within the post-pits, although their function as post-holes is apparent from the excavated profiles of the features.

At some locations two or even three adjacent or overlapping post-settings were present (017/033, possibly 036, 002/047, 014/022/052, 037/053, 048/051/055, 044/056). In certain cases excavation demonstrated that one post had replaced another (ie post-hole 017 replaced post-hole 033, Illus 8 c–d; post-hole 047 replaced post-hole 002). For the other multiple post-settings the identification of sequence was precluded owing to the undifferentiated nature of their fills, although it was apparent from their overlapping bases that the posts were successive rather than contemporary erections.
Illus 7 Auchrennie: location map and site plans.
Based upon an analysis of the spatial patterning of the post-holes, it is possible to propose two separate wall-lines, although other potential interpretations exist, particularly in relation to the form of the entrance. The limited stratigraphic evidence does not contradict this model, but provides little solid support. The two wall-lines follow much the same alignment around the SE (front) half of the building, but one diverges to run a little inside the other in the NW (rear) half. Both wall-lines have foundations laid out almost symmetrically around an axis running NW–SE through the centre of the entrance gap and post-hole 008 at the rear of the structure (Illus 7). Where three post-settings occur together (particularly symmetrical groups 001/002/047 and 014/022/052) it is less certain which post relates to each ground plan.

Six symmetrical pairs of post-holes (033 and 044, 041 and 048, 036 and 037, 002 and 014 or 001 and 022, 004 and 011, 005 and 010) and a rear post 008 define the outer wall-line, which describes a structure with an internal diameter of c 8.2m. These pairs were not equally spaced around the perimeter of the structure. The three pairs bounding the SE half of the building (033/044, 041/048, 036/037) and running around the
outer edges of the lengths of ring-ditch (see below) were spaced c. 1.8–2.4m apart, and were preserved over 0.3m deep. The three pairs (002/014 or 001/022, 004/011, 005/010) and the rear post (008) defining the NW half of the building were spaced at closer and irregular intervals, and survived generally 0.2–0.3m deep, with rear post 008 surviving only 0.18m deep. Post-holes 033 and 044 define an entrance break c. 3.5m wide.

Five symmetrical pairs of post-holes (034/045, 041/055, 036/053, 047/052, 006/009), and possibly a sixth marking the entrance (017/056), define the inner wall-line, which describes an internal space with a diameter of c. 7.6m. Certain post-holes (eg 033, 052) overlap elements of the outer wall-line. The post-holes are spaced more regularly around the circuit than was the case for the outer wall-line, at intervals of c. 1.8–2.4m, and there is less variation in their surviving depths between the front and rear of the structure, with most falling in the range 0.25–0.35m. The entrance to the structure, defined between post-holes 017 and 056, is a little over 3m wide.

The close relationship between the two lines indicates that one formed a direct replacement for the other, probably resulting from a repair to or replacement of an existing timber-framed wall. The presence of three overlapping post-settings at certain locations may however point to additional evidence for repairs. Consideration of the relative sequence of wall construction is discussed below, taking into account the evidence obtained from other components of the structure.

**Ring-ditch**

What are interpreted as two sections of a discontinuous internal ring-ditch occupied the peripheral interior space of the structure on the east and west. Both features comprised a shallow scoop cut into the subsoil, containing dark silty soil and angular stones, with several flat slabs apparently laid as paving on their surviving upper surfaces (Illus 7). The larger, western scoop (035, Illus 7) measured c 6m by 1.5m and c 0.2m deep. It had gently sloping sides and a roughly level base. The flat angular slabs set within the surface of its fill varied in size from c 0.2m to approaching 1m across (Illus 8 e–f). The eastern scoop 038 had a less regular form, probably as a result of poorer preservation. It measured up to c 4m long, 1.3m wide and was 0.05–0.15m deep, with very gently sloping sides and an uneven base (Illus 8 i–j and k–l). A couple of slab-like stones were positioned horizontally within the fill, but the majority of stones were smaller and sub-angular. Fragments of coarse, plain pottery were recovered from the fills of both scoops.

Patches of dark soil present on the subsoil surface around post-holes 045 and 044/056 may indicate that the eastern scoop formerly extended further south, as far as the entrance to Structure A, as was evident on the west side of the building. There was no surviving evidence to indicate that the ring-ditch once formed a continuous feature within Structure A.

It is reasonable to interpret the scoops as elements of a ring-ditch demonstrating two phases of use. In its first phase the ditch was an open feature, whereas its second phase was defined by the filling in and partial paving-over of this ditch.

The post-holes relating to the proposed outer wall-line of the building ran around the outside margin of the scoop (033, 041 and 036 on the west side; 048 and 037 on the east side). By contrast, those forming part of the inner wall line in some cases cut through the base or inner edge of the scoops (034 to the west; 055 to the east). In most cases it was not possible to determine any stratigraphic relationships between the post-holes and the scoops, owing to the undifferentiated nature of their fills (eg post-holes 036 and 041, Illus 8, e–f and m–n). As a result no post-hole was demonstrated to have been cut through the filling of the scoops, and mostly these features were only identified following the excavation of the material filling the scoops. The exceptions were post-holes 051 and 054, which were identified in the base of the eastern scoop but had been sealed beneath paving slabs, suggesting that these posts were removed before the filling of the scoop and the laying of the paving. As post-hole 054 forms part of Structure B, this stratigraphic relationship provides important evidence to suggest that Structure B preceded Structure A. The significance of the evidence relating to post-hole 051 is less clear, although spatial considerations indicate that it may have formed an element of Structure B.

**Other internal features**

There was limited evidence for other structural features within the building. An arc of poorly preserved post-holes or stake-holes (003, 007, 049, 039) extended around the rear, running concentric to the wall-lines and approximately extending the alignments of the inner edges of the ring-ditch sections. They may have formed the foundations for an internal screen or partition, or they may represent the remains of a post-ring on the inner margin of the ring ditch. Elsewhere, a scatter of post-holes and stake-holes was identified across the internal floor space, but these formed no coherent pattern.

The most distinctive internal feature was a large sub-rectangular pit (016, Illus 7). It was positioned slightly off-centre within the structure and its long axis ran parallel to the entrance. This feature measured 1.75m by 0.65m, with a depth of 0.25m. The cut was steep-sided with a level base (Illus 8 a–b). Its fill comprised sandy silt and several stones, including an upright slab towards its centre. Fragments of degraded prehistoric pottery were found within its fill. The function of this pit was not evident upon excavation, and features of this size are not typical components of prehistoric roundhouses in Angus. Its shape and dimensions suggested that it might be the remains of a grave, within which no human remains had survived as a result of the acidic soil conditions. To explore this
possibility further, the basal fill of the pit was grid sampled to allow phosphate tests to be undertaken. The analysis of these suggested that the feature had not contained a burial (Cressey infra).

Structure B

A sub-circular arrangement of eight post-holes (030, 026, 024, 023, 019, 015, 054, 051; Illus 7) appeared to indicate the position of a post-defined space c 5.8m NW–SE by c 5.2m NE–SW. The post-holes were of similar dimensions, measuring 0.25–0.45m wide and c 0.2–0.3m deep. They were spaced at intervals of c 1.6–1.9m, apart from to the south-east, where a c 3m wide gap between post-holes 030 and 051 probably defined an entrance. As with Structure A, the posts delimiting this structure were arranged in opposing pairs symmetrically around a central NW–SE axis (019/023, 015/024, 054/026, 051/030).

Three post-holes on the west side of Structure B were located within the wall-line of Structure A (015, 054, 051). In particular, post-holes 054 and 051 were cut into the subsoil in the base of the eastern segment of the ring-ditch belonging to Structure A, in both cases sealed beneath paving stones laid on the surface of the infilled scoop. Post-hole 051 overlapped with post-hole 055, interpreted as part of the inner wall-line of Structure A although, as their fills could not be differentiated, no stratigraphic relationship was established between them. However, there is sufficient spatial and stratigraphic evidence to demonstrate that Structure A and Structure B could not have stood at the same time, and that Structure B was primary, since some of its component post-holes were sealed beneath elements of the Structure A ring-ditch.

Other features

A sub-rectangular pit (018) was located c 4m south of the entrance to Structure A. This feature measured 1.08m by 0.61m, with a maximum depth of 0.11m. An isolated post-hole (031) was also identified to the rear of Structure B. Otherwise, the excavation trench was devoid of archaeological features outside the ‘footprints’ of the structures.

The finds

Few artefacts were discovered during the excavation at Auchrennie. Coarse, undecorated pottery fragments were recovered from a variety of features relating to Structure A, including the ring-ditch scoops (035, 038) and the large rectangular pit (016).

Two chipped stone pieces were also found, and have been identified as a fragment of a split flint pebble from the eastern ring-ditch scoop (038) and a tertiary chip of red (burnt) flint from a Structure A post-hole (009). This material cannot be closely dated (Warren in archive).

Prehistoric pottery

Catherine McGill

The small assemblage of prehistoric pot recovered from the structures at Auchrennie consists of 15 worn sherds constructed from two slightly different fabrics and probably representing two different vessels.

Three sherds, each coming from a different pit or post-hole of Structure A (013, 045, 048), are constructed from Fabric 1, a fairly fine clay with very few poorly sorted, sub-rounded basic dark igneous inclusions up to 7mm across. The exterior and interior of the vessel are buff and the core dark grey. The sherds come from a poorly constructed, fairly thick-walled vessel(s) and are heavily worn and probably residual. None of the sherds represents a diagnostic part of a vessel so specific dating is not possible.

The remaining 12 sherds, including two rim sherds, are constructed from Fabric 2. This differs from Fabric 1 only slightly, in having occasional stalk-like organic inclusions in addition to the basic dark igneous rock, and it is possible that both fabrics occurred in a single vessel. Research by the author has demonstrated that, although organic tempers occur intermittently throughout prehistory in eastern Scotland, there is a notable increase in the proportion of these fabrics from the last half of the first millennium BC, for example at Broxmouth (Cool 1982) and at St Germains phases 4 and 5 (Alexander and Watkins 1998).

The Fabric 2 sherds were recovered from pit 016 and the fills of the ring-ditch (033, 038). Again, all the sherds were worn and probably residual. The rim of the vessel was slightly thickened and rounded, but the fragmentary sherds reveal no more than this and again the vessel cannot be specifically dated.

Radiocarbon dates

There were no in situ burnt deposits preserved on site, and all carbonised material was scattered throughout the fills of the excavated features. This suggests that carbonised material occurred only in residual contexts, meaning that any radiocarbon determination obtained would not date the feature from which the dated material derived. Nevertheless, it was considered worthwhile to obtain single entity AMS dates from a range of contexts, to provide an indication of the likely period(s) of activity represented by the two structures. Since the excavation did not reveal complex or extensive remains, it was believed that the most likely source for the carbonised material was activities associated with the two seemingly isolated structures.

Four samples of wood charcoal were initially submitted for dating. The dates returned (Table 2) all had calibrated ranges within the middle of later second millennium cal BC (AA-51543–6). These dates were unexpectedly early, as it had been assumed that the morphological characteristics of Structure A indicated a ring-ditch house of first millennium cal BC date, comparable to structures elsewhere in Angus at
Table 2 Radiocarbon determinations for Auchrennie (calibrated using OxCal v. 3.10, Bronk Ramsay 1995; 2001).

<table>
<thead>
<tr>
<th>lab number</th>
<th>sample context</th>
<th>material</th>
<th>lab age BP</th>
<th>2σ range, cal BC</th>
<th>d(^{14}C) (‰)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AA-51543</td>
<td>Structure B, post-hole 023</td>
<td><em>Corylus avellana</em></td>
<td>3315 ± 45</td>
<td>1740–1490</td>
<td>-26.7</td>
</tr>
<tr>
<td>AA-54913</td>
<td>Structure A, post-hole 034</td>
<td><em>Hordeum vulgare</em></td>
<td>3235 ± 60</td>
<td>1670–1400</td>
<td>-21.8</td>
</tr>
<tr>
<td>AA-51546</td>
<td>Structure B, post-hole 024</td>
<td><em>Corylus avellana</em></td>
<td>3210 ± 45</td>
<td>1610–1400</td>
<td>-26.3</td>
</tr>
<tr>
<td>AA-54912</td>
<td>Structure A, post-hole 009</td>
<td><em>Hordeum vulgare nudum</em></td>
<td>3180 ± 60</td>
<td>1610–1310</td>
<td>-22.6</td>
</tr>
<tr>
<td>AA-51544</td>
<td>Structure A, post-hole 041</td>
<td><em>Corylus avellana</em></td>
<td>3140 ± 45</td>
<td>1510–1300</td>
<td>-26.9</td>
</tr>
<tr>
<td>AA-51545</td>
<td>Structure A, pit 016</td>
<td><em>Corylus avellana</em></td>
<td>3010 ± 45</td>
<td>1400–1120</td>
<td>-27.1</td>
</tr>
</tbody>
</table>

Table 3 Charcoal species identification and total weights at Auchrennie.

<table>
<thead>
<tr>
<th>species</th>
<th>weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Salix</em> sp</td>
<td>0.4</td>
</tr>
<tr>
<td><em>Quercus</em> sp</td>
<td>14.5</td>
</tr>
<tr>
<td><em>Corylus avellana</em></td>
<td>3.0</td>
</tr>
<tr>
<td><em>Betula</em> sp</td>
<td>0.9</td>
</tr>
<tr>
<td><em>Alnus glutinosa</em></td>
<td>0.02</td>
</tr>
</tbody>
</table>

Plant macrofossils
Jennifer Miller and Susan Ramsay

Method
Cereal grains and associated weed seeds from the sorted flots were submitted for identification and interpretation. Carbonised cereal grains and other plant remains were identified using a binocular microscope and variable magnifications of between x4 and x45. Close reference was made to Jacomet (1987) and Hillman's unpublished teaching material for identification of cereal grains. Cereal nomenclature follows Zohary and Hopf (2000). Other vascular plant nomenclature follows Stace (1997). A summary of the results is shown in Table 4; full data by context are available in the excavation archive.

Structure A
Material from various post-holes and shallow features was available for analysis (specifically from...
The main cereal type identified from Structure A contexts was six-row barley (*Hordeum vulgare*). Although preservation of cereal grains was generally poor, it was possible to recognise hulled grain (*H. vulgare var vulgare*) from six contexts (001, 005, 009, 011, 013, 038), two of which (011, 013) also contained naked barley (*H. vulgare var nudum*). Cereal grains were generally in a fragile condition, and it was suspected that some might have broken further in transit. It was not possible to identify some of the broken grains, which were very fragmented. The only other food item identified during this study from Structure A contexts was a single fragment of hazelnut shell (**Corylus avellana**).

The weed seed assemblage was interesting, primarily consisting as it did of fruits of goose grass (**Galium aparine**). The only exception to this was one probable seed of wild oat (**cf. Avena fatua**). However, it is suspected that this assemblage is a result of processing, since the flots were all recovered from a large mesh diameter sieve, and that these seeds may only be a proportion of the actual weed assemblage. Seeds such as cleavers and wild oat have a similar size to grain and would be retained on a sieve mesh along with the cereals in a sieving process that has the sole purpose of recovery of grain. Rare fragments of indeterminate rhizome from contexts 010, 046 and 048 were the only other botanical remains encountered from Structure A. These are likely to be residual from turf, either from fuel or from the remains of a structural element.

**Structure B**

Material from several post-holes and shallow features was analysed (contexts 015, 019, 023, 026, 028, 029, 031, 032). The grain assemblage from Structure B was mostly indeterminate, although context 029 contained two grains that were identifiable as six-row barley (*Hordeum vulgare*). However, neither of these two grains was in good enough condition to be able to say whether it was of the hulled or naked type. A single putative oat grain (**cf Avena**) from context 026 was the only other cereal type identifiable from Structure B. A single fragment of hazel (**Corylus**) charcoal weighing <0.05g in context 015 was the only other botanical evidence recovered during this study from structure B. This taxon was regularly recovered from the site (**Cressey supra**) and is entirely in keeping with a prehistoric low altitude occupation site.

**Discussion**

A total of 135 cereal grains were identified from the

<table>
<thead>
<tr>
<th>context type</th>
<th>ow</th>
<th>outer wall post-holes</th>
<th>p</th>
<th>partition post-holes</th>
<th>rd</th>
<th>ring-ditch</th>
<th>ip</th>
<th>internal post-holes</th>
</tr>
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<tbody>
<tr>
<td>structure</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>context</td>
<td>all</td>
<td>003/1</td>
<td>007/1</td>
<td>013/1</td>
<td>046/1</td>
<td>038/1</td>
<td></td>
<td>ow</td>
</tr>
<tr>
<td>context type</td>
<td>ow</td>
<td>p</td>
<td>p</td>
<td>ip</td>
<td>ip</td>
<td>rd</td>
<td>ip</td>
<td>ow</td>
</tr>
<tr>
<td>taxon</td>
<td>carbonised cereals</td>
<td>cf Avena sp</td>
<td>cf oat</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>cf Avena fatua</td>
<td>cf wild oat</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Corylus nutshell</td>
<td>hazel nutshell</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Galium aparine</strong></td>
<td>cleavers</td>
<td>54, 5, 5, 5, 5, 21</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>miscellaneous</td>
<td>rhizome fragments</td>
<td>2, 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>cf pre-Quaternary spore</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>indet carbonised fragment</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>indet bud</td>
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<td></td>
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</tr>
</tbody>
</table>
site as a whole, of which approximately 60% were identifiable as six-row barley (*Hordeum vulgare* s.l.), including 13% further identifiable as hulled six-row barley (*H. vulgare var. vulgare*). The remaining 40% were not sufficiently well preserved to be confidently identifiable beyond indeterminate cereal type, although many of them are suspected to have also been barley grains.

The single grain of possible oat (cf *Avena*) may have been from a cultivated type, but the small size of the grain would suggest that it is more likely to have been the wild type (*Avena fatua*), rather than residual from a crop of cultivated oats (*A. sativa/strigosa*). One seed in the assemblage was more confidently identifiable as wild oat (*A. fatua*), with identification criteria based on grain size and the shape of the abscission scar at the base of the grain. This find indicates that wild oats were likely to have been present as part of the crop weed assemblage.

The occasional finds of rhizome fragments in the assemblage from Structure A are suspected to be residual from the burning of turf. The charcoal assemblage from this site is mainly oak (*Quercus*), with identification criteria based on grain size and the shape of the abscission scar at the base of the grain. This find indicates that wild oats were likely to have been present as part of the crop weed assemblage.

The charcoal assemblage does not include evidence of rhizomes, suggesting that the main sources of fuel did not include turf, and suggesting a more specialised use for this resource. Burnt turf has been encountered frequently by the authors on archaeological sites in situations indicative of the damping down of fires for cereal parching (eg Miller et al 2000), and given the association of turf indicators to cereal grains at this site, it is entirely feasible that cereal parching is the original provenance of this material here too.

More contexts were available to be examined from Structure A than Structure B, but it was still possible to observe that the cereal grains from Structure A were better preserved than those from Structure B, although none was in prime condition. However, the fact that most of the contexts examined in both structures were from post-holes and shallow features would suggest that the incorporation of the grain might have occurred some time after the initial burning of the cereals, due to the scattering of general occupation debris or re-deposition of material following abandonment. This suggestion is given further weight by the fact that the charcoal assemblage from these post-hole and shallow features was varied, with most contexts containing a mixture of taxa. Nevertheless, the predominance of six-row barley and the presence of naked grain within the combined cereal assemblage from this site is entirely in keeping with what would be expected from a Bronze Age site on mainland Scotland. As mentioned previously, the weed assemblage may be related to the size of sieve mesh used during processing, rather than a true reflection of the entire carbonised weed seed assemblage. It is unlikely that goose grass (*Galium aparine*) would be the only weed represented on the site.

**Phosphate analysis**
Mike Cressey

Soil phosphate analysis was undertaken on 16 samples collected on a gridded basis from the basal fill of pit 016, a possible grave feature. The samples were measured against two samples of undisturbed subsoil taken from the base of pit 016 and from the subsoil surface adjacent to the pit, and against six soil samples recovered from other excavated archaeological features. Soil phosphate levels are normally increased in archaeological soils, especially in the presence of human and animal bone. Other organic residues accumulating from occupation of the site will also lead to local phosphate enhancement (Craddock et al. 1986; Dockrill and Simpson 1994).

The samples were air-dried and passed through a 3mm sieve. Between 8 to 18g of dry soil was fired at 550°C for three hours. A sample of fired soil was combined with P reagent powder and Phos Ver 3 Powder. 0.5ml of extractant was added to 25ml of deionised water and measured using a Hach DR/2000 spectrophotometer.

**Table 5 Average soil phosphate values (ppm) from pit 016, subsoil and other archaeological features.**

<table>
<thead>
<tr>
<th>Sample</th>
<th>ppm</th>
<th>Control ppm</th>
<th>Feature ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>016 pit</td>
<td></td>
<td>870.9</td>
<td>472.5</td>
</tr>
<tr>
<td>01</td>
<td>710</td>
<td>710</td>
<td>710</td>
</tr>
<tr>
<td>02</td>
<td>1195</td>
<td>1195</td>
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<tr>
<td>03</td>
<td>615</td>
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<tr>
<td>04</td>
<td>935</td>
<td>935</td>
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<tr>
<td>06</td>
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<tr>
<td>07</td>
<td>800</td>
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<tr>
<td>08</td>
<td>1185</td>
<td>1185</td>
<td>1185</td>
</tr>
<tr>
<td>09</td>
<td>890</td>
<td>890</td>
<td>890</td>
</tr>
<tr>
<td>10</td>
<td>980</td>
<td>980</td>
<td>980</td>
</tr>
</tbody>
</table>

**Results**

An average value of 870 ppm was attained from the sixteen samples taken from feature 016 (Table 5). A mean of 472 ppm was attained from two natural soil samples. The six archaeological features produced an average phosphate value of 934 ppm. These results show that samples from pit 016 and the six archaeological features share the same levels of phosphate.
enrichment, which is above the two natural soil samples. Although three samples from context 016 have attained values greater than 1000 ppm, these high spots are considered to have arisen from the increase in nutrients derived from occupation of the site. The analyses provide no support for the hypothesis that pit 16 was a grave.

Discussion

The excavation identified the remains of what appears to be a circular timber-built structure of 8.5m diameter (Illus 9). Structure A was probably roofed and used for a domestic purpose. A structure such as this, in association with later prehistoric pottery, could be seen to fall into the familiar British later prehistoric tradition of circular buildings. Ring-ditch structures are amongst the most common forms of such structures in NE Scotland and are typified by the site of Douglasmuir in Angus (Kendrick 1995). Comparable dates have been obtained from ring-ditch houses at Kintore, near Aberdeen (Cook and Dunbar forthcoming).

The number of post-holes, often adjoining, appears to provide evidence that the structure was in use over a period of time which would have necessitated its full or partial reconstruction, as posts were replaced and new holes dug for their foundation. The radiocarbon dates have borne this hypothesis out to a certain extent. Structure B could add weight to this theory, if it is, as suggested, an earlier structure of 5–6m diameter, which was replaced by the larger ring-ditch building.

The excavation of Structure A appears to indicate that larger, more widely-spaced posts were present in the front half of the building, with smaller more closely set posts present to the rear. This has implications for reconstructing the form of the building and the nature of its roof. It is possible that the varying depths of the post-holes primarily reflect small-scale variations in the level of plough truncation and archaeological survival, although there were no obvious differences in topography or subsoil character across the excavation area that could explain differential plough truncation.

Moreover, this factor would not explain the irregular post spacing around the wall-line. This spacing might indicate that the weight of the roof presumed to have been supported by the post-ring did not exert downward pressure equally around the wall-line, perhaps suggesting a conical roof with its apex located off-centre. Alternatively, perhaps the posts 004, 008 and 011, which appear to be single posts in the gaps between replacement posts, might represent an attempt at shoring late in the life of the structure.

The apparent lack of any kind of porch structure at the entrance may be the result of truncation, but equally it could be one factor which sets this early building apart from the later ring-ditch structures in the area. The small post-hole 043 could be the only remaining evidence for a porch, however. The large pit towards the centre of the structure is also an unusual feature. Although in size and shape it appears very similar to a grave cut, the fill was extensively sampled...
The route of the A92, Dundee to Arbroath

and phosphate analysis suggested that this was unlikely to have been its function. A storage area would seem more likely, in which case it has smaller parallels at Douglasmuir (Kendrick 1995, eg illus 27).

Mains of Kelly (North) Trenches 2–4

Three evaluation trenches excavated at Mains of Kelly revealed several features spread along c 65m of the route. Although no dateable artefacts were recovered from the fills of these features, due to their form, depth and comparison with other excavated examples, they are considered to be of prehistoric date.

Trenches 2–4 were excavated through a dark brown organic silty sand topsoil which measured up to 1.2m in depth and overlay a gravelly, coarse sand subsoil. Two and possibly three ring-ditch/enclosure features were revealed (Illus 10). It is thought that a high degree of truncation has occurred within this area due to the shallow nature of the surviving features.

At the east end of Trenches 2 and 3 a section of U-profiled, curvilinear ditch (1075) was identified. Its exposed dimensions were 8m in length by 0.7–0.8m in width by 0.2m in depth. The fill comprised a mid brown silty sand with a few small pebbles and flecks of charcoal. No artefacts were recovered from within this context. The diameter of the feature identified within trenches 2 and 3 is estimated to have measured from 12 to 15m. Situated against its inner edge in Trench 3 was a shallow, irregular feature (1078) measuring 1.08m in length by 0.6m wide and 0.1m in depth, with a concave base with dark brown, organic, silty sand fill; it is quite likely that this feature could be the result of animal burrowing.

To the west of Trench 3 was 1080, a possible post-hole/scoop, measuring 1.7m in length by 0.5m wide by 0.1m in depth, the fill comprising a dark brown silty sand. Adjacent to it was a ditch feature (1082), V-profiled with exposed dimensions of 2m in length, 0.5m in width and a depth of 0.21m. The fill comprised a mid brown, silty sandy fill with occasional pebbles and flecks of charcoal with patches of ill defined orange-yellow sand.

In Trench 4, 1084 was a 2m long curvilinear feature, U-shaped in profile, 0.7–0.8m in width and 0.12m in depth. The fill was a coarse sandy silt with occasional patches of a coarser gritty gravel, cut in places by patches of yellow sand. To the west, a section of linear ditch (1086) running N–S and comprising a roughly
V-shaped cut in profile was 1.05m in width by 0.3m in depth and filled with a dark brown medium coarse sandy silt. The ditch showed signs of a possible recut. Further to the west was an irregular cut (1088) measuring 1.15m by 0.5m wide and aligned E–W, with an undulating base which was deepest (0.25m) at its eastern side. The fill comprised an organic dark brown humic silt with occasional rounded stones.

Mains of Kelly (South) Trench 12

This trench had dimensions of 1.6m by 24m and topsoil had a depth of up to 0.3m. Modern ploughmarks were visible on the subsoil surface. Five pits were identified in this trench (Illus 11). Pit 769 measured 0.37m diameter with a depth of 0.04m. To the west, Pit 770 measured 0.7m by 0.58m and was sub-circular in plan, with a depth of 0.09m; it had gently sloping sides with a flatter base. This pit produced a substantial amount of Neolithic pottery within a charcoal-rich fill (MacSween infra). Four large rounded stones were located at its base. Pit 771 had dimensions of 0.35m diameter and 0.12m depth. A single modern ploughmark was visible running through all three of these pits. Pit 772 measured 0.23m diameter with a depth of 0.13m. Pit 773 ran under the northern baulk and measured 0.55m along the baulk, 0.32m wide with a depth of 0.13m. It had a relatively gritty silt fill.

Three Mile Wood Trenches 32 and 33

On the edge of ground sloping down to Three Mile Burn, a number of features were revealed and partially excavated (NGR NO 6057 3910; Illus 12). Trenches were concentrated at this point because a number of NE to SW-aligned features were visible on aerial photographs extending into the study corridor.

With the exception of feature 1041 and perhaps 1045, the various cuts and fills seen in Trench 32 could not easily be ascribed a function or date. Linear features 1050 and 1052 may be related and give the impression of belonging to later agricultural activity. This is of course speculative, but without further information it is difficult to provide a more concrete
Illus 12 Three Mile Wood: Trenches 32-33 site plan and sections (see Illus 11 for location).
intermediate, irregular, shallow cuts and mixed nature of the fills.

The large, regular pit 1041 in the NE corner of the trench was one of the very few features with stratified deposits. It had clearly defined limits and was of a sufficient size to remove any doubt that it was anthropogenic. The cut was an irregular oval with an estimated length of 2.1m, of which 1.05m was visible, a width of 1.25m and a depth of 0.8m. The primary fill was a moderately compact, dark reddish brown, gritty silt with yellow coarse sandy striations and infrequent rounded pebbles, 0.3m in thickness, and containing fragments of burnt bone. The secondary fill was a dark brown fine silt, 0.4m thick, again including occasional yellow coarse sandy striations. These are most likely the result of water flowing through the deposit. The fragments of burnt bone recovered from its fill were too small for dating or identification.

The small feature 1045, partially within the trench, may be a truncated post-hole. If circular, the diameter of its cut would be 0.54m. The cut profile was an even gentle rounded curve to a maximum depth of 0.17m. The fill was a loose homogenous dark brown fine silt sand with very few stone inclusions. As with the other features in this trench, function and date were difficult to determine with any certainty.

Within Trench 33, a number of interesting features were revealed, two of which (1065 and 1069) yielded prehistoric pottery. The linear feature 1060 crossing the trench at the east end was not dissimilar to 1052 in Trench 32. While 1062 is clearly a modern rig it is by no means certain that 1060 is of a similar origin. Feature 1065 was problematic in that the form of the feature lends no clue to what function it might have served but, despite nearby animal disturbance, pottery was recovered from a secure context within the feature. Without these finds this feature, because of its irregular nature, might have been dismissed as entirely due to animal disturbance. The cut spanned the width of the trench and had a depth of 0.11m and width varying between 0.4m and 0.9m. The fill was a loose, homogenous, light/mid-brown, coarse sand with small gravels.

Features 1067, 1069, 1071 and 1073 were similar in form, generally circular in plan and bowl-shaped in section, though differing in size. However, the fill of 1071, the deepest of these features, was stratified into three layers, a comparatively unusual occurrence with these features. The latest fill had a depth of 0.11m and consisted of the ever present homogenous mid brown coarse sand and gravel with rounded stones. This was divided from the primary deposit by a 0.03m lens of organic, dark-brown, charcoal rich, sandy silt. The primary deposit, some 0.45m deep, was not dissimilar to the uppermost stratum but with some degree of sorting. Pit 1069 produced prehistoric pottery of uncertain date.

Given the close proximity of Trench 32 to Trench 33 and the artefacts retrieved from that trench, there is an overall density of activity, which, when allied to the aerial photographic evidence points towards a high level of prehistoric activity at this site. The nature of this activity is impossible to determine from the current evidence.

The finds

Pottery from Mains of Kelly Trench 12 (Illus 13)
Ann MacSween

The assemblage from Mains of Kelly (South) pit 770 comprises sherds from three decorated Grooved Ware vessels. Sherds from a possible fourth vessel are undecorated. The fabric and technology of these sherds are comparable with those from the decorated vessels and it is possible that they represent an undecorated portion of one of the other vessels. A bag of fragments was recovered from sample sorting; these were not catalogued.

The sherds are described in detail in the catalogue. The fabrics of all four vessels are fine clay with 50–60% of crushed rock. All vessels have a slip. V1 has a rim with an interior bevel decorated with a line of impressed twisted cord along its mid-point. The exterior of the vessel is decorated with pairs of incised horizontal lines, some decorated with short incisions alternating down from the upper line and then up from the lower line, others with short lines running from one of the lines to the other. These lines are arranged in a chevron-based design.

V2 is represented by two body sherds. The decoration comprises pairs of thick incised lines with thick short vertical incisions between them, again alternating down from the upper line and up from the lower line. The third decorated vessel (V3) has a rim with an interior bevel decorated with two incised horizontal lines with slightly oblique lines between. On the exterior are pairs of horizontal lines with short lines running between them. At 26mm below the lip of the vessel is a line of incomplete perforations 4mm in diameter.

Recent excavations such as Dubton Farm, Brechin (Cameron 2002) and Kintore (Murray Cook, pers comm) have extended the east-coast distribution of Grooved Ware north from Fife, and Mains of Kelly adds another site to this distribution. Reviews of Scottish Grooved Ware (eg Barrowman 1994; MacSween 1995) have recognised a tradition with overall similarities but considerable variations in detail between assemblages. Some regional preferences in decorative technique are emerging, and the decoration on the Mains of Kelly assemblage has parallels with pottery from other sites in the south-east of Scotland. The alternating stabs may have been an attempt to replicate wavy lines—at Balfarg, Fife (Henshall 1993, eg illus 28, no 53a) among other sites, alternating stabs were used to produce wavy lines in false relief. Less
The route of the A92, Dundee to Arbroath

well-executed versions, similar to the decoration in the Mains of Kelly assemblage, have been noted at, for example, Beech Hill House, Perthshire (MacSween 1995, eg illus 9, SF 20). Perforations, or partial perforations were noted on vessels from Balfarg (Henshall and Mercer 1981, 130, Fig 43.16; Henshall 1993, eg illus 30.63) and also on pottery from Beech Hill House (MacSween 1995, eg illus 9, SF 20).

Ashmore (1998) in his analysis of the available dates for Scottish Grooved Ware, has urged caution in dealing with the early dates for Grooved Ware, namely true dates between 3300 and 3100 BC, suggesting that nothing more precise can be said than that they date to somewhere in the period 3400 to 3000, due to plateaus in the calibration curve. Most of the available Grooved Ware dates precede 2500 BC.

Catalogue (Illus 13)

V1 Four rim sherds and nine body sherds (one from residue sorting) from a coil-constructed vessel (N-shaped junctions). The rim has a slight interior bevel with a line of impressed cord along its mid point. The exterior of the vessel is slipped and decorated with incised decoration comprising ?chevron-based design formed of parallel incised lines with alternating stabs from the top then the bottom band, or with stabs which cross from one line to the other. The decoration has been made with a thin (c 1mm wide) object, probably a knife or blade. The fabric is fine clay with c 60% of angular rock fragments which has fired hard and is grey with red/brown surfaces. There is light sooting on the exterior. The interior is fire-cracked. Th 9mm; Dia est 200mm.

V2 Two adjoining body sherds from a coil-constructed vessel (N-shaped junctions). The exterior is covered with a thick slip into which is incised thick (3mm) grooves, possibly arranged in a chevron-based design. Some pairs of lines have thick stabs alternating down from the upper line then up from the lower line, giving the impression of a thick zig-zag in false relief. The fabric is fine clay with c 50% of angular rock fragments which has fired hard and has a grey interior and a red exterior. There is light sooting in the interior. Th 10mm; Wt 35g.

V3 Rim (broken in two) and two decorated body sherds. The rim has a slight interior bevel decorated with two incised parallel lines with slightly oblique lines crossing from one to the other. The exterior surface is slipped and decorated with parallel incised lines with short lines crossing from one line to the other. The pairs of lines appear to converge, possibly to form a triangle-based design. 26mm below the lip of the vessel is a line of incomplete perforations 4mm in diameter. The fabric is fine clay with c 50% of angular rock fragments which has fired hard and is grey with red/brown surfaces. There is light sooting on both surfaces. Th 8–9mm; Dia est 240mm; Wt 43g.

V4 Nine body sherds and one sherd from the interior of the base. The exterior surface is slipped and there are traces of an incised line on one sherd. The fabric is fine clay with c60% of angular rock fragments which has fired hard and is red. Th 9mm; Wt 43g. (Not illustrated.)
**Coarse stone from Mains of Kelly Trench 12**

Adam Jackson

Four finds of coarse stone were studied, all from pit 770 that also yielded pottery of prehistoric date. Only two, however, showed any clear evidence of use. These are classified as plain cobble tools; neither has been modified prior to use and both are identified by the damage to the object formed through use. One granite cobble had been used as a hammerstone and the other, an oval gneiss fragment, as a rubbing stone or grinder. Given that the two cobble tools are crude and expedient finds, and that such artefacts are commonplace on Scottish sites of prehistoric through to Early Historic and later date it is impossible to draw any chronological conclusions from this small coarse stone assemblage.

**Charcoal from Three Mile Wood and Mains of Kelly**

Mike Cressey

Oak, willow and birch were identified in six samples from Three Mile Wood, and oak, birch and hazel in four samples from Mains of Kelly, but only in trace amounts. The assemblages were too small (total weight 1.03g and 1g respectively) to make any meaningful judgements on local woodland index or taphonomy. A full catalogue forms part of the project archive.

**Discussion**

Several groups of evaluation trenches between Nether Kelly and Balcathie produced evidence of scattered pits, shallow scoops and ditches, suggesting that the area was a focus of activity in the prehistoric period. Whilst the dating evidence from the excavated features is limited, pottery finds suggest that there was certainly some occupation in the Later Neolithic. Unfortunately, owing to the nature of the excavation, consisting entirely of narrow linear trenches in this part of the route, it has not been possible to interpret this activity. The findings are presented here simply to provide a background on which future work in the area may be based.

**A ditched promontory site at Elliot**

During the 1998 trial trenching, a section of ditch, two long cist burials and various other features were revealed at Elliot, near Arbroath, at the extreme eastern end of the road corridor (NGR NO 6176 3940; Rees and Cameron 1998). Subsequently, during November 1999, an excavation was carried out that revealed a suite of the road corridor (NGR NO 6176 3940; Rees and Cameron 1998). Subsequently, during November 1999, an excavation was carried out that revealed a suite of features which future work in the area may be based.

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The site was located on a small promontory at the SE corner of a large, level field. The finger-shaped spur of land upon which the site was located (Illus 14) was oriented approximately E to W with Elliot Burn on its northern margins and the A92 on its southern side. At the eastern end of the promontory the ground falls away sharply. From the site it is possible to view the coast to the NE for a considerable distance; this may well have been a deciding factor in its use as a settle-ment focus. Only after excavation, when the ditch was fully excavated, was the extent of the ditched promon-tory realised. Now reclaimed, the ground to the SE of the site is flat, sandy and taken up by a golf course, but before reclamation the tidal limit may have reached the site, as it would have with the higher sea levels which are thought to have occurred in the Iron Age (I Ralston, pers comm).

The topsoil consisted of a dark brown, sandy silty soil and varied in depth from 0.25m to 0.40m. The sub-soil comprised a mixture of sands, gravels, pockets of orange silt and occasional areas of dense clay. Evidence was revealed for a natural palaeochannel which was filled with fine, organic, black silts. All archaeological features proved to be cut into subsoil. There was no evidence of any areas of buried ground surface or ploughsoils which could have been related to occupation of the site.

The dispersed nature of the negative features meant that few stratigraphic connections existed between them. Excavation revealed principally the remains of an enclosed promontory site estimated to measure 80m in length by 70m wide at the western end and 35m at the eastern limit. It is possible that, prior to the damm-ing of the Elliot Burn sited immediately to the north, a burn may have run along the north and east sides of the promontory.

**The segmented ditch**

Enclosing the promontory on the western side was a ditch (004) of distinctively segmented construction (Illus 14–15). This feature had initially been interpreted, during the evaluation, as a souterrain on the basis of a shorter exposed length. The ditch was the largest man-made feature encountered, with an exposed length of 27m within the trench, of which a 17m length was fully excavated. The ditch appears to have been dug in several adjoining straight sections of varying depths, up to 1.5m deep and 3.25m wide at the top.

The filling sequence of the ditch was found to be similar along the whole of its excavated length (Illus 16). The top fill comprised a fine, mid brown, slightly sandy silt (eg 006) which appears to be a windblown, topsoil-derived deposit. The sequence of stones recovered within this feature comprised a primary basal deposit of large reddish sandstone slabs (possibly deriving from either a wall face or from the stone capping), overlain by numerous, large, water-rounded rocks averaging 0.35 to 0.5m in diameter. The tumbled stone was always found to lie predominantly on the eastern side of the ditch, which would suggest that the rampart originally stood on this inner side. The lack of evidence for any mortar
Illus 14 Elliot: location map and site plan.
or clay within this fill is probably an indication that the rampart was of a drystone construction. There was no in situ evidence for a rampart, however. The lower fills of the ditch were characterised by lenses of organic silts and clayey silts with lenses of sandy gravels derived from the parent subsoil material inwashed from the sides of the ditch. These deposits are consistent with a gradual, natural infilling of the ditch.

Internal features

Within the area defined by the ditch was a scatter of features including a small cluster of graves, a spread of stones, several pits, and a palaeochannel.

In total, three graves were excavated. Two stone-lined long cists (079 and 080) produced the fragmentary skeletal remains of two individuals (Illus 17), while a possible unlined grave (012) was devoid of any skeletal remains. The two heavily truncated long cist graves were revealed during trial trenching and the dug grave was discovered during the main excavation.

Burial 1 (079) comprised the remains of a stone-lined and floored long cist (1003). Constructed with locally available micaceous olive green sandstone, this cist measured 1.54m in length by 0.5m wide. The side slabs had been truncated so heavily that they survived only to a height of 0.08m. Upon initial discovery, this gave the impression that the capstones, rather than the floor, of the cist had been revealed. The slabs measured
from 0.08m to 0.1m in thickness. No end slabs were present and it is suggested that these had been removed by the severe plough truncation. Fragmentary remains of an adult individual survived at its base. The human remains (1004) recovered from the cist comprised several vertebrae, cranium fragments, some ribs and the upper arm bones. A radiocarbon date was obtained from the bone (GU-10582) which indicated a date of AD 530–710 (2σ).

The adjacent burial (Burial 2, 080) comprised a heavily truncated long cist constructed from locally available sandstone, measuring 1.8m in length by 0.8m in width with the very fragmentary remains of upright side slabs which had also been almost completely destroyed by plough truncation. The floor of the cist was formed by slabs of sandstone, irregularly shaped with frequent gaps (1006). The basal slabs all measured 0.3m to 0.45m across. The badly truncated skeletal remains of an adult inhumation were revealed, comprising fragmented lower vertebrae, ribs, partial left and right femora and fragments of pelvic bone. The bone was submitted for radiocarbon dating (GU-10668) and produced a date range of AD 540–690 (2σ).

Sited close to the two long cists was an elongated oval feature (012) with fairly steep sides; it measured 1.4m in length by 0.55m wide by 0.43m deep. Its upper fill was characterised by numerous stones roughly 0.1m to 0.2m in diameter which were set within a matrix of homogenous brownish slightly sandy silt. The lower fills were similar but without the stones. A small, copper alloy ring (SF 8) and an iron bracelet (SF 6) were found lying on the floor of the feature. Although no trace of human remains was recovered, due to its location close to the long cists and the overall plan and morphology, this feature has been interpreted as a grave in which human remains have not survived the acidic environment.

Feature 002 was a shallow scoop lying adjacent to the possible grave 012. It measured 2.2m in length by 1.4m wide, was aligned E–W, and was 0.1m deep. Occasional large, flattish stones were visible in the base of this feature. This feature displayed characteristics which may allow it to be interpreted as a grave, although no fragments of bone were recovered to confirm this. A small cannel coal fragment was recovered from the fill.

On the northern side of the trench, three pits were excavated. At the NW of the group was pit 018. Measuring 1.1m in diameter, this pit was fairly shallow (0.15m) with a saucer-shaped profile. Located 2.7m to the east was pit 019, measuring 1m in diameter with a shallow, saucer-shaped profile and a depth of 0.18m. Pit 020 was 2m to the south. With a diameter of 0.65m and depth of 0.33m, this vertical-sided feature contained a large stone which may have been used as a quern or rubbing stone. This stone was lying within the pit at such an angle as to infer it had been tipped into the pit as opposed to having been deliberately set, like a packing stone. Overall, this stone measured 0.43m in length by 0.35m wide and was 0.08m in thickness. The upper surface had been worn smooth and the opposing side was flat but without an obvious worn surface.

Further to the south, 7m from the segmented ditch 004, feature (035) comprised a large circular pit, 0.7m in diameter by 0.5m deep, with almost vertical sides and a flattish bottom. The pit was filled with numerous largish stones, 0.15m to 0.2m in diameter, set within a dark brown silty fill.

A stone spread (078) was noted during the trial trenching exercise. Further excavation revealed that the stones were largely restricted to the area of the previous trial trench. The feature comprised a number of large flattish slabs and measured approximately 4m in length by 1m wide. The overall size and shape suggested that the feature, previously thought to be paving, is potentially a detached length of wall foundation. No artefacts were recovered within or near the paved/foundation area.

Upon removal of topsoil, it was thought initially that feature 038 was of man-made origin as it had a sooty fill. Further excavation revealed however, that it comprised a palaeochannel filled with a highly organic blackish silt. Excavation of a small trench across this feature revealed it to be of natural origin (M Cressey, pers comm).

**Finds**

*Chipped stone*

Graeme Warren

A total of 20 pieces were presented for analysis. Of these, five were worked flint, one a probably worked, although poor quality, agate and the remainder were quartz. Of the 14 quartzes, eight are only possibly worked: these chunks are fresh fractures but do not display coherent morphological features of flakes. However, it seems likely that most of these fractures are related to working: seven come from palaeochannel fill 031, where unambiguous quartz working is identified in exactly the same material. The archive report provides a detailed description of the assemblage.

Finds were made in a number of contexts from the surface, through fills of scoops (001) and the blackish fill of the palaeochannel. A number of pieces (five of the 12 definitely worked pieces) are abraded, and a further three edge damaged. This suggests that the small assemblage has been redeposited or disturbed. Nevertheless the material is broadly homogenous, and is treated as a unit in this discussion.

The quartz industry includes platform flakes and bipolar working and appears to have utilised rolled quartz pebbles—possibly collected from beach deposits. One piece (SF 10.2) has possibly been retouched, but this is an unusual artefact and the crudely modified edge may be damage. Most of the definitely worked quartz comes from the palaeochannel. The agate is a difficult piece to interpret with an exceptionally irregular fracture, however it appears to have been worked at two perpendicular angles and is presumably therefore not natural.
The small amount of flint present is remarkably consistent in type, consisting of three blades, a regular flake and a small chunk – possibly a thermal fracture. Cortex is present on two pieces, and indicates a pebble source; this also is presumably to be found on the beaches nearby. Flints were found in the palaeochannel, on the surface and in a grave fill, a comparable distribution to the quartz. The blades and flake all demonstrate light platform preparation (scrubbing) and difficulties with hinging fractures. Platforms are slightly elongated, rather than punctiform in type. There are no retouched pieces. It is difficult to be certain, especially with such a small sample, but this assemblage is likely to be early prehistoric in date (Mesolithic to Early Neolithic). The quartz assemblage is not diagnostic but given its association with the flint there seems little reason to doubt that it is of the same date.

In conclusion, the small assemblage from Elliot is probably of early prehistoric date indicating the use of quartz and flint, although it is not possible to determine the character of activity. The assemblage is not in situ but indicates some kind of activity in the immediate area of the site.

Miscellaneous artefacts
Fraser Hunter

Cannel coal

Ring pendant fragment SF1 Cannel coal, well finished, with an hour-glass perforation. The section is incomplete but probably oval. Only 15% survives; originally 35–40 mm in diameter, with a perforation c.10mm D; W 13.5mm, surviving H 10mm. Fill 001 of scoop 002.

The size and shape is large for a bead, and it is most probably a pendant, a typical Iron Age / Early Historic type (Hunter 1999, 333). XRF analysis shows it is highly organic with a very clean spectrum, but its physical characteristics are not typical of jet and it is most probably a highly organic cannel coal. This occurs in Carboniferous deposits, which are not found in Angus; the nearest sources are in Fife. Artefacts of cannel coal and related materials are uncommon on Iron Age / Early Historic sites in Angus, and there is a preference for pendants in the small sample, with other examples from Carlungie, Finavon and West Grange of Conon; a globular pinhead/gaming piece from Hurly Hawk completes the limited corpus (unpublished, found after main excavations (NMS HD 1924); Childe 1935, 76, fig 16; Jervise 1862, 497; Taylor 1982, 239, no 114).

Metalwork

Note: Copper alloys were analysed by non-destructive X-ray fluorescence (XRF), without surface preparation, to give a broad characterisation of alloys used.

Bracelet SF6 Iron decorated penannular strip made from a rectangular-section bar with slightly rounded edges and overlapping rounded terminals. Decoration comprises four circumferential ribs. Intact when buried, but only two-thirds now survives. D 70–72mm, H 7.2–8.3mm, W 2.5–3mm. Lower fill 013 of ?grave 012. Illus 18.

No exact parallels have been found, although fragments on a settlement site would not be easily identified. Iron bracelets are rarer than copper alloy ones, and the decoration does not fit standard Roman or Anglo-Saxon types. Better general parallels in form (but not decoration) come from Iron Age contexts; there are a number of iron bracelets from burials, typically plain (Whimster 1981, 230, 261–2, 269, 274, 279, 300–2; Stead 1979, 75; Stead and Rigby 1989, 102; Fitzpatrick 1997, 99–100). The form is best paralleled at Whitcombe, Dorset (Aitken and Aitken 1990, 72); an example from Hod Hill, Dorset is similar but with a circular section (Manning 1985, 78). While circumferential ribbing is rare, there are analogies in more ornate northern British bronze bracelets (MacGregor 1976, nos 211–12). On balance the Elliot bracelet is most consistent with an Iron Age date, although this remains tentative in the absence of close parallels. (Illus 18).

Ring SF8 Slightly irregular, cast leaded bronze with minor zinc. Plano-convex section. Rings are hard to categorise, and there is no wear to indicate a possible function, but the asymmetrical section suggests it was intended to be viewed from one side only; it could be a clothes fastener, perhaps for a belt. Ext D 31 x 32.5mm, int D 18.5 x 20.5mm, ring W 6–6.5mm, H 3mm. Lower fill 013 of ?grave 012. Illus 18.

?Peg or staple SF2 Triangular-sectioned iron bar, one end rounded, the other with a triangular point at right angles to the end. Probably a post-medieval peg or staple of agricultural use. L 150mm, W 14.5mm, H 23.5mm. From disturbed soil overlying Burial 2.
The route of the A92, Dundee to Arbroath

Spoon handle SF 5 Post-medieval, copper-nickel-zinc alloy. L 69mm, W 26mm, T 3mm. Layer 1021, overlying paved area 078.

Nail shank fragment SF11, tapering to tip. L 33 mm, shank 4.5 x 4.5 mm. Palaeochannel fill 031.

Nail SF14, the tip clenched over. L (straight) 30 mm, head 14 x 10 mm, shank 6 x 5 mm. Lower fill of palaeochannel 039.

The significance of the pendant fragment from 002 is even more speculative. It could be dismissed as settlement rubbish, perhaps contemporary with the use of the enclosure.

However the spatial association with the long cists and the common orientation suggested to the excavator this could be the truncated remains of a dug grave. As discussed above, artefacts are exceedingly rare in early Christian tradition, although there is a long cist burial from St Andrews with just such a ring pendant (Hay Fleming 1909, 411–2). When finds occur they tend to be fragmentary items in the grave fill, and are usually dismissed as residual, but excavations at Barhobble, Wigtownshire, suggest this may be over-simple (Cormack 1995). Here among an extensive 10th to 12th-century graveyard around a church, a number of the graves contained items which cannot readily be dismissed as accidental inclusions, such as a pair of shears, a piece of exotic porphyry, and a fragment of unusual Romano-British glass bangle (Cormack 1995, 36, 39, 51). There are other examples from early Christian burials, particularly with ornaments, such as a cannell coal armlet fragment from Parkburn, Lasswade, and a fragmentary ring-pendant from West Grange of Conon, Angus (Henshall 1956, 264–5, 277; Jervise 1862, 497). Their personal nature suggests they may have been valued items broken as part of the burial rite and included as tokens, perhaps the deceased’s possessions, perhaps from a mourning relative; they may have been seen as some form of talisman. The Parkburn and Elliot fragments both show typical fracture patterns; the Conon example is more complex, and clearly saw long use before it was deposited. It has a pronounced groove worn by the thong, with a large flake broken off here through wear; it then continued in use until the ring broke, with one broken edge then being cut at an angle shortly before burial. Its long use shows it was a valued item, suggesting it was rather more than an accidental intrusion. In general there is some evidence for the inclusion of broken artefacts, especially jewellery, as tokens in a small number of early Christian burials. While highly speculative in the absence of any skeletal remains, Elliot 002 may therefore fit a wider pattern.

The human remains

Julie Roberts

Preservation of the remains

Both the burials from Elliot were in an extremely poor state of preservation. The few bones that had survived were extremely fragmented and eroded, and they disintegrated further as the excess soil was removed to facilitate analysis.

Burial 1 consisted of fragments of right humerus, right and left clavicle and scapula, an unsided piece of parietal bone, a minimum of nine left ribs and three right ribs, and numerous fragments of thoracic verte-
brach. The vertebral fragments were primarily from the neural arch, the bodies having disintegrated. There were multiple root impressions on all of the bones as well as erosion of the outer surface of the cortex.

Burial 2 comprised fragments of right and left femur, left ilium, numerous fragments of lumbar vertebra (again predominantly neural arch), several small pieces of unsided rib, and a single fragment of left tibia. The right femur consisted of only a few fragments of the outer cortex of the shaft, held together by compacted soil. The surfaces of the bones, in particular the left femur, were severely eroded and, again, they were damaged by multiple root impressions.

Age at death

The remains of Burial 1 appeared to be adult in size, but without the presence of the ends of the long bones and other diagnostic areas of the skeleton, a more precise age could not be given.

In Burial 2 the head of femur had been preserved and was fused to the shaft of the bone indicating an age of greater than 16 to 20 years at death. The fact that the epiphyseal line was no longer visible meant that fusion had not occurred recently, therefore an age of greater than 20 years was probable. Similarly the epiphyses of the vertebral bodies had been fused for some time which, together with the slight to moderate degenerative changes observed there, suggested an age of greater than 25 years at death.

Sex

No sexually dimorphic elements from the pelvis or the cranium had survived from Burial 1, and there were no joint surfaces preserved that could be measured. The clavicles and the distal shaft of the humerus were fairly small and gracile, but sex could certainly not be based on these observations alone.

The only sexually diagnostic element present amongst the remains of Burial 2 was the sciotic notch of the ilium. Unfortunately this was not fully complete, although the surviving part was acute, and therefore more male than female in morphology. The left femur was quite robust, but this robusticity was also related to pathological changes (see below). This limited amount of information was, again, insufficient to enable sex to be determined.

Metric data

It was not possible to calculate the stature of either of the individuals as there were no intact long bones. The left femur of Burial 2 was largely complete, although fragmented, but the distal end was missing. It was, however, possible to calculate the platymeric index of this bone. This value measures the amount of anterior/posterior (front to back) flattening of the upper shaft of the femur, which is thought to be related to physical activity and mechanical loading (Brock and Ruff 1988). Standards used were after Bass (1995). A value of 79.5 was calculated for Burial 2, which meant that the proximal shaft of the femur was platymeric, or flat. This shape is commonly observed in archaeological skeletons, in contrast to modern individuals in whom the upper femur is generally more rounded. A slight lateral flange was also present on the left femur. This thickening of the bone on the lateral aspect of the proximal shaft, is also frequently observed in archaeological populations, and is also related to muscular activity and mechanical stress.

Pathology

The recognition of specific diseases is often dependent on the whole of the skeleton being present in order that the character and distribution of the lesions throughout the body might be observed. In both Burials 1 and 2, almost all of the joint surfaces were absent, and the surfaces of the fragments that had survived were severely eroded. This meant that there was a high probability that any evidence of pathological conditions would have been lost or obscured. Despite this, it was possible to identify two disorders in Burial Two: spinal degenerative joint disease, and osteitis of the left femur. No pathological conditions were identified on the remains of Burial 1.

Degenerative joint disease (DJD), or osteoarthritis, is one of the most frequently observed diseases in archaeological populations. It is characterised by the breakdown of the articular surface of the joint and the formation of osteophytes (bony projections) around or away from the joint margins. The aetiology of DJD is multi-factorial, although the most common causes are age and repeated stress. It may also develop as a consequence of traumatic injury.

Two fragments of lumbar vertebra displayed changes characteristic of osteoarthritis. The surviving part of the superior surface of the fifth lumbar vertebra showed moderate porosity and there were slight osteophytes around the joint margin. Slightly larger osteophytes were present around the superior surface of an additional fragment. No degenerative changes were observed on any of the apophyseal facets of the vertebrae. As the spine was so poorly preserved, little can be said about the overall severity of the condition in this individual, and the extent of the pain and limited mobility that the condition might have caused.

Osteitis, inflammation and thickening of the entire cortex of the bone affected the left femur from the proximal to the mid-shaft. The medullary cavity of the bone had narrowed considerably, indicating that the condition was probably long-standing in duration and possibly the result of quite a severe infection. This disorder is generally associated with periostitis—inflammation of the periosteum and soft tissues around the bone—which is characterised by new bone growth on the outer surface of the cortex. Unfortunately severe erosion had resulted in the destruction of most of this outer layer and it was therefore not possible to charact-
erise the infection further or to determine whether it was still active at the time of death.

Conclusions

The two individuals were both thought to be adult, Burial 2 probably being aged older than 25 years at death. In both cases sex and stature could not be determined. The upper femoral shape of Burial 2 was platymeric, ie flattened from front to back, a common feature of archaeological skeletons. Burial 2 was found to be suffering from two pathological conditions, slight to moderate spinal degenerative joint disease, and osteitis of the left femur.

Environmental evidence

Animal bone
Sue Anderson

Fragments of animal bone in very poor condition were recovered from two contexts. SF13, from the fill of the palaeochannel, consisted of three tiny fragments of mammal bone of uncertain type or species. SF15, from the fill of the segmented ditch, was three fragments of enamel from a large mammal tooth, possibly bovine or equine.

Plant macrofossils
Mhari Hastie

Twelve bulk soil samples (each being 8 litres in volume) were collected from the grave, a series of pit and ditch fills and a palaeochannel. Each sample was processed in a Siraf style flotation tank. The floating debris (flot) was collected in a 30mm sieve and, once dry, scanned using a binocular microscope (magnification x10 to x40). The material remaining in the flotation tank (retent) was wet-sieved through a 1mm mesh and air-dried. The retents were then sorted and any material of archaeological significance removed. The results of the flot analysis are summarised in Table 6. Identifications were made in comparison with CFA Archaeology Ltd modern comparative seed collection and seed atlases.

Only four samples contained any carbonised cereal plant remains: fills 066 and 067 of pit 020, palaeochannel 032 and fill of ditch 076. The majority of plant remains, albeit in small quantities, was recovered from the fill of pit 020 including cereal grain and seeds of wild taxa. The cereals were dominated by barley (*Hordeum vulgare*) with occasional grains of oat (*Avena* sp.) and two possible rye grains (cf *Secale cereale*). The wild taxa included seeds from heath grass (*Danthonia decumbens*), ribwort (*Plantago lanceolata*), sedge (*Carex* sp.), persicaria (*Polygonum persicaria/lapathifolium*) and a bud from heather/ling (*Calluna vulgaris*).

The recovery of a small number of cereal grains and other charred plant remains does suggest that at least some small corn drying or food processing was being carried out during the occupation of the site. Interestingly a large stone, which may have been utilised as a quern or rubbing stone, was also recovered from the fill of pit 020, and its presence together with a small concentration of charred grain may indicate that corn was being processed near to the pit.

<table>
<thead>
<tr>
<th>taxon</th>
<th>common name</th>
<th>plant part</th>
<th>pit 020</th>
<th>palaeochannel</th>
<th>ditch 076</th>
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<tbody>
<tr>
<td>cereals</td>
<td></td>
<td></td>
<td></td>
<td>066 067</td>
<td>032 076</td>
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<tr>
<td><em>Hordeum vulgare</em></td>
<td>barley</td>
<td>caryopsis</td>
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<td></td>
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<tr>
<td><em>Hordeum sp</em></td>
<td>barley</td>
<td>caryopsis</td>
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<td></td>
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<tr>
<td><em>Secale cereale</em></td>
<td>rye</td>
<td>caryopsis</td>
<td>?2</td>
<td></td>
<td></td>
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<tr>
<td><em>Avena sp</em></td>
<td>oat</td>
<td>caryopsis</td>
<td>2</td>
<td>1</td>
<td>4</td>
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<tr>
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<td>indeterminate</td>
<td>caryopsis</td>
<td>7</td>
<td></td>
<td></td>
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<tr>
<td>Monocotyledon fragments</td>
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<td>rhizome</td>
<td>5</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Sedge monocotyledon</td>
<td>sedge</td>
<td>rhizome</td>
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<td></td>
<td></td>
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<tr>
<td>wild taxa</td>
<td></td>
<td></td>
<td></td>
<td>032 076</td>
<td></td>
</tr>
<tr>
<td><em>Corylus avellana</em></td>
<td>hazel</td>
<td>shell</td>
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<td></td>
<td></td>
</tr>
<tr>
<td><em>Plantago lanceolata</em></td>
<td>ribwort</td>
<td>seed</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Danthonia decumbens</em></td>
<td>heath grass</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>cf <em>Danthonia decumbens</em></td>
<td>heath grass</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Polygonum persicaria/lapathifolium</em></td>
<td>persicaria/pale persicaria</td>
<td>achene</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Carex sp</em> (tri)</td>
<td>sedge</td>
<td></td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><em>Carex sp</em> (bi)</td>
<td>sedge</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td><em>Calluna vulgaris</em></td>
<td>heather/ling</td>
<td>bud</td>
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<td></td>
<td></td>
</tr>
<tr>
<td><em>Chenopodium sp</em></td>
<td>fat hen</td>
<td></td>
<td>1</td>
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<td></td>
</tr>
<tr>
<td>Graminae indet (small)</td>
<td>small-grained grass</td>
<td>caryopsis</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 6 Composition of carbonised plant remains from Elliot.
The weed seed assemblage was dominated by acidic pasture/grassland plants for instance heath grass, ribwort and heather, while other species, such as sedge, suggest slightly wetter areas. Heath grass is particularly indicative today of heath on sandy soils and its presence may suggest that the seeds were brought to the site as part of heathy turf, collected for use as fuel or building material, from coastal areas near to the settlement.

**Charcoal**
Mike Cressey

Alder, birch, hazel, hawthorn and willow were identified in five samples from five contexts: the palaeochannel, pit fill 066, ditch fill 076 and grave fills 011 and 1007. In general terms the charcoal was fractured fragments ranging of between 2–4mm with little evidence of serious abrasion or vitrification caused by secondary firing of the charcoal. The assemblages were too small (1.75g total weight) to make any inferences on woodland index. A full catalogue forms part of the project archive.

**Discussion**

It is considered that the site at Elliot represents a defended promontory of later prehistoric or Early Historic date, probably occupied at some stage during the last centuries BC and/or early centuries AD. Whether the burials identified within it were contemporary with the enclosure or simply re-utilising the space after it had fallen into disuse is unknown.

The promontory was originally enclosed by a substantial ditch, on the inner side of which a drystone wall or rampart may have stood. The topography of the promontory suggests that the enclosing works may originally have extended in a curve c 85m long (Illus 19) to cut off the whole promontory. If so, the enclosed area would measure approximately 80m in length by 70m wide at the western end and 35m at the eastern limit. No trace was identified within the excavation trench of an entrance break through the enclosing works and, presuming that one existed, this must lie outside the area of excavation. There was no evidence for a second line of enclosing works immediately outside those identified, and the site thus appears to have been univallate.

The scatter of features identified within the promontory does not allow for detailed interpretation of the nature of the activity which took place there. A small cluster of graves and a spread of truncated features point to funerary and structural activity. The long cist burials suggest activity around the middle of the first millennium AD. Whilst the
apparent isolation of the burials suggests that this was not an important Early Christian centre, the excavation trench exposed only a small part of the interior of the site, so it is possible that denser concentrations of activity exist elsewhere on the promontory. It also seems likely that severe plough-truncation has removed many features.

Perhaps the closest parallels for this type of site lie in the series of six coastal promontory forts located along the east coast between Arbroath and Lunan Bay (Wilson 1980). Two of these—at West Mains of Ethie (ibid) and Auchmithie (Ralston 1986)—have been partly investigated by excavation, and artefactual evidence from the first site at least suggests occupation during the early centuries AD. At both these sites the nature of the occupation within the enclosed areas was difficult to establish, although evidence for hearths and possibly temporary windbreak structures was detected, suggest-ing at least ephemeral or seasonal settlement. Three of the six forts have single ramparts and ditches, as appears to be the case at Elliot. Both of the excavated sites were multivallate, but in neither case was the ditch fully excavated, so it is not known if other such sites had the segmented ditch seen at Elliot.

At Elliot, the relationship of the promontory to the coastline at the time of its occupation has yet to be established—the promontory currently lies somewhat inland from the shore, the two being separated by an area of links. Higher sea levels in the Iron Age have been argued from evidence in the Forth Estuary (I Ralston, pers comm), so it may have been a coastal site when first constructed. Inland promontory locations were also used during later prehistory as the locations of high status settlement—the excavated site at Hurly Hawkin, Angus (Taylor 1982) providing a good example—but these are rare north of the Forth.

Conclusions

Excavations along the line of the A92 between Dundee and Arbroath have revealed activity and settlement of probable Neolithic, Bronze Age, Iron Age, Early Historic and medieval date.

The Late Neolithic evidence from Carlogie and the Balcathe area was vestigial, consisting of groups of pits with uncertain functions which, fortuitously, happened to produce a few sherds of datable pottery. Further, larger scale, excavation in these areas would be required to aid their interpretation. Scatters of pits and pit groups of Neolithic date have been identified at other sites in the area, for example at Newton Farm, Carnoustie (Suddaby et al forthcoming), and have been interpreted as representing seasonal occupation.

A roundhouse of ring-ditch type at Auchrennie has provided evidence that this particular structural form—a type previously considered to belong to a later period—was in use during the Bronze Age in Angus, at least a thousand years before previously excavated examples at Douglasmuir and Ironshill. An adjacent ring of post-holes may have belonged to an earlier house, perhaps of post-ring type. Ring-ditch houses are by far the commonest form of timber roundhouse in Angus (Dunwell and Ralston forthcoming), although this may be due to their better survival as cropmarks than some of the other forms. As a type, they do appear to have had an extensive life, being dated to the second millennium BC (eg Kintore; Cook and Dunbar forthcoming), the Late Bronze Age/Iron Age transition (eg Douglasmuir; Kendrick 1995) and continuing perhaps into the 2nd century AD (eg Culhawk; Rees 1998).

A souterrain of later Iron Age date was fully excavated at Ardownie as part of this project, but the site was so well preserved it was considered worthy of individual publication (Anderson and Rees 2006). It is, however, one of several such sites known from aerial photography and excavation in this area, indicating the intensity of habitation in the area at the time. Part of a promontory fort of probable Iron Age date which may have continued in use into the mid first millennium AD was excavated at Elliot, although only a small proportion of the site’s segmented ditch and interior could be investigated. Six other such sites of similar size have been identified running along the coast to the north. It has been suggested that they may represent high status or ‘special’ settlements rather than defensive refuges (Dunwell and Ralston forthcoming), comparable with the isolated monastic sites of the early Celtic church. Whether the fort was still in use as a settlement or not, by the 6th/7th century the promontory had become a site favoured for burial.

Evidence for medieval rural settlement and enclosure was uncovered at Barry and Cotside, but again the small scale of the excavations did not allow for definitive interpretations. The enclosure at Cotside is perhaps one of the few excavated examples of the type of late medieval rectilinear enclosure familiar from aerial photography and upland surveys of medieval or later rural settlement over much of south-eastern Scotland.

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Abstract

Evaluation and excavation along the route of the A92 between Dundee and Arbroath uncovered the remains of a variety of archaeological features. These included a possible medieval rectilinear enclosure at Cotside; scattered medieval features at Barry Manse; possible prehistoric features at Carlogie, Mains of Kelly and Three Mile Wood, one of which contained Late Neolithic grooved ware; two Bronze Age roundhouses at Auchrennie; and a promontory enclosure with associated Early Historic burials at Elliot.

Keywords

A92
cist grave
grooved ware
prehistoric pits
promontory enclosure
rectilinear enclosure
roundhouse

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