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Excavations of Neolithic and Bronze Age sites near Peterhead, Aberdeenshire, 1998

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with contributions by A Clarke, M Cressey, C McGill, R Pelling & G Warren

ABSTRACT

Several archaeological sites were located and excavated by the Centre for Field Archaeology, University of Edinburgh (CFA) during a watching brief associated with the construction of a c 13km gas pipeline from St Fergus to Peterhead, Aberdeenshire, in the summer of 1998. The discoveries comprised two Neolithic artefact scatters, Bronze Age structures and an enclosure, and two features akin to burnt mounds. Penspen Limited commissioned the work on behalf of Scottish Hydro-Electric plc.

INTRODUCTION & METHODOLOGY

In 1998 Scottish Hydro-Electric plc inserted a gas pipeline from the St Fergus Offtake to Peterhead Power station (illus 1). Prior to its construction, the proposed route was subject to a desk-based assessment and field survey conducted by the Centre for Field Archaeology, University of Edinburgh (CFA) (Strachan 1997), the results of which were incorporated into the Environmental Statement supporting the planning application. Three sites, all relatively modern, listed in the National Monuments Record of Scotland (NMRS) and the Aberdeenshire Sites and Monuments Record (SMR) and considered to be of significance were threatened by pipeline construction (Table 1, illus 1).

Planning permission was subsequently granted for the development with a condition attached that an archaeological watching brief be conducted during topsoil stripping operations, to allow the identification and recording of any archaeological remains present.

The pipeline route crossed gently undulating agricultural land, at that time mostly given over to pasture but with some arable. The land in the northern part of the pipeline route lay generally around the 30m and 40m contours, rising up to almost 100m OD in places to the south. The subsoil along the pipeline route is largely non-calcareous gleys derived from Old Red Sandstone sediments and belonging to the Peterhead Association (Macaulay Institute for Soil Research 1981, unit 430), although occasional pockets of sand and gravel were encountered during the watching brief. This predominantly clayey subsoil and the generally shallow nature of the topsoil in this area are not conducive to producing cropmark images of archaeological sites. This, combined with the lack of previous archaeological work in the

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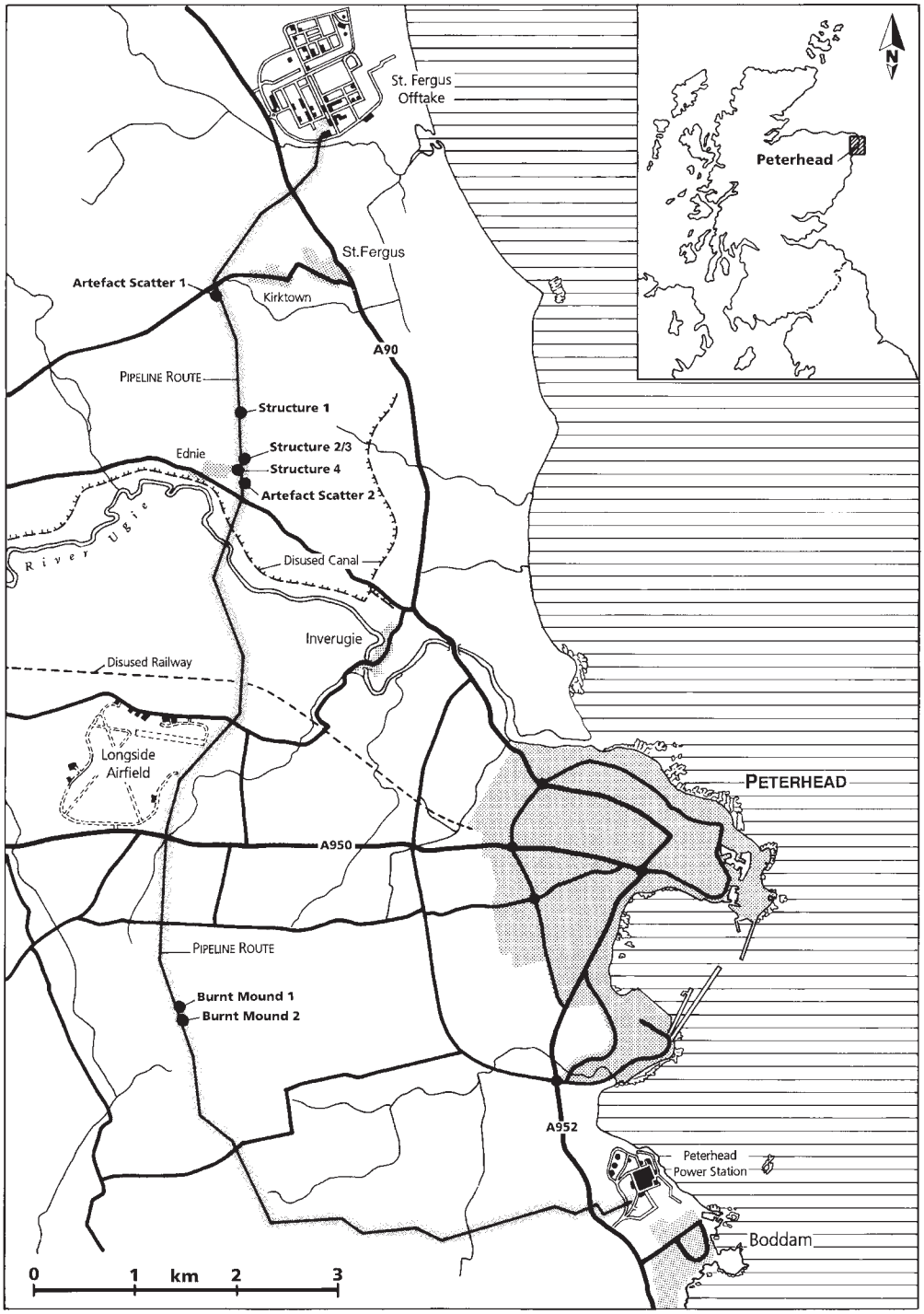


ILLUS 1 Location map showing route of St Fergus to Peterhead Pipeline and location of sites (*Based on the Ordnance Survey map © Crown copyright*)

TABLE 1
Known sites along the pipeline route

Site	NGR	NMRS	SMR
Peterhead/Longside Airfield	NK 08 47 area	NK04NE 12	NK04NE 27
Great North of Scotland railway, Formantine to Buchan section	NK 085 480		NK04NE 13
St Fergus and North Ugie Canal	NK 088 495	NK04NE 13	

area, meant that very little was known of prehistoric settlement and land-use patterns in this area.

The pipeline swathe was 20–30m wide, of which half was stripped of topsoil by tracked excavators using toothless buckets; topsoil in the remaining half was then pushed to one side by bulldozers. The result of this process was that most of the topsoil was removed, although any archaeological features located were heavily compressed and tracked over. Archaeological monitoring involved both continuously watching the stripping as it took place and subsequent inspections of the exposed subsoil surface. The dry weather during most of the watching brief followed periods of very wet weather in April. As a result sites would appear only after a day or two of drying out following topsoil stripping.

Seven principal sites (Structures 1, 2/3 & 4; Artefact Scatters 1 & 2; Burnt Mounds 1 & 2) were identified (illus 1). These are first described and discussed consecutively and their wider significance as a group is then discussed. Further details relating to isolated, minor and previously recorded sites are contained within the project archive.

LITHIC COLLECTIONS

Graeme Warren

Every chipped stone artefact was examined macroscopically. A full catalogue is provided as part of the project archive (for classifications see Finlayson et al 1996). 734 artefacts greater than 10mm in maximum dimension were given an individual identification number (illustrated items bear this catalogue number; illus 11, 13). Artefacts smaller than this were bagged by context, and each bag was given an individual identification number: 35 database references of this kind were made. (Many of the 280 small chips and irregular flakes present came from the routine soil samples taken of many contexts.)

All site assemblages are based upon the exploitation of pebble flint, quartz and quartzite. Although in situ flint deposits are unknown in Scotland (Wickham-Jones & Collins 1978), derived Pleistocene flint gravels are well known in the Peterhead area. The most famous are at Den of Boddam where prehistoric flint quarrying is attested from at least 3500–3000 BC (Saville 1994). Flint is also present in overlying till deposits in the region, and other sources include beach pebbles.

Quartz forms an important part of the assemblages and is fairly common in the area, often incorporated as rounded pebbles into flint gravels. A wide range of quartz is found in the assemblages, varying in quality. Notwithstanding this, much of the quartz is clearly worked, some of the cores for example showing some formality.

POTTERY

Catherine McGill

Pottery assemblages, totalling 280 sherds weighing 1800g, were recovered from five of the sites (Artefact Scatters 1 & 2; Structures 1, 2/3 & 4). These assemblages were analysed using the pottery recording system recommended by the Prehistoric Ceramics Research Group (PCRG 1997). A full report on the pottery forms part of the project archive.

The sherds were assigned fabric types after macroscopic examination, and were counted and weighed to the nearest whole gram. Each diagnostic sherd was examined and assigned a form type with further detailed variables recorded where appropriate. Each rim form (RF) was assigned a number. Apposite parallels were identified for the forms represented. The analysis included a measurement of wear, as employed by Lelong (1993) and Swift (1996), which is measured on a scale of 1 (not worn) to 5 (very worn). This can aid in isolating residual

elements in an assemblage, although the relative softness of different fabrics must be taken into account as must any applied finishes such as slips or burnishes.

All of the fabric types encountered in the assemblages were very similar, undoubtedly due to the common use of the local clay subsoil, which had a fairly high sand content and naturally contained fragments of quartzite, granite and other rock. Detailed fabric descriptions are contained in the project archive.

WOOD CHARCOAL IDENTIFICATION

Michael Cressey

All samples were examined at x10–200 magnification using incident lighting microscopy and compared with references/anatomy keys in Schweingruber (1990). Birch, hazel, alder and hazelnut shell were identified. In general terms the charcoal was mainly fractured fragments with little evidence of serious abrasion or vitrification caused by secondary firing of the charcoal. The assemblages were far too small to make any inferences on woodland index; a full catalogue forms part of the project archive.

CHARRED PLANT REMAINS

Ruth Pelling

Samples of deposits from several sites were taken for the recovery of charred plant remains. Samples were processed by water flotation and flots collected onto 300μm sieves. The volumes of deposits processed were generally very small (down to 50ml), with the largest sample 5.15 litres. Samples were sorted to 1mm. No charred seeds or chaff were witnessed in the 300μm flot. Residues were sorted to 2mm and the items recovered combined with the flot. Sorted seeds and chaff were submitted for analysis. Nomenclature and taxonomic order follows Clapham et al (1989). Seeds and chaff were examined under a binocular microscope at x10–20 magnification. Identifications were based on morphological characteristics and by reference to modern comparative material held at the Oxford University Museum of Natural History.

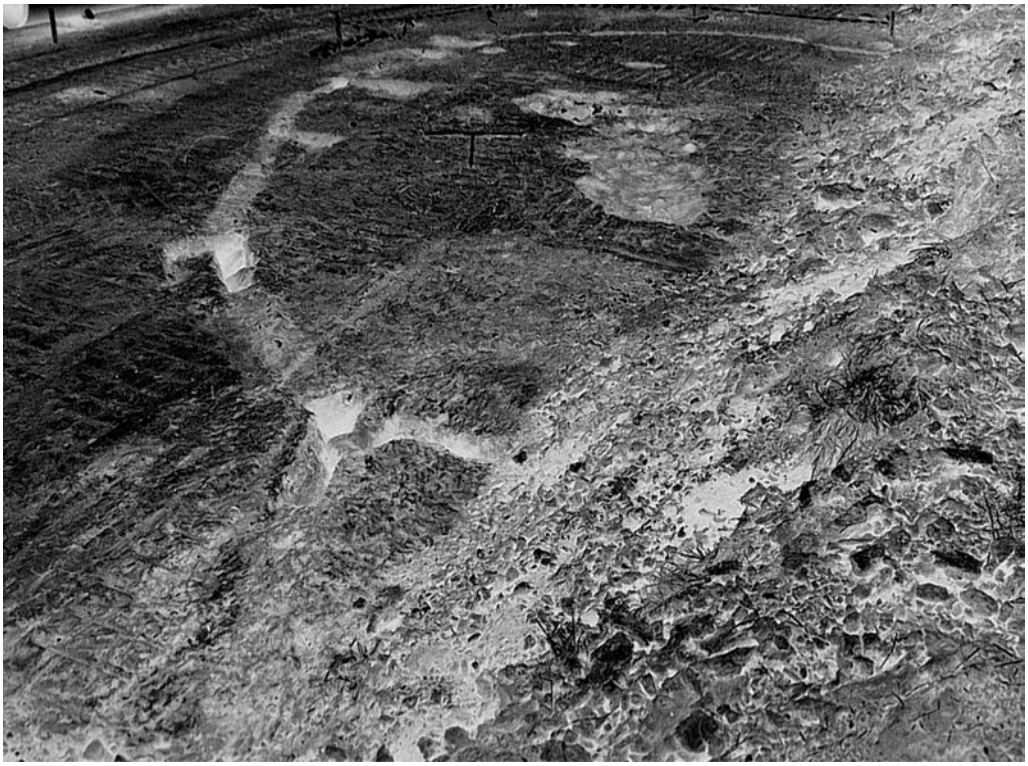
The number of charred seeds and chaff was very low from all samples. This must largely be due to the small sample size. In general the charred plant remains identified are suggestive of background scatters of low-density remains generally present within settlement deposits. The economic remains are all of species present from the Neolithic onwards in Scotland (Boyd 1988). Hulled barley was most frequently identified with occasional emmer wheat and flax. The weeds identified include occasional ruderal, but also damp ground and possible heathland, species. Monocotyledon rhizomes were present in several of the samples, which must be the result of uprooting of grasses or heather. Given the presence of Ericaceae seed pods and the possible heathland species it would seem very plausible that they derive from heather. The fact that they are charred would be consistent with the use of heathland turf for fuel.

RADIOCARBON SAMPLES

Ten single entity samples were submitted for AMS radiocarbon dating to the Scottish Universities Research and Reactor Centre (SURRC), the measurements undertaken by the University of Arizona. The majority of fills relating to Structures 1–4 contained charcoal in variable amounts, though retrieval of this proved to be difficult due to the compacted nature of the predominantly clay fills. Of the ten samples submitted, six were wood charcoal, three comprised pot residues and one was a charred nutshell. Species identification was conducted by Dr Michael Cressey except GU-8797, which was by Ruth Pelling. All quoted calibrated date ranges were determined by SURRC using the University of Washington, Quaternary Isotope Laboratory, Radiocarbon Dating Program, Rev 4.0, 1998.

STRUCTURES 1–4 AT EDNIE

Four structures (Structures 1–4) of differing character were excavated, and demonstrated varying degrees of structural complexity. The descriptive term 'Structure' is used here in a general sense, to imply a built feature rather than specifically a dwelling-house: the functions of the four structures are considered following their descriptions. Structure 1 was located towards the summit of a low rise at c 40m OD, approximately 500m to the north of Ednie Farm (NGR: NK 0886 5064 centred; illus 1). Structures 2 and 3 were located on a gentle south-facing slope at c 35m OD, towards the summit of a low hill approximately 300m east of Ednie Farm,



ILLUS 2 Structure 1, viewed from the north-west

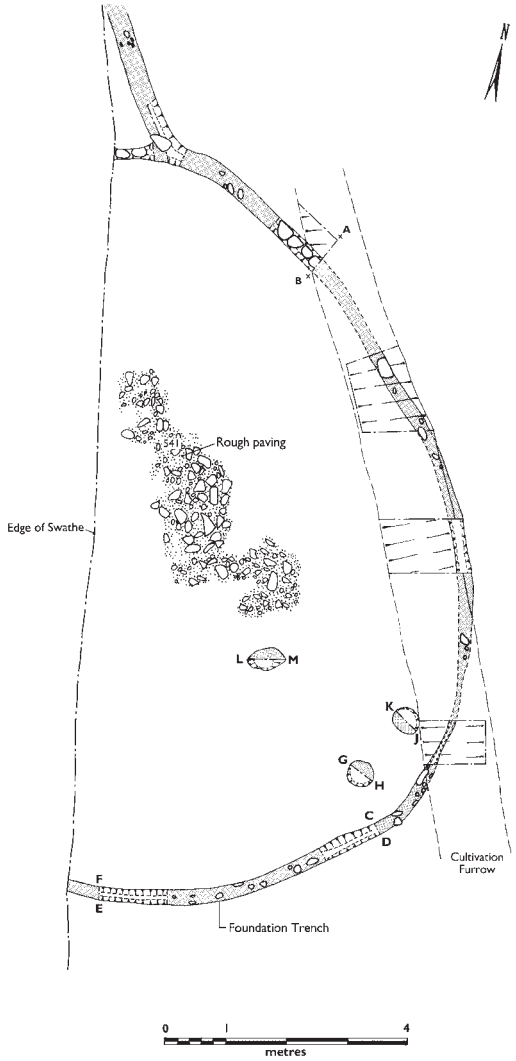
and c 500m south of Structure 1 (NGR: NK 0893 5018 centred; illus 1). Structure 4 was located approximately 45m to the south of Structure 2, on the south facing slope within the same field (NGR: NK 0894 5013 centred; illus 1).

STRUCTURE 1

An estimated two thirds of Structure 1 (illus 2–4) was exposed within the pipeline swathe; the remaining third survived beneath the topsoil bund. Parts of the structure had been truncated by a cultivation furrow (oriented NW/SE and measuring 1.2m wide by c 0.1m deep (illus 3; 4, A–B)). None of the remaining features had any stratigraphic inter-relationships.

Structure 1 was defined by a continuous curvilinear slot, enclosing an area (within the trench) 12m north/south by 6m (illus 3). Assuming the feature to have been symmetrical around its NW/SE and NE/SW axes, the overall shape of the structure can be estimated as a flattened oval measuring c 12m NW/SE by 8m NE/SW. The perimeter slot had near-vertical sides and measured 0.2–0.3m wide by up to 0.35m deep. In some sections it was filled with large tabular packing stones that lined the outer edge of the cut (eg illus 4, A–B). Elsewhere the slot was filled by a sequence of predominantly silty clay, stone-free, deposits (illus 4, C–D & E–F). There was no evidence to suggest that the slot had been re-cut at any time. At its north end (illus 3) the slot bifurcated, with one arm appearing to continue the perimeter of the feature and the second forming part of an external feature extending to the north. Excavation confirmed that the two arms were the result of a single phase of construction. The perimeter feature is interpreted as the remains of a continuous foundation trench designed to hold upright timber posts. Two small, heavily-worn, sherds of undiagnostic plain pottery, as well as chipped stone pieces, were recovered from the upper fills of the slot.

Few features were present within the enclosed area. An irregular spread of plough-disturbed stones, set within a shallow cut in the subsoil,



ILLUS 3 Structure 1, excavation plan

appeared to represent the remains of a roughly paved area. Flint flakes were recovered from the soil between these stones. Two features were located immediately inside the perimeter slot in the south-east (illus 3). Both these features measured c 0.45m in diameter by c 0.25m deep (illus 4, G–H & J–K) and had similar profiles (vertical sides and flat bases). No packing stones were present within their silty clay and clay fills. It is therefore likely that these features represent the remains of pits as opposed to post-holes. A third pit (illus 4, L–M) was located beside the paving in the south-eastern part of the interior.

STRUCTURES 2 & 3

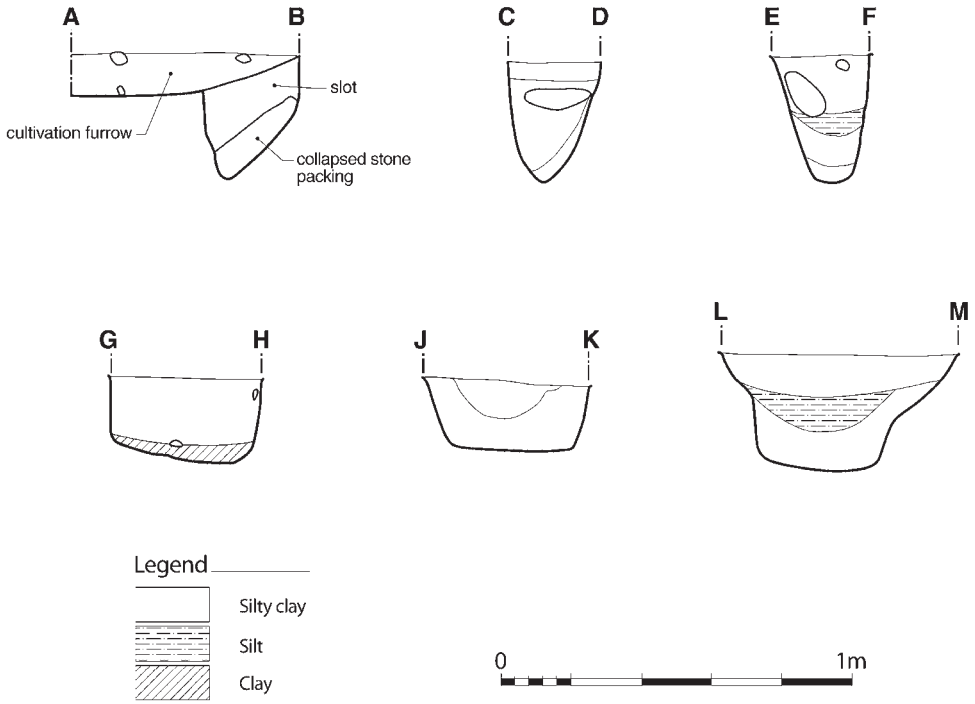
The whole of Structure 2 (illus 5–8), representing a single multi-phased timber roundhouse, was exposed within the topsoiled swathe. A second, smaller structure (Structure 3) overlay the southern side of Structure 2.

A test-pit measuring c 3m by 1.5m had been excavated into the south-eastern interior of Structure 2 prior to the identification of the area as being of archaeological significance. The remains of Structure 2 had also been truncated by ploughing which appears to have removed much of its south-eastern quadrant. Cultivation furrows spaced 4m apart were visible on an east/west orientation along the eastern side of the spread, where the ground began to slope down to the east. One of these (illus 6) overlay a group of post-hole features related to Structure 2.

Structure 2

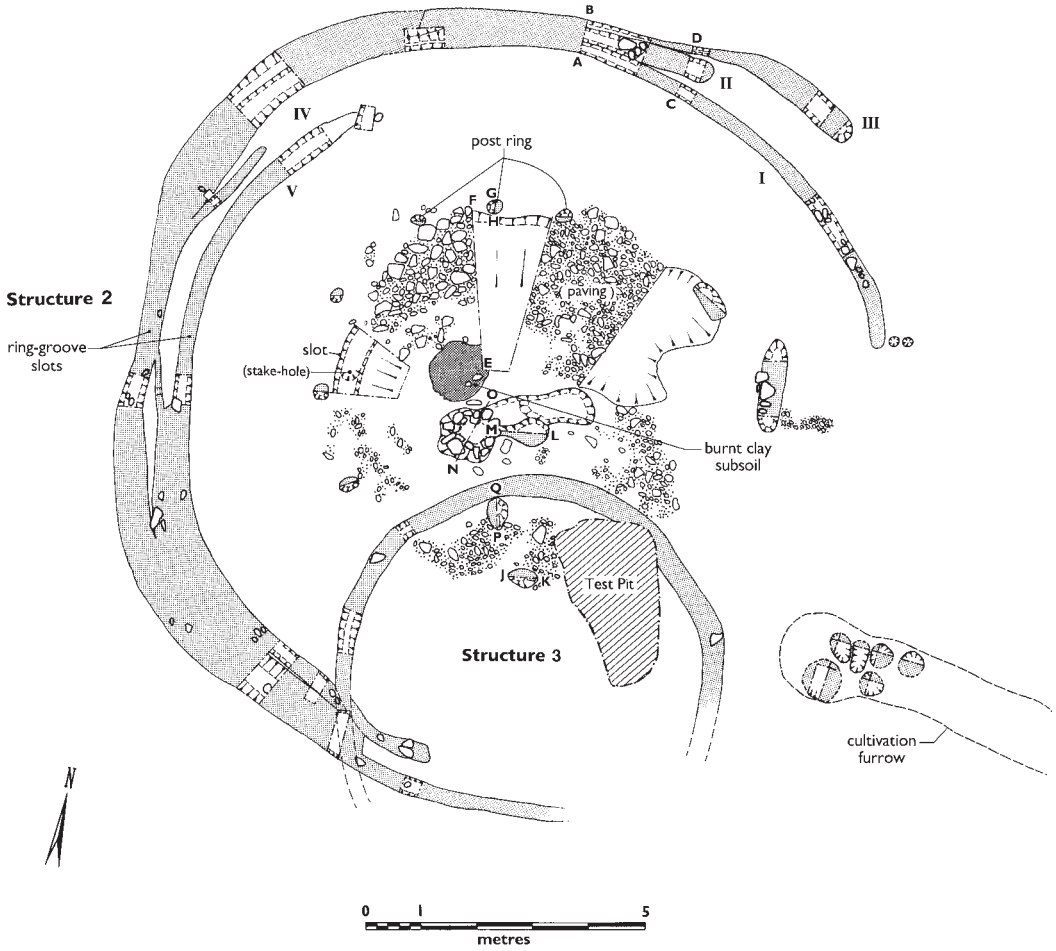
A complex sequence of roughly concentric inter-cutting trenches of ring-groove type formed multiple phases of the outer wall foundation of Structure 2, which had a maximum external diameter of c 15m. At least five separate ring-groove slots were identified, each potentially relating to a different building phase. As the slots did not run entirely concentrically and could not be fully excavated within time constraints, it is difficult to trace individual slots around the circuit of the building and hence provide precise ground plans and dimensions for each building phase.

A section excavated across the north-east arc of the building demonstrated three inter-cutting phases of ring-groove (illus 7, A–B). Nearby the alignments of the three slots had diverged (illus 7, C–D). All were simple U-profiled slots, in section A–B the earliest (I) being c 0.25m wide and 0.2m deep, the middle feature (II) c 0.6m wide and 0.3m deep, and the latest (III) c 0.4m wide and 0.2m deep. Smaller dimensions were recorded in section C–D, perhaps as a result of differential truncation. All the slots were filled by silty clay or clay soils, and none contained any coherent trace of stone packing. The wall-line represented by these slots thus appears to have migrated outwards slightly with each successive rebuild.



ILLUS 4 Structure 1, selected sections

ILLUS 5 Structures 2 & 3, aerial photograph (*M Greig, Aberdeenshire Archaeology Service*)

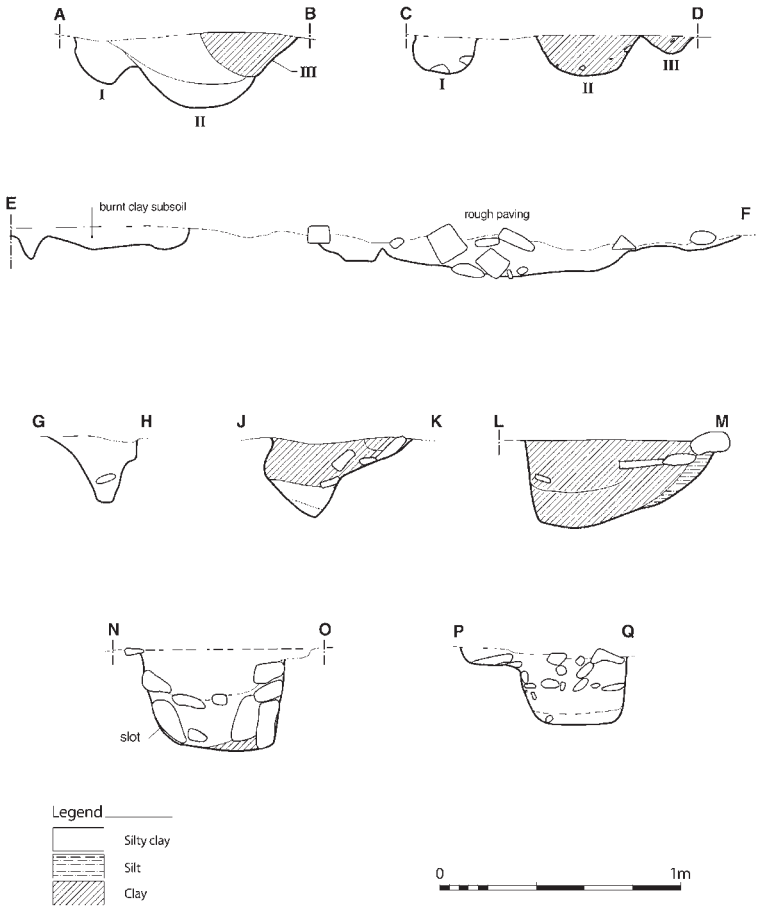


ILLUS 6 Structures 2 & 3, excavation plan

Two further wall slots were identified on the west side of the building (illus 6, IV–V), largely within the circuits of slots I–III. The innermost (V) was of similar profile, size and fill as III. Slot IV survived no more than 0.15m wide and 0.07m deep. The stratigraphic relationship between IV and V and I–III was not demonstrated, although it is reasonable to suggest that the inner slots reflect the earlier building phases.

The entrances to the various phases of Structure 2 appear to have been located on the eastern side of the building, as there were no evident breaks in the circuits of the outer ring-groove trenches to the west. However, the entrances need not have been on the same orientation within each building plan. For slots I–III deliberate terminals were identified in the north-east quadrant, at different points on the circuit of the building in each case, although these points do not certainly reflect entrance positions.

Two small negative features projected outwards from the terminal of slot I, and may represent the remains of two severely truncated door post-holes associated with the entrance to that building phase. Within the south-eastern quadrant of the site, and truncated by a cultivation furrow, was a cluster of six possible post-holes. Four of these appeared to form an alignment c 2m long. They were of similar size and profile, averaging 0.48m in diameter by 0.21m deep, with vertical sides and flat bases, and containing what appeared to be displaced packing stones. These features may represent the southern



ILLUS 7 Structures 2 & 3, selected sections

side of one or more entrance structures, although poor preservation prohibits conclusive interpretation. It seems unlikely that they relate to the same entrance indicated by the smaller features to the north-east, as in such a case the entrance would have been an unlikely 3.5m wide.

The internal features of Structure 2 had a very distinct zonal patterning. Almost all were located within the central floor space, in a circular area c 7.5m in diameter. The periphery of the internal space, in a band c 2.7m wide within the innermost wall-lines, was devoid of archaeological features except to the east where an enigmatic stone-filled slot, measuring 1.65m by 0.43m and 0.26m deep, was present c 1.5m within wall-line I. The distribution of internal features was not a result of patterns of archaeological survival, and thus must relate to the spatial organization of activities within the building(s).

The floor surface at the very centre of the structure notably lacked stone and was slightly domed. Three inter-cutting features were located within this area. The earliest appeared to be the remains of a post-hole which measured 0.72m by 0.52m by 0.37m deep (illus 7, L–M). It was filled with sticky clay deposits, which were probably deliberately packed into the hole to create a level surface once the post had been removed, and several stones which may have represented disturbed post packing. This feature was truncated by the insertion of a stone-filled slot measuring 1.9m long by 0.57m wide and up to 0.2m deep. Both features were subsequently cut through by a large stone-lined pit (illus 7, N–O; illus 8). This feature measured almost

ILLUS 8 Structure 2, photograph of central stone-lined pit 054

1m in diameter and was cut through the clay subsoil to a depth of 0.6m. Its vertical edges were lined by large tabular slabs of stone, positioned upright, defining a central space c 0.3m in diameter which was filled with silty clay deposits containing stones. This feature could be interpreted as a carefully packed post-hole, although an explanation as a small storage pit is also possible. These alternatives are discussed further below.

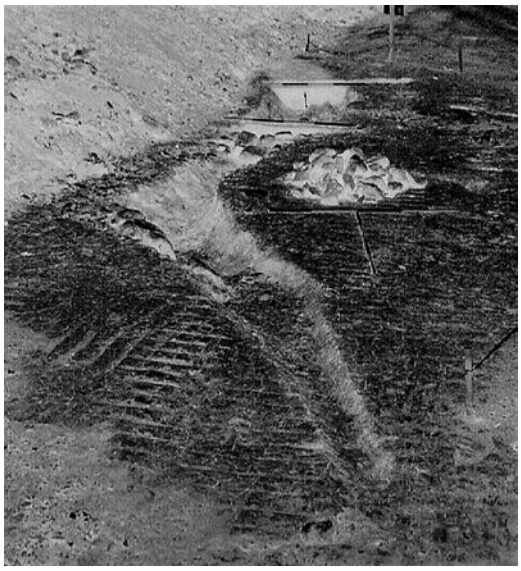
Running around the central features was a penannular spread of rough paving, 1.5–2m wide (illus 6). The stones were set within a slight depression 0.15m deep cut into the subsoil (illus 7, E–F). The paving was best preserved within the northern half of the structure. A narrow slot was located beneath the paving to the west, running concentrically around its periphery, but this feature was not present to the north. A small stake-hole was also present within the base of the slot, although the stratigraphic relationship between the two was not certain. All these features were filled with silty clay soils similar in character to the natural subsoil.

There was a ring of eight post-holes around the outer edge of the paving (illus 6; 7, G–H & J–K). These features had average diameters and depths of 0.38m and 0.19m respectively. All of the post-holes were filled with compact clay, while only two of them contained packing stones. Two of them (including illus 7, J–K) also had their axis inclined to the east, perhaps indicative of the uprooting of the post in this direction. None of the post-holes appeared to have been re-cut.

No evidence for a formal hearth or any occupation deposit survived within Structure 2, although a patch of burnt clay subsoil, located in the northern half of the central interior defined by the paving (illus 7, E–F), may indicate the former location of a hearth.

Structure 3

Structure 3 overlay the southern part of Structure 2. When first exposed by topsoil stripping the full circuit of its outer wall-line was apparent. However, its southern perimeter was so vestigial that it did not survive the initial cleaning of the site, and only about two-thirds of the circumference was available for controlled excavation. The surviving wall-line was represented by a ring-groove slot, c 0.25m wide by 0.1m deep. The structure appears to have had a sub-circular form, measuring c 6.2m east/west by a similar distance north/south. No entrance position



ILLUS 9 Structure 4, viewed from the south-east

was confirmed. This building was clearly later than and secondary to Structure 2, having been cut through the paved area of the latter and truncating some of its ring-groove slots. No certain internal features were located – a post-hole located just inside the perimeter slot (illus 6; 7, P–Q) could belong to either Structure 3 or Structure 2.

A range of flint, quartz, coarse stone and pottery artefacts was recovered from the excavations of Structures 2 and 3. These came mainly from the area of paving and associated deposits, central features and post-ring of Structure 2.

Structure 4

Only part of this site was exposed within the pipeline swathe. It comprised four principal elements: a substantial ditched feature; two parallel slots, one possibly truncated by the ditch; two pits; and an area of cobbling cut by the ditch (illus 9–10).

The principal feature was a serpentine ditch measuring c 20m in exposed length and orientated NNW/SSE (illus 9). The ditch measured 1.52m wide by 0.37m deep at its northernmost excavated section (illus 10, A–B). From here the ditch widened to 1.63m and deepened to 0.63m (illus 10, C–D), tapering to only 0.26m wide and 0.1m deep at its southern tip. The change in profile was paralleled by longitudinal variations in its fills. The northernmost 7m consisted of largely stone-free silts (illus 10, A–B, C–D), which suggest that this section of ditch infilled gradually. These changed abruptly to densely packed large angular and tabular stones. The stones lay directly on the base of the ditch, and appeared to represent a deliberate infill or blocking of the feature. In the southernmost, tapering section of ditch (illus 10, E–F), part of its west side was lined with large tabular stones set on edge, and a spread of small cobbles lined its base. This cobbling suggests that the base of the ditch, at least in this area, was meant to be walked on. Small stones were present in the base of the northern part of the ditch, but did not appear to form a distinct cobbled layer.

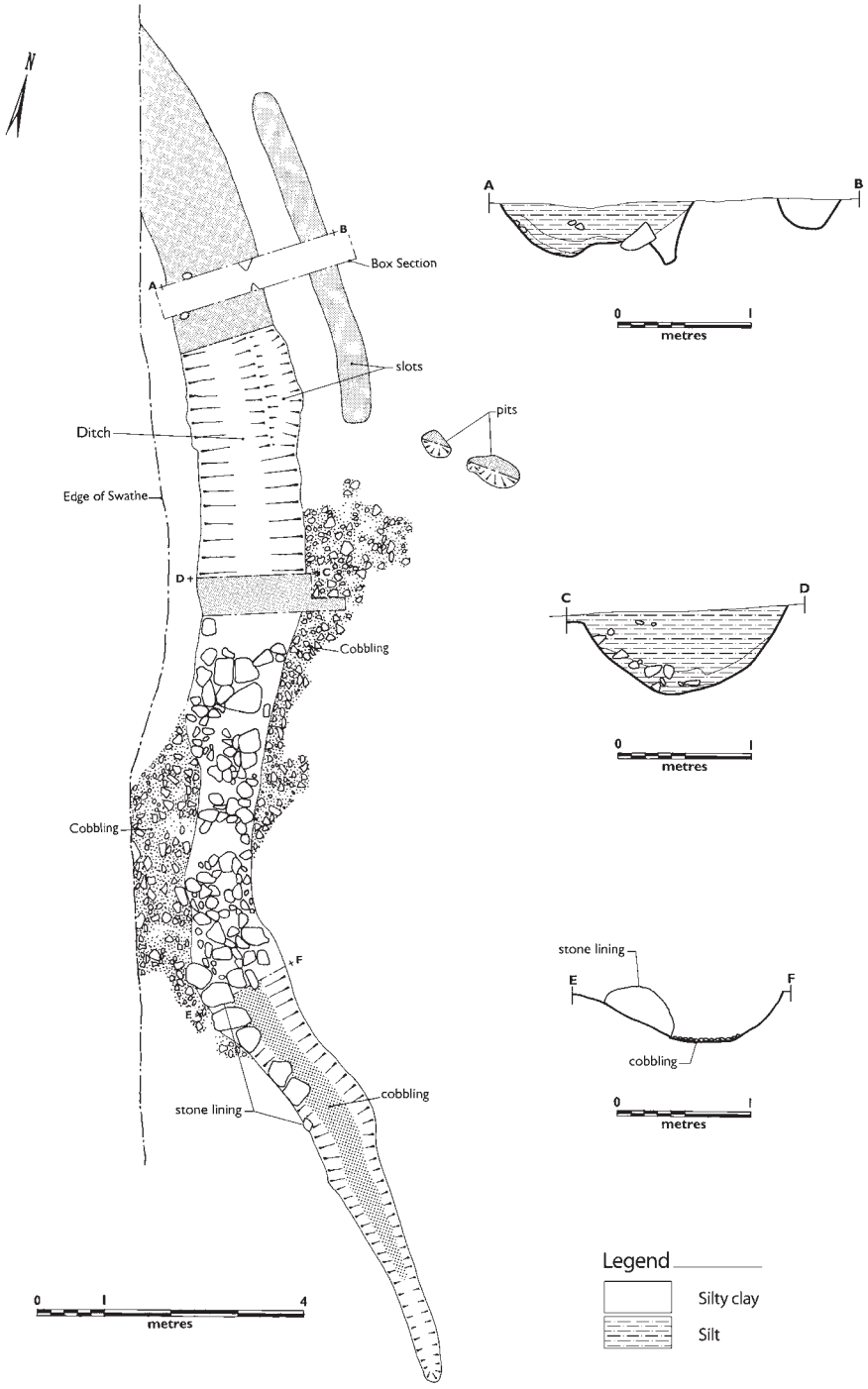
Within the northern section of the ditch a curvilinear slot was revealed within its eastern edge, apparently forming a slight shelf on this side. Approximately 2m of this slot was exposed in plan and it was also present in the box-section to the north (illus 10, A–B). It measured at least c 0.2m wide by 0.2m deep, with a sandy clay fill. The relationship between this slot and the ditch was unclear. It may have been a contemporary feature designed to hold either stone or timber uprights, subsequently sealed beneath the upper ditch fill, but equally it may relate to an earlier phase of activity associated with the adjacent slot (see below) which was truncated with the cutting of the ditch.

A narrow slot was located c 0.7m east of, and running parallel to, the ditch. This feature was c 5m long, with a rounded profile c 0.5m wide and 0.25m deep, and was filled with compacted clay. Its relationship to the other features identified is uncertain. However, its alignment parallel to the slot within the ditch, and the coincidence of their southern terminals, suggest that the two slots were functionally related in some way.

Two oval pits were located on the eastern side of the ditch. These lay at the north-east end of a c 2m wide band of cobbles, pressed into the surface of the subsoil, which ran north-east to south-west and which had been truncated by the excavation of the ditch.

It was thus clear that the partially exposed remains of this site included at least two phases of activity, the first defined by the band of cobbles, and the second by the ditch. It was not established how the slots and pits fitted into this basic sequence.

An assemblage of lithic and pottery artefacts was recovered from the primary, secondary and uppermost fills of the ditch. None of the other excavated features produced artefacts.



ILLUS 10 Structure 4, excavation plan and selected sections

RADIOCARBON DATES

The excavated structures contained a dearth of deposits suitable for radiocarbon dating. There were, for example, no in situ burnt structural timbers, hearth deposits or conflagration horizons present. However, with the objective of providing a general view of the chronology of the sites, a range of dates was obtained (Table 2) from charred material extracted from stratified contexts in Structures 1–4 (see Rideout 1996, 250, for a similar argument).

Of the eight AMS dates, five were obtained from wood charcoal derived from the soil fills of features, including pits, ring-groove slots and a ditch. As none of these samples derived from in situ burning events, uncertainties exist regarding the taphonomic processes by which the dated samples entered their contexts of recovery. Although the dated pot residues do reflect in situ burning, since these dates were obtained it has become apparent that a range of factors can lead to contamination of such residues within their buried environment, leading to misleading radiocarbon dates being produced (discussed by McGill, below). Moreover, the taphonomy of the sherds is open to question.

The inferences to be drawn from the dates must necessarily be treated with caution, particularly as in most cases multiple dates were not taken from each dated context, for purposes of corroboration, and where multiple dates were obtained significant problems of interpretation arise.

Notwithstanding these problems, a few general inferences can be made on the basis of the radiocarbon dates regarding the chronology of the excavated structures.

The radiocarbon dates from the central features within Structure 2 (GU-8835 & 8836) are broadly consistent with each other, and suggest that the building was occupied early in the second half of the second millennium cal BC. There are insufficient dates to allow the overall length of occupation to be suggested, although the presence of at least five superimposed wall-lines suggests some longevity. Although it is tempting to use the more recent date obtained from Structure 3 (GU-8834) to confirm the stratigraphic evidence that Structure 3 was constructed after the abandonment of Structure 2, in taphonomic terms the context from which the dated sample was recovered is insecure. The C14 date provides little more than a terminus post quem for the fill of the perimeter slot. It is not possible to use this date to provide a terminus ante quem for the excavation of the slot and the construction of Structure 3. Furthermore, it is possible that the sample dated from Structure 3 does not relate to the use of this building at all, but that the charcoal was derived from material associated with the occupation of Structure 2 and which was subsequently redeposited within the fill of the Structure 3 slot. This last point is developed further below, taking into account artefactual evidence.

A single date was obtained from the perimeter slot fill of Structure 1. Without corroboration from other dates, compounded with issues of taphonomy, it is difficult to be certain that this date accurately reflects the broad date of use of the feature.

TABLE 2

Radiocarbon dates obtained from Structures 1–4

Lab-no	Sample	Yrs BP	1σ cal date	2σ cal date	δ13C ‰
GU-8833 (AA-37271)	Structure 1, fill of perimeter slot: piece of birch charcoal	3070 ± 55	1409–1261 cal BC	1437–1131 cal BC	-26.3
GU-8835 (AA-37269)	Structure 2, lower fill of primary central post: piece of hazel charcoal	3060 ± 40	1394–1262 cal BC	1425–1133 cal BC	-27.5
GU-8836 (AA-37268)	Structure 2, fill of latest central pit / post-hole: piece of hazel charcoal	3180 ± 40	1504–1411 cal BC	1522–1323 cal BC	-27.3
GU-8834 (AA-37270)	Structure 3, fill of perimeter slot: piece of hazel charcoal	2675 ± 40	886–803 cal BC	902–796 cal BC	-24.7
GU-8793 (AA-37267)	Structure 4, primary fill of ditch: hazel charcoal	3240 ± 45	1596–1446 cal BC	1676–1413 cal BC	-25.4
GU-8795 (AA-37265)	Structure 4, primary fill of ditch: pottery, internal basal burnt residue	3090 ± 50	1412–1265 cal BC	1488–1135 cal BC	-25.4
GU-8796 (AA-37264)	Structure 4, primary fill of ditch: pottery, external burnt residue	3450 ± 50	1876–1688 cal BC	1884–1624 cal BC	-26.5
GU-8794 (AA-37266)	Structure 4, secondary fill of ditch: pottery, internal burnt residue	4630 ± 65	3505–3353 cal BC	3628–3104 cal BC	-26.3

However, the date is very similar to those obtained from Structure 2 and, given the number of morphological parallels between the two sites, there is good reason tentatively to accept the date as reliable and thus that Structure 1 also belongs to the second half of the second millennium cal BC.

Interpretation of the dates obtained from the fills of the ditch at Structure 4 is far more problematic, as the four do not form a coherent group. The three dates from the primary fill (GU-8793, 8795, 8796) all fall into the second millennium cal BC. However, GU-8796 falls in the first half of the millennium and GU-8795 falls in the second half. The two are statistically significantly different, and thus the two samples from pot residues cannot relate to the same event. The charcoal sample from the same context (GU-8793) falls between the two pot residue dates, and overlaps with both.

There are two possibilities. The first is that the context contains residual material and that the latest dated sample provides a terminus post quem for the formation of the primary ditch fill, in the later second millennium cal BC or later. The second is that one or more of the samples is contaminated, and has not provided a reliable date. McGill (supra) has suggested this possibility with regard to the earliest date (GU-8796), which was obtained from an external pottery residue considered to be most likely to be contaminated. Both possibilities would allow for the date of the basal ditch fill to be linked to the second half of the second millennium cal BC, and allow the ditch to be linked chronologically with the adjacent Structures 2 and 3.

However, there are problems associated with both interpretations, which urge extreme caution in accepting either. First, if it is accepted that some of the dated material within the ditch is residual, then it is by extension possible that all the datable material is residual, and that none of it accurately dates its recovery context. Secondly, it is possible that either or both pot residue samples could have produced erroneous dates (and the date of the charcoal sample does not elucidate matters). Both these points are compounded by GU-8794, a considerably earlier date obtained from a pot residue recovered from a secondary ditch fill. That date must indicate either that the dated sample was contaminated or that the potsherd was a residual occurrence in its recovery context – McGill (below) tends towards the former explanation on the basis of the degree of wear visible on the sherd. Finally, the potential presence of a more recent, though not specifically dated, handled pottery vessel from the secondary ditch fill (McGill, below) further complicates the range of dating possibilities for the ditch. In the absence of more telling evidence, it must be concluded, albeit regrettably, that the radiocarbon dates provide no firm indication of the date of the ditch and associated features of Structure 4, although a broad chronological link with the nearby Structures 2 and 3 cannot be ruled out, and is the interpretation preferred by the authors.

LITHICS

Graeme Warren

Structure 1

Forty-five flint artefacts were recovered during the excavation of this site. Stratified items included three from within the fills of the foundation slots and nine from the paved area. Eleven chips and spalls were found in a soil sample taken from the central paved area, and these indicate that knapping was taking place in situ. Six burnt flints and four abraded flints were present.

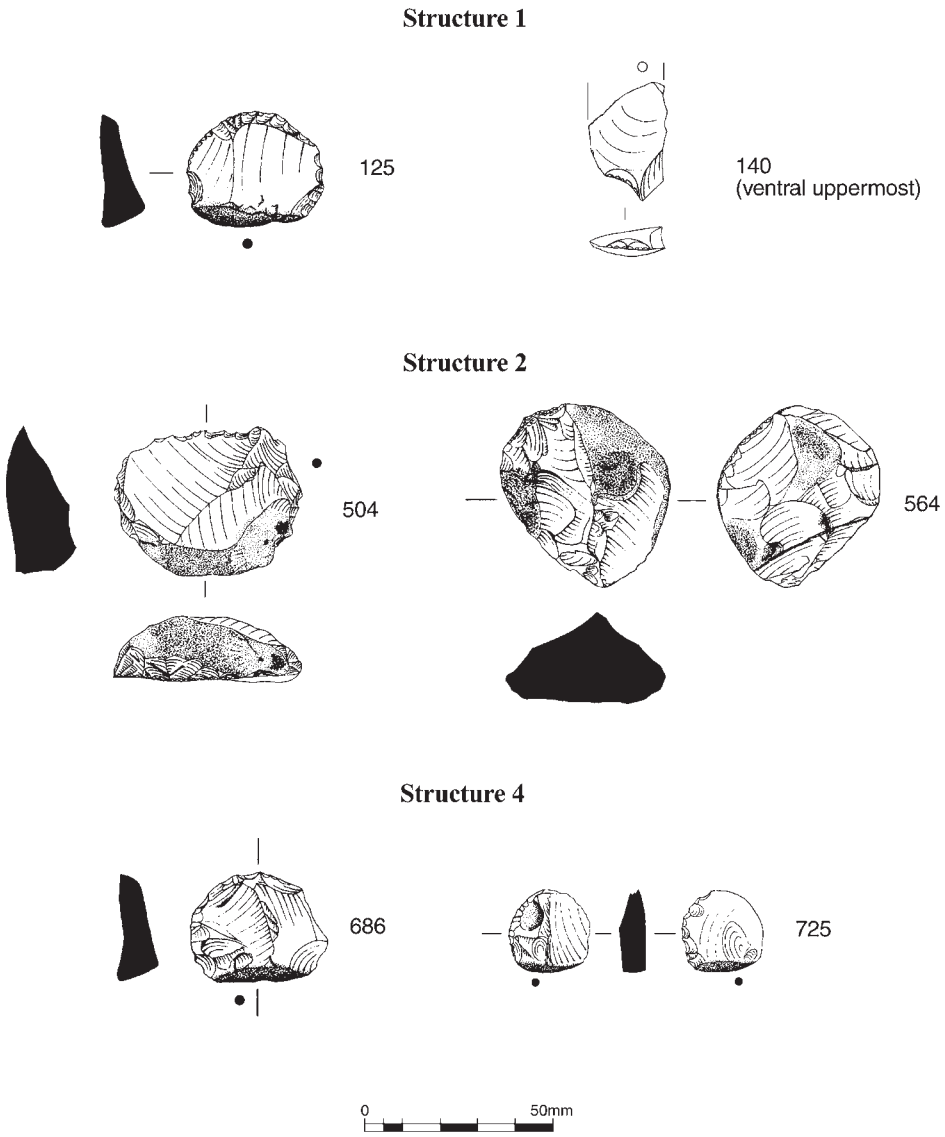
Pebble flint was the only raw material used. Many artefacts are cortical (n = 28), and this cortex is often very rounded. The quality of the flint varies; hinge and other highly irregular fractures are common. Honey-coloured flint was the most important type (n = 25); grey flint was absent and red flint was rare.

The assemblage (Table 3) is dominated by waste (chunks and irregular flakes) and regular flakes. In general the flakes do not seem to have been derived from platform cores and indicate heavy, possibly direct, production. The two broken blades, which do derive from carefully prepared cores, are quite distinct from the bulk of the assemblage. Platform cores, where present, are either reused or abraded.

TABLE 3

Composition of flint assemblage from Structure 1

Type	Quantity
Regular flake (Regular)	11
Irregular flake (Irregular)	15
Blade	2
Core	4
Chunk	11
Bipolar core	1
Split pebble	1
Total	45



ILLUS 11 Lithic assemblage from Structures 1,2 & 4

Six artefacts are retouched, including formal artefacts as well as less developed examples. All came from the surface or the fill of the cultivation furrow. They include a core scraper manufactured on a fragmentary blade core; two scrapers, one a formal convex scraper with considerable edge damage (125, illus 11); two notched items, including a possible graver (140, illus 11); and a regular tertiary flake with a confined small area of blunting on one edge. These artefacts are not diagnostic.

This small collection is quite complex and in some senses clearly differentiated from the rest of the assemblages examined. The presence of platform cores and blades is very distinctive. These items are likely to be Mesolithic or Early Neolithic in date. However these items, along with all of the retouched artefacts, were recovered from the topsoil, machined surface or cultivation furrow, and cannot be associated with the structure excavated. Much of this surface material was also abraded and

it seems likely to have been re-deposited; it may well indicate Mesolithic or Early Neolithic activity in the vicinity. The small amount of material associated with the paved area was dominated by irregular flakes and chunks of honey flint and a multi-directional core. The presence of micro-debitage from this area indicates that knapping has taken place in situ, but this is very hard to fix in chronological terms.

Structures 2 & 3

Of the 427 items from this site (excluding natural pebbles), 224 were less than 10mm in maximum dimension: these chips are excluded from detailed consideration below, although they clearly indicate that flint knapping was taking place on site. Of the remaining 203 artefacts flint was the dominant raw material (n = 138, 68%) with quartz forming almost all of the rest of the material. One abraded chunk of chert was present.

The bulk of the flints came from in and around the paved area and the two large pits/post-holes in the centre of Structure 2. Artefacts also derived from other post-holes and the ring-groove fills. There are significant differences between the types of artefact recovered in the different areas. In particular, all of the cores were found in the central area of the structure and finds of split pebbles and bipolar cores occurred slightly more frequently here. Flakes were also more common in the central area than in the ring groove fills. All the retouched artefacts were either found in the central area or in the surface layers.

There is some variety in the condition of the artefacts in the assemblage (Table 4). It seems likely that there is a degree of chronological complexity involved, and some material is residual. This probably reflects the slow incorporation of material into slot fills or post-holes. There are no significant patterns in the contextual distribution of burnt, rolled, abraded or patinated material.

The flint was derived from a pebble source. A high proportion (70%) of the artefacts display cortex and this is often highly abraded and battered. The flint is dominated by honey-coloured material (62% of fresh examples) but grey flint is also significant (25%). Both materials suffer badly from irregular and hinging fractures, and many cores were abandoned before they were exhausted.

Regular flakes are the most numerous artefact in the flint assemblage, although chunks and irregular flakes occur commonly. Cores and bipolar cores also form a very significant proportion, especially when split pebbles are considered, many of which may also have resulted from bipolar strategies. Many of the more formal cores present have only weakly developed platforms and a tendency for multidirectional flake removals. Even where platforms are present they tend to be bifacial, with removals taken from both sides (eg 564, illus 11). The range of approaches used is indicative of a very flexible strategy for reducing pebbles of highly variable quality. The regular flakes resulting from these reduction strategies can be quite large, consistently amongst the largest from all of the sites excavated along the pipeline, and often longer than they are broad. Many clearly display the signs of direct hard hammer percussion.

A high proportion of flint artefacts was retouched (n = 14, 10.4%). Although this proportion includes clear formal tools a number of pieces were retouched in a highly irregular fashion. This factor, combined with the presence of quite extensive edge-damage on some pieces, has left a number

TABLE 4

Condition of material from Structures 2 & 3

Raw material	Total	Fresh	Abraded	Patinated	Rolled	Burnt
Chert	1				1	
Flint	138	111	9	5	2	11
Quartz	63	61	2			
Quartzite	1	1				

TABLE 5

Composition of flint assemblage from Structures 2 & 3

Type	Quantity	% total
Regular flake (Regular)	42	30.4
Irregular flake (Irregular)	30	21.7
Blade	1	0.7
Core	9	6.5
Chunk	32	23.2
Bipolar core	15	10.9
Split pebble	9	6.5
Total	138	100

of artefacts where it is difficult to assess whether they are intentionally retouched or otherwise.

The retouched flint artefacts include two heavy convex scrapers, with very strong percussive evidence (eg 504, illus 11). Others include convex scrapers including end of flake examples; a fragmentary thinner disc scraper; and a fairly crude large knife with invasive heavy retouch and slightly more formal edge modification. More fragmentary and irregular retouched artefacts are numerous: these include examples with small areas of inverse retouch, those with small notches and many with irregular blunting retouch. These artefacts are best understood as demonstrating small-scale modifications to improve a working edge rather than being formalized tools (see also Wickham-Jones 1981).

Sixty-three artefacts of quartz were recovered. These are from a number of different raw material types, and can only loosely be differentiated by colour and quality. The quartz present ranges from homogenous white material through to grey crystalline examples. Some of the quartz is clearly derived from pebble sources.

Chunks and irregular split pebbles dominate the quartz assemblage. However, some more formal artefacts are present, including cores with weakly-developed platforms. Some of the bipolar cores are also quite formal examples, with clear evidence of repeated structured removals. More frequently, however, a fairly crude approach to splitting pebbles, often using bipolar techniques, is evident. No quartz artefact was retouched.

The assemblage is compatible with a later prehistoric date. The industry is based around the exploitation of a wide range of flints and quartzes. The range of reductive techniques used to knap this material represents a series of flexible responses to the challenges raised by lower quality stone. The retouched artefacts present tend to be somewhat informal, representing small modifications to pre-existing edges or shallow notches.

TABLE 6

Composition of quartz assemblage from Structures 2 & 3

Type	Quantity
Regular flake (Regular)	4
Irregular flake (Irregular)	6
Blade	4
Chunk	27
Bipolar Core	8
Split Pebble	14
Total	63

TABLE 7

Composition of flint assemblage from Structure 4

Type	Quantity	% total
Regular flake (Regular)	32	34.4
Irregular flake (Irregular)	24	25.8
Blade	1	1.1
Core	2	2.2
Chunk	11	11.8
Bipolar core	16	17.2
Split pebble	7	7.5
Total	93	100

Structure 4

A total of 102 artefacts was recovered from this site, all from the fills of the ditch. Flint was the dominant raw material (93%), with quartz forming the remainder. Abraded (9%), burnt (7%) or patinated (3%) flints formed small but significant parts of the assemblage. All of the patinated artefacts were recovered from the primary fills of the ditch but there was no clear correlation between extents of abrasion and particular ditch fills.

The flint industry was based on the exploitation of cortical flint pebbles. The largest flakes and cores are 50–60mm long and 59% of the material is cortical. Most of the flint (57%) is honey coloured, with 29% grey and only 4% red. This material varies greatly in quality; hinging fractures are relatively common and many cores appear to have been abandoned early. Some of the material was too coarse to knap and attempts to split pebbles have been abandoned.

The dominant feature of the assemblage (Table 7) is the large number of bipolar cores and large regular flakes deriving from these cores. At least one bipolar core had been retouched to make a thin scraper edge. The flakes vary widely in size, and often display clear evidence of direct hard hammer percussion.

Twelve retouched artefacts were recovered from the upper fills of the ditch. These include scrapers manufactured on wedge-shaped flakes of flint with cortical platforms and very pronounced bulbs of percussion (eg 686, 725, illus 11). Item 725 is a remarkable artefact, a small (25x25x10mm) thumbnail size scraper manufactured on a cortical platform wedge flake with two convex scraper edges, one inverse and one normal, that actually overlap at the distal.

The quartz artefacts were predominantly waste material (3 chunks, 2 flakes) and cores (2 irregular

cores, 1 bipolar core, 1 split pebble). None of the quartz was retouched.

Notwithstanding the dominance of bipolar cores, the most notable feature of this assemblage is the distinctive group of scrapers found in the upper ditch fills. These are not paralleled on any of the other sites examined. Most of the material is probably residual and implies that there was bipolar knapping occurring in the vicinity of the ditch, perhaps during its use, or that material was being dumped here. Technologically, the assemblage would not be out of place in a later prehistoric context.

POTTERY

Catherine McGill

Structure 1

Two small, heavily-worn body sherds were recovered from the upper fill of the perimeter slot. They are likely to be prehistoric but no firmer date can be suggested.

Structures 2 & 4

Ninety-three sherds (515g) were recovered from 10 contexts at Structure 2, comprising soils associated with the paving and central features; fills of the ring of posts; fills of the ring-groove slots; and topsoil and other superficial deposits. Five rim forms are represented (Table 8, RF4–8; illus 12).

Eight contexts from the primary, secondary and uppermost fills of the Structure 4 ditch produced sherds, with four rim forms represented (Table 8, RF1–3 & 5; illus 12). The total weight of the assemblage was 854g and the total number of sherds was 106.

All of the vessels were hand made. In many cases it was not possible to identify the specific method of construction, but where it was possible, the vessels had been coil constructed and the external and internal surfaces smoothed. RF1 differed from the majority of sherds in displaying a mica-rich slip.

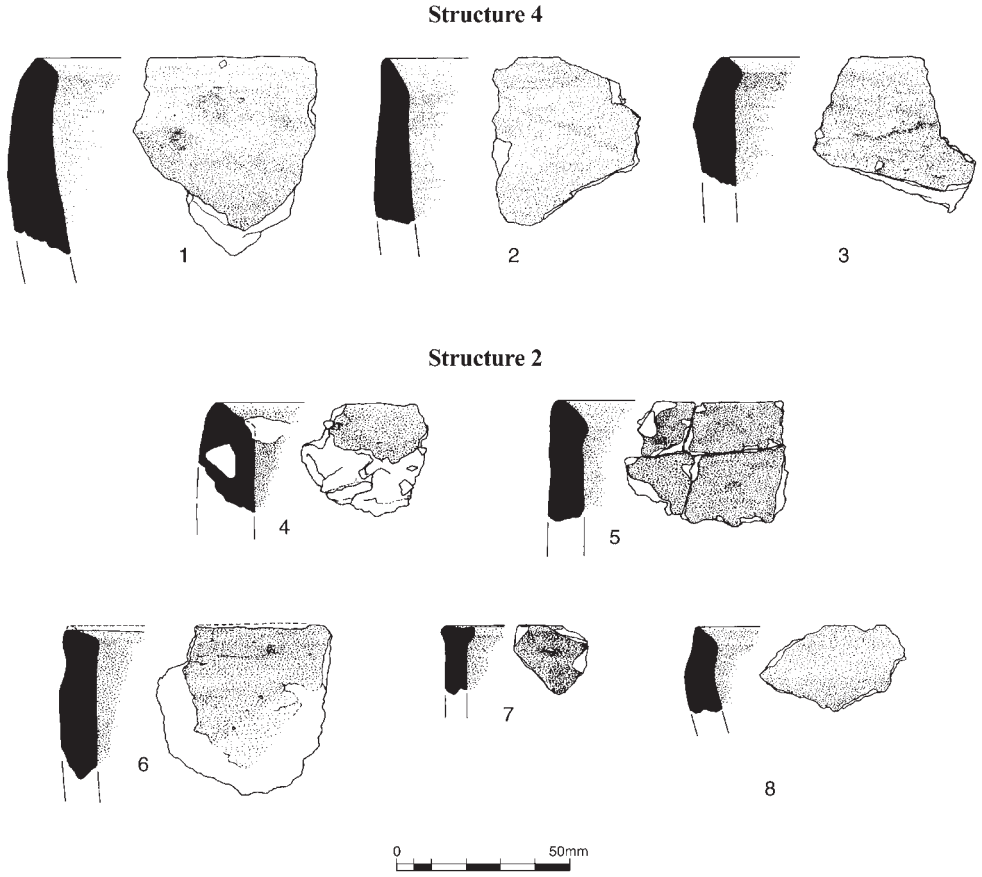
Several sherds had residues on the exterior and/or interior. The same pattern of residue location appeared in both assemblages, with rim sherds having external residues and body sherds more often having internal residues and sometimes both.

The significance of this pattern, which was the same on both straight-sided and rounder-bodied vessels, is not certain. Internal burnt residues suggest cooking, but reasons for the external residues on or just below the rim are less clear. Two possibilities are that the external residues are related to the way the vessel was supported during the cooking process, or that the vessels' contents boiled over.

TABLE 8

Pottery forms from Structures 2 & 4

Rim form (RF)	Description	Circumference	Context
1	Straight-sided with an internally bevelled, inturning rim. Finished with a mica-rich slip	c 240mm	628, a primary fill of the Structure 4 ditch
2	Straight-sided with steep internal bevel, flat base	Unknown	604, uppermost fill of northern section of Structure 4 ditch
3	Straight-sided with internal bevel	Unknown	602, mixed topsoil deposit overlying Structure 4 ditch
4	Straight-sided with concave internal bevel	Unknown	057, soil matrix of Structure 2 central paving
5	Straight-sided, with an internal bevel and a slight internal lip	c 170mm	010, soil overlying Structure 2 central paving, and 610, a primary fill of the Structure 4 ditch
6	Straight sided, with a concave internal bevel. A finger-groove 13mm below the rim has created a slight neck	Unknown	059, upper fill of one of the ring of posts in Structure 2
7	Straight-sided with a slightly expanded, concave rim	Unknown	068, upper fill of one of the ring of posts in Structure 2
8	Fairly straight-sided, with an internal bevel and angular-edged rim	Unknown	Test pit/1 backfill



ILLUS 12 Pottery rim forms from Structures 2 & 4

The generally heavy degree of wear on the sherds from Structure 2 suggests that either the sherds derive from higher, plough-damaged contexts or that they became incorporated into the archaeological record naturally rather than being deliberately deposited immediately after breakage. It is however likely that they are contemporary with the site's principal period of occupation as no ceramics of a clearly later date were found.

There was some variation in the wear of the sherds from Structure 4. This could be related directly to the presence of slips and substantial residues (both of which can both act as forms of protection from wear) on some sherds, and variations in fabric hardness.

Specific parallels exist for the rim forms from the two sites. At Structure 2, RF4 matches vessels from Deskford (Hunter 1995), Covesea (Benton 1931), Green Knowe (Jobey 1980), and A96 Kintore bypass structure 2 (Alexander 2000). RF5 has fewer obvious parallels, as the convex internal bevel is less common, but one fairly similar vessel comes from Green Knowe (Jobey 1980). RF6 has a very good match with a Late Bronze Age form from Myrehead (Barclay 1983). There is also an approximate match from the lowest levels at Traprain Law (Curle 1920), although a date cannot be suggested on the basis of that site due to the excavation methods employed there. RF7 finds parallels at Deskford (Hunter 1995) and Easterton of Argaty (Lorna Main, pers comm), although RF7 is somewhat finer than both of those examples. RF8 has parallels from Ormiston (Sherriff 1988), Green Castle PK-77-280 (Ralston 1980), and A96 Kintore bypass, structure 2 (Alexander 2000).

From Structure 4, RF1 and 3 are of a simple, widespread form occurring at Hoprig, Cockburnspath (McGill 2001, 233–5), Hownam

Rings (Piggott 1948), Green Knowe (Jobey 1980), and Eildon Hill North (McLellan 1992). RF2 occurs at Covesea (Benton 1931), Ormiston Farm (Sherriff 1988), and from Bersu's secondary occupation deposit at Traprain Law (Close-Brooks 1983, although the illustrated assemblage appears mixed and cannot be seen as a reliable indicator). Parallels for RF5 have been cited above.

Typologically, nothing in the assemblage from Structure 2 would be out of place in the Late Bronze Age and in fact the internally bevelled forms are increasingly being seen as diagnostic of this period. However, some of the radiocarbon dates from Structures 2, 3 & 4 suggest that these forms may have occurred slightly earlier than previously recognized. The date from Structure 3 occurs within the expected time frame for the pottery. The remaining five dates are earlier, including all three gained from analysis of pot residues from Structure 4 (see above). One of these (GU-8796), unfortunately the only one from a rim sherd (RF1), might be expected to be a little early as it derived from external residue, which could be contaminated if peat or bog wood had been used as fuel. GU-8794 is so far removed from the remainder of the dates that it seems unlikely to be correct unless the sherd in question is a residual element in the assemblage. This, however, seems very unlikely as the sherd is not heavily worn. GU-8795 appears to be most reliable in that it derives from internal residue, less likely to be contaminated, and it is comparable to the other dates from the two sites. These dates suggest that the currency of the internally bevelled forms might have to be pushed back slightly to include at least some of the Middle Bronze Age (although see further discussion of the radiocarbon results below).

The presence of the possible later element, in the form of the handle, within the otherwise similar assemblage from Structure 4, derives from a secondary ditch fill. The contextual implications of this are discussed further above (see radiocarbon results).

COARSE STONE

Ann Clarke

Five cobble tools were recovered from Structure 2, three of which are of the same red quartzite or quartzitic sandstone. One is a fragment of a facially pecked cobble and another is an anvil stone which bears traces of linear pecking on both faces. The third has been pecked over the domed upper face and has a base which has been rubbed flat and smooth. A small cobble with a small area of pecking and a partially-smoothed fragment complete the group. The artefacts derived from the paving and the fills of the central pits.

The coarse stone tools from Structure 2 are most likely to have been used as hammerstones or anvils for the lithic flaking activities. The linear traces on the anvil stone in particular are indicative of its use in the bipolar reduction of flint and quartz cores. The close association of these knapping tools with the central paving and associated features accords with the distribution of the flaked lithics from this site. Despite the presence of flaked lithic assemblages from other sites along the pipeline there are no other hammerstones or anvils associated with them.

CHARRED PLANT REMAINS

Ruth Pelling

Only the 31 samples from Structure 2, most from post-holes and ring-groove fills, produced results worthy of note. The majority of samples produced only occasional charred grain, weeds or rhizome fragments. *Hordeum vulgare* was identified, including hulled grain. The weeds identified included *Ranunculus* subgen *Ranunculus* (buttercup), *Ranunculus flammula* (lesser spearwort), *Carex* sp (sedge) and *Sparganium erectum* (branched bur-reed), all species associated with damp or wet ground, such as damp heathland or marshland.

Three samples from Structure 2 were much larger in terms of volume of deposit processed (ranging from 1–5.15 litres). The quantity of remains in these samples was rather greater. Samples 601, 613 and 614 were all derived from central post-holes (Table 9). Occasional grains were identified, most commonly *Hordeum vulgare* (barley). A single asymmetric grain suggests the presence of six-row barley. A single grain was identified as *Triticum* cf *dicoccum*. In addition to the cereal grains, occasional fragments of *Corylus avellana* (hazel) nut shell and moderately large numbers of monocotyledon rhizome fragments were present. Weed seeds were identified in all three samples. Samples 610 and 613 were dominated by ruderal species, notably *Stellaria media* (chickweed) and the Chenopodiaceae (*Chenopodium album*, *Atriplex* sp) and *Plantago media/lanceolata* (plantain). Sample 614 conversely contained seed pods of

TABLE 9

Charred plant remains from central post-hole fills of Structure 2

	Sample	610	613	614
	Context	Upper fill, primary central post	Middle fill, final central post	Lower fill, primary central post
	Volume (litres)	3.25	5.15	1.0
Hordeum vulgare	Hulled barley, asymmetric	1	–	–
Hordeum vulgare	Hulled barley grain	1	7	3
Hordeum vulgare	Barley grain	16	–	5
Triticum cf *Dicoccum*	cf Emmer wheat grain	1	–	–
Cerealia indet	Indeterminate cereal grain	8	3	–
Corylus avellana	Hazel nut shell fragment	3	–	–
Ranunculus subgen *Ranunculus*	Buttercup	1	1	–
Stellaria media agg	Chick weed	6	1	1
Chenopodium album	Fat Hen	1	1	–
Atriplex sp	Orache	2	–	–
Chenopodiaceae		3	–	–
Plantago media/lanceolata	Plantain	2	3	–
Rumex sp	Docks	–	1	–
Polygonum aviculare agg	Knotgrass	–	–	1
Polygonum periscaria/lapathifolium	Pericaria	–	–	4
Polygonaceae		–	–	2
Ericaceae	Heather seed pod	–	–	2
Carex sp	Sedge	–	–	1
Gramineae	Grass, large seeded	–	4	2
Gramineae	Grass, small seeded	–	–	1
Monocotolydon	Rhizome fragments	6	23	15
Indet	Indeterminate weed	6	3	4

Ericaceae (heather) and occasional *Carex* sp (sedges), in addition to the Polygonaceae (*Polygonum aviculare* and *Polygonum persicaria/lapathifolium*). Any interpretations made on such limited numbers of remains must be tentative. However, it would appear that this sample may contain some heathland type remains. It is also possible that the rhizome fragments are derived from uprooted heather.

DISCUSSION – EDNIE

Of the excavated sites, Structure 2 is the most complex but also the most readily interpretable. It comprises the remains of a timber roundhouse which was repeatedly refurbished or rebuilt on the same spot. The diameter of the building, which latterly reached c 15m, is such that it can be classified as a 'substantial' roundhouse in the terms discussed by Hingley (1992), albeit that Hingley was considering Iron Age structures. There was nothing in the excavated evidence to suggest that Structure 2 was anything other than primarily a domestic dwelling.

The ring-grooves appear to define successive wall-lines of Structure 2. The outer wall may have been the principal load-bearing roof support, although equally the roof could have been supported by a turf wall set outside the ring-groove (cf Kendrick's reconstruction of a ring-ditch house based upon her excavations at Douglasmuir, Angus: 1995, 62). If any such external feature once had been present, its non-survival could be explained by a combination of plough truncation and the circumstances of discovery of the site.

It is not straightforward to reconstruct the forms of the outer walls from the evidence of the partly excavated ring-groove foundations. No post-impressions were identified in the bases of the grooves to indicate the spacing of uprights set within them, and post sockets, stone-packed or otherwise, were absent.

It is a moot point as to how many successive buildings formed the archaeological remains of Structure 2. The ring-groove slots could relate to five separate buildings erected on the same spot. The post-ring probably acted as a roof support: the post-holes were certainly of sufficient size to have held substantial uprights. However, the post-ring demonstrated only one phase of construction, as none of the post-holes showed evidence for re-cutting. It is likely the ring-grooves could have reflected either abortive attempts at construction, or possibly the refurbishments only of the walls of the building, with the roof still in place. The evidence from the interior of the building does not clarify matters. Conversely, it is also possible that the large pits within the centre of the building acted as a sequence of central roof supports. This would provide evidence for multiple buildings with different superstructural frameworks having occupied this location. There are, however, other possible interpretations for the functions of the central features, such as storage pits. The other internal features of the building (see further below) demonstrate no more than two stratigraphic phases. However many buildings were present, it seems likely that the post-ring, which respects the paved surface, formed part of the final building plan.

The entrance(s) to the roundhouse(s) faced broadly east, an orientation that is common to many later prehistoric roundhouses and has been argued as determined by cosmological considerations (eg Fitzpatrick 1997; Oswald 1997), and has been traced back to the later Bronze Age by Parker Pearson (1999). The interior had a distinct zonal pattern, which seems to have been maintained throughout the various structural phases, to judge from the near absence of features around the peripheral area of the floor space. The central, roughly paved, part of the building, within the post-ring, appears to have formed a focus of activity, perhaps where cooking, eating and other communal activities took place. Most of the stratified artefacts associated with Structure 2 derived from this central area, although this fact is hardly surprising given the absence from the peripheral area of stratified features or deposits. Indeed, the absence of deposits from this outer area might suggest that it had been provided with a floor surface of organic materials. It can be envisaged that latterly the inner and outer zones were separated by screening hung from the framework formed by the post-ring: the slot preserved beneath the paving may be the foundation remains of a similar feature belonging to an earlier building phase. The possibility that Structure 2 had an upper storey should not be discounted.

The radiocarbon dates from Structure 2 have been accepted as reliable (above), and thus the site can be dated broadly to the second half of the second millennium cal BC. Given that up to five construction phases are apparent, it is possible that the two dates obtained do not represent the full chronological range of the occupation of Structure 2. McGill (above) records that the radiocarbon determinations date Structure 2 to several centuries before the date range which would normally be associated with the internally bevelled pottery forms recovered from it. While this evidence might be used to extend the chronology of the pottery forms (McGill, above), it is possible that the pottery relates instead to the later stages of occupation of Structure 2 and that this period is not reflected in the available radiocarbon dates. However, to this can be added the further possibility that the C14 date obtained from Structure 3 actually relates to the occupation of Structure 2. This last possibility, which cannot be confirmed, would indicate that the Structure 2 site was occupied for several hundred years, its last phases of occupation datable to the early first millennium cal BC and thus more readily associated with internally bevelled pottery.

The more secure radiocarbon dates indicate that the occupation of Structure 2 extends back into a period that lies at the early end of

the known chronological range for such timber-built roundhouses. Similar structures at Bannockburn have been dated to the first half of the first millennium cal BC (Rideout 1996), reinforcing the early Iron Age date suggested for the West Plean type-site (Steer 1956). However, Structure 2 is certainly not without earlier parallels in northern Britain. In southern Scotland, comparable structures of similar date to Ednie have been recorded at unenclosed platform settlements such as Green Knowe, Peeblesshire (Jobey 1980) and Lintshie Gutter, Dumfriesshire (Terry 1995); at the latter site structures up to 13m in diameter were present. Elsewhere, timber roundhouses of later Bronze Age date have been recorded at Blairhall Burn (Structure 2), near Dumfries (Strachan et al 1998), Lamb's Nursery, Dalkeith (Cook 2000a), and in Northumberland, for example at Lookout Plantation (Monaghan 1994) and Houseledge (Burgess 1984, 146). In the north-east of Scotland, the radiocarbon dates for the excavated ring-ditch building (Structure 3) at Deer's Den, Kintore (Alexander 2000) indicate it to have been broadly contemporary with Structure 2 at Ednie, and it is of interest that the two buildings appear to have been of similar diameter. The chronological overlap between these two types of construction in the Bronze Age settlement record of the north-east is of wider interest, given the ongoing debate about the chronological, functional and social interrelationship between them in the Iron Age record of the Tyne-Forth area (eg Hill 1982).

Indeed, the discoveries at Kintore and Ednie of unenclosed timber roundhouses of second millennium cal BC date in a lowland area is hardly surprising given the numbers of stone-walled roundhouses, traditionally described as 'Bronze Age hut circles', that are found in the upland areas of Scotland. A range of such 'hut circles' in eastern Scotland has been dated to the later second millennium cal BC, including Carn Dubh, House 1 (Rideout 1995), North Pitcarmick, both Perthshire (Barrett & Downes 1993, 102–3; 1996, 141) and Ormiston, Fife (Sherriff 1988). At Tulloch Field, Enochdhu, Perthshire (RCAHMS 1990, 81, no 159) the excavation of a 'hut circle' forming part of a group of six revealed a substantial timber house with ring-groove slots of comparable date, which was set within a stone wall measuring 14.5m by 10m.

It is becoming clear that the construction of timber roundhouses characterized by ring-ditch, ring-groove and post-ring type foundations continued as a widespread phenomenon in northern Britain from the second millennium cal BC through to the first millennium cal AD, occurring in both unenclosed and enclosed settlement contexts. Besides Kintore and Enochdhu, there is currently only a limited corpus of excavated later prehistoric timber roundhouses in eastern Scotland with which to compare the Ednie data, although those that are known reinforce the pattern of long-lived, heterogeneous structural forms and sizes apparent in the more extensively explored parts of northern Britain. From radiocarbon dates obtained from Douglasmuir (Kendrick 1995), Ironshill (Pollock 1997) and elsewhere in Angus it is clear that the ring-ditch form persisted through the first millennium cal BC. 'Pit circles' have been examined at Romancamp Gate, Fochabers (Barclay 1993), Tavelty (Alexander 2000) and Wardend of Durris, Kincardineshire (Russell-White 1995). A substantial roundhouse comprising a ring-groove enclosing multiple internal post-rings has been recorded at Candle Stane, Aberdeenshire (Cameron 1999). The above sites have been dated to the last centuries cal BC, and further undated post-ring structures have been recorded at Greenbogs, Monymusk, Aberdeenshire (Greig 1996, 9–10) and Dalladies, Kincardineshire (Watkins 1980: although at this site the dates obtained from associated features indicate occupation of this settlement spanning a considerable proportion of the first millennia cal BC and AD). Both post-ring and ring-groove buildings have been partly revealed in the ongoing excavations of the Iron Age settlement at Birnie, Moray (Hunter 1999,

63; 2000, 58–9). Further to the west at Seafield, Inverness (Cressey & Sheridan 2003), ring-ditch, ring-groove and post-ring buildings were built side by side within a settlement. Both Seafield and Birnie appear to have been occupied in the first centuries cal AD, to judge from the available radiocarbon dates and the recovery of Roman artefacts during the excavations.

In parallel, the occupation of stone-walled 'hut circles' appears to have continued throughout the first millennium cal BC in the east of Scotland, to judge from radiocarbon dates obtained from excavated structures at both Enochdhu and Carn Dubh. To this can be added Tulloch Wood, Forres (Carter 1993) and Site 1E at Sands of Forvie, Aberdeenshire which Ralston & Sabine (2000, 11–13) have re-interpreted as a domestic structure (in line with the original excavator's opinion) rather than as a burial monument.

Whereas Structure 2 can be interpreted with some confidence as a large domestic dwelling, the functions of the other structures at Ednie are less clear. The small size, irregular form and lack of internal features tend to indicate that Structure 3 was not a domestic building and need not have been roofed. It may have functioned as a small outbuilding or storage area, although there is little positive evidence to support this interpretation.

Structure 3 was erected on the site of the former Structure 2, which had been abandoned and levelled by that time, and marks a significant change in the character of activity at this location. The radiocarbon dates from the two buildings, when taken in isolation, could be interpreted as demonstrating a break in occupation between them. However, taphonomic and artefactual factors urge caution in accepting the evidence at face value. As noted above, the pottery evidence may indicate that Structure 2 was occupied more recently than the radiocarbon dates would suggest. As discussed above, it also possible that the radiocarbon date from Structure 3 dates the occupation of Structure 2. Given these uncertainties, the time gap between the two buildings cannot be reliably estimated, and the date of Structure 3 must remain open to interpretation, although a later prehistoric date seems assured.

The single radiocarbon date from Structure 1 suggests that its use lay within the period of occupation of Structure 2, in the later second millennium cal BC. Structure 1 appears to have been a single phase construction, and thus need not have had a long use-life. The key issue surrounding the interpretation of Structure 1 is whether the plough-truncated archaeological remains relate to a roofed building or an unroofed enclosure. Its oval form, its dimensions of 12m by 8m, and the character of the perimeter slot (which contained no meaningful information as to the nature of the structure founded in it) do not exclude Structure 1 from being a dwelling-house. Lintshie Gutter (Terry 1995), for example, contained a range of structures with similar ground plans. The paving present within the centre of the enclosed space is also reminiscent of that present in Structure 2.

To counter this, the lack of internal roof support foundations tends to suggest that this was not a roofed structure, although it is possible that internal posts could have rested on post pads that are no longer detectable. However, the absence of internal post-holes is not a factor of archaeological survival, since the paving and other pits were preserved in this area. On balance, the remains of Structure 1 do not stand out as those of a roofed building. What did survive within the perimeter suggests that the construction was for human use, such as a storage or working space, and that it was not built primarily as a stock enclosure.

Structure 4 presents substantial problems of interpretation, largely due to its partial exposure within the pipeline spread and to the considerable problems of dating which have arisen from the radiocarbon determinations. The ditch could have formed the east side of a

penannular enclosure, possibly bounding a settlement or structure which was not exposed in the pipeline spread. It appears that at least the tapering end of the ditch, which may have defined one side of an entrance passage, was intended for access, since its base was cobbled. If so, it appears that access was blocked off at some stage by a substantial dump of stones placed within the ditch. Vestigial traces of other remains of uncertain function were identified at this site; an area of cobbling was cut by, and pre-dated, the ditch. None of the features can be reliably dated.

Three radiocarbon dates from a primary fill of the ditch span much of the second millennium cal BC. These do not form a coherent group and it is not clear whether the dated material reflects contemporary activities occurring within or adjacent to the ditch as opposed to residual material incorporated within the ditch fills. However, the apparently relatively late handled pottery recovered from the secondary ditch fill suggests that the ditch may have remained as a distinct surface feature long after its construction.

ARTEFACT SCATTER SITES

Two artefact concentrations (Artefact Scatters 1 & 2) were located, containing sizeable quantities of primarily Neolithic artefacts. Although no associated structural remains were detected, these findspots are likely indicators for the presence and survival of areas of prehistoric activity.

ARTEFACT SCATTER 1

This scatter was located on the southern side of the crossroads between the Kirktown to Rora road and the South Essie to Corhill road, c 300 m west of Kirktown (illus 1: NK 0861 5190). The site consisted of a concentration of artefacts present within a peaty deposit, occupying the base of a gentle north-facing slope and extending over an area of c 9m by 6m, and the overlying topsoil. The artefact assemblage comprised an undiagnostic cobble with a simple smoothed face; two, small, heavily-worn body sherds of pottery of likely prehistoric date; and a collection of lithics.

Lithics

Graeme Warren

One hundred and nineteen artefacts were recovered. Of these 28 were recovered from topsoil, suggesting significant prior disturbance by ploughing. Flint was the dominant raw material (n = 99), though quartz was also present (n = 18). Five of the artefacts were abraded; aside from these the assemblage appears to be homogeneous in character and is treated as a unit in the discussion that follows.

The pebble origin of the flint is clearly demonstrated by the high proportion of pieces (n = 62) showing cortical material. The fresh material (n = 80) is frequently honey coloured (n = 44, 55%) or light grey (n = 10, 12.5%); red flint (n = 9, 11.3%) is also present. The flint was variable in quality, hinge and other irregular fractures occurring in significant quantities. The use of some very low-grade flint, especially a honey-white coloured material, is also notable. Seventeen (17.2%) of the flints are burnt, including the fine retouched tools (eg 2, 25; illus 13) as well as cruder chunks.

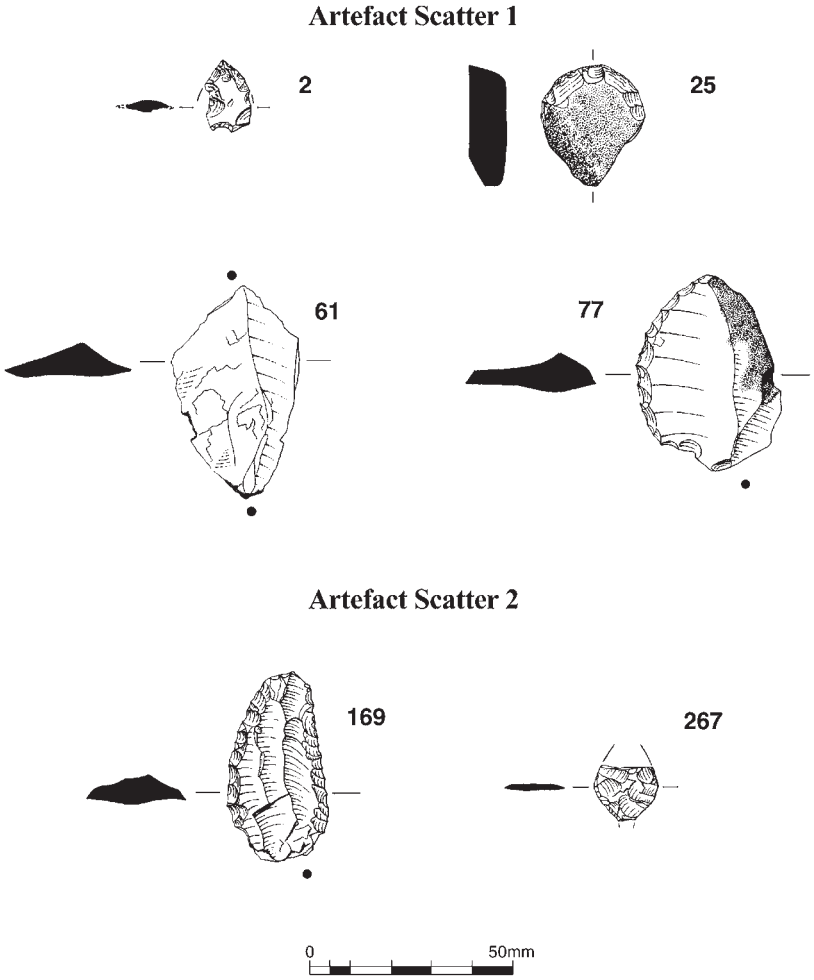
Although the flint assemblage (Table 10) is dominated by waste (irregular flakes and chunks), regular flakes are also important. Bipolar working was used to produce flakes, as were multi-directional, fairly amorphous flake cores and a well formed discoidal core. One small, fragmentary platform core was recovered from the topsoil; this is abraded and may be residual. In general the flakes have wide platforms, sometimes with clear evidence for faceting. Fairly pronounced bulbs of percussion often accompany these pieces; this seems suggestive of direct hammer percussion.

Eight of the flint artefacts were retouched. Of these four were severely burnt (eg 2, 25; illus 13) and

TABLE 10

Composition of flint assemblage from Artefact Scatter 1

Type	Quantity	% total
Regular flake (Regular)	35	35.3
Irregular flake (Irregular)	30	30.2
Blade	0	0
Core	5	5
Chunk	23	23.1
Bipolar core	4	4.3
Split pebble	2	2.1
Total	99	100



ILLUS 13 Lithic assemblage from Artefact Scatters 1 & 2

two broken. The retouched artefacts were all quite formalized tools. They include a burnt and fragmentary chunky triangular arrowhead with short, quite steep retouch forming a point and a possible notch at the base (2; illus 13), and a large D-shaped retouched flint knife with the cortex providing natural backing to the quite steeply retouched edge (77; illus 13). Four convex scrapers are present, including two short thick 'thumbnail' examples (eg 25; illus 13), one burnt convex side scraper, and a burnt, long end of flake example. All of the retouched artefacts are broadly congruent with a Late Neolithic/Early Bronze Age date for the assemblage.

The quartz artefacts derive from pebble sources. In general the quartz appears to be of relatively high quality and this is reflected in the quartz working. Quartz was worked using bipolar techniques in order to obtain regular flakes (eg 61; illus 13), varying in size from 19mm to 30mm. None of the quartz was retouched.

The assemblage from this site is generally quite consistent in character but is still difficult to date beyond stating that the retouched artefacts have general affinities to the later Neolithic or Bronze Age. The evidence from the site is consistent with in situ knapping as well as many other tasks involving

regular flakes. The significance of the retouched artefacts being burnt is not clear.

ARTEFACT SCATTER 2

This site was located c 160m to the south of Structure 4 at the foot of the hill east of Ednie Farm (NK 0897 4997: illus 1, 13–14). It comprised a sub-rectangular spread of brownish grey, silty clay soil, measuring 9m east/west by 3.5m north/south, which filled a shallow (0.06m deep) south-facing depression in the clay subsoil running down the slope towards a burn or drain. Chipped stone artefacts, pottery and a smoothed quartzite cobble were recovered from the soil filling this depression and the overlying residual topsoil. The deposit partly lay beneath a farm track.

A sample of soil taken from the depression was sieved, and produced occasional *Corylus avellana* (hazel) nut shell fragments (identification by Ruth Pelling). One charred fragment was dated by radiocarbon methods, producing a radiocarbon date of 4620 $\pm$ 45 BP (3517–3140 cal BC at 2σ, GU-8797).

Lithics

Graeme Warren

One hundred and seventy-four artefacts were recovered from this site, all but 13 flint and the rest quartz or quartzite. A further 18 flint chips less than 10mm across were found in a sample taken from the deposit within the depression. More than half of the artefacts were surface finds, suggesting considerable plough disturbance. A significant proportion of the finds was burnt (16.7%, n = 29) or patinated (5%, n = 9).

A pebble source was used by the flint workers at this site. Seventy-six pieces (47.2%) were cortical. The fresh material (n = 113) is frequently honey coloured (n = 61, 54%) and red flint (n = 28, 24.8%) is also very significant, while grey flint (n = 13, 11.5%) is weakly represented. This is a higher proportion of red flint than is used on any other site and adds to the impression that this assemblage is distinct from those previously discussed. The red flint includes some high quality retouched artefacts (eg 169; illus 13).

Although regular flakes are the single most important artefact type, chunks and irregular flakes are the dominant characteristic of the assemblage (Table 11). Blades are a small significant presence, while the lack of bipolar cores and split pebbles is notable. All of the formal cores were slightly irregular platform flake cores. These often had one main platform and a smaller second or third platform. A wide range of percussive evidence was available from this assemblage, and the blades and flakes range greatly in morphology, including very broad examples as well as the regular blades.

TABLE 11

Composition of flint assemblage from Artefact Scatter 2

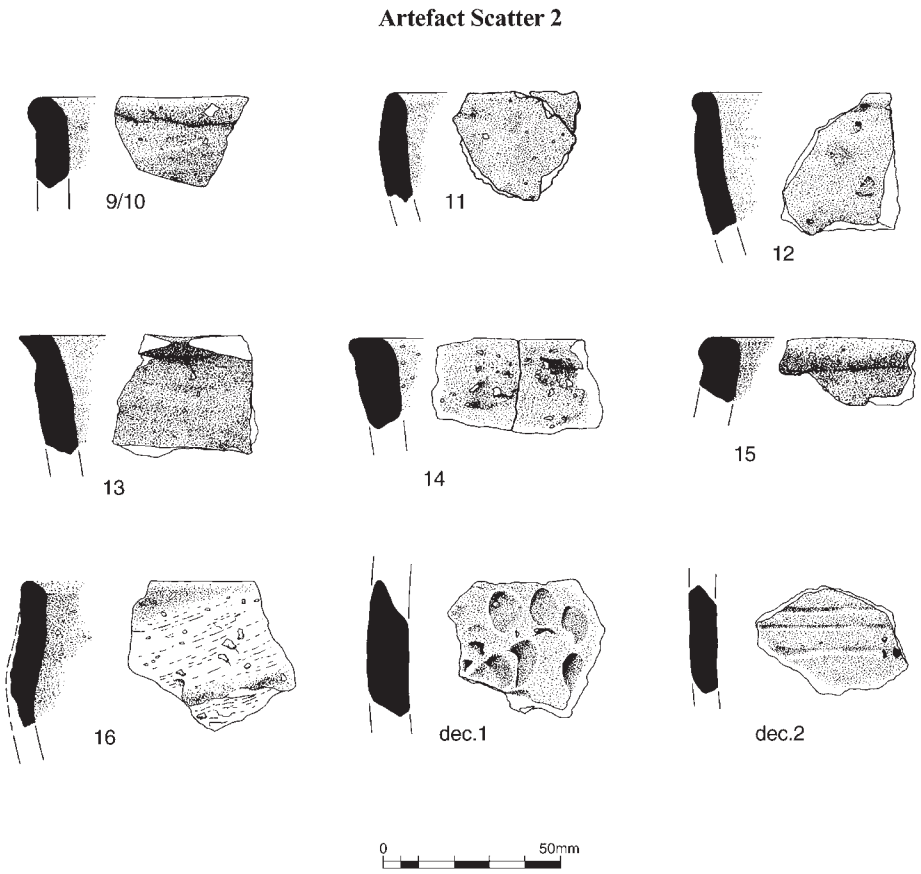
Type	Quantity	% total
Regular flake (Regular)	51	31.6
Irregular flake (Irregular)	42	26.1
Blade	8	5
Core	7	4.3
Chunk	46	28.6
Bipolar core	3	1.9
Split pebble	4	2.5
Total	161	100

Five artefacts are clearly retouched, and a further two possibly so. The clearly retouched artefacts include a fragmentary leaf-shaped arrowhead (267; illus 13); a worn edge retouched knife, broadly D-shaped with unifacial retouch along both edges creating steep neat cutting faces (169, illus 13); two convex scrapers, both somewhat scrappy and heavily worn; and a fine blade with a small area of light retouch on one side.

The small assemblage of quartz/quartzite included six regular flakes, four irregular flakes, and a controlled core.

The diverse range of morphology and reductive strategies, when considered in conjunction with the variation in the condition of the artefacts, strongly suggests that this assemblage is mixed in character. However, the presence of concentrations of burnt material and smaller waste in the deposit within the depression, including the presence of 18 flint micro-débitage chips, hints that the site does not solely consist of accumulations of colluvially-derived material. The distinctive character of raw materials selection, with a high representation of red flint, also hints that there is a coherence to this collection.

The platform cores and the regular character of some of the blades and flakes may be an indication of an Early Neolithic date for this assemblage. This would also be consistent with the presence of the leaf shaped arrowhead (although these are not exclusively Early Neolithic). Perhaps then, the assemblage from Ednie is Early Neolithic with some



ILLUS 14 Pot rim forms 9–16 and decorated sherds from Artefact Scatter 2

later admixture. Such a suggestion can only be tentative, especially given our poor understanding of the nature of Early Neolithic flint knapping.

Pottery

Catherine McGill

Seventy-seven sherds (422g) were recovered, mostly from the soil within the depression but with some from overlying deposits. The diagnostic sherds comprised six rim forms and two decorated body sherds (illus 14; Table 12). All of the pottery was hand-made, although in general it was not possible to identify the specific method employed. Several rim and body sherds were burnished on one or both sides. A low proportion of the sherds showed signs of the presence of residues, indicating they are likely to have derived from cooking vessels. The function of the remaining vessels is not apparent.

In this assemblage, degree of wear can be related directly to the surface treatment of the sherds as burnishing appears to offer some protection. The unburnished sherds are fairly worn, indicating they have either been substantially disturbed, perhaps by ploughing, or that they were exposed prior to incorporation in the deposit.

These fairly upright vessels with straight sides or slight carinations, flattened rims, external rounded lips and an absence of bases, in association with examples of both decoration and the use of burnishing, indicate a Neolithic date for this assemblage. Comparable assemblages have been found at sites such as Bannockburn, Stirling (Rideout 1996), Easterton of Roseisle, Moray (Henshall 1983) and Barbush Quarry, Dunblane, Perthshire (Cowie 1993).

Chronological sub-divisions of pottery in the Neolithic have tended to be simplistic, with the

TABLE 12
Pottery forms from Artefact Scatter 2

Form	Description	Circumference	Context
Rim form (RF) 9/10	Two slightly differing rim forms probably derived from a single, unevenly-made vessel. Straight-sided with a slightly everted rim. Burnished on interior and exterior	Unknown	700, topsoil
RF11	Straight-sided vessel with a simple, rounded inturning rim	Unknown	700, topsoil
RF12	Straight-sided vessel with a flattened rim and exterior lip	Unknown	700, topsoil
RF13	Straight-sided vessel with subtle finger-groove on exterior immediately below rim. The rim is flattened with an elongated external lip, terminating in a sharp point. Burnished exterior	Unknown	701W, fill of depression
RF14/15	Two slightly differing rim forms probably derived from a single, unevenly-made vessel. Straight-sided vessel with flattened rim turning slightly to the outside. The rim has an external lip	c 250–300mm	701W, fill of depression
RF15	Upright vessel with curved lower part, a slight shoulder c25mm below the rim and an upright, flattened rim. Burnished on interior and exterior	Unknown	701W, fill of depression
Decorated sherd 1	Body sherd with several apparently random shallow fingertip impressions	N/A	701W, fill of depression
Decorated sherd 2	Body sherd with three parallel incised lines	N/A	701W, fill of depression

earlier period being represented by the relatively fine and often well finished Grimston-Lyle Hill type ware, and the later period being defined by coarser Late Neolithic Impressed and Grooved Wares. Cowie's recent study (1993) demonstrated that both coarse and decorated wares make an earlier appearance than previously recognized. For example, Cowie suggests that earlier coarse vessels may exist which are analogous to the Towthorpe style – a Yorkshire variant of Grimston-Lyles Hill pottery – which dates to the fourth to third millennia BC. An additional complication in suggesting a more specific date for this assemblage is the current lack of understanding of regional variation.

Conventionally, because these vessels are all fairly coarse, are not heavily carinated and carry some decoration, the assemblage would be dated to the late Neolithic. However, in the light of Cowie's (1993) survey of Neolithic pottery it seems inappropriate to suggest anything more than a broad range of dates, from the fourth to the early second millennium BC, on the basis of form and decoration.

DISCUSSION – ARTEFACT SCATTERS

Artefact Scatter 1 appears to be of broadly Late Neolithic/Early Bronze Age date on the basis of the lithic evidence. Warren (above) has suggested that some of the lithic material represents in situ knapping, which might indicate that at least some of the artefact scatter reflects former activity at this location. However, and by contrast, the pottery sherds are heavily worn and may represent residual items. Given the topographic location of the scatter at the base of the slope, some pieces could represent downwashed material (although, if so, no traces of associated activity survived uphill to the south in the pipeline spread). Since the deposition of the artefact scatter, some plough-disturbance has occurred.

Artefact Scatter 2 comprises an assemblage of pottery and lithic items contained within a soil filling a natural depression, with further material occurring in overlying deposits, presumably as a result of plough disturbance. The assemblage is of Neolithic origin. The lithic material has Early Neolithic characteristics, and the pottery can be dated to the between the fourth and early second millennium cal BC. The radiocarbon date for the hazel nut, spreading the second half of the fourth millennium cal BC, appears to provide a good indication of the date of the assemblage.

Taphonomy is again important to the interpretation of this collection of artefacts. The soil formation could represent the fortuitous survival in a hollow of the remains of a settlement. However, it seems more likely that the assemblage represents a collection of colluvially derived material, to judge from the

ILLUS 15 Burnt mound 1, excavation photograph taken from the west

apparently mixed nature of the lithic assemblage and the wear apparent within the ceramic material. Given the considerable quantity of artefacts, in this case the assemblage must have derived from a site in the immediate locality, presumably located uphill to the north. Whichever site formation process was at work, it appears that any other physical remains of the presumed settlement site had been entirely removed by ploughing.

BURNT MOUNDS

Two spreads of burnt material were located on the northern and southern sides respectively of a canalized stream channel which runs east/west and empties into East Den (illus 1). Both are interpreted as the ploughed-out remains of burnt mounds.

BURNT MOUND 1

This site was detected as an amorphous spread of grey/black silt filling a slight hollow in the gravel subsoil (NK 0824 4479: illus 15, 16). This spread measured 11m east/west by 6.8m north/south by 0.35m deep. Beneath this deposit and overlying the subsoil was a concentration of sub-rounded and sub-angular stones measuring c 0.05–0.10m in size, to a depth of 0.40m. Some of these stones showed evidence of having been burnt.

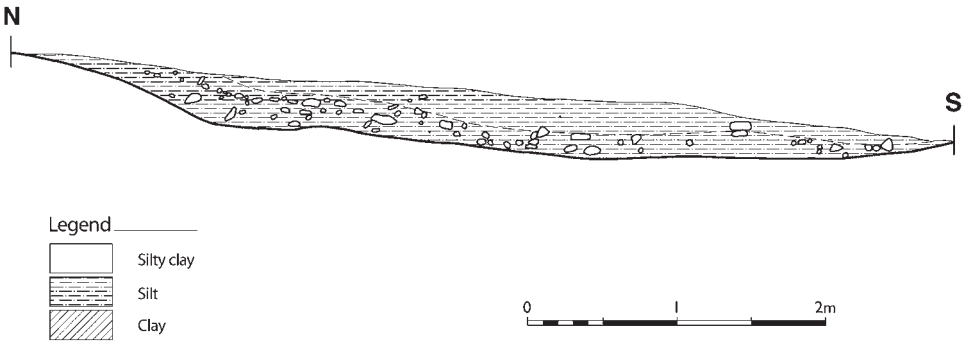
A piece of birch (*Betula* sp) charcoal recovered from the upper fill was submitted for dating, and produced a result of 3360 $\pm$ 40 BP (1742–1523 cal BC at 2σ; GU-8798).

Lithics

Graeme Warren

Thirty-four flint pieces were recovered from the surface of this site. A further 29 artefacts were recovered from the two samples taken of the grey/black silt, including small chunks and chips of flint and quartz indicative of in situ flint knapping. This latter material is excluded from the discussion below.

Many of the flints were abraded (34%) or rolled (12%); this, alongside the crude character of the primary technology, creates problems in differentiating between natural and worked artefacts (Table 13). These difficulties do not detract from the appraisal of the industry except in a quantitative fashion. The evidence is of a simple flint industry based on the exploitation of rounded pebbles, mainly honey coloured. The absence of bipolar cores is slightly surprising, in what appears to be an



ILLUS 16 Burnt mound 1, cross-section

TABLE 13
Composition of flint assemblage from Burnt Mound 1

Type	Quantity
Regular flake (Regular)	1
Irregular flake (Irregular)	9
Blade	0
Core	2
Chunk	18
Bipolar core	0
Split pebble	4
Total	34

expedient industry. Four artefacts are heavily burnt. No artefacts were retouched.

The material is indicative of a crude flint industry based on the removal of flakes from flint pebbles. The abraded condition of many of the pebbles is interesting, as is the paucity of burnt flint in the collection, especially as the assemblage is associated with a burnt mound. The assemblage cannot be dated but is coherent with a later prehistoric context.

BURNT MOUND 2

This site consisted of an amorphous spread of dark brown/black silty sand containing small and predominantly sandstone pebbles (NK 0826 4478: not illustrated). Some of these stones showed evidence of having been burnt. This deposit was for the most part sealed beneath the remains of a field bank. No structural evidence or finds were located. It seems likely that the plough-disturbed remains of a burnt mound had been fortuitously preserved beneath a later field boundary, and that most adjacent deposits had been removed by continued ploughing by modern methods.

DISCUSSION – BURNT MOUNDS

The size, morphology and location of these sites are consistent with their interpretation as the ploughed-disturbed remains of burnt mounds. The radiocarbon date for Burnt Mound 1 is consistent with the known broad Bronze Age distribution of burnt mounds across Scotland (eg Barber 1990, 102, table 4). These new discoveries add nothing significant to previous discussions as to the range of potential functions represented by burnt mounds, although their presence close to a water source is a common feature of burnt mound site locations. They are, however, important as further indicators of extensive, previously unknown, prehistoric activity in the landscape crossed by the pipeline.

CONCLUSIONS

The excavations along the St Fergus to Peterhead pipeline have significantly enhanced the archaeological record for this previously neglected area. A range of prehistoric sites has been recorded in the landscape transect crossed by the pipeline, where previously prehistoric activity had been indicated by a single stray artefact findspot. These discoveries confirm that the previous absence of known sites was illusory, and the result of a combination of factors: intensive agricultural landuse, which has removed upstanding traces of archaeological sites; ground conditions, which render aerial reconnaissance ineffective; and the lack of previous archaeological fieldwork in the area.

The importance of the vestigial, in some cases highly localized, remains discovered as part of this project highlights the need for the potential archaeological impacts of future developments of any significance in this area to be carefully considered within the planning process.

It is striking that all the sites of any note discovered along the pipeline route are of Neolithic and Bronze Age date. Two artefact scatters of Early Neolithic date (Artefact Scatter 2; Structure 1) and a further Late Neolithic/Early Bronze Age example (Artefact Scatter 1) appear to represent the disturbed remains of otherwise ploughed-out settlement activity in the immediate vicinity of the findspots. A series of structures near Ednie can be related to later Bronze Age, probably unenclosed, settlement in that area. The various structures do not all appear to have been residences, and were not all contemporary. Structure 2, a roundhouse, may have been occupied and rebuilt for several hundred years centred on

the second half of the second millennium cal BC, but its period of use entirely predates that of the likely non-domestic Structure 3, which overlay it, and encompassed the period of shorter-lived use of Structure 1, itself of indeterminate function. The burnt mounds have added to the handful of recorded examples of this type of monument in Aberdeenshire.

The artefact scatters and structural remains lay within a c 2km length of the pipeline, to the north of the River Ugie. It is argued that this particular landscape zone was favourable for early farming, and that it was characterized by a dispersed and shifting pattern of unenclosed settlement lasting from the fourth until at least the second or first millennia cal BC. At the more localized level, however, it is not possible to determine whether, for example, Structure 1 related to the same settlement unit as Structures 2/3, given that they are c 500m apart. The possibility that an extensive settlement occupied the low-lying ridge at Ednie should not be dismissed given the extensive nature of later prehistoric unenclosed settlements demonstrated in Aberdeenshire at, for example, Dalladies (Watkins 1980) and Kintore (Alexander 2000; Cook 2000b, 10–11).

No Iron Age or later remains were discovered in the pipeline spread. Their absence in the Ednie area is of particular interest when it is considered that in the North-East other excavated unenclosed settlement sites with Bronze Age components (eg Kintore, Alexander 2000; Enochdhu, RCAHMS 1990, 81; Carn Dubh, Rideout 1995) have also revealed occupation extending well into the Iron Age, albeit not necessarily continuously. The observations from the current project could be simply a result of sample bias. However, it is also possible that the absence of Iron Age or later activity reflects a real change in the settlement, land ownership and land use patterns. Perhaps Iron Age settlement forms became more nucleated and possibly enclosed? There is currently no way of evaluating these possibilities, given the invisibility of Iron Age and later settlement forms within the wider landscape of the Peterhead area.

Overall, the results of this project have provided a tantalizing glimpse of the changing patterns of prehistoric settlement in the Peterhead area. Pipeline projects such as that reported here provide good opportunities to assess both patterns of past activity and archaeological survival across the landscape. It is for future work in the area to assess whether the patterns of settlement and land use observed here are real or the result of sample bias. Confirmation or re-assessment will allow more robust explanatory models to be proposed, to include hypotheses as to how and why settlement patterns changed over time. When it is considered that only 20 years ago the 'preliminary assessment' by Ralston et al (1983, 149) of the later prehistoric settlement in North-East Scotland was able to call upon Dalladies (Watkins 1980) as the only dated unenclosed settlement within their study area, there is good reason to be hopeful that the next 20 years will see a blossoming in our understanding of prehistoric life in that part of the world.

ARCHIVE

A copy of the project archive and unabridged versions of all specialist reports have been deposited with the National Monuments Record of Scotland. The artefact assemblages have been claimed under Treasure Trove procedures and allocated to Marischal Museum, Aberdeen.

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