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Neolithic pits and Late Bronze Age roundhouses in the Upper Ury Valley, Aberdeenshire

Claire Lingard¹ and Richard Moore¹

with contributions by Melanie Johnson², Ann Clarke³, Mhairi Hastie², Mike Cressey², Gemma Cruickshanks⁴ and Derek Hamilton⁵ with illustrations by Jacqueline Churchill and David Watt

ABSTRACT

Archaeological monitoring of works on a gas pipeline route in Aberdeenshire, north-west of Inverurie, resulted in the discovery and excavation of several groups of Neolithic pits and four Bronze Age roundhouses. The Neolithic pits were concentrated around the Shevock Burn, a small tributary of the Ury, and in the East and North Lediken areas to the north. They produced significant assemblages of Early Neolithic Impressed Ware and of Modified Carinated Bowl. The Bronze Age roundhouses included the heavily truncated remains of a post-built structure near Pitmachie, the remains of a pair of ring ditch structures near Little Lediken Farm and another ring ditch structure close to Wrangham village.

INTRODUCTION

The 8.7km route of the Moray Reinforcement Pipeline (Illus 1) forms part of a larger scheme to improve natural gas distribution in north-east Scotland. It continues the route of an existing pipeline from Broadsea (NGR: NJ 7062 2111) to Old Rayne (NGR: NJ 6714 2777) (Kirby 2011) northwards to the small settlement of Jericho, north-west of Colpy. A staged programme of pre-construction studies, including a desk-based assessment, field-walking and geophysical surveys, carried out in 2010, covered both routes, from Broadsea to Jericho (Morley 2010).

Archaeological monitoring of topsoil removal from an 18.5m-wide working width along the length of the pipeline led to the identification of archaeological remains in 17 plots of land, of which 12 were designated as notification areas

requiring further investigations. These were excavated and recorded between 24 February and 20 June 2016.

LANDSCAPE

The pipeline route broadly follows the west side of the Ury Valley, to the west of the A96 Aberdeen to Inverness road. At its southern end, the route is at 93m OD, and it rises gradually up the valley side, with dips across the small side valleys of the Shevock, Kellock and Jordan Burns. The route terminates at a gas compound on the western slopes of the Hill of Skares, at a height of 265m OD. It crosses a mix of arable and pasture fields, but the wider landscape has a greater upland character towards the northern end of the route, with open moorland to the west and forestry plantations to the east.

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ILLUS 1 The location of the excavated sites along the pipeline route (© Network Archaeology)

Ordovician igneous rocks underlie the route, outcropping towards the north, around Wrangham and the Hill of Skares. Elsewhere, the bedrock is masked by Devensian tills, of coarse silts with occasional thin layers of fractured rock, and granite boulders increasing in frequency to the north. The National Soil Map of Scotland shows brown earths of the Insch Association overlying the tills.

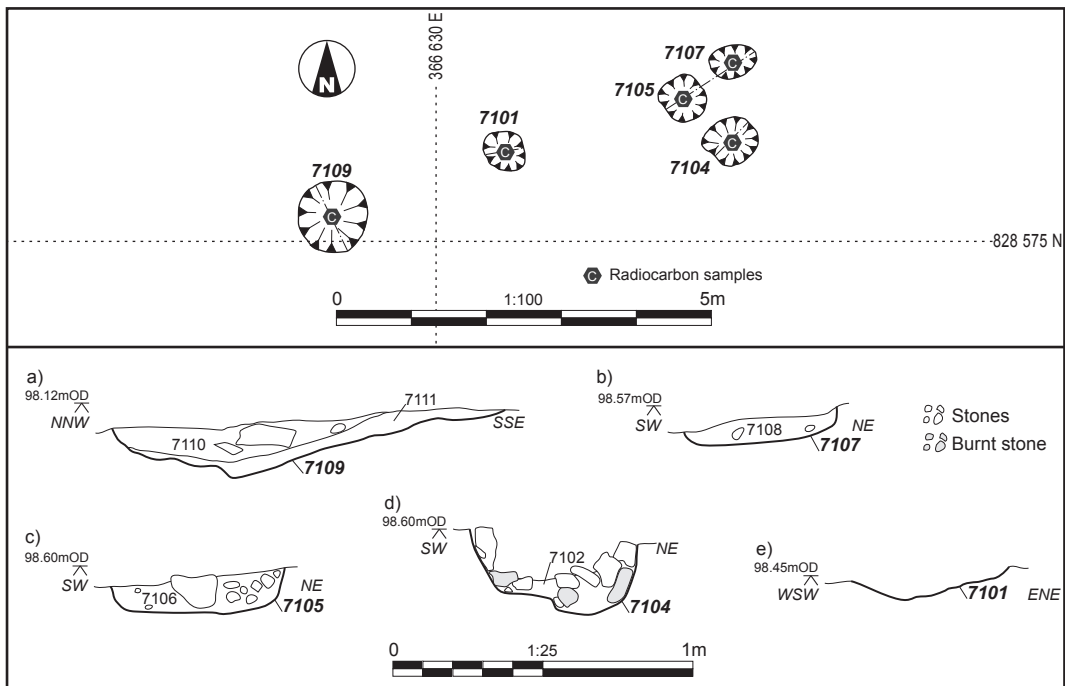
METHODS

Topsoil was stripped along the whole length of the pipeline route, using back-acting tracked excavators with smooth-faced buckets. This was monitored throughout by an experienced archaeologist. A notification procedure facilitated the rapid deployment of an excavation team to hand excavate and record all remains that were too complex to be recorded by the monitoring archaeologist. Sites were located to OS National Grid co-ordinates using dGPS, with a positional accuracy of ± 20mm. After planning,

features were excavated and recorded in cross-section. All fills of archaeological features were sampled, and were then totally excavated, before pipeline construction work proceeded.

Specialist analyses of artefacts and samples, as proposed in the data structure report (Cruse 2017), have been integrated into this text. The unedited reports by Melanie Johnson (pottery), Ann Clarke (flaked lithics and stone tools), Mhairi Hastie (archaeobotany), Mike Cressey (charcoal) and Gemma Cruickshanks (vitrified materials), included in the site archive, provide details of methods employed by each of the specialist contributors, summaries of which are included in this paper.

To avoid undue repetition, radiocarbon dates quoted in this paper are calibrated at the 95% confidence level, unless otherwise stated. Full details of all radiocarbon dates are listed in the Appendix.



ILLUS 2 Shevock: plan and sections of pit group (© Network Archaeology)

EARLY NEOLITHIC PITS

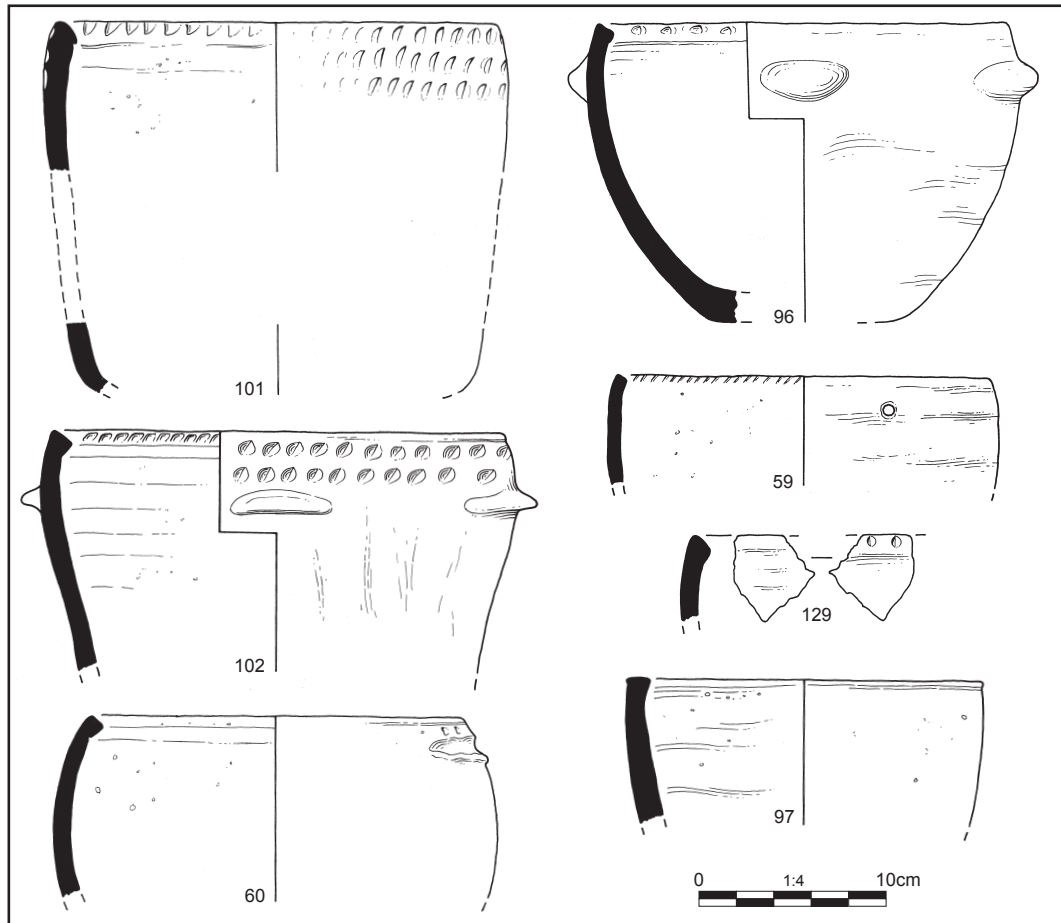
SHEVOCK: PIT GROUP (NGR: NJ 66630 28575;
ILLUS 2)

All five of a group of shallow pits, located 50m to the south of the Shevock Burn, contained pottery sherds. Their fills were soft silty sand with varying quantities of charcoal, interpreted as the result of either burning in situ or dumping of hearth waste. Large and well-preserved assemblages of burnt hazelnut shell were recovered, particularly from Pits 7104, 7105 and 7107, and provided radiocarbon dates for four of the features, with hazel roundwood charcoal providing a sample for the fifth: Pit 7109.

Pit 7104, the deepest of the group, produced sherds from four diagnostic vessels (Illus 3), with a further six vessels represented by 53 undecorated body sherds.

Vessels P58 (not illustrated) and P59 are each represented by a single rim sherd, both internally bevelled: P58 is decorated with small impressed marks along the bevel, while P59 has short diagonal notches along the bevel and a perforation below the rim, drilled from the exterior.

Vessel P60 consists of 17 sherds from a vessel with an inturning rim, with an internal bevel and a rounded body; the rim is pinched below the bevel on the interior and the vessel is



ILLUS 3 Shevock: Neolithic pottery (© Network Archaeology)

decorated on the exterior with a large horizontal slash, pinched along the bottom edge to create a ridge, with possible fingernail impressions above.

Vessel P96 consists of 37 sherds, including rim and base sherds, from a heavy bowl with lugs; its rim is internally bevelled and the base is flat. It is decorated with fingernail impressions along the bevel and there are two elongated lugs present immediately below the rim.

Two rim sherds from the largest pit, 7109, are from a vessel (P97) with an upright, flattened rim, slightly expanded to each side and decorated with incised diagonal lines.

The fill of Pit 7101 consisted mostly of pot sherds in a loose, silty matrix, 7103. Three diagnostic vessels were present, with a further six vessels represented by 140 undecorated body sherds.

Vessel P99 (not illustrated) comprises three very abraded sherds from a thick rim with an internal bevel, decorated with deep fingernail impressions along the bevel and in a diagonal row below the rim. There is little profile present so the overall form of the vessel is not known.

P101 consists of 180 sherds from a vessel with a slightly inturning rim, with internal bevel and a rounded body. Three of the sherds may be from either a carination or the base. It has three rows of deep fingernail impressions below the rim and one row along the bevel.

P102 consists of 52 sherds from a vessel with an inturning rim with internal bevel, decorated with two rows of deep fingernail impressions below the rim, and one row along the bevel, where they become more pinched. Two elongated lugs are present immediately below the rim.

Of the two shallower pits to the north of Pit 7104, Pit 7105 contained sherds from three different vessels, the only diagnostic one, P129, consisting of an inturning rim with its internal bevel decorated with deep fingernail impressions. Pit 7107 contained only eight undecorated body sherds.

Overall, rim diameters for vessels in this pit group range from 18 to 22cm, and fabrics are generally very similar, coarse and sandy and

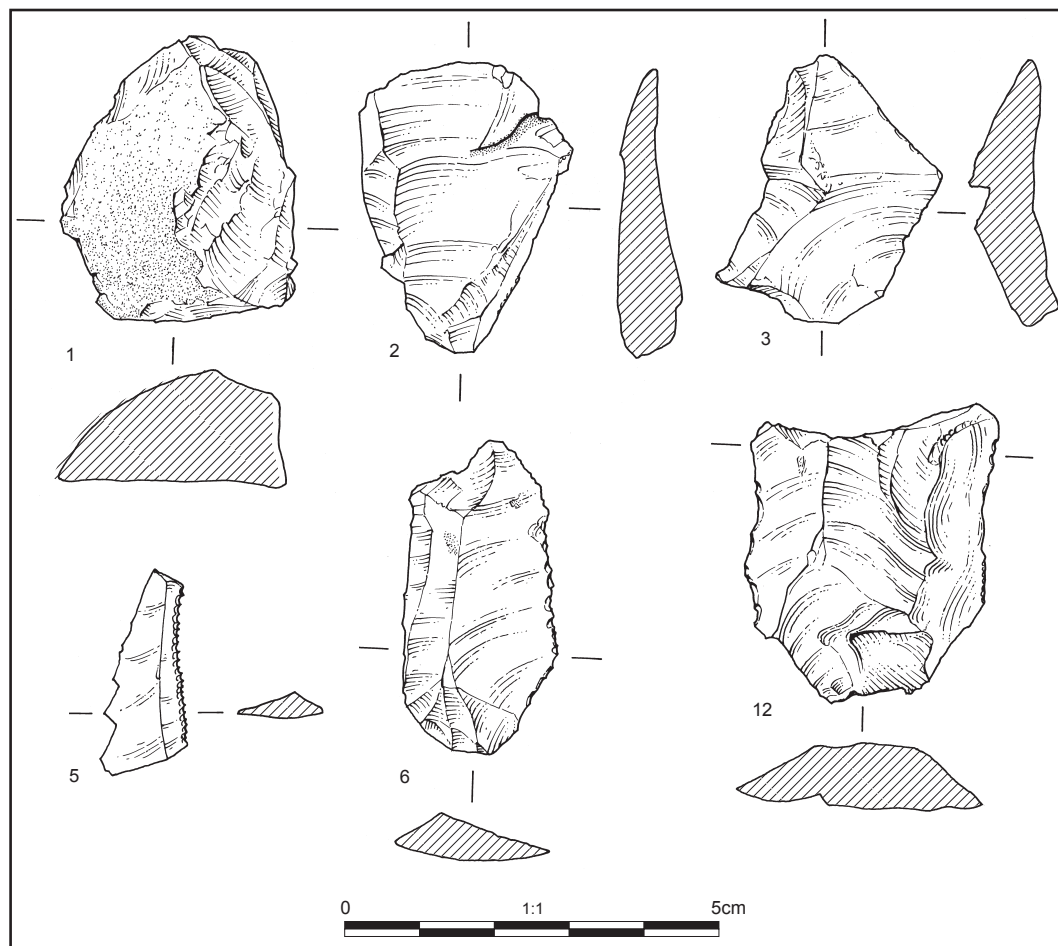
tending to be orange/brown in colour, with wall thicknesses ranging from 6 to 14mm.

The large portions of individual vessels recovered from Pits 7101 (P101, P102) and 7104 (P60, P96) form a coherent group: all are Impressed Ware, their internally bevelled rim forms, lugs and impressed decoration being typical traits. This strongly indicates that these two features are related and represent pit-digging activity in the 4th millennium BC.

However, Bayesian modelling of the radiocarbon dates from all five features indicates that the group as a whole does not represent a very short-lived nor a single event despite the physical proximity of the pits (see Appendix). Use of the same area for pit-digging activity on two or more occasions could be purely coincidental, but raises the possibility that this location may have maintained a special significance over an extended period.

An isolated round pit, 7112 (not illustrated), in the same field, but over 60m to the south-east (NGR: NJ 66684 28536), was 0.60m in diameter and 0.1m deep, with a fill of large angular stones in a loose sandy silt matrix. Four of the stones showed heat-reddening. Five worked flints, recovered from beneath the stones, include two flakes and a core from what appears to be the same mottled grey flint. Remnants of a rolled cortical surface on the back of the core indicate a beach or gravel source for this flint (Illus 4: 1). The flakes (Illus 4: 2, 3) do not refit to each other or to the core but they are so similar in colour and texture, and share the same technique of flint working, that it is likely that they originated from the same nodule.

The rough Levallois-like flat core has a backing of pebble cortex. The two large inner flakes have dihedral platforms indicating they were detached from a faceted platform (see Anderson-Whymark 2017 and Ballin 2011 for explanation of this technique). Anderson-Whymark observes that this method of working is exclusive to Scotland and dates to the Late Neolithic. Across Britain during this period it was not uncommon for pits to be filled with flaked lithics, some coming from the same episode of flint working (Edmonds 1995; Thomas & Anderson-Whymark 2011).



ILLUS 4 Shevock, East Lediken and Little Lediken: flints (© Network Archaeology)

The two other simple inner flakes of light grey and light brown flint both have narrow platforms.

The same field also produced an intriguing unstratified piece, found 104m to the south-west of the pit group (NGR: NJ 66703 28500): a fragment of deeply incised purple roofing slate with a carved symmetrical pattern of a circle bisected by two quadrants (Illus 14: 4, below). Lighter hashed lines fill the outer corners of the quadrants. The object is incomplete, having broken along the outer incised lines, so its original size is not known. The use of a purple roofing slate would give a historic date for the motif.

EARLY NEOLITHIC IMPRESSED WARE

Melanie Johnson

It is typical for Neolithic Impressed Ware to be recovered from pit scatters, and the ware is characterised by impressed decoration ('maggots', comb, fingernail, stabs) and bevelled rims (MacSween 2000, 2002, 2007). Impressed Ware has previously been understood as a development from the Carinated Bowl tradition, but it is becoming clear that Modified Carinated Bowl and Impressed Ware can be found together. Although previously characterised as Late Neolithic, dating to the early to mid-3rd millennium BC (McInnes 1969; Kinnes 1986;

Cowie 1994), the Shevock evidence adds to a growing corpus of dates that indicate that Impressed Ware is found on sites dating to the second half of the 4th millennium BC. For example, the radiocarbon dates from a feature at Grantown Road, Forres (McLaren 2016: 29), containing sherds from a lugged vessel, a round-bodied bowl and the rim of an Impressed Ware vessel, support a period of currency of 3635–3119 BC.

Excavations at Kintore, Aberdeenshire, gave a date range from 3530–3340 BC (Cook & Dunbar 2008), and the Dubton Farm, Brechin, assemblage (Cameron 2002) included Carinated Bowl and Impressed Ware found together in pits with a date of 3639–3374 BC. Impressed Ware from Alloa (Mitchell et al 2010) came from the same pit as radiocarbon dates of 3370–3100 BC. Sheridan (1998) also suggested at Biggar Common, South Lanarkshire, that an earlier date in the 4th millennium was possible, as did Strachan et al (1999) at Amisfield, Dumfries and Galloway. Strong regional groups have still not been identified within Impressed Ware assemblages, although some indications of regional patterning have been suggested (MacSween 2002, 2007).

The pottery from Shevock includes round-based bowls with upright and inturning bevelled rims, a bowl with an upright flattened rim and a heavy bowl with lugs which appears to have a flat base. The presence of lugs on two vessels along with an example of a perforation suggests continuity from the Modified Carinated Bowl tradition rather than a mixed assemblage of Impressed Ware and Carinated Bowl, as the lugs are paired in each case with impressed fingernail decoration. Fingernail impressions are recorded on a number of the vessels, in parallel rows on the rim bevels and on the exterior of the pot. Other decoration present in the Shevock assemblage includes an unusual large horizontal slash, which is pinched along the bottom edge to create a ridge; diagonal notches and small impressed stabs along rim bevels; and short incised lines along the top of the flattened rim.

Parallels for fingernail impressions in Impressed Ware assemblages can be found in the vertical impressions arranged in horizontal rows at Hedderwick, East Lothian (Callander 1929:

fig 51.1 and 2), and in the pinched fingernail impressions at Kenny's Cairn and Glenluce Sands, Galloway (Callander 1929: fig 51.4 and 5), and at Grandtully, Perthshire (Simpson & Coles 1991). The fingernail impressed vessels from Shevock possibly also fall into a group which includes the assemblage from Kinbeachie, Black Isle, Highland (Barclay et al 2002), in particular, the impressed corrugated decoration on V1 from that site which also has perforations. The Kinbeachie assemblage has been dated to the second half of the 4th millennium BC.

A vessel from Newton Road, Carnoustie, Angus (White et al 2009), had fingernail impressions and a lug, although its form is different; overall, the Newton Road assemblage had a small quantity of decorated vessels, considered at the time not to be typical of Impressed Wares but more likely to be examples of sporadically decorated Neolithic wares, as recognised by Cowie (1994). The Newton Road radiocarbon dates calibrate to 3700–3350 BC (White et al 2009), slightly earlier than the Shevock assemblage.

It appears that the assemblage from Shevock is early Impressed Ware, and possibly provides an example of the transition from the North-East Modified Carinated Bowl to Impressed Ware in the mid-to-late 4th millennium.

EAST LEDIKEN: SCATTERED PITS (NGR: NJ 66090 29000)

The ground rises quite steeply from the north bank of the Shevock Burn, before flattening out towards the access track to East Lediken farm. Fieldwalking in this area had recovered 14 struck flints, including a Levallois-like core (Ballin 2010), and topsoil stripping revealed widely scattered small and shallow round or oval pits on the sloping ground, and a more compact group of features beyond the top of the slope.

The easternmost feature in the group, shallow oval Pit 7408, 100m north of the burn (NGR: NJ 66451 28777), yielded eight sherds, including Vessel P4 with an upright, flat-topped rim (Illus 8). Paired Pits 7401 and 7402, part way up the slope (NGR: NJ 66371 28830), contained abraded sherds of Neolithic pottery, including

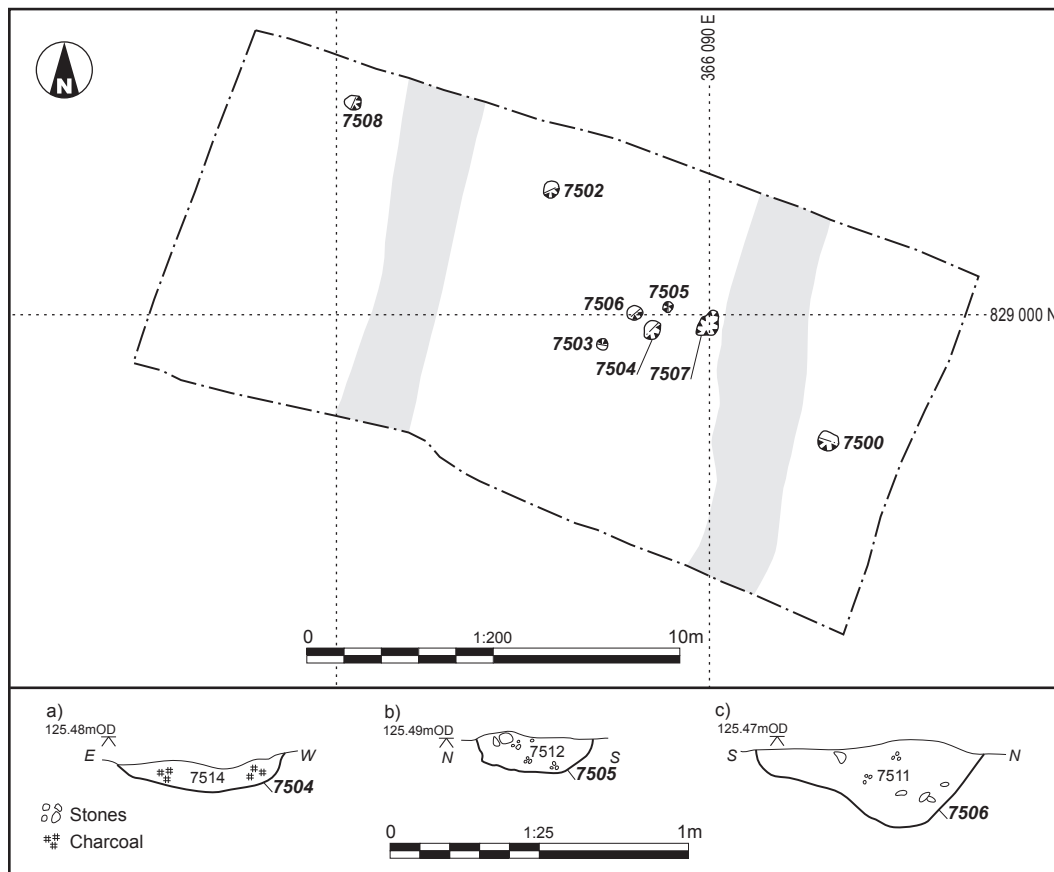
two fragments of rim from Pit 7402, one rounded and the other internally bevelled (P134 and P6, neither illustrated); the remaining sherds from this feature were undecorated body sherds from two further vessels.

Pits 7401 and 7402 also produced Early Neolithic serrated flint blade fragments, along with charcoal and burnt bone. Radiocarbon determinations from Pits 7401 and 7402 were consistent with them having infilled at the same time (see Appendix) and the similarities of the serrated blades support this inference. Both blades are of a similar light grey, opaque flint, though one is a fragment from a fine blade (SF21: Pit 7402, Illus 4: 5) and the other is a broad blade, 20mm wide and 42mm long (SF22: Pit 7401, Illus 4: 6). The finer blade has regular serrations, at a spacing slightly less than 1mm, while the broad

blade has much coarser serrations, subsequently damaged either by use or deposition. It also has a diagonal length of fine blunting edge retouch at the proximal end.

Blades are a common find in Early Neolithic pits across Scotland (see discussion in Gray & Suddaby 2010: 13), although it is not so common for them to be serrated: usually they are simple unretouched forms, some only slightly larger than the larger blade (SF22) from Pit 7401. The opaque grey East Lediken flint is rather different from the mottled grey and brown flint that is more common in the area and this might suggest a deliberate selection for colour, as was proposed for the blade made from a distinctive red flint at Hatton Farm (ibid).

Pit 7400, located 2m to the north of Pits 7401 and 7402, contained two pieces of worked



ILLUS 5 East Lediken: plan and sections of the western feature group (© Network Archaeology)

flint. Farther up the slope (NGR: NJ 66278 28900), a 3m-diameter shallow spread of silty sand, 7417, produced five Early Neolithic sherds (Illus 8: 69) and a flint flake, and 18m to the west (NGR: NJ 66259 28903) the more northerly of a pair of pits, 7413, contained a single flint flake. The flints from Pits 7400 and 7413, and Spread 7417, are simple unretouched flakes of brown flint.

At the top of the slope, beyond an outcrop of coarsely fractured sandy shales, a loose cluster of seven shallow pits or truncated post holes were visible within a small area, along with remnant rig and furrow (Illus 5). Of the 78 sherds of pottery from this area, 62 were from a shallow pit, 7505. The stone-studded fill of this feature also included several heat-affected stones and a thin flat slab of sandstone, one of the narrow sides of which appears to have been used for smoothing or grinding, since the face is skewed and smooth and forms crisp edges against the other faces (Illus 14: 7). It is not an artefact that can be specifically dated but it is likely to be contemporary with the pottery from the same feature.

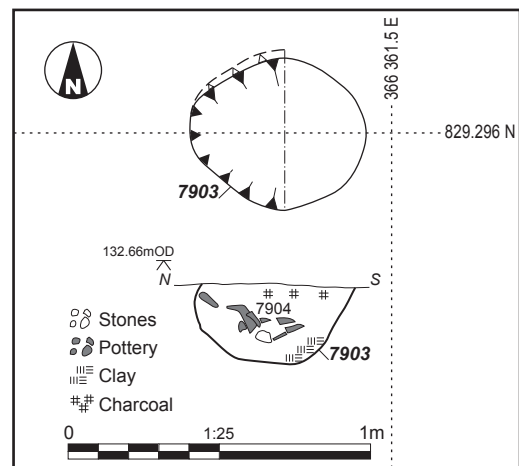
Three of the four vessels from Pit 7505 included rim sherds. Vessel P75 (Illus 8), of which a substantial portion was present, has an internally bevelled, upright rim with a slight neck and a gently rounded body; this was undecorated and had a rim diameter of 20cm. Vessel P12 has an expanded rim, which is flat-topped and slightly flaring. In the same pit were undecorated body sherds (P135, not illustrated) and a single upright rounded rim with a slight internal bevel (P76). Initially it was considered that P75 and P76 were Middle to Late Bronze Age in date, while P12 was Neolithic, but rather than the feature containing mixed material of different periods, it seems more likely that P75 and P76 are a form of plain Neolithic bowl. Indeed, internally bevelled upright rims form a component of the Neolithic assemblage at Newton Road, Carnoustie (White et al 2009).

Radiocarbon dates on a hazelnut shell from Pit 7505, together with those from Pits 7401 and 7402 (see Appendix), indicate that all three could be the same age but within a relatively broad 4th- to early 3rd-century BC date range.

Alongside Pit 7505, 14 further sherds were embedded in the surface of the till and in the base of the more easterly of the two furrows within the excavation area (Contexts 7500 and 7516 respectively). Rim sherds from Context 7516 were from a vessel with a flat-topped rim (P17) expanded to either side and slightly flaring, and from Context 7500 (P73) a slightly flaring rounded rim with a shoulder or carination visible. Both vessels are dated to the Early Neolithic. A single body sherd from Pit 7506 is also probably from the same period, based on its fabric. A single sherd (P13, not illustrated) was recovered from Pit 7507.

The topsoil in this area produced two flakes of mottled grey flint. A secondary flake has a section of light acute retouch along part of one edge: this might indicate an Early Prehistoric date, perhaps Late Mesolithic or Early Neolithic. The other flake is an inner fragment with a missing platform. Also from the topsoil, a segment of a coarse thick blade was most likely used as a strike-a-light as it retains coarse edge damage along one edge. It could date from the Late Bronze Age onwards.

Fragments of hazelnut shell were present in all of the processed soil samples from East Lediken, the largest concentrations in the fills of Pits 7401 and 7504. Otherwise, charred plant remains were limited to a small number of much



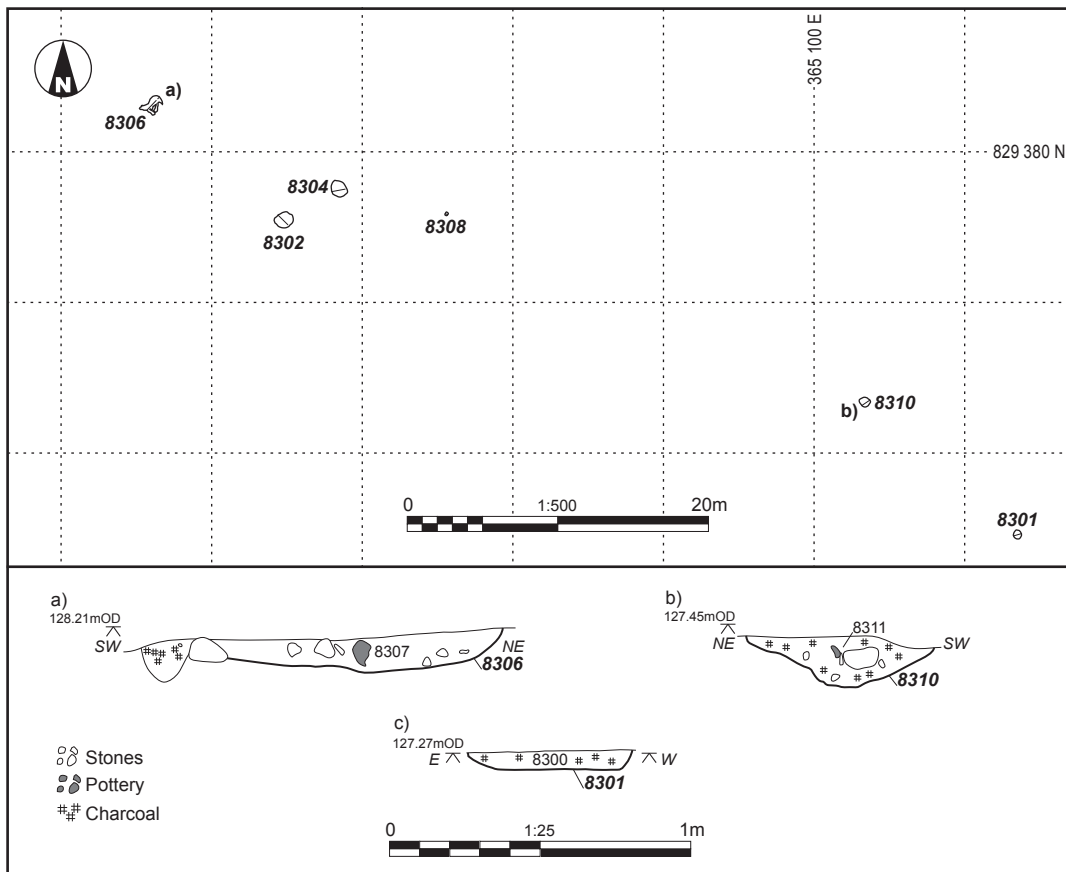
ILLUS 6 North Lediken: plan and section of Pit 7903
(© Network Archaeology)

abraded and fragmentary grains in Pit 7401, tentatively identified as barley (*Hordeum* sp) and wheat (*Triticum* sp).

NORTH LEDIKEN: PIT GROUPS

Around 800m to the west (NGR: NJ 65361 29296), towards the buildings of the former North Lediken Croft, a well-defined circular pit, 0.6m in diameter and 0.26m deep, had steep concave sides and a concave base (7903, Illus 6). Its fill of brown sandy silt, with clay lenses towards the base, contained occasional pieces of heat-affected quartzite. This appeared to be a relatively isolated feature, apart from a shallower and less well-defined pit (7902) 20m to the west.

Seventeen sherds of pottery from Pit 7903 represent eight separate vessels, five of which have diagnostic characteristics. Three of these have elongated lugs, including a heavy, round-bottomed bowl with inturned rim (Illus 8: P78), and a rim diameter of 20cm. One lug is present immediately below the external bevel of the rim; a scar shows the position of a second missing lug. A vessel with a rounded upright rim, perforated adjacent to the lug, was also decorated with a single incised line (P51). A lug, together with a body sherd from the same vessel (P20, not illustrated), no longer attached, was also recorded. Other vessels include a single rim sherd from a bowl (P23, not illustrated) and a single sherd from a slightly necked bevelled rim (P22). These vessels all date to the Early



ILLUS 7 North Lediken: plan and sections of pit group (© Network Archaeology)

Neolithic, most likely the second half of the 4th millennium.

A farther 250m west, to the north-west of North Lediken Croft, five discrete, circular or slightly oval pits and a smaller squarish feature were excavated along a 65m length of the pipeline (NGR: NJ 65134 29354 to NJ 65056 29383; Illus 7). All had similar coarse silty fills with charcoal inclusions. Heat-affected stones in the fills of the two largest pits, 8304 and 8302, suggest a use for cooking, and smaller pieces of burnt bone in Pit 8310 might imply a similar function. The small feature, 8308, was clearly defined by its dark fill, despite being no more than 4cm deep.

Three of these features contained pottery. Eight different vessels from Pit 8310 include a rounded inturning rim (P87) and a vessel with a flared rim with internal bevel (P90), both likely to be earlier Neolithic. The other vessels are represented only by plain body sherds. A radiocarbon date from a carbonised barley grain from the fill of Pit 8310 calibrates to 3635–3380 BC.

Six plain undiagnostic body sherds from the easternmost feature in this group, Pit 8301, include one sherd that is burnished, likely to indicate an Early Neolithic date. A sample of hazel small roundwood charcoal gave a radiocarbon date that calibrates to 3339–3027 BC.

Features 8301 and 8310 both contained more recent finds: a tiny copper alloy fragment, probably part of a pin shaft, and a fragment of modern glass, respectively. These finds are both small enough to have been intrusive, introduced into these shallow features by worm action, animal burrowing or root disturbance; nevertheless, they highlight the uncertainty inherent in interpreting the taphonomy of shallow discrete features and raise a degree of doubt as to the contemporaneity of the radiocarbon samples and the pottery.

The lower fill of the root-disturbed Pit 8306 contained 12 sherds of pottery, representing four different vessels, only one of which (P83) is diagnostic: an Early Neolithic Carinated Bowl, 24cm in diameter, with a flaring, rounded rim.

MODIFIED CARINATED BOWL

Melanie Johnson

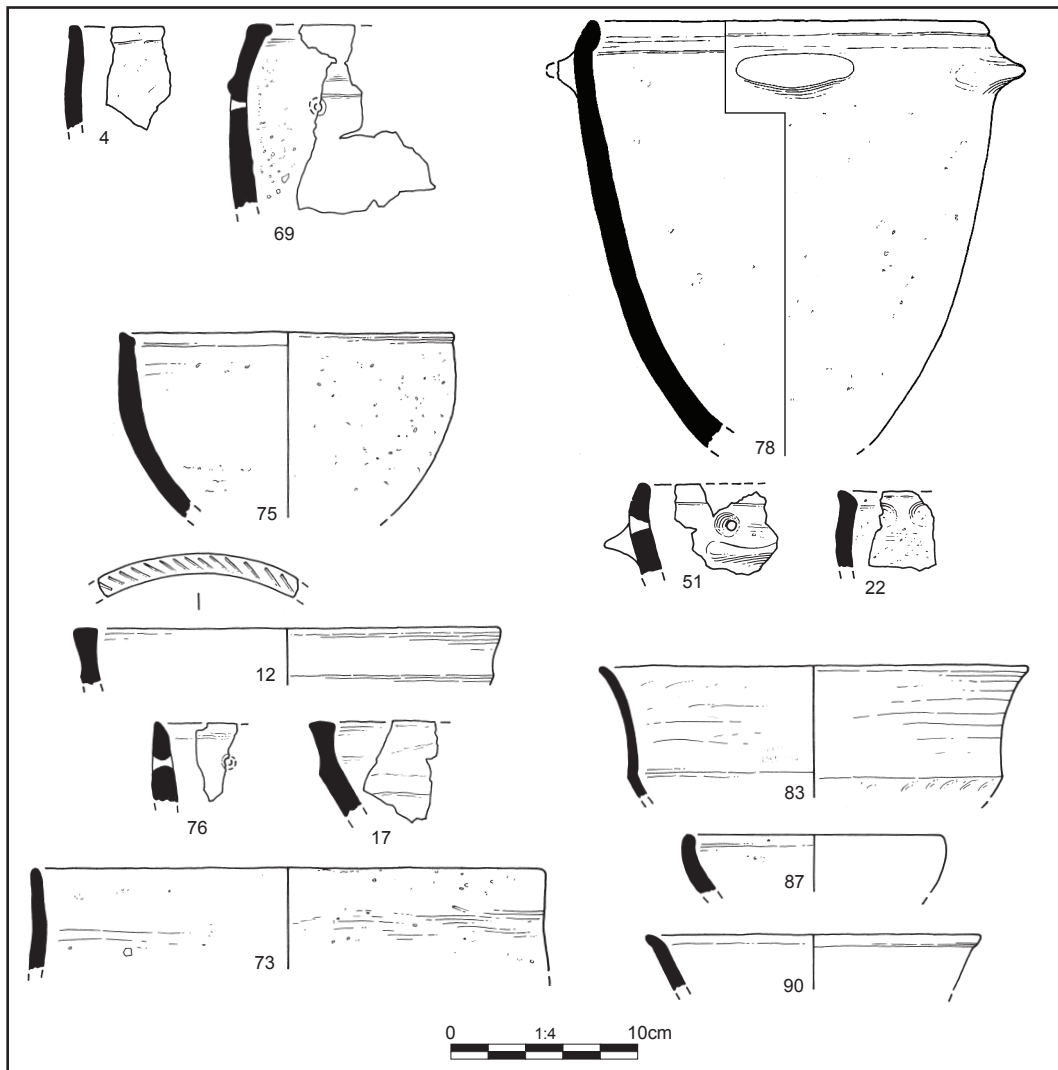
It is not unusual for activity during this period in Scotland to be largely represented by Neolithic pottery recovered from scatters of pits, and there are a number of local parallels such as Mosstodloch (Gray & Suddaby 2012) and Grantown Road, Forres (Cook 2016), both in Moray. As such, the pottery and features excavated at East Lediken and North Lediken are typical of the period.

The earliest type of Neolithic round-based pottery, known as ‘traditional’ Carinated Bowl, is generally accepted to belong within an early 4th-millennium BC context, with the appearance and use of this pottery dated to around 3950–3700 BC in Scotland (Sheridan 1995, 2003a, 2007, 2011; ScARF 2012). Regional variants, known as Modified Carinated Bowl, developed fairly early on (Sheridan 2007), including Henshall’s (1983, 1985) North-East Style found across Aberdeenshire and Moray and into Caithness.

The Neolithic pottery from East Lediken and North Lediken is typical of Modified Carinated Bowl, with elements of the North-East Style present, including lugs and perforations, although fluting, another typical component of such assemblages, was not recorded.

While some of the known radiocarbon dates obtained for Modified Carinated Bowl assemblages are indistinguishable from ‘traditional’ Carinated Bowl, there is evidence to suggest that Modified Carinated Bowl continued in use until at least around 3600 BC (Sheridan 2003b). As more sites are excavated and dates obtained, it is becoming clear that it could continue as late as 3000 BC (Cameron 2002; Cook & Dunbar 2008; Cook 2016) – with a range of 3970–2880 BC for Kintore – and overlap with other types of Neolithic pottery, including Impressed Ware.

The associated radiocarbon dates lie broadly in the second half of the 4th millennium BC, those from East Lediken and one from North Lediken being very similar, at 3336–3014 BC, 3337–3027 BC and 3339–3027 BC respectively,



ILLUS 8 East Lediken and North Lediken: Neolithic pottery (© Network Archaeology)

and the other North Lediken sample seemingly slightly earlier, at 3635–3380 BC. Together, these dates support the theory that this pottery type continued in use through the second half of the 4th millennium BC.

The presence of lugs on vessels from North Lediken has parallels within Moray assemblages from Boghead, near Fochabers (Henshall 1985), and Easterton of Roseisle, near Elgin (Henshall 1983), and other north-east sites such as Midtown of Pitglassie, Aberdeenshire

(Shepherd 1997); Deer's Den, Aberdeenshire (Alexander 2001); and Lesmurdie Road, near Elgin (Suddaby forthcoming). The lugs present in the assemblage from Feature 7903 were all elongated: elongated lugs on uncarinated bowls are known from Loanhead of Daviot and Leggatsden Quarry, both Aberdeenshire; Tulloch of Assery, Caithness (Henshall 1983); Newton Road, Carnoustie, Angus (White et al 2009); and Dubton Farm, Brechin, Angus (Cameron 2002).

A perforated vessel was recorded from Pit 7903. Very few other perforated vessels are recorded from this period: a vessel from Easterton of Roseisle has a series of perforations just below the rim (Henshall 1983) and seven bowls from the same site have perforations; a vessel from Camster passage grave, Caithness, apparently had perforations but was lost and has never been illustrated (Anderson 1886: 252); a perforated and lugged bag-shaped bowl was recorded at Mosstodloch, Moray (Gray & Suddaby 2012); and a perforated vessel was recorded at Newton Road, Carnoustie (White et al 2009).

A single sherd with fingernail impressions, from an unstratified context at East Lediken (P71,

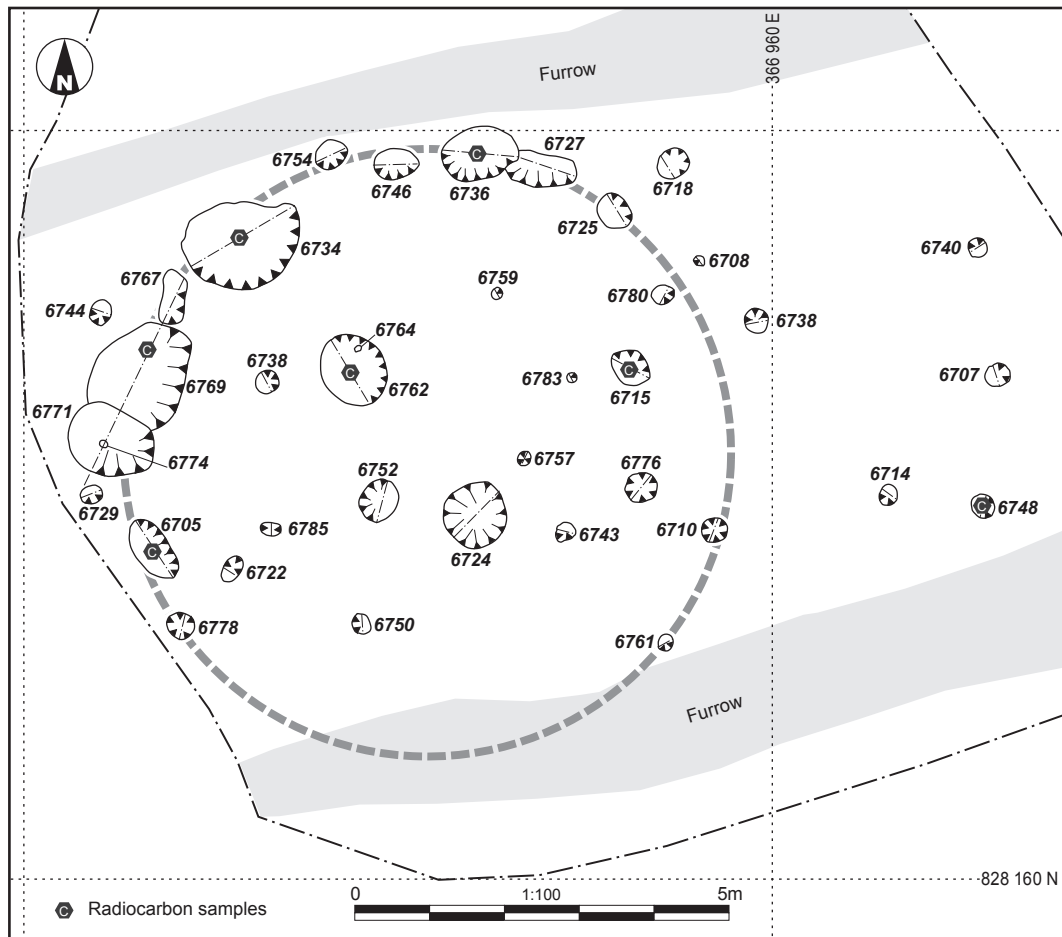
not illustrated), may be a residual Impressed Ware sherd.

MIDDLE TO LATE BRONZE AGE

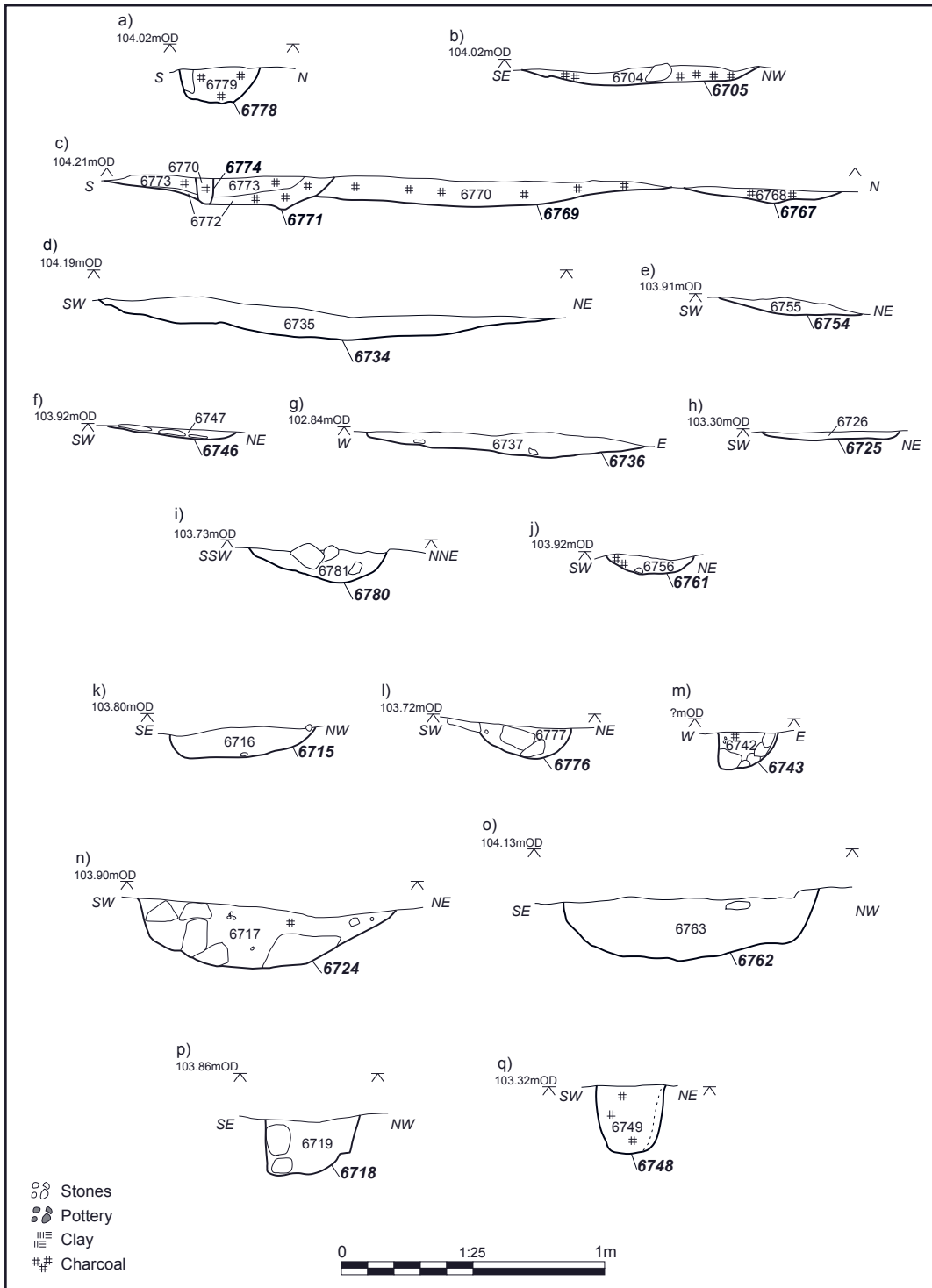
PITMACHIE: POST-BUILT ROUNDHOUSE (NGR: NJ 66955 28165)

Following topsoil stripping in damp weather, an arc of features was identified with some difficulty in the smeared muddy surface. Only after careful cleaning and weathering was the overall pattern discernible (Illus 9, 10).

The height of the ground drops noticeably here, from 104.2m to 103.4m OD across the width of the stripped surface, towards the



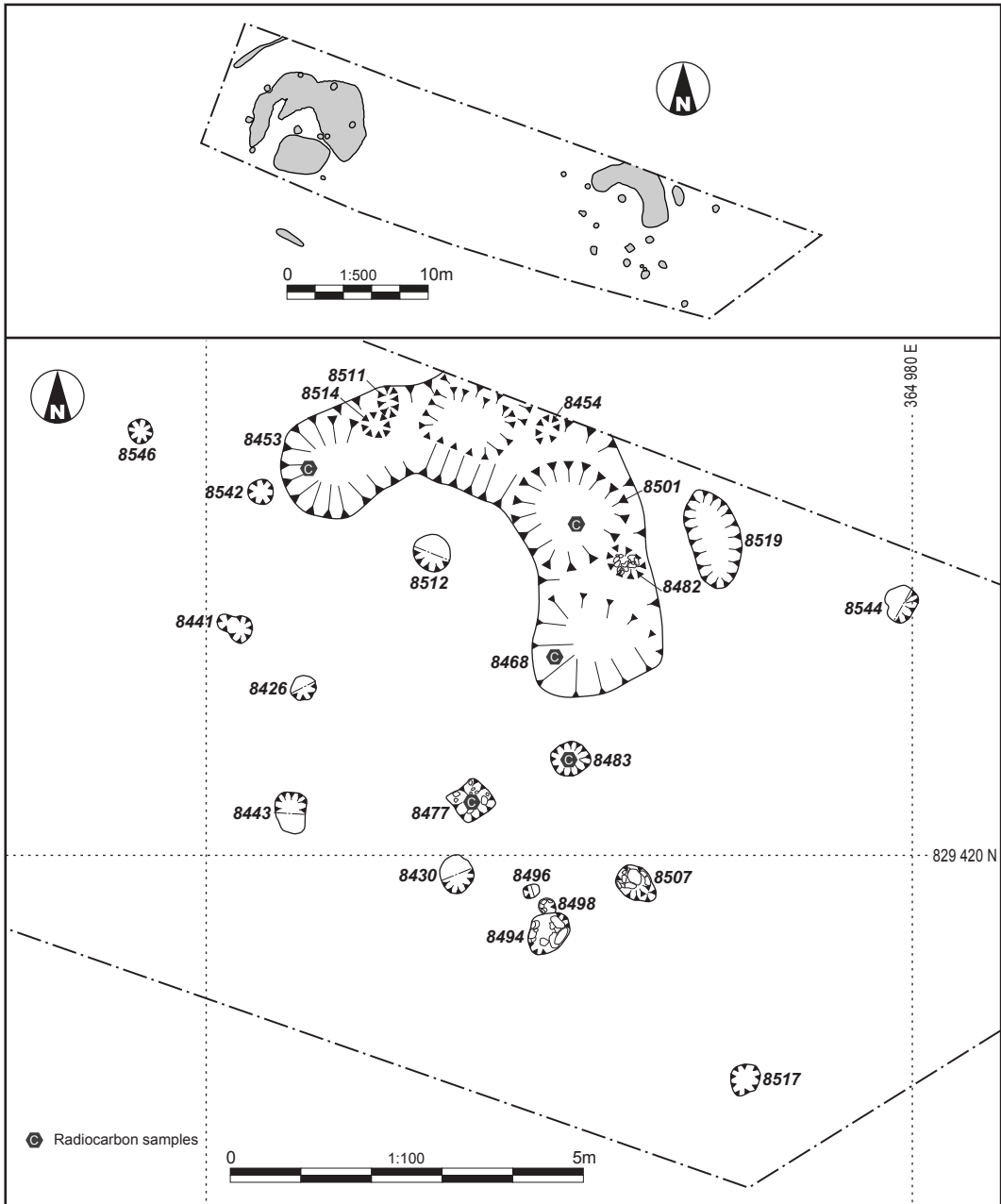
ILLUS 9 Pitmachie: plan of features (© Network Archaeology)



ILLUS 10 Pitmachie: sections (© Network Archaeology)

Ury, 260m to the west. Two broad remnant furrows framed the features, the pattern of furrows continuing north and southwards through the rest of the field, on an approximately 8m spacing.

The remains included a ring of at least 15 truncated post holes or shallow pits, forming an arc from Feature 6778, in the south-west, to 6780 in the east, and continuing, beyond a gap, by Features 6710 and 6761. The various elements



ILLUS 11 Little Lediken: plan of eastern ring ditch (© Network Archaeology)

of the ring were all shallow, some vanishingly so, ranging in depth from 0.20 to 0.02m below the stripped surface; if, as seems likely, these features held a ring of posts, it would imply a considerable degree of later truncation, before the rig and furrow agriculture fortuitously buried and protected the surviving features.

Generally, the silty fills were only slightly darker than the underlying natural deposits, but Pits 6771, 6734 and 6727 were rich in charcoal, Pit 6736 contained heat-reddened stones, and a piece of light, porous, brownish-red, non-magnetic fuel-ash slag was present in Pit 6761. A compacted base of stones in Pit 6727 and a disturbed stony lower fill in Post hole 6729 could be plausibly interpreted as disturbed post packing. External to the ring, Feature 6718 also had post packing of several large stones.

Within the ring and equidistant from its centre, two pits, 6762 to the north-west and 6724 to the south-east, were of similar dimensions. The sandy fill of Pit 6762 contained a chunk of flaked quartzite, while Pit 6724 was largely filled with angular, heat-reddened granitic rocks in a charcoal-rich loose sandy matrix, suggesting an interpretation as a hearth.

On the eastern side of the ring, two similarly sized sub-circular post holes, 6715 and 6776, were set back by around 0.70m from the line of the ring, internal to the gap between Pits 6780 and 6710. The other recorded internal features were, for the most part, small and shallow, and were not readily interpretable. To the east of the ring, four well-defined features, 6740, 6707, 6748 and 6714, were initially interpreted as relating to a possible entrance at this point, but their distance from the ring seems rather too great for this interpretation to be tenable and an interpretation as the remains of an ancillary structure might be more likely.

Only eight sherds of pottery were recovered from the site: from Post holes 6705 and 6780, from Pit 6724 and its neighbour, Post hole 6743, and from Post hole 6748, external to the ring. All eight sherds were abraded and undiagnostic. The pottery fabrics are coarse, either sandy or containing large stone inclusions, and tend to be orange or brown in colour. The recovery of only very small quantities of pottery is not unusual for

later Prehistoric post-built structures in the north-east of Scotland as, for example, at Craiggellachie, Moray (Dunbar 2017).

The lack of readily datable finds and the degree of truncation of the features present difficulties for the dating and interpretation of the Pitmachie structure. Suitable material for radiocarbon determinations was very sparse, but a single hazelnut shell, four pieces of hazel charcoal and two of birch charcoal, recovered from seven of the features, were submitted for dating. All seven dates lie within a relatively narrow range (Appendix: Table A1), suggesting that they derive from activity broadly associated with the period of occupation of the structure: Bayesian analysis estimates (68% probability) a start date of 1230–1135 BC and end date of 1120–1015 BC (Appendix: Illus A1).

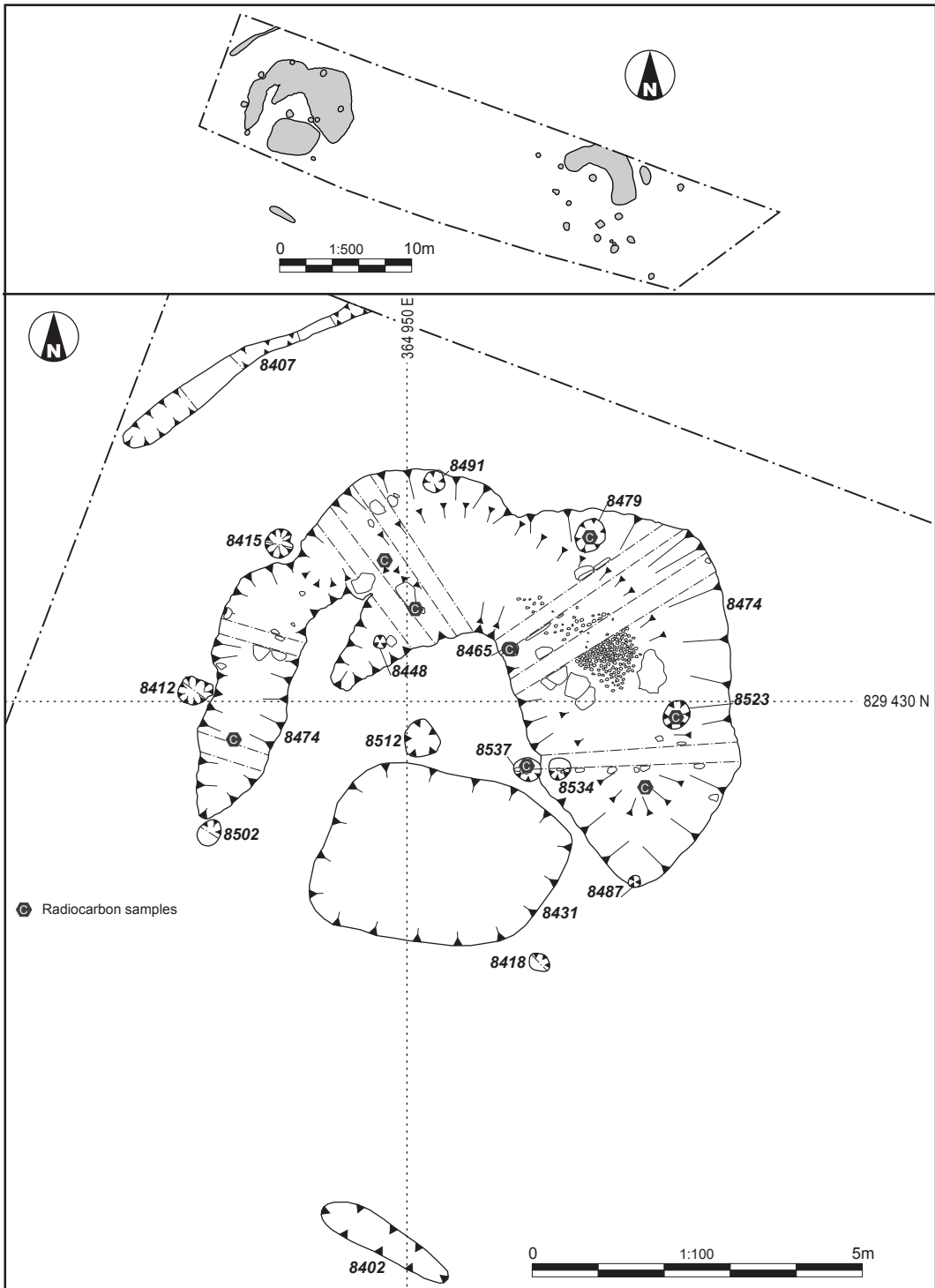
LITTLE LEDIKEN: RING DITCH STRUCTURES

The remains of two ring ditch structures, less than 20m apart, were uncovered 300m south-west of Little Lediken Farm and a similar distance south from the B992 Inch Road (NGRs: NJ 64974 29426; NJ 64951 29430). The site is on a gentle west-facing slope, at a height of between 129.5m and 131.5m OD, with the rising ground preventing any view towards the Ury Valley.

Eastern ring ditch

The smaller of the two ring ditches occupied an area 6m by at least 3.7m, the outer circumference of the arc partly obscured beneath the edge of excavation (Illus 11). As initially exposed, it formed a continuous broad arc, clearly defined in the stripped surface, with a single fill. On excavation, the feature as a whole was shallow, with a maximum depth of no more than 0.25m (Illus 13).

The central part of the arc was recorded in various sections as Contexts 8428, 8445, 8452 and 8490 and contained a brownish-black coarse silt fill, rich in charcoal, and interleaved with striking pinkish to brick-red lenses of peat ash. Much of the charcoal survived as roundwood chunks, mostly of birch with smaller quantities of oak and hazel. Within the fill, large angular rocks,



ILLUS 12 Little Lediken: plan of western ring ditch (© Network Archaeology)

with dimensions up to 40cm × 30cm × 12cm, continued into the northern limit of excavation. This fill also included substantial sherds from three large pottery vessels and a rim-sherd from a fourth.

The fill of the western part, 8453 and 8500, was similar, but lacked the large stones and pottery sherds. To the east, the arc became very shallow, 8501, deepening only slightly at its rounded eastern terminal, 8468. The pinkish peat ash was absent from this side of the ring, although three small fragments of light, porous fuel-ash slag, bright red in patches, show evidence of exposure to high temperatures.

Within the ring ditch, three post holes, 8514, 8454 and 8482, were recorded, one of which, 8514, was cut by a shallower replacement, 8511. Shallow Features 8542 and 8426 may have been the truncated remains of a south-western counterpart to the arc of post holes within the ditch. Feature 8512, which was approximately 2.6m from each of these features, could be interpreted as a heavily truncated central post hole or shallow pit, although it was considered by the excavator to be an infilled void from the displacement of one of the boulders that occurred sporadically throughout the till. A similar explanation is tenable for the other shallow features nearby, including 8441 and 8443.

To the south-east, Post holes 8477, 8483, 8494 and 8507 had charcoal-rich fills with remains of stone post packing, their location supporting an interpretation as the remains of a south-east-facing entrance structure. If it is assumed that Post holes 8477 and 8483 were in the inner wall-line of the structure, it would imply an overall internal radius of around 3.5m, extending for around 90cm beyond the post hole ring.

The copious quantities of peat ash in the fills of the ring ditch imply that peat turfs were used for roofing or for surrounding walls. The elongated, sausage-shaped pit, 8519, to the east of the structure is difficult to reconcile with a turf wall, unless the pit was an earlier feature, or the inner wall of the structure was farther out than Post holes 8477 and 8483. A roof continuing down to, or close to, ground level beyond Pit 8519 may be more plausible.

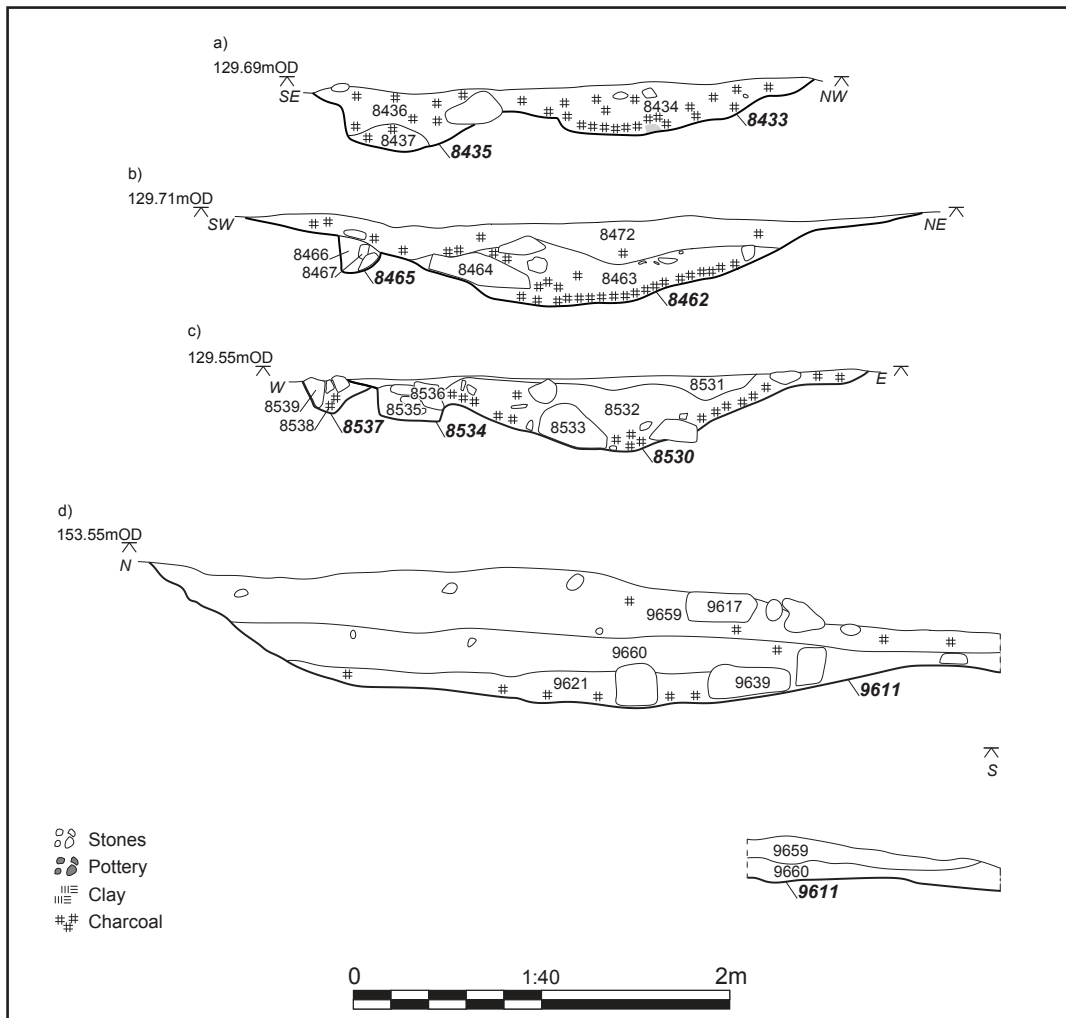
Western ring ditch

The western ring ditch was larger, with maximum dimensions of 8m × 5.5m, and up to 0.55m deep, becoming shallower towards the terminals (Illus 12, 13). Through most of the feature, the fill, up to 0.35m in depth, was consistently dark grey-brown sandy silt with frequent charcoal and pinkish peat-ash lenses. Several small pieces of black or reddish-brown fuel-ash slag were recovered from this fill.

In some parts of the ring ditch, an upper fill had accumulated. This was also rich in charcoal but lacked peat ash and varied from greyish- to reddish-brown across the feature. This deposit produced fewer artefacts than the lower fill and is thought to be post-occupation infilling, following the destruction by fire of the structure. Angular stones and boulders, up to 40cm or more across, were scattered within the lower fill, disposed randomly, as if they had been tipped in to the ring ditch prior to its infilling, and typically resting where the slope of the sides levelled off towards the base. Near the south-eastern terminal, a spread of small stones forming a metalled surface in the base of the ditch is likely to have originated during the occupation phase of the structure.

A short length of a curvilinear gully, 8450, up to 0.3m deep, protruded from the internal side of the ring ditch for around 2m, tapering and becoming shallower towards its south-western terminal. Initially interpreted as from a separate phase of the structure, its relationship to the rest of the ring ditch is uncertain. An alternative reading (that this was an integral part of the ring ditch, separated from the western arm by a less deeply excavated ridge) would be tenable, especially if, as seems to be the case, the final form of the ring ditch had been determined by erosional patterns from use rather than deliberate design.

Post holes 8502, 8412, 8415, 8491, 8479, 8523, 8487 and 8418 formed a ring around the edge of the ring ditch, or within the fill of its outer edge. These were complemented by Post holes 8534, 8465 and 8448 on the inner edge. Seven of these features still retained stone post packing, in two cases incorporating reused stone tools, including an anvil stone in



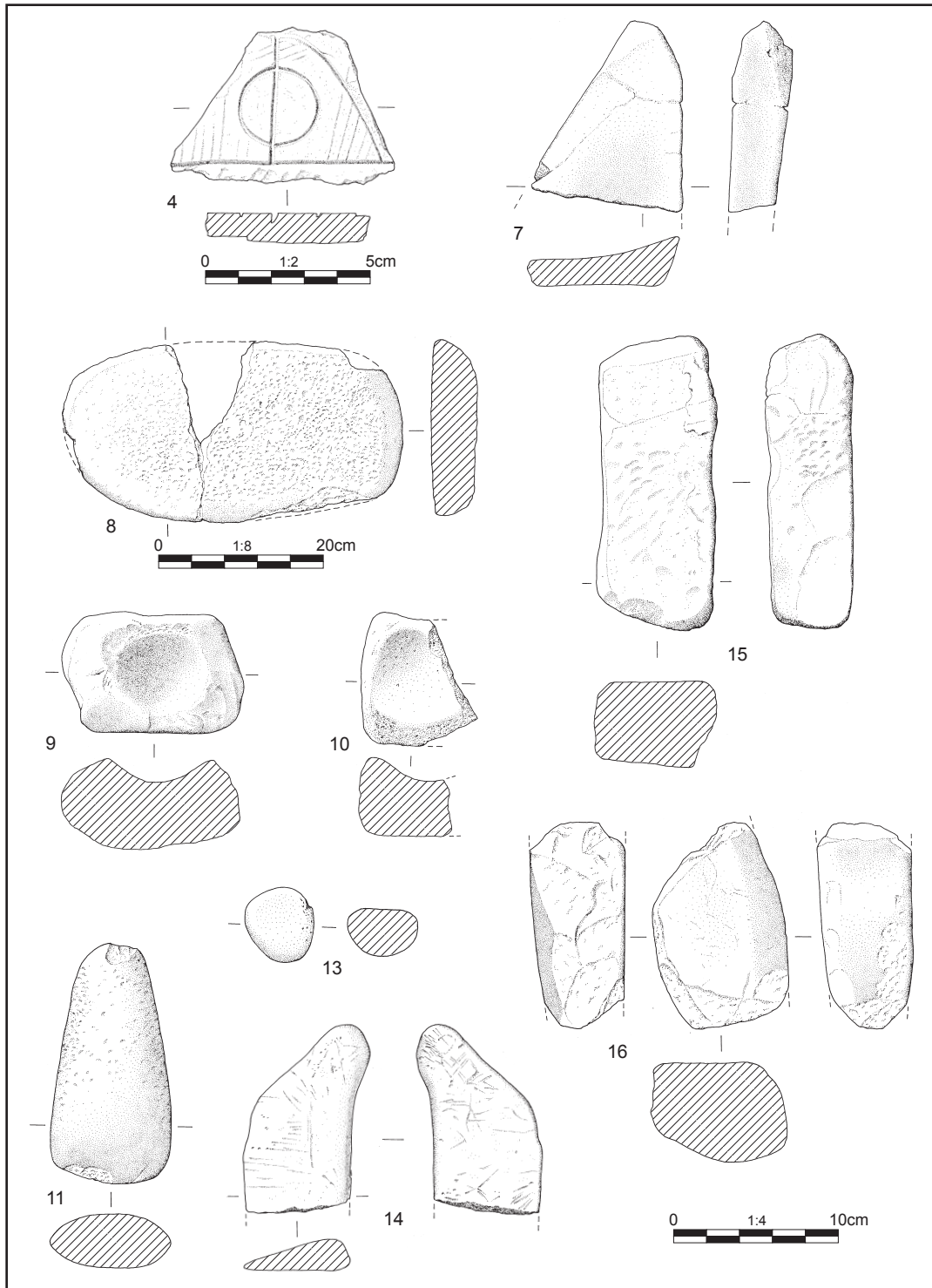
ILLUS 13 Little Lediken and Wrangham: representative sections of ring ditches (© Network Archaeology)

Post hole 8418. There was no clear distinction in fill, or break of slope corresponding to the post hole ring, suggesting that both the form of the ring ditch and the deposition of its lower fill were the results of single formation processes. Within the space enclosed by the arc of the ring ditch, Feature 8512 was close to the geometric centre of the post hole ring.

To the south, a large rectangular feature, 8431, occupied much of the gap between the terminals of the ring gully, but it had a very different profile with a flat base little more than 20cm deep and fairly steep sides. Its brown silty

clay fill produced only a single fragment of flaked quartzite along with two pieces of hazelnut shell. If the ring ditch resulted from differential wear around the interior of a post-built structure, there must have been a very distinct use for this southern part of the interior space.

Feature 8407, emerging from the limit of excavation to the west of the ring ditch, could be interpreted as a drip gully or drainage feature, external to a probable turf wall and therefore indicating a maximum external limit of the structure. Farther south, an elongated pit, 8402, contained a saddle quern fragment



ILLUS 14 All sites: stone artefacts (© Network Archaeology)

and small quantities of plain body sherds of Prehistoric pottery, as well as several heat-affected stones.

A range of stone artefacts were found within the ring ditch fill, including a Neolithic ground stone axe, two fragments of quern rubber, hollowed stones and a cobble tool, as well as nine pieces of worked flint and quartzite. This contrasts with the eastern ring ditch and its associated features which produced no notable stone finds, perhaps implying that these two structures were functionally distinct. The western ring ditch also produced 163 sherds of Middle to Late Bronze Age pottery, along with pieces of fuel-ash slag.

The Neolithic stone axe was found on the outer lip of the ring ditch, in a way that suggested deliberate placement and curation, especially as the hollowed stones and cobble tool were found in the same section of the ditch. The axe has some edge damage, raising the possibility of its reuse during the Late Bronze Age. Equally, these finds could have been purely accidental inclusions, possibly brought to the site in turfs used for walls or roofing.

A range of different contexts were sampled for radiocarbon dating, including lower fills from the component parts of the two ring ditches, their associated post holes and the fill of Gully 8407. The results all fell within a broad 12th- to 9th-century BC range, but Bayesian analysis indicates that the results are not statistically consistent, whether for the two structures considered together or separately. This was not unexpected, given that the dated samples could have included residual or reused material, incorporated into the various elements of the structures during their construction and occupation, or deposited during the subsequent abandonment and infilling of the features.

Stone finds from Little Lediken

Ann Clarke

The Neolithic stone axehead (SF8; Illus 14: 11) appears an incongruous find in a Bronze Age ring ditch. It is a fine complete specimen of an axe made from metamorphosed sandstone, ground all over and then polished around the blade end. The butt and blade are slightly damaged by percussion

and the blade edge is blunted. This edge damage is likely to be from later use, contemporary with the use of the ring ditch structure.

A broad blade-like flake of mottled brown flint with a possible dihedral platform (SF13; Illus 4: 12) from destruction Layer 8463 also indicates earlier prehistoric activity in the area.

The saddle quern fragment (not illustrated) found in the fill of Pit 8402 is a block of coarse-grained metamorphosed sedimentary rock, which has broken irregularly across one end. The upper worn face is smooth and slightly concave and worn out to the edges.

Two fragments found at different points in the ring ditch fill (SF10 and SF16) refit to form a single incomplete quern rubber (Illus 14: 8). The face is gently concave along the length, and slightly convex along the width. On both ends, the worn face tips down. The whole working surface is very smooth, polished in parts and worn out to the edges. It is large at 410mm in length and has a flat base.

A large flat saddle quern found in the ditch of a Middle Bronze Age roundhouse at Hatton Farm, Angus (Gray & Suddaby 2010), echoes the deposition of the fragments of quern rubber and saddle quern here.

Two hollowed stones were found in the ring ditch fill. A rhomboid block of sandstone with a rounded base and irregular sides (SF12; Illus 14: 9) has a regular oval, round-based hollow worn into the centre of the upper face and it is worn smooth inside. The other piece (SF9; Illus 14: 10) is a squared block of metamorphosed sedimentary rock with a flat base and irregular sides. The hollow has been worn on the upper face from use and truncated by breakage. As with SF12, the hollow is round-based and worn smooth in the interior. They also share similar dimensions at around 120mm long and 25mm deep. Given the smooth interior of the hollows, it is likely that these had been used as some form of mortar for mixing or grinding small amounts of material.

Although hollowed stones are more commonly found in Iron Age contexts, where they come in many sizes and shapes (Clarke 2006), a hollowed stone described as a mortar, of similar dimensions to the two from Little

Lediken, was found in hillwash over the Bronze Age settlement at Lintshie Gutter, Lanarkshire (Terry 1996).

The centre of the flatter face of a flat cobble of fine-grained stone, now broken across its middle (SF13; Illus 14: 14), is worn smooth and shiny, and there are groups of small multi-directional striations across both faces as a result of its use as a smoother. There is also a spread of pecking across the unbroken end. A small quartzite pebble was also selected for use as a smoother (Illus 14: 13). Use of a rectangular block of stone (Illus 14: 15) left pecking damage along the length of all its faces and sides. Flaking damage along the edge truncates the pecking and it is likely that this was used as a hammerstone or anvil. It had been reused as post packing in Post hole 8418.

Two angular quartzite flakes from the western ring ditch terminal were detached from what is most likely the same nodule. Their removal may have been incidental, perhaps from a piece of quartz being used as a hammerstone, rather than a deliberate attempt to work quartz.

Coarse stone tools are, in general, much less frequent finds at Prehistoric sites in mainland Scotland than, for example, on sites in the Northern and Western Isles (Clarke 2006). This is particularly true for Bronze Age roundhouses across mainland Scotland, where excavation has demonstrated that the assemblages of stone tools are small in size and formed of a limited range of tools: mainly cobble tools and saddle querns.

Flat saddle querns were found at Lintshie Gutter, Lanarkshire, and Hatton Farm, Angus (Terry 1996; Gray & Suddaby 2010), and what has been described as a grinding platform from Oldmeldrum, Aberdeenshire (White & Richardson 2010). Other stone finds from these sites included a stone disc and perforated weight found at Oldmeldrum, a hollowed stone from Lintshie Gutter (Terry 1996) and a pounder/grinder from Hatton Farm. A limited range of stone tools have also been found at Bronze Age roundhouse sites in Sutherland, such as Upper Suisgill (Barclay 1986); Lairg (McCullough & Tipping 1998); Navidale (Dunbar 2008) and Connagill (Clarke 2015a).

Here the stone artefacts comprise saddle querns, cobble tools of various types, and occasionally stone discs as at Lairg and Connagill. The apparent uniformity in the use of stone tools across mainland Scotland at this time might vary on closer inspection as, for example, the querns from Navidale and possibly one or two from Lairg appear to be more dished than those with flatter surfaces from other sites and this would suggest a different grinding technique.

Pottery from Little Lediken

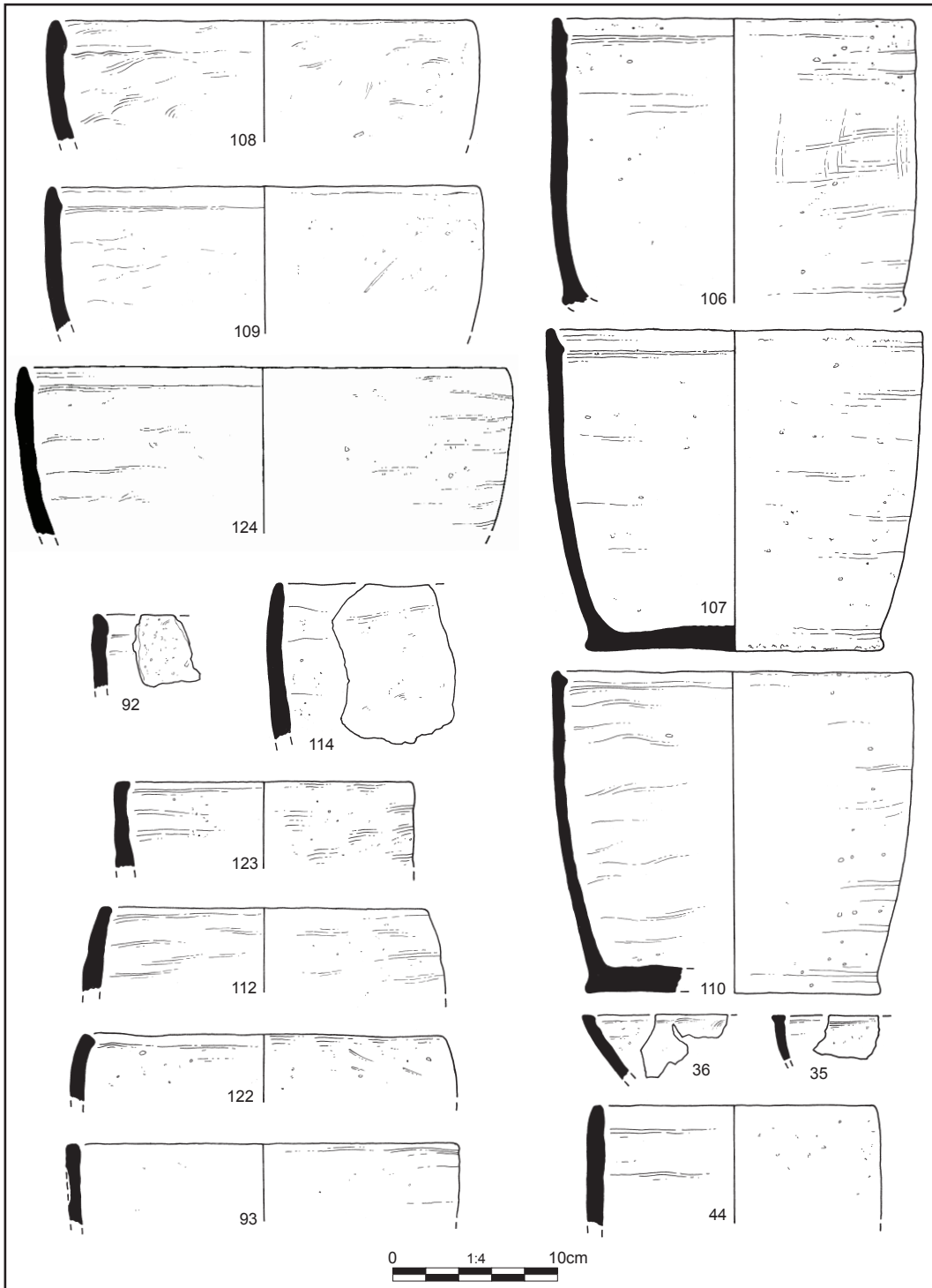
Melanie Johnson

Fifty separate vessels were recorded from Little Lediken, including 17 with diagnostic traits (Illus 15). Roughly equal weights of pottery were recovered from the two structures: 164 sherds weighing 2,723g from the western and 239 sherds weighing 2,988g from the eastern, but there were more vessels – 32 as opposed to 18 – represented in the western roundhouse.

The western ring ditch house contained 11 diagnostic vessels and a further 84 plain body sherds. There are four examples of upright internally bevelled rims (P92, P108, P109, P124), two of upright flat-topped rims (P114, P123), two of slightly inturning flat-topped rims (P112, P122) and single examples of an upright rounded rim (P93), a rounded rim with neck (P118, not illustrated), and a flat base (P121, not illustrated). Measurable rim diameters are 18–26cm.

The fills of the eastern ring ditch contained four diagnostic vessels. These included substantial portions of three different vessels (P106, P107 and P110). All were simple straight-sided vessels with upright internally bevelled rims and flat bases. Base diameters of 18cm and rim diameters of 18–22cm were recorded. There was also part of a bowl with a flattened rim (P36), as well as 25 plain body sherds.

In addition, a rounded rim (P31, not illustrated) and a flattened rim, expanded to the exterior (P35), both from bowls, were recovered from Post holes 8430 and 8477 respectively. Small quantities of plain body sherds were found in Post hole 8483 and as unstratified finds while cleaning.



ILLUS 15 Little Lediken and Wrangham: Bronze Age pottery (© Network Archaeology)

WRANGHAM: RING DITCH STRUCTURE
(NGR: NJ 63523 31515)

Remains of a ring ditch structure were uncovered 200m north of the settlement of Wrangham, and just over 50m south-east of the minor road running from Colpy towards Inch. The site lies at around 153m OD on ground sloping up eastwards towards the 185m-high Fallow Hill with long views to the Bennachie range to the south and west.

The western side of the ring ditch was beyond the limit of excavation but the visible portion indicated that the whole structure occupied an area up to 12m across (Illus 16). It was cut into sloping ground, with the base 1.1m below the subsoil surface at the north but becoming vanishingly shallow towards its southern terminal. The northern edge had a slightly stepped profile (Illus 13d) and there was a suggestion of a compacted surface of small gravelly stones, at a depth of around 450mm. From this point, the side dropped more gently to a shallow dished base. The interior edge of the ring ditch was very shallow, becoming increasingly imperceptible to the south.

The lower fill of the ditch, 9621, included large stones, some up to 0.4m or more across, which are abundant in the glacial tills in the immediate locality. At one point in the inner edge of the base of the ditch, several of these stones appeared to have been deliberately placed on the edge, forming a kerb or low revetment.

Above and around these stones a thick deposit of silt and pinkish-red peat ash, 9660, contained frequent charcoal patches and lumps, including recognisable pieces of sharpened roundwood timbers. Although this had all the signs of being a destruction deposit, from the burning and subsequent collapse of the structure, the layer also produced 47 sherds of Middle to Late Bronze Age pottery, two possible coarse stone tools and burnt bone fragments, which would indicate that there was continuing activity in the vicinity as the deposit accumulated. A cleaner back-fill of reddish-brown sandy-silt, 9659, had formed above 9660 and the uppermost fill was a loose disturbed matrix, of similar composition, around large and medium, angular and rounded

stones, some of which showed heat-reddening. The stones in the upper fills could be explained as the result of later field clearance, using the partly infilled, abandoned ring ditch as a convenient dumping place.

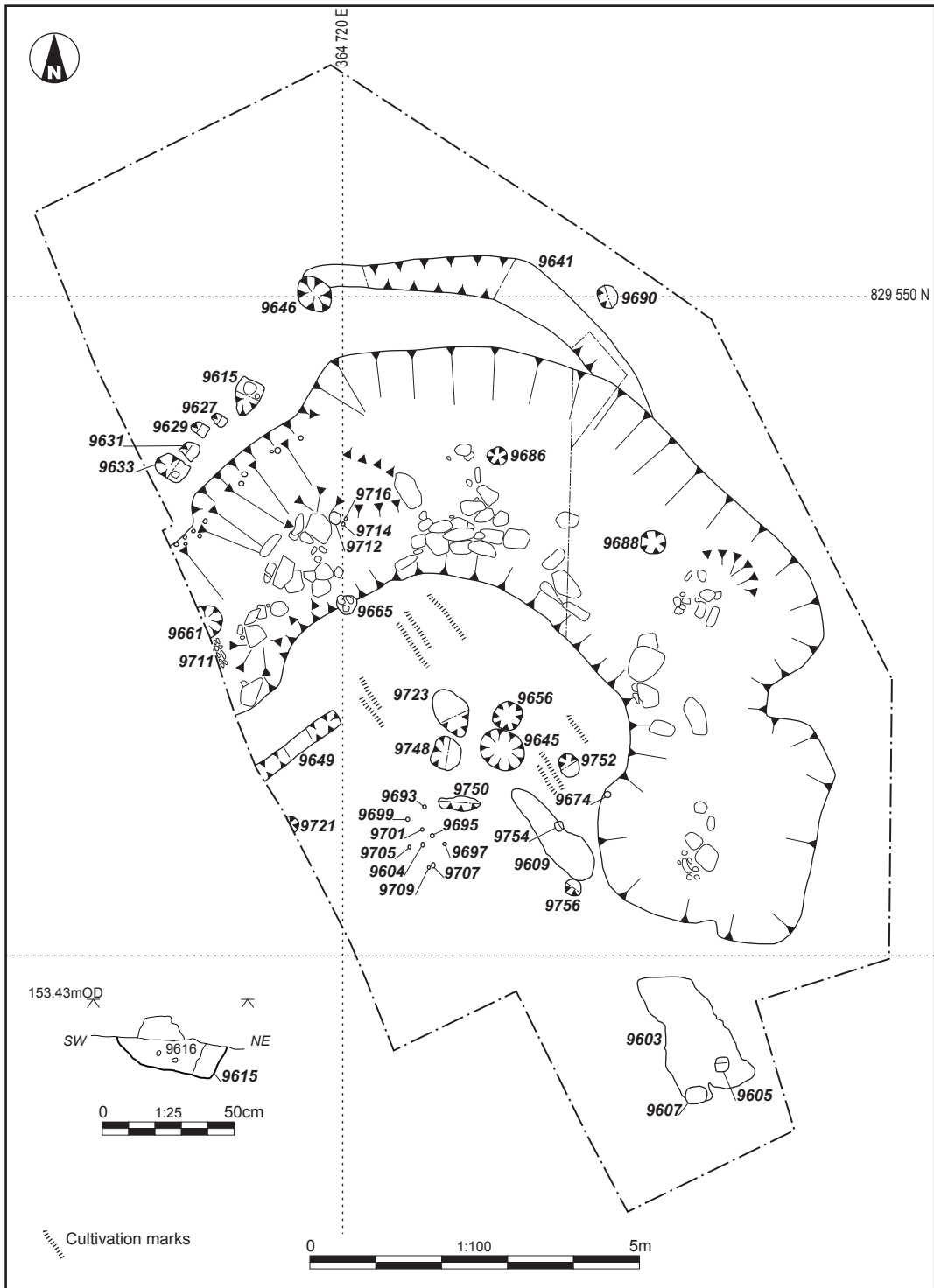
Along the north-western edge, 11 stake holes formed a line just below the lip of the ditch, matched by a row of five small pits or post holes beyond the edge of the ditch. Four post holes and several small stake holes were recorded in the base of the ring ditch. A shallow curving gully, 9641, to the north was recorded as stratigraphically earlier than the ring ditch, although this relationship, and that with the small pit at its western end, was far from clear.

The centre of the interior space had a group of three well-defined features: a stone-filled pit, 9656; a larger pit containing small quantities of burnt bone, 9645; and a small post hole, 9748. A circular patch of heat-reddened ground nearby, 9723, signalled the site of a fire or hearth. Several smaller features, including post holes and stake holes, were also recorded. One of the few lithic finds from the site, a simple flake of mottled light brown flint (SF23), came from the fill of a small, shallow gully, 9649, running beneath the limit of excavation. The surface of the underlying till in this central area was crossed by narrow parallel scoring, interpreted as cultivation marks. Their relationships to the other features were unclear but they were not seen to have disturbed the fills of the central pits or possible hearth and may have been from earlier cultivation.

Finds from Wrangham

Melanie Johnson and Ann Clarke

Eleven separate vessels were represented in the pottery from the ring ditch fill. These included 20 rim and body sherds from a bucket-shaped vessel (P44, Illus 15) with an upright flat-topped rim and a diameter of 19cm, and two base sherds (P62, P66, not illustrated). A single plain body sherd was found in Gully 9641 and a single base sherd in Pit 9676. A base and two body sherds from the surface were recovered from the shallow terminal during initial cleaning (Context 9603). Vessel P44 is typical of the Middle to Late



ILLUS 16 Wrangham: plan of ring ditch, and representative section (© Network Archaeology)

Bronze Age, and the other base sherds are also likely to belong to this same period.

The surprisingly small quantity of artefactual stone from this site does not appear in contexts contemporary with the use of the structure. A regular inner flint flake with a flat platform, residual in the post-destruction infilling of the ring ditch, suggests an earlier Prehistoric date. The same deposit also had an angular quartzite waterworn cobble, deliberately flaked around the ends and one side to create coarse, chopper-like edges. Large irregular flakes were detached from the cobble, with no clear shaping intention, resulting in the creation of some obtuse-angled edges. These edges were then used as heavy choppers or wedges, hammered in from the opposite side, leaving patches of coarse pecking on the cortical surface (Illus 14: 16 centre and right). Heavy rounding wear is evident along the edges that were in contact with the material being worked (Illus 14: 16 left). A simple wedge-shaped piece of quartzite with some coarse edge damage along the acute edge came from the very shallow and poorly defined Feature 9603, to the south of the ring ditch terminal, and may have been used in the same way as the flaked cobble.

Flaked cobbles are commonly found at Bronze Age sites in Orkney, such as Tofts Ness, Sanday and Crossiecrown, St Ola (Clarke 2007, 2015b), and in Shetland (Clarke 2006), where they are made from regular oval beach cobbles. At Stainton West, Carlisle, a group of flaked cobbles were identified from Late Neolithic/Bronze Age deposits in a palaeochannel (Clarke 2012). The occurrence of the flaked cobble at Wrangham provides evidence of these tool forms being used more widely across Scotland.

BRONZE AGE POTTERY

Melanie Johnson

Internally bevelled and flat-topped rims on vessels with flat bases and straight sides are typical characteristics of later Prehistoric domestic pottery associated with Middle to Late Bronze Age roundhouses in the north and east of Scotland. This assemblage forms a

coherent group, with no distinction between the assemblages from the roundhouses. The pottery from Little Lediken and Wrangham is typical of Middle to Late Bronze Age pottery associated with domestic roundhouse structures from Aberdeenshire and elsewhere in the north-east of Scotland, broadly dating to the second half of the 2nd millennium and into the first half of the 1st millennium BC.

The ring ditch house in Wrangham is associated with Middle to Late Bronze Age radiocarbon dates in the range 1380–930 BC, while the dates from the ring ditch houses at Little Lediken are slightly later, from 1200 to 810 BC. Additionally, undiagnostic pottery from the Pitmachie roundhouse is associated with features from which Middle to Late Bronze Age radiocarbon dates were obtained, calibrating to 1290–920 BC, and these dates agree with the suggestion from the fabrics and context that the pottery is later Prehistoric. Therefore, there is a good correspondence between the pottery types identified and the radiocarbon dating, and the pottery is a useful addition to the corpus of later Bronze Age pottery from the north-east of Scotland.

The pottery belongs within the so-called flat-rimmed ware tradition (Coles & Taylor 1970), a rather ill-defined ware common throughout Scotland in the later Bronze Age which is now known to include not just flat rims but often internally bevelled rims. This ceramic type has yet to receive a universally accepted alternative name, and the typology and chronology of this later Prehistoric ware is poorly understood, but it has both longevity of use and a widespread distribution in domestic contexts; this renders it less useful for spot-dating of settlement activity. It is possible that refinements, such as regional patterning, could be made through more detailed synthetic analysis and dating, including analysis of the types of structures with which it is associated. For example, decorated vessels have been recorded within structures dating to the Middle to later Bronze Age (1610–1132 BC) at Drumyochoer, Aberdeenshire (Johnson 2017), while ridged vessels have been recorded within ring ditch structures at Oldmeldrum, Aberdeenshire, dating

to the period 1530–820 BC (White & Richardson 2010), and at Kintore, Aberdeenshire (Cook & Dunbar 2008).

The pottery from the Late Bronze Age structures on the Moray Reinforcement Pipeline does not include any decoration or external ridges. However, internally bevelled rims are common in Aberdeenshire in the Middle and later Bronze Age and may prove to be the defining regional characteristic of assemblages of this date in the north-east of Scotland (McGill 2004: 156), and are the dominant form at both Pitmachie and Little Lediken as it was at Drumyoher, Aberdeenshire (Johnson 2017), and Kintore, Aberdeenshire (Cook & Dunbar 2008).

Comparable assemblages of similar date at other settlement sites include: Drumyoher (Johnson 2017), which consisted of barrel- or bucket-shaped vessels with upright or inturning rims, often with an internal bevel or otherwise with a flat or rounded top; Kintore (Cook & Dunbar 2008), where flat and internally bevelled rims on thick-walled bucket-shaped vessels were present along with examples of external ridges or cordons below the rims; Deer's Den, Kintore, Aberdeenshire (Alexander 2001), which produced bucket- and barrel-shaped vessels with flat bases and closed mouths, their rims including plain flat rims and short everted rims with internal bevels; and Ednie, Peterhead (Strachan & Dunwell 2004), which included inturning, flat and internally bevelled rims. Farther afield, similar pottery is found at sites such as Green Knowe, Scottish Borders (Jobey 1979), Lairg, Highland (McCullagh & Tipping 1998), Blackford, Perth & Kinross (O'Connell & Anderson forthcoming), and Kiltaraglen, Skye, Highland (Suddaby 2013).

Within ring ditch structures, the pottery is often found within the fill of the ditch, suggesting post-abandonment deposition, as at Oldmeldrum Houses 1 and 3 (White & Richardson 2010) and Drumyoher Structure 1, while nearby structures can produce very little pottery as at Oldmeldrum House 2 and Drumyoher Structure 2. As has been suggested (Johnson 2010: 15), distinct differences between quantities of pottery deposited could indicate some degree of intention during either use or abandonment.

Examples of whole pots are known (eg Structure 3 at Drumyoher (Johnson 2017)) but none of the larger deposits of sherds from Little Lediken and Wrangham are large enough to suggest that a whole vessel was deposited.

DISCUSSION

Following the terminology of Pope (2015), the Little Lediken structures have been described here as 'ring ditch structures'. She stresses that 'ring ditches are not a house type as such, but rather the signature of a formation process'. The characteristic penannular ditch of these structures was internal to the outer wall line and, rather than being a deliberate element of the structure, can be considered to have resulted from erosion of soil, from livestock movements within the structure and from deliberate mucking out. In some cases, these structures may have been used solely for housing animals, but in most cases they are likely to have been used for human habitation as well.

Both of the Little Lediken structures had post holes around the outer edge, or within the fills, of their ring ditches, though more clearly defined in the western than the eastern structure. An estimated internal radius of around 3.5m for the eastern structure, with up to 1m between the wall and the post ring, would not accommodate the whole width of the ring ditch, and certainly not the sausage-shaped pit 8519. If this pit was contemporary and within the structure, it increases the radius to around 4.5m.

In the western ring ditch structure, the post hole ring was rather better defined and had a radius of 3.2m, while taking in the maximum extent of the ring ditch would increase the estimate of the internal radius to close to 5m. It needs to be borne in mind that the extent of the features, as excavated, ignores the depth of the ploughsoil but includes post-abandonment erosion or damage.

Any attempt at reconstruction of the structures is highly speculative, but the turf peat ash and charcoal from birch, hazel and smaller quantities of oak in the fills of the ring ditches would be consistent with the conventional picture of a

conical roof, braced with upright timbers set in a post hole ring. Though both structures had possible central post holes, these were shallow and perhaps were used only temporarily during construction, before the posts were removed to form an open central living space.

Although at first sight the plan of the Pitmachie structure appears very different, it is possible that this was a similar structure abandoned at an earlier stage of its evolution. Already, on its western and northern side, the ground around the ring had been eroded to form a series of conjoined pits; with erosion and the passage of time these could have coalesced into a ring ditch. An alternative interpretation could be that the individual post holes lost their definition as a result of posts being removed or lost during the collapse of the structure. It may also be the case that in this rather more sheltered valley-bottom location, the structure was functionally or culturally distinct from those at Little Lediken.

The Wrangham ring ditch was the largest of the excavated structures, fitting within a circular area of around 5.5m radius, with the post holes 9661, 9686 and 9688 likely candidates for the remains of a ring with a 4m radius. The depth of the ring ditch on its northern side set it apart from the other ring ditch structures, though this was emphasised by the steepness of the slope. When it was first built, it is likely to have appeared very similar to the Little Lediken structures.

In conclusion, monitoring of construction of the Moray Reinforcement Pipeline has added significantly to the knowledge base of Neolithic and Bronze Age Aberdeenshire. The areas of archaeological potential along the route were successfully identified and investigated within the tight programme constraints and challenging working conditions imposed by a linear construction site. The results emphasise the importance of the region as one of the core areas for understanding Prehistoric occupation and culture of Scotland, of the island of Britain and of western Europe. The findings from the Neolithic pit groups either side of the Shevock Burn, and especially their ceramic assemblages, together with the structures at Pitmachie, Little Lediken and Wrangham support and add incrementally to our understanding of these periods.

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APPENDIX: RADIOCARBON DATING

Derek Hamilton

Thirty-six samples of charred grain, charred nutshell or small roundwood charcoal were submitted to the Scottish Universities Environmental Research Centre (SUERC) for AMS radiocarbon dating (Table A1). Standard SUERC procedures were used; full details are given in the archive report.

A Bayesian approach was applied to the interpretation of the radiocarbon dates from each of the six sites along the pipeline. For each site, the only assumptions were that the dated material related to a single uniform phase of relatively continuous depositional activity and constituted random samples of the deposited material.

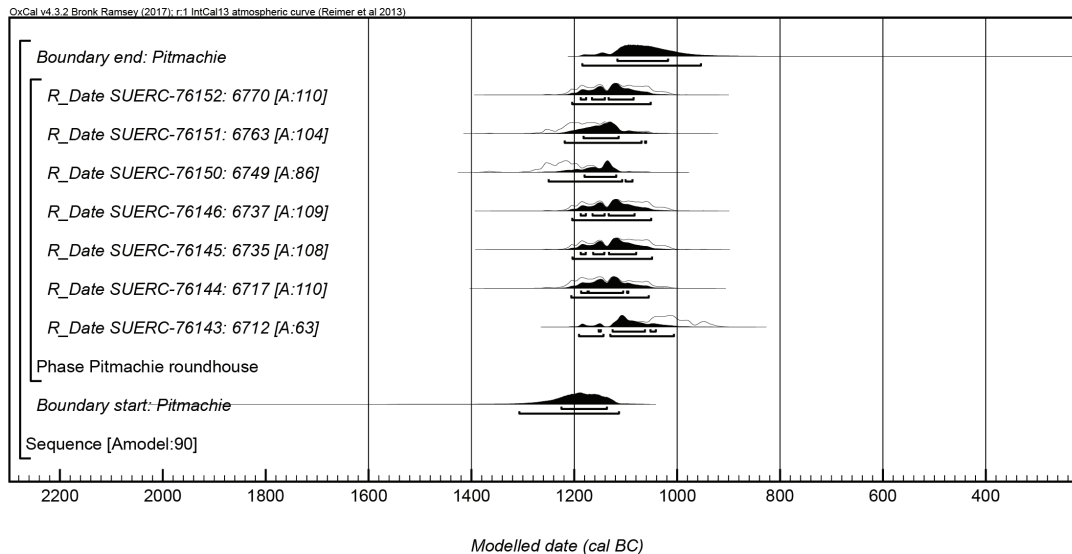
For Pitmachie, the analysis has good agreement ($A_{\text{model}}=90$). It estimates the activity associated with the post-built structure began in 1310–1110 cal BC (95% probability; Illus A1: ‘start: Pitmachie’), probably in 1230–1135 cal BC (68% probability). It was used for a maximum of 305 years (95% probability), and probably for no more than 180 years (68% probability). The structure was out of use

in 1185–950 cal BC (95% probability; ‘end: Pitmachie’), and probably 1120–1015 cal BC (68% probability).

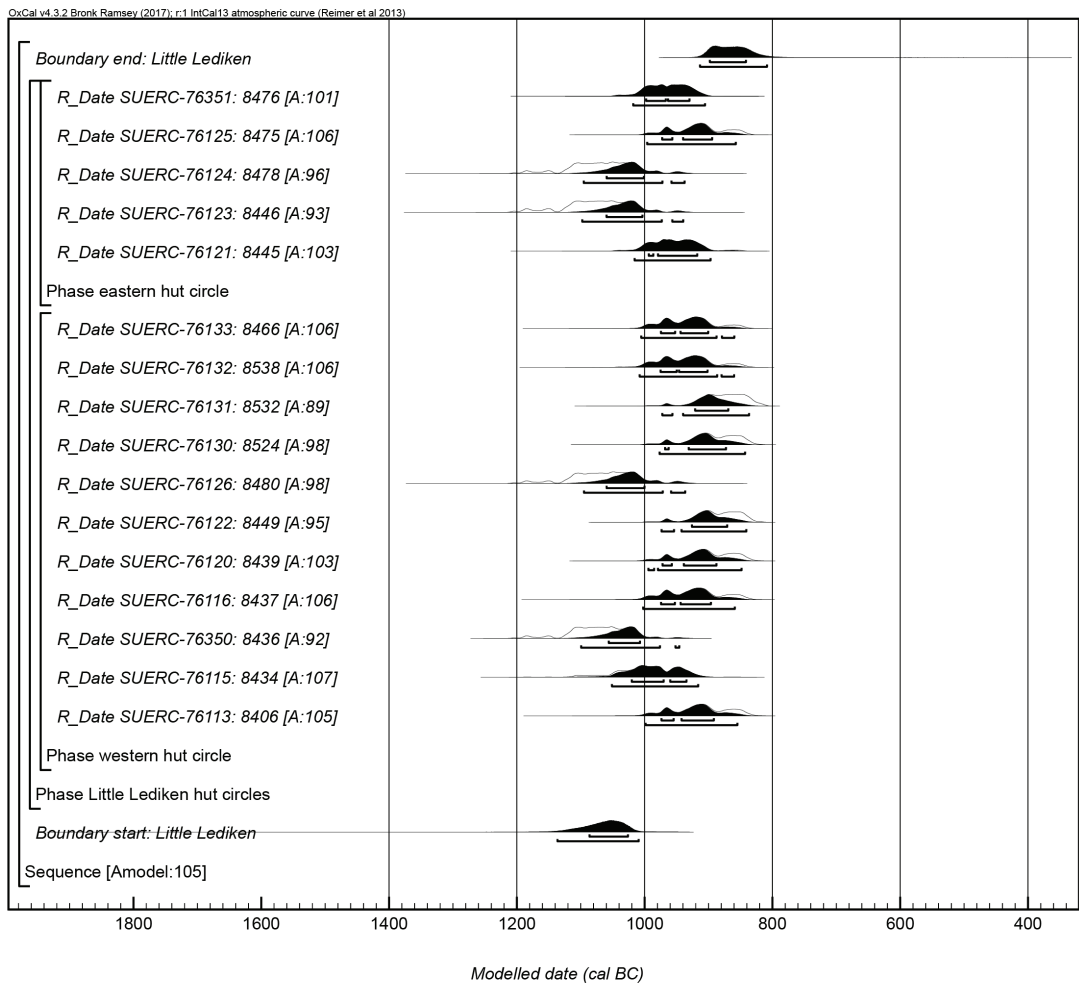
(In Illus A1 and A2, each distribution represents the relative probability that an event occurred at some particular time. For each of the radiocarbon measurements two distributions have been plotted, one in outline, which is the result of simple radiocarbon calibration, and a solid one, which is based on the chronological model used. The other distributions correspond to aspects of the model. For example, ‘start: Pitmachie’ is the estimated date for the activity at this site. The large square brackets along with the OxCal keywords define the overall model exactly.)

At Shevock, five results from the five pits indicate an overall range of 3496 to 2917 cal BC, but despite the features forming a compact group, the results are not statistically consistent, which would suggest that the pit-digging activity was neither very short-lived nor a single event.

The Bayesian model for the three dates from East Lediken, from Pits 7505, 7401 and 7402, has good agreement ($A_{\text{model}}=110$). Analysed together, they are statistically consistent ($T'=0.3$; $v=2$; $T'(5\%)=6.0$) and all three samples could



ILLUS A1 Chronological model for Pitmachie



ILLUS A2 Chronological model for Little Lediken

be the same age. The analysis estimates that pit activity began in 3775–3030 cal BC and probably in either 3415–3235 cal BC (56% probability) or 3190–3165 cal BC (3% probability) or 3145–3090 cal BC (9% probability). The activity lasted for a maximum of 1,050 years, and probably for 1–300 years (68% probability). The activity ended in 3320–2600 cal BC, and probably in either 3285–3145 cal BC (34% probability) or 3115–2975 cal BC (34% probability).

The radiocarbon dates for the two pits from North Lediken are around 250 radiocarbon years different, implying that these two features

are unrelated: the calibrated dates for each pit provide the best estimate for their respective associated assemblages.

Sixteen radiocarbon results from Little Lediken are not statistically consistent, whether considered as a single group ($T' = 61.0$; $\nu = 15$; $T'(5\%) = 25.0$) or broken down into separate western ($T' = 40.9$; $\nu = 10$; $T'(5\%) = 18.3$) and eastern ($T' = 15.2$; $\nu = 4$; $T'(5\%) = 9.5$) ring ditch groups. Therefore, the material dated is likely to have accumulated over a protracted period.

The model has good agreement and estimates the activity began in 1140–1010 cal BC (95%

TABLE A1
Summary of radiocarbon results

Lab ID	Context, feature	Material dated	$\delta^{13}\text{C} \text{ ‰}$	RC Age BP	Calibrated cal BC (95%)
<i>Shevock</i>					
SUERC-76136	7103, Pit 7101	charred nutshell: <i>Corylus</i> sp	-23.1	4462 ± 27	3340–3020
SUERC-76140	7111, Pit 7109	charcoal: <i>Corylus</i> sp	-25.8	4523 ± 30	3370–3090
SUERC-76141	7106, Pit 7105	charred nutshell: <i>Corylus</i> sp	-21.9	4402 ± 30	3270–2910
SUERC-76142	7108, Pit 7107	charred nutshell: <i>Corylus</i> sp	-25.6	4401 ± 30	3270–2910
SUERC-76355	7102, Pit 7104	charred nutshell: <i>Corylus</i> sp	-25.0*	4584 ± 25	3490–3190
<i>East Lediken</i>					
SUERC-76111	7404, Pit 7401	charred nutshell: <i>Corylus</i> sp	-28.2	4457 ± 30	3340–3010
SUERC-76112	7406, Pit 7402	charred nutshell: <i>Corylus</i> sp	-24.9	4450 ± 27	3340–3010
SUERC-76114	7512, Pit 7505	charred nutshell: <i>Corylus</i> sp	-25.9	4470 ± 26	3340–3020
<i>North Lediken</i>					
SUERC-76134	8300, Pit 8301	charcoal: <i>Corylus</i> sp	-27.0	4471 ± 30	3350–3020
SUERC-76135	8311, Pit 8310	charred grain: <i>Hordeum</i> sp	-25.9	4741 ± 30	3640–3370
<i>Pitmachie</i>					
SUERC-76143	6712, Ph 6705	charcoal: <i>Corylus</i> sp	-26.5	2859 ± 29	1120–920
SUERC-76144	6717, Pit 6724	charcoal: <i>Corylus</i> sp	-27.1	2933 ± 29	1230–1020
SUERC-76145	6735, Pit 6734	charcoal: <i>Corylus</i> sp	-27.5	2918 ± 29	1220–1010
SUERC-76146	6737, Pit/Ph 6736	charred nutshell: <i>Corylus</i> sp	-26.0	2921 ± 29	1220–1010
SUERC-76150	6749, Ph 6748	charcoal: <i>Betula</i> sp	-26.1	2983 ± 27	1290–1120
SUERC-76151	6763, Ph 6762	charcoal: <i>Betula</i> sp	-26.2	2958 ± 29	1270–1050
SUERC-76152	6770, Pit 6769	charcoal: <i>Corylus</i> sp	-26.1	2923 ± 29	1220–1010
<i>Little Lediken</i>					
SUERC-76113	8406, Gully 8407	charcoal: <i>Betula</i> sp	-27.1	2769 ± 29	1010–830
SUERC-76115	8434, w ring ditch	charred grain: <i>Hordeum</i> sp	-22.8	2838 ± 29	1110–910
SUERC-76116	8437, w ring ditch	charcoal: <i>Corylus</i> sp	-27.4	2776 ± 29	1010–830
SUERC-76120	8439, w ring ditch	charred grain: <i>Hordeum</i> sp	-23.6	2763 ± 27	980–830
SUERC-76122	8449, Ph 8448, w ring ditch	charcoal: <i>Corylus</i> sp	-26.3	2749 ± 25	970–820
SUERC-76126	8480, Ph 8479, w ring ditch	charcoal: <i>Betula</i> sp	-26.9	2884 ± 29	1190–970
SUERC-76130	8524, Ph 8423, w ring ditch	charcoal: <i>Corylus</i> sp	-26.3	2755 ± 27	980–830
SUERC-76131	8532, w ring ditch	charcoal: <i>Corylus</i> sp	-26.7	2734 ± 29	930–810
SUERC-76132	8538, Ph 8537, w ring ditch	charcoal: <i>Corylus</i> sp	-27.4	2784 ± 29	1010–840
SUERC-76350	8436, w ring ditch	charcoal: <i>Corylus</i> sp	-26.5	2791 ± 24	1190–1000
SUERC-76121	8445, Pit 8453, e ring ditch	charred grain: <i>Hordeum</i> sp	-23.4	2802 ± 27	1020–890

TABLE A1
Summary of radiocarbon results (*cont*)

<i>Lab ID</i>	<i>Context, feature</i>	<i>Material dated</i>	$\delta^{13}\text{C} \text{‰}$	<i>RC Age BP</i>	<i>Calibrated cal BC (95%)</i>
<i>Little Lediken</i>					
SUERC-76123	8446, Pit 8468, e ring ditch	charred grain: <i>Hordeum</i> sp	-25.0*	2891±29	1200–990
SUERC-76124	8478 Ph 8477, e ring ditch	charcoal: <i>Quercus</i> sp	-25.9	2886±29	1200–970
SUERC-76125	8475 Ph 8483, e ring ditch	charcoal: <i>Corylus</i> sp	-26.2	2771±25	1000–840
SUERC-76133	8466, Ph 8465, w ring ditch	charcoal: <i>Betula</i> sp	-24.9	2782±27	1010–840
SUERC-76351	8476, Pit 8501, e ring ditch	charcoal: <i>Corylus</i> sp	-27.1	2814±24	1030–900
<i>Wrangham</i>					
SUERC-76153	9612, Ring ditch section 9111	charcoal: <i>Quercus</i> sp	-27.5	2909±29	1220–1000
SUERC-76154	9638, Ring ditch section 9622	charcoal: <i>Corylus</i> sp	-25.5	2862±25	1120–930
SUERC-76155	9638 Ring ditch section 9622	charcoal: <i>Quercus</i> sp	-26.9	3004±29	1380–1120
			*Assumed value		

probability; Illus A2: ‘start: Little Lediken’), and probably in 1090–1025 cal BC (68% probability) and ended in 915–805 cal BC (95% probability; ‘end: Little Lediken’), and

probably 900–840 cal BC (68% probability), giving a maximum range of 105–310 years (95% probability); or probably 140–245 years (68% probability).

