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ARO46: A well-trodden path: the prehistoric landscape of Maidenhill, Newton Mearns, East Renfrewshire

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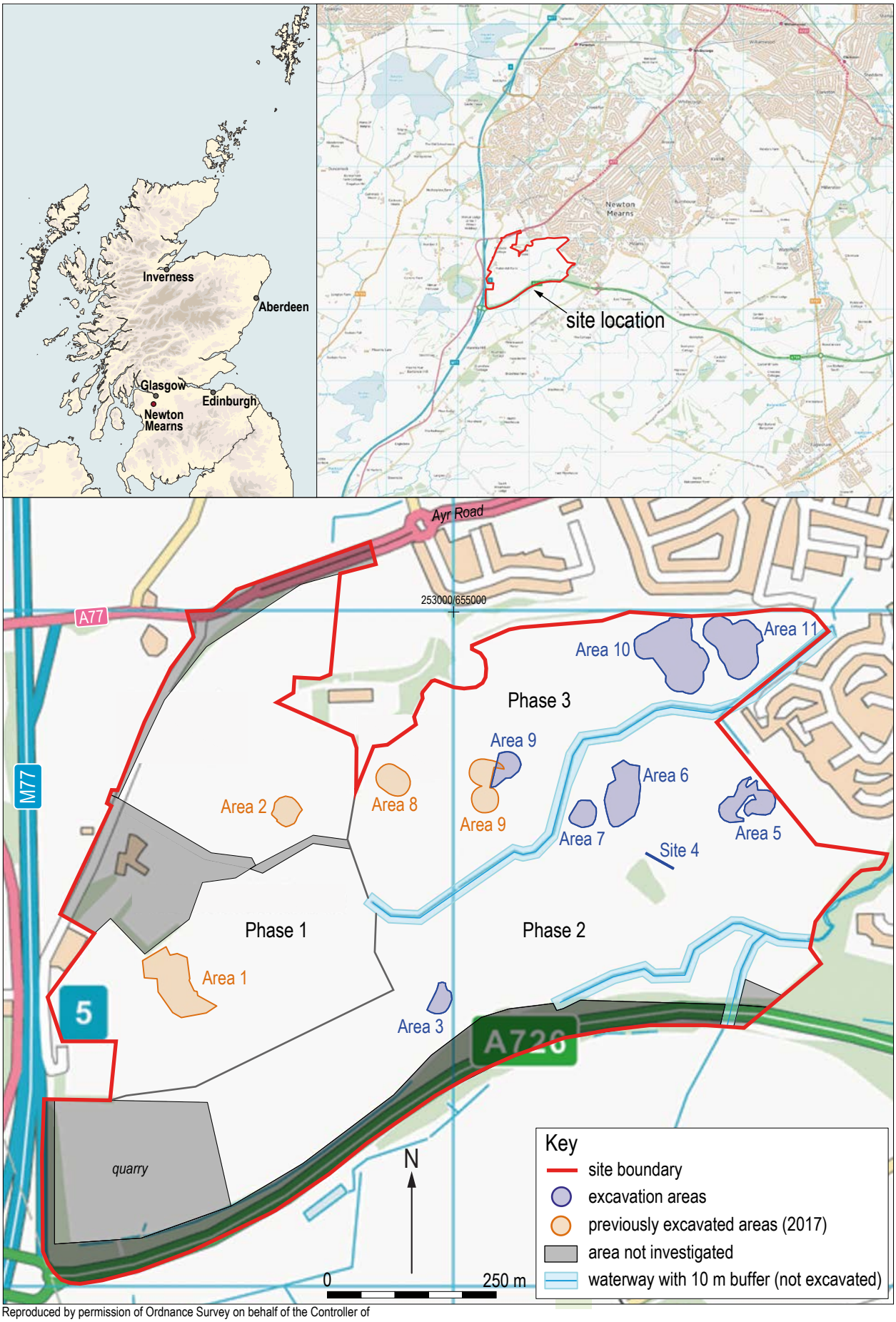

Figure 1: Site location and position of the investigated areas

Abstract

Between 2017 and 2018 GUARD Archaeology Ltd conducted a programme of interventions including excavation at Maidenhill, Newton Mearns in East Renfrewshire. The remains of early Neolithic and later pits, and evidence of Bronze Age burial practices were uncovered. Radiocarbon dates were obtained from features across the project area, which indicated activities throughout much of the fourth millennium BC and the second half of the third millennium BC. This present work highlights the earliest known use of the upland areas of East Renfrewshire, including burials, of which little previously was known.

Introduction

CALA Homes (West) and Taylor Wimpey commissioned GUARD Archaeology Ltd to undertake a series of archaeological investigations that included an evaluation and strip, map and sample excavation on a site proposed for residential development at Maidenhill, Newton Mearns, East Renfrewshire (Figure 1). This took place between 2017 and 2018. The site was divided into three separate areas (Phases 1-3), with the archaeological mitigation work carried out across all three. During the evaluation, Areas 1-11 were marked for targeted excavation due to their archaeological potential. The work revealed the remains of early Neolithic activity on sites 1, 6 and 10, Neolithic settlement and a Bronze Age cemetery in Area 6 and a Bronze Age structure in Area 11.

Site location, topography and geology

The site at Maidenhill is located south-west of the town of Newton Mearns in East Renfrewshire in an area known as Malletsheugh. It is centred at NGR: NS 52956 54600 and covers an area of approximately 75 hectares (Figure 1). It mainly comprises rolling agricultural fields with prominent natural terracing and mounds of outcropping bedrock and is intersected by several water courses and drainage channels. The topography slopes from the south at c. 182 m OD down to the north at c. 157 m.

The site is bounded by the A77 Ayr Road and housing to its north, by housing to the east, by the M77 to its west, and the A726 to its south. It is currently divided into several fields and used as grazing and arable land. The surface geology is mainly sand and gravel, while the solid geology consists of Moyne Moor Lava Member – Basaltic-rock, Plagioclase-microphyric. Igneous bedrock formed approximately 329 to 347 million years ago in the Carboniferous Period (BGS 2020 -British Geological Survey, Geology of Britain Viewer 2021).

Archaeological background

Four archaeological sites were identified previously within the development area by Dr T C Welsh, and they included a possible platform (WoSAS Pin: 8492), a rectangular building named 'Faside' (WoSAS Pin: 8472), a dyke (WoSAS Pin: 8473) and a possible tower (WoSAS Pin: 8501). The latter was described as a flat-topped knoll with a 'disturbed nature that suggests some human activity'. The remains of a possible trackway and rig and furrow were also identified in this area. Although outside of the development area, Fa'side House, a category B listed building (LB18527; WoSAS Pin: 40108) is located immediately north of the centre of the development area.

Several archaeological activities associated with the Glasgow Southern Orbital route were carried out to the south and south-west of the development area. They included an archaeological assessment and survey (WoSAS Pins: 1036 and 4966), archaeological evaluation (WoSAS Pins: 327, 328, 329 and 750) and watching briefs (WoSAS Pin: 1190). No cultural remains were uncovered in any of these archaeological works. However, an evaluation conducted approximately 450 m south-east of the site revealed a large rectangular palisaded enclosure of possible late Bronze Age/early Iron Age date (WoSAS Pin: 22810). Another settlement at West Acres, Bronze Age in date, is located c. 1 km to the north-east of the site (Toolis 2005). Moreover, immediately north of the site, a recent evaluation revealed a pit of prehistoric date (Kilpatrick 2018).

The development site is depicted mainly as arable land on General Roy's Map of 1747-55. A building with a possible rectangular enclosure known as 'Fallside' is also drawn around the area where Fa'side House is currently located, while five further possible buildings, partly enclosed, are depicted on an area named 'Maidenskill'. On the first edition six-inch to the mile Ordnance Survey map of 1856, the field divisions appear similar to the current layout.

Excavation results

Area 1

Area 1 was located on low-lying flat ground with a raised outcrop of bedrock in the southern part of the area. Three clusters of pits were found there, with one cluster located on the bedrock outcrop (Figure 2). The north-west cluster comprised eight pits and one deposit containing fills of grey/brown clay silt. All were investigated for botanical material which revealed species including oak, alder and hazel, with hazel nutshell found in several pits. Barley seeds were also retrieved from two features, deposit 037 and pit 044, which were radiocarbon dated to between 1407-1260 cal BC. A further cluster in the east comprising seven pits contained charcoal species of oak, alder and willow, and probably represent the remains of domestic refuse pits.

Situated in natural dips in the bedrock outcrop in the south were pits 028, 033 and 036 which were presumed to be small fire-pits (Plate 1). They contained similar charcoal assemblages of domestic waste material comprising hazel and alder, with oak also found in pit 033. Numerous hazel nutshells were also found in all three pits providing evidence of processing of nuts. Several fragments of early Neolithic Carinated Bowl pottery, which would have been used as cooking or storage pots, were found in adjacent pits 028 and 033. Burnt pitchstone was also recovered from pit 028. The early Neolithic date was confirmed by radiocarbon dating of charcoal retrieved from both pits (028 and 033) of 3712–3641 cal BC (SUERC-90652) and 3763–3648 cal BC (SUERC-90651) respectively (see Table 1).

Pit 30002 was located slightly downslope from the bedrock features. It contained domestic hearth waste including 67 flint chips, 20 worked pitchstone fragments including a microblade (CAT 92 and CAT 94) and a leaf shaped arrowhead

Plate 1: Hearths 036 and 028, viewed from the east.

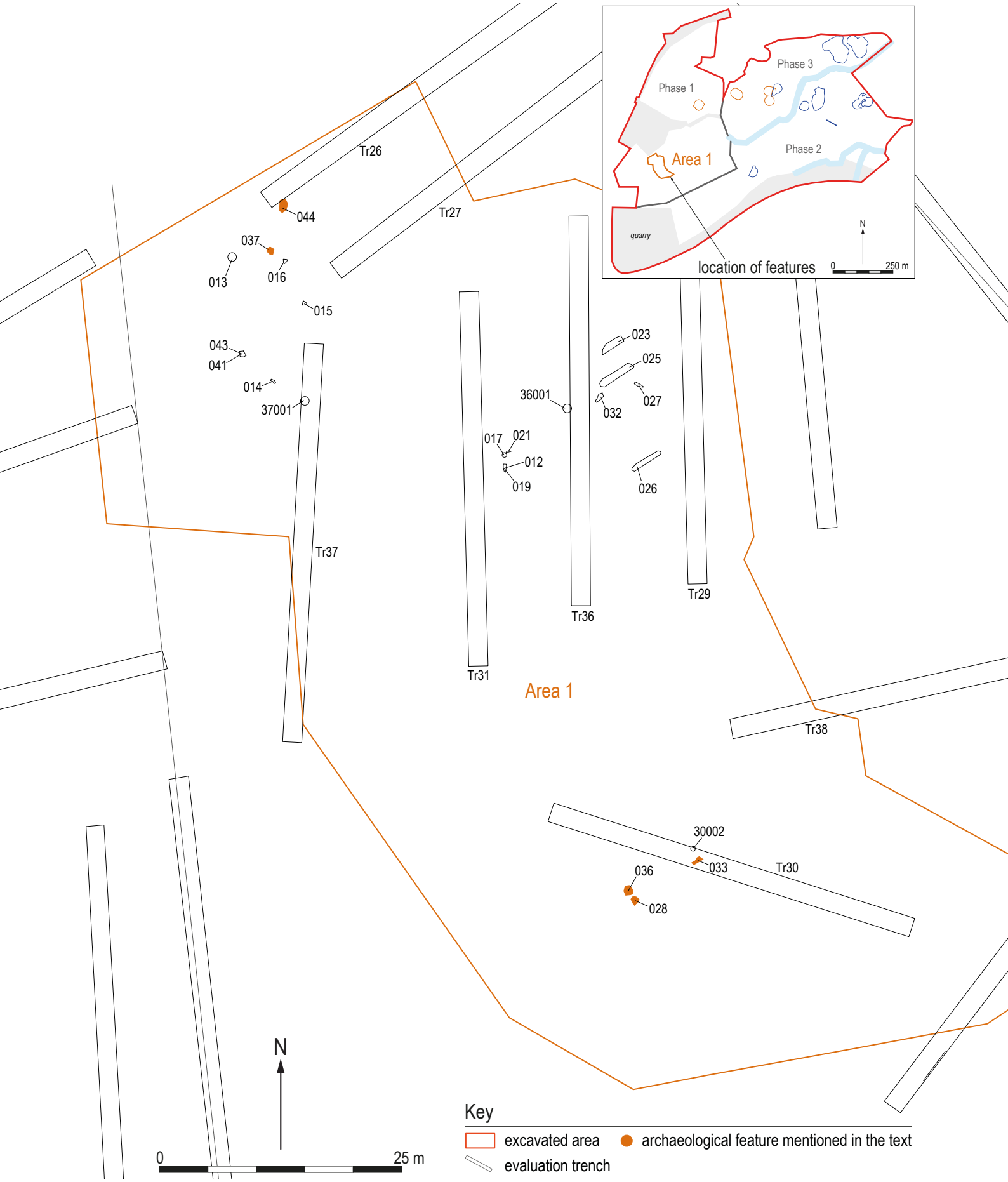

Figure 2: Location of features in Area 1.

(CAT 136), suggesting that this area might have been the focus for tool production.

Area 6

This site was located on a prominent mound where a bedrock outcrop dominated its topmost area and its southwestern slope (Plate 2). A group of 14 features were found on this slope comprising mainly pits of varying sizes (Figure 3). Five of them were particularly large 400, 402, 405, 409 and 411 and all were dug into the underlying bedrock (Plate 3, Figure 4). Pits 405 and 409 (Plate 4) revealed marked shaping of the bedrock with linear cut marks on their bases and sides where the rock had been removed. Pits 405 (Plate 5 and 6) and 411 were lined with stones. The latter, considered to be a cist, contained several fragments of burnt bone suggesting it might have been used for burial (Figure 5). The bone was identified as human (see Cremated bone, below) and confirmed its identification as a place of burial. All the fills of the pits were investigated for botanical material, which revealed a mixed assemblage of alder, hazel and oak with hazelnut shells in abundance in several features.

Sherds from eight pottery vessels (V3 to V10) were recovered from features in this area, ranging in date from the middle Neolithic Impressed Ware vessel (V10) through to the middle to late Bronze Age cooking pot (V5). One of the most significant finds were fragments of an All Over Corded (AOC) Beaker (V4) found in deposit 395 alongside a small barbed and tanged arrowhead (CAT 64) of late Neolithic to early Bronze Age date (see Ballin and Ballin Smith below). These artefacts are generally found together in funerary contexts although in this instance they were located in a shallow deposit near to a stone-lined pit 411 and could have been disturbed by later on-site activity.

Fifteen further features were found on the lower-lying flatter ground to the south-west of the mound. These comprised eight pits, three deposits and four possible bases of truncated postholes (Figure 3). Few finds were recovered from this area but they include very small burnt bone fragments, lithics and several small sherds of pottery.

Plate 2: View of rock outcrop mound in NE part of Area 6.

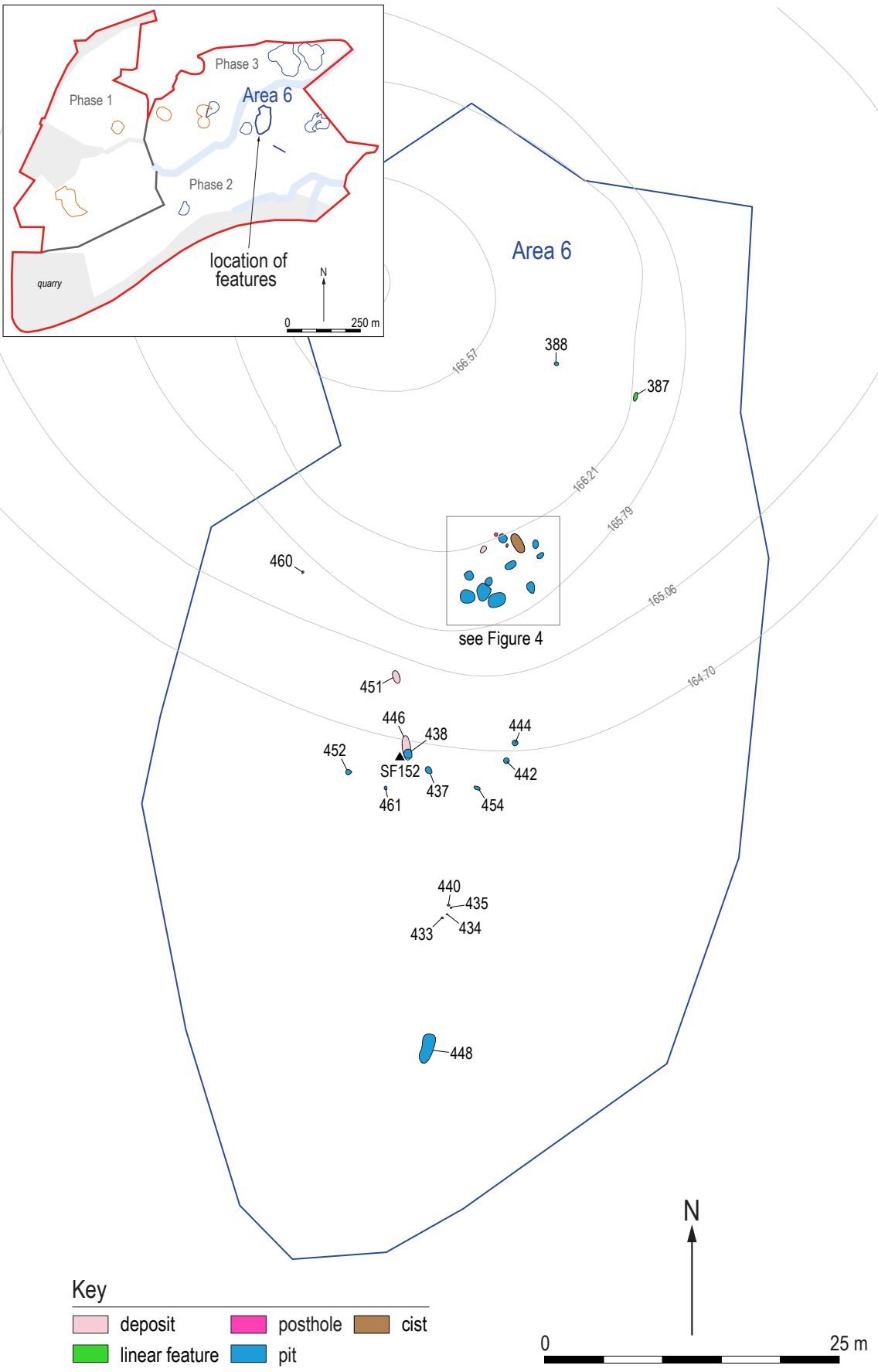

Figure 3: Location of features in Area 6, with inset.

Plate 3: Large pits on crest of the bedrock mound with the evaluation trench visible in centre of the image.

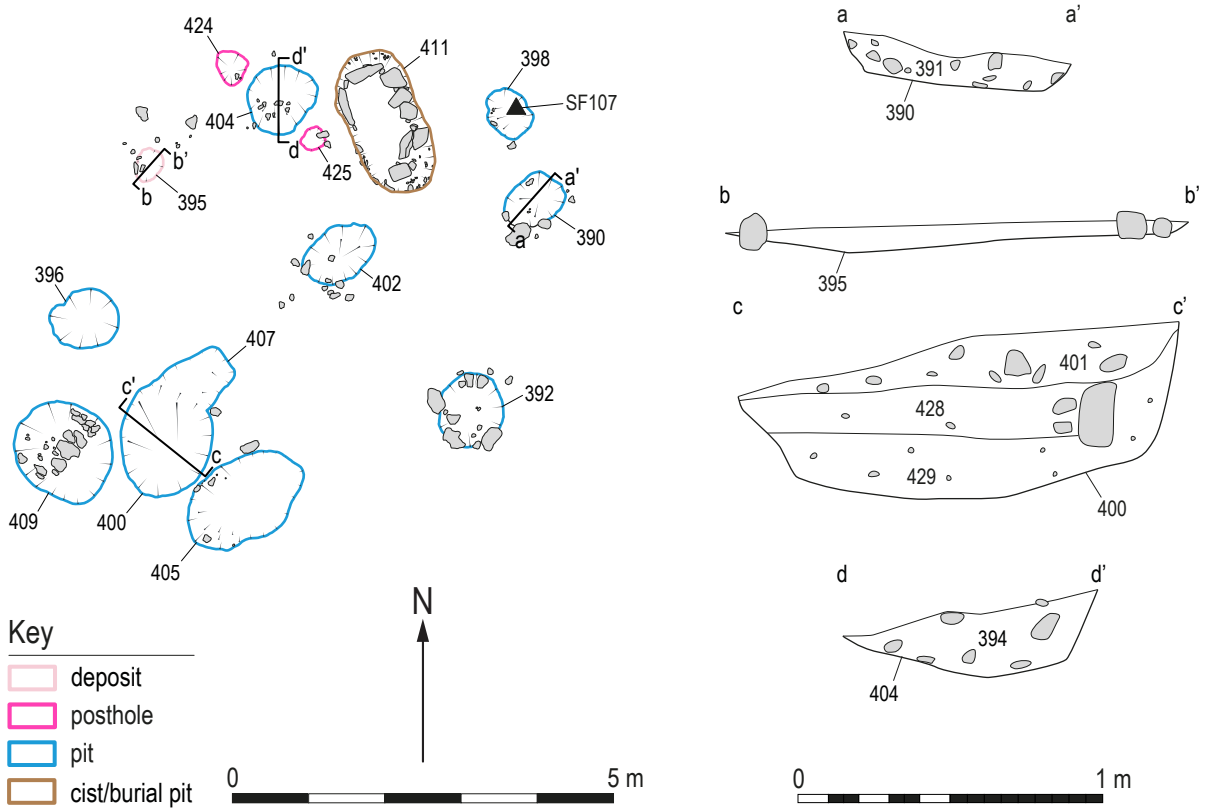

Figure 4: Area 6, detail of features on top of the hillslope.

Plate 4: Rock-cut pit 409.

Plate 5: Pit 405 during excavation.

Plate 6: Pit 405 after excavation.

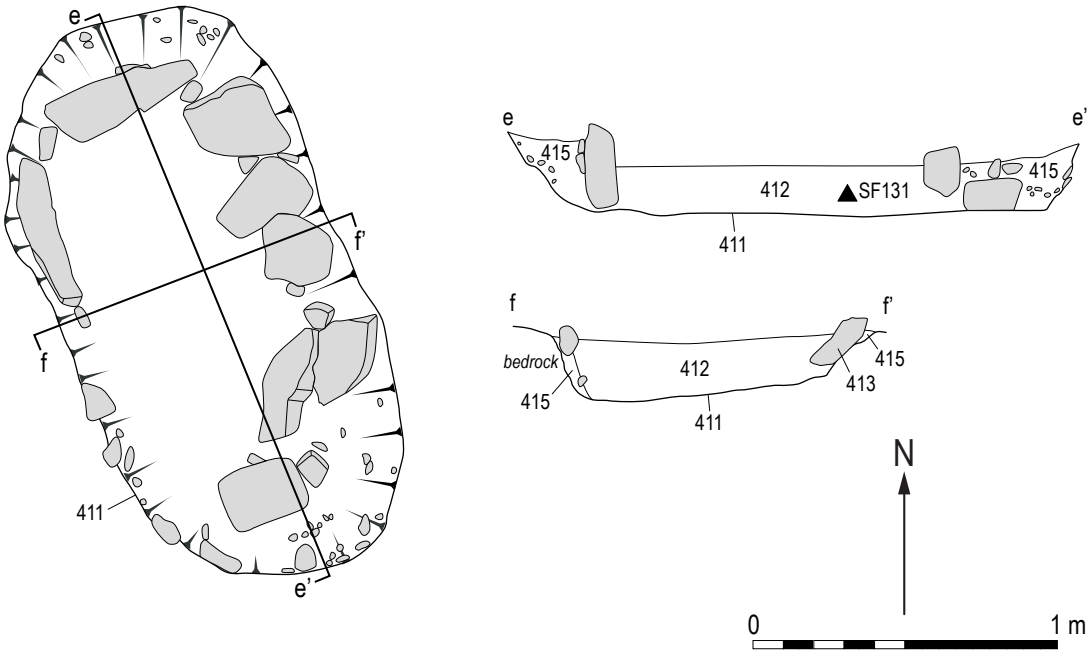

Figure 5: Area 6 plan of, and sections through, the burial pit/cist 411.

Radiocarbon dates from this area was generally consistent with the early Neolithic period and they were obtained from charcoal retrieved from the stone-lined pits. Pit 405 produced a date range of 3627–3373 cal BC (SUERC-90657) and pit 411 dates of 3622–3371 cal BC (SUERC-90661). A further early Neolithic date of 3711–3644 cal BC (SUERC-90662) was obtained from deposit 451 further downslope, while an early Bronze Age date of 2465–2286 cal BC (SUERC-90656) was obtained from pit 399, which was close to stone-lined pit 411. This latter feature also contained the inverted remains of an early Bronze Age small cup or plain Beaker vessel (V3).

Area 10

The activities on this area were located on a flat outcrop of bedrock which dropped steeply away to the north (Figure 6). Stone blocks were noted in the subsoil, where they had detached from the bedrock, and the immediate area was generally stony. The most prominent feature was the remains of a 13 m long line of 15 postholes (084-086, 088, 094, 122-125, 130, 179, 181, 183, 188, and 195), aligned NW/SE, with four other posts (089, 176, 190 and 192) on its west side, possibly for reinforcement (Figure 7 and Plate 7). The alignment, identified as a wall or fence seems to have curved slightly to the north-west at its north end, but the postholes yielded very little charcoal of mixed species and little evidence survived of the posts burnt *in situ* (see Archaeobotany, below). However, one posthole, 084, provided an early Neolithic radiocarbon date of 3786–3661 cal BC (SUERC-90665), which has to be considered as deriving from the backfilling of the feature. This alignment of postholes appeared to divide activities to the west from more intensive use to its east.

Those features to the east of the posthole alignment were divided into north, middle and southern groupings during the excavation. The most northerly features included thin surface deposits (087, 108 and 278). These patchy areas of redeposited clay and sandy silt were c. 30 mm to 200 mm thick and were cut through by a linear feature (215), aligned NE/SW (Plate 8). This feature was 3.8 m long by 0.28 m wide and 0.15 m deep, and contained stones near a bedrock outcrop to the west. This in turn was cut through by a large pit 095 and a small number of other pits and postholes that survived in the vicinity. Feature 215 was considered to be a trench for a wooden partition within a building or a drainage channel, but it may have originally been an animal burrow, as this type of disturbance is noticed elsewhere in the immediate area, and some of the patchy surface deposits may have derived from it. A radiocarbon date from the fill of it provided the earliest radiocarbon date range on the excavated site of 3941–3702 cal BC (SUERC-90700), the early Neolithic. Two fragments of an early Neolithic Carinated Bowl (V13) were also retrieved from its fill.

Pit 095, which measured 1.37m by 1.07m by 0.17 m, cut through the linear feature (215) was used twice, possibly as a hearth or for ashes from one. It also contained small sherds of pottery.

Plate 7: Posthole alignment during excavation.

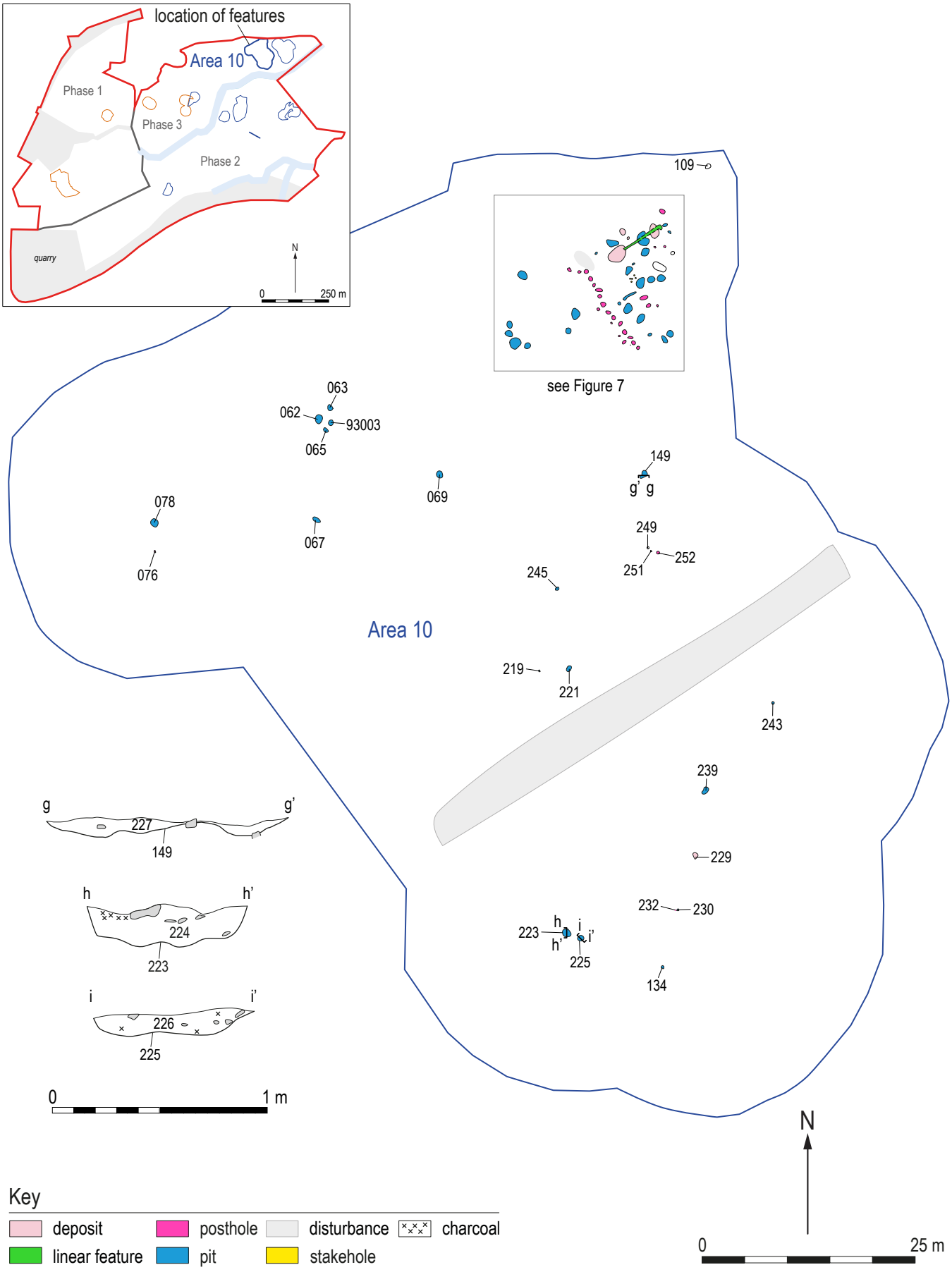

Figure 6: Location of features in Area 10.

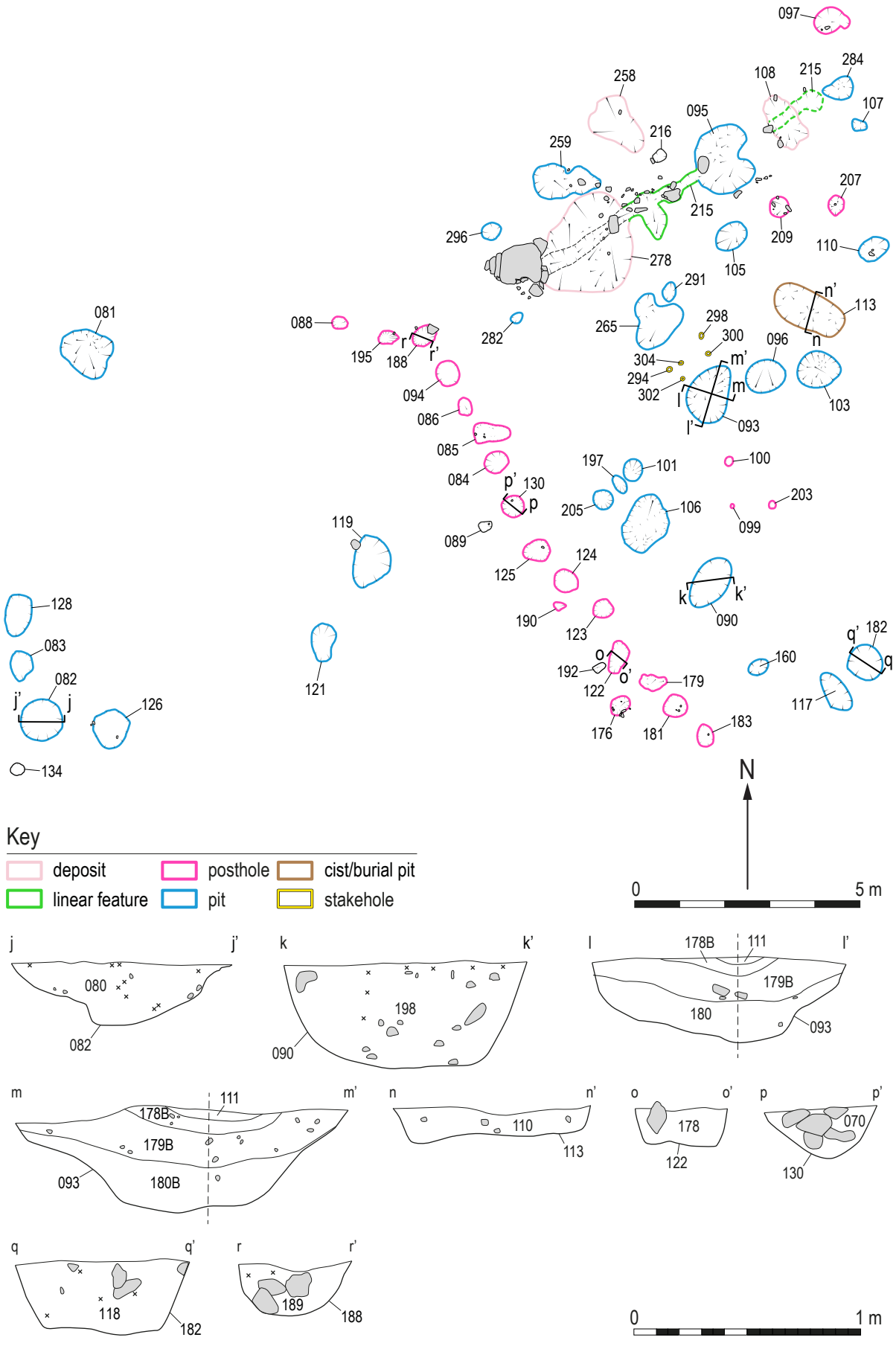

Figure 7: Detail of features in NE part of Area 10.

Plate 8: Linear feature during excavation.

However, the most interesting feature of this area was pit 259, located north and west of the ground surfaces and the linear feature (215, Figure 7). The roughly 'figure of eight' shape pit was stone-lined and measured 1.4 m in length by 0.5-0.7 m in width, but was only 0.2 m deep. Twenty-three pitchstone fragments were retrieved from its fill along with small fragments of burnt bone, a large amount of oak charcoal and smaller traces of hazel and hazel nutshells. The finding of pitchstone fragments in these numbers in the pit, suggests deliberate deposition (see Lithics analysis below). Radiocarbon dating from a sample from the pit provided another early Neolithic date range of 3908–3702 cal BC, (SUERC-90704), similar to that of the nearby linear feature (215).

The middle group of features, which may be intimately linked to the northern group, comprise five pits, four small postholes and a group of five stakeholes. The southernmost pit, fire-pit 093 (Figure 7) contained a large amount of oak, hazel, and hazel nutshell fragments and a few sherds of Neolithic pottery. Five stakeholes were located in a group close to the fire-pit, but to its north-west. Radiocarbon dating of the contents of 093 revealed that it was similar in date to the post alignment and other features already discussed. The early Neolithic date of 3703–3642 cal BC (SUERC-90666) was produced from it. Other large pits close to the hearth suggested other fire-pits or pits for waste.

The largest pit of this group was 113/110, which contained the majority of fragments of cremated bone, identified on the site. Even though the amount of bone was small (see Cremated bone, below), the remains of two individuals were identified, and confirmed its function as a burial place.

Although in the southern group of features, an elongated pit (101) was considered structural but it was heavily disturbed by burrowing. Other pits and postholes in the vicinity only contained evidence of hearth waste.

The seven pits to the west of the posthole alignment were mostly filled with domestic hearth waste material, suggesting they were primarily used for waste disposal (Plate 9). Pit 082 contained some sherds of undated Neolithic pottery and material for a radiocarbon date of 3635–3380 cal BC (SUERC-90664), spanning the early to middle Neolithic.

Plate 9: South-west group of pits.

Features across the rest of the excavated Area 10 comprised a small group to the south-west of the concentration of features already discussed, and the remainder were isolated pits and postholes. The south-west group were four pits clustered together. Although they contained no cultural material, pits 062 and 93003 contained much hazel charcoal, which is consider burnt hazel wattle (see Archaeobotany, below).

Of the remaining outlying features, two pits are worthy of mention. Pit 225 in the south of the area was probably a fire-pit for the roasting of hazel nutshells and contained fragments of an early Neolithic Carinated bowl V16. Pit (149) most likely a fire-pit, lay 35 m to the south of the northern concentration of features, and contained a wide variety of material culture. This included sherds of three middle Neolithic decorated vessels (V11, V14 and V15), and Cat 278 a flake of a Cumbrian tuff axehead. Hazel charcoal from the fill of the pit produced a middle Neolithic radiocarbon date range of 3330–3031 cal BC (SUERC-90699).

Area 11

This area was located downslope from Area 10 on relatively level ground which contained a large flat bedrock outcrop. Cut into this bedrock (Figure 8) was a series of seven postholes (312, 324, 328, 330, 333, 339, 356, 358 and 361). They were set out in two roughly parallel lines approximately 2.5 m apart with the northern alignment having three extra in a small group to the south-west. This double alignment was orientated NE/SW. Oak charcoal was found in several features and although not burnt, suggests that they might have contained oak posts which were later removed or naturally rotted away. Radiocarbon dates obtained from charcoal from three of the postholes provided similar radiocarbon dates between 2332–2032 cal BC of the early Bronze Age (Table 1).

To the south-west was a relatively shallow curvilinear ditch 354/347 which measured 11 m in length and terminated at a pit with a possible posthole in the rock outcrop (Plate 10). This could suggest that the feature held wattle panelling possible supported by a post at its terminal. No botanical evidence suggesting structural remains were found in its fill, with only alder, hazel and willow and hazel nutshells suggestive of hearth waste. Within the ditch fill was a pitchstone chip (CAT 58) and a flint blade (CAT 15). Radiocarbon samples from its fill provided early Bronze Age dates of 2461–2295 cal BC (SUERC-90708) and 2113–1920 cal BC (SUERC-90709) (Table 1).

Several other pits were located on site to the north and south, including a large feature (271) with cobble stones reminiscent of a fire-pit.

Plate 10: Curvilinear feature 354 as excavated.

Other areas

A total of sixteen pits and two deposits were excavated in Areas 2, 3, 7, 8 and 9 (Figure 1). Most contained botanical material suggesting they were the remains of domestic hearth waste and included species such as alder, hazel, willow, oak and hazel nuts. Two pits, one each from Areas 3 and 9, were radiocarbon dated and provided dates from the early fifth millennium BC, making them the earliest dates obtained from the site.

These dates 4707–4555 cal BC (SUERC-90654) and 4945–4788 cal BC (SUERC-90663) (Table 1) suggest that activity across the area of the site commenced as early as the late Mesolithic period.

Areas 1, 3, 5 and 6 also produced features of probable medieval date including three parallel linear agricultural ditches from Area 1 and pits from Areas 3, 5 and 6, which produced sherds of medieval pottery and cereal grains, including flax and oats. A radiocarbon date from pit 369 in Area 5 produced a date within the early medieval period of between 722 and 952 cal AD (SUERC-90655), which supports the presence of oat grains in many of the pits being most common in this period.

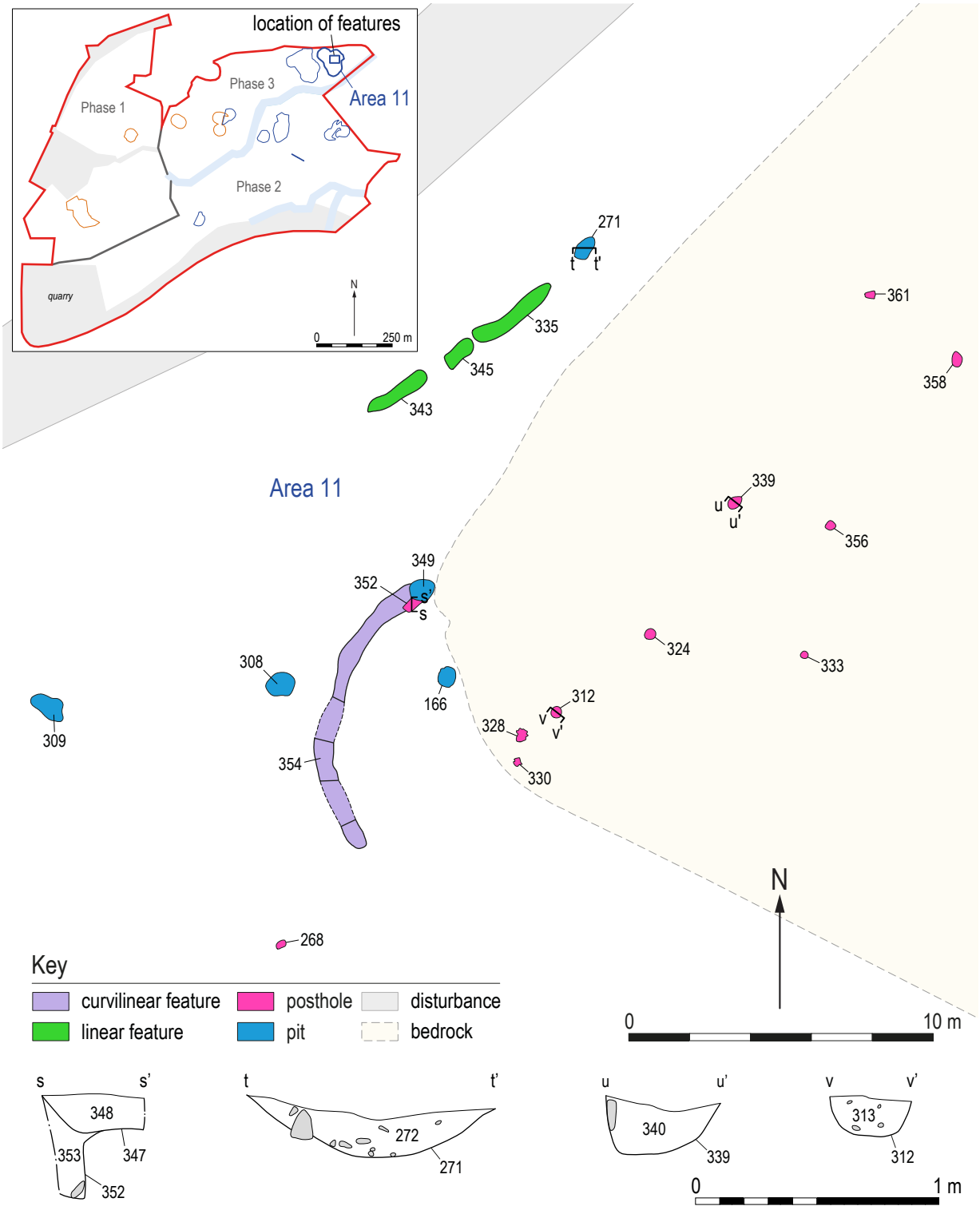

Figure 8: Location of features in Area 11.

Sample Nr	Area	Lab Code	$\delta^{13}C$	Context	Radiocarbon Age BP	95.4% probability
16	1	SUERC-90651 (GU53374)	-28.7 ‰	Corylus cf avellana charcoal from context 33 a charcoal deposit on the bedrock.	4920 ± 25	3763–3724 cal BC 3716–3648 cal BC
17	1	SUERC-90652 (GU53375)	-26.1 ‰	Corylus cf avellana charcoal from context 34, the fill of pit 028, conjoined with pit 036.	4902 ± 26	3712–3641 cal BC
24	1	SUERC-90653 (GU53376)	-26.5 ‰	Corylus cf avellana charcoal from context 40, the fill of pit 044.	3061 ± 24	1407–1260 cal BC
38	3	SUERC-90654 (GU53377)	-27.8 ‰	Corylus avellana nutshell from context 59 charcoal deposit.	5785 ± 26	4707–4555 cal BC
293	5	SUERC-90655 (GU53378)	-25.4 ‰	Salix sp charcoal from context 370, the fill of firepit 369.	1169 ± 25	722–901 cal AD 921–952 cal AD
307	6	SUERC-90656 (GU53379)	-25.3 ‰	Corylus cf avellana charcoal from context 399, the fill of a shallow pit dug into bedrock.	3875 ± 24	2465–2286 cal BC
315	6	SUERC-90657 (GU53380)	-25.1 ‰	Corylus cf avellana charcoal from context 406, the fill of an oval pit 405 in the base of a cist.	4698 ± 23	3627–3597 cal BC 3526–3492 cal BC 3469–3373 cal BC
317	6	SUERC-90661 (GU53381)	-26.2 ‰	Alnus cf glutinosa charcoal from context 412, the fill of cist 411.	4680 ± 26	3622–3608 cal BC 3523–3483 cal BC 3476–3371 cal BC
357	6	SUERC-90662 (GU53382)	-25.4 ‰	Corylus cf avellena charcoal from context 451, manganese deposit.	4907 ± 23	3711–3644 cal BC
34	9	SUERC-90663 (GU53383)	-25.3 ‰	Salix sp charcoal from context 51, fill of linear deposit 050.	5969 ± 26	4945–4788 cal BC
61	10	SUERC-90664 (GU53384)	-25.8 ‰	Corylus cf avellana charcoal from context 138, the fill of pit 082.	4738 ± 26	3635–3552 cal BC 3541–3501 cal BC 3430–3380 cal BC
74	10	SUERC-90665 (GU53385)	-27.7 ‰	Alnus cf glutinosa charcoal from deposit 169 from within posthole 084.	4956 ± 24	3786–3661 cal BC
207	10	SUERC-90666 (GU53386)	-25.0 ‰ assumed	Corylus cf avellana charcoal from context 179B, fill of fire pit 093.	4887 ± 23	3703–3642 cal BC
218	10	SUERC-90699 (GU53387)	-25.4 ‰	Corylus cf avellana charcoal from context 227, the fill of pit 149.	4452 ± 23	3330–3215 cal BC 3185–3157 cal BC 3126–3021 cal BC
231	10	SUERC-90700 (GU53388)	-27.4 ‰	Corylus cf avellana charcoal from SF 247, a deposit in linear feature 215.	5025 ± 24	3941–3856 cal BC 3844–3833 cal BC 3823–3758 cal BC 3745–3713 cal BC
237	10	SUERC-90704 (GU53389)	-27.9 ‰	Corylus cf avellana charcoal from context 260, fill of pit 259.	4988 ± 24	3908–3879 cal BC 3801–3702 cal BC
277	11	SUERC-90705 (GU53390)	-26.1 ‰	Corylus cf avellana charcoal from context 325, fill of posthole 324, dug into bedrock	3714 ± 25	2199–2164 cal BC 2151–2032 cal BC
279	11	SUERC-90706 (GU53391)	-26.8 ‰	Alnus cf glutinosa charcoal from context 334, fill of posthole 333, dug into bedrock.	3804 ± 22	2332–2329 cal BC 2300–2194 cal BC 2176–2144 cal BC
280	11	SUERC-90707 (GU53392)	-26.3 ‰	Alnus cf glutinosa charcoal from context 340, fill of posthole 339.	3725 ± 23	2201–2111 cal BC 2105–2036 cal BC
289	11	SUERC-90708 (GU53393)	-26.3 ‰	Salix sp charcoal from context 348, fill of enclosure ditch 347.	3880 ± 22	2461–2295 cal BC
290	11	SUERC-90709 (GU53394)	-25.0 ‰	Corylus cf avellana charcoal from context 348, fill of enclosure ditch 347.	3626 ± 22	2113–2101 cal BC 2036–1920 cal BC

Table 1: Radiocarbon dates from Maidenhill.

Specialists' reports

These reports deal mainly with the prehistoric period. Although there was a small amount of later cultural material, for example, metal work from across the site, their analyses is not included here and it can be found in the site archive.

Radiocarbon dates

A total of 21 radiocarbon dates were obtained from features across Areas 1, 3, 5, 6, 9, 10 and 11. They were submitted to the Scottish Universities Environmental Research Centre (SUERC) for AMS radiocarbon dating (Table 1). All features were interpreted using dates at the 95% probability (2-sigma range) due to its greater accuracy. They revealed that activity on site was not continuous and that areas fell in and out of use during the early prehistoric period. They indicated an early use of the area by Mesolithic peoples (Areas 3 and 9), followed by a concentration of activity during the early Neolithic period in Areas 1, 6 and 10. Following this, Area 1 appeared to fall out of use, and the next events concern the early Bronze Age which focussed on Area 6, where activities associated with burial took place, and also Area 11. Following this, there then appears to be a long gap where no activity is recorded on the site until the medieval period when evidence of agricultural activity was demonstrated on Area 5.

Archaeobotany

By Susan Ramsay

Introduction

This shortened report[1] details the processing, analysis and interpretation of carbonised botanical remains recovered from samples taken during the three phases of excavation at Maidenhill Farm but concentrates on the main areas of activity.

Methodology

Sample Processing

A total of 264 bulk samples taken on site were examined for the presence of carbonised botanical remains. The samples were subsequently analysed after processing by flotation or wet sieving for the recovery of carbonised remains, using standard methods and sieves of mesh diameter 1 mm and 500 µm for flots (and wet sieved samples) and 2 mm and 4 mm for retents from flotation. There was no indication from any of the samples that uncarbonised plant remains through waterlogging were present.

Macrofossil Analysis

Dried flots and sorted retents were examined using a binocular microscope at variable magnifications of x4 to x45. For each sample, estimation of the total volume of carbonised material >4 mm was made. For each sample, all the charcoal >4 mm was identified unless this proved to be too large an amount, in which case a known percentage of the total charcoal >4 mm was identified. All carbonised seeds were also identified and any other plant macrofossil remains were noted.

The testa characteristics of small seeds and the internal anatomical features of all charcoal fragments were further identified at x200 magnification using the reflected light of a metallurgical microscope. Reference was made to Schweingruber (1990), Gale and Cutler (2000) and Cappers *et al.* (2006) to aid identifications and vascular plant nomenclature follows Stace (1997).

Results and discussion

Area 1 - results

Three pits were excavated during the initial phase of excavation. No finds were recorded but their fills produced significant amounts of oak charcoal, suggesting that these features could be postholes with the remains of posts burnt *in situ,* rather than midden or storage pits. The fill of pit 30002/30001, produced significant amounts of alder and hazel charcoal, with large amounts of hazel nutshell fragments, suggesting domestic occupation waste.

The fill of pit 044 contained a more mixed assemblage of alder, hazel and oak, together with a few grains of carbonised barley. A nearby deposit (037) also produced a similar assemblage of alder, hazel and barley grains with traces

1 The full report forms part of the site archive.

of hazel nutshell, suggesting midden waste. A fragment of hazel charcoal from pit 044 it produced a radiocarbon date of 1407-1260 cal BC (SUERC-90653), suggesting that domestic occupation of the site most likely took place during the late Bronze Age.

At the southern end of the site were three possible hearths 028, 033 and 036. These contained similar carbonised assemblages that were dominated by hazel and alder charcoal, although oak charcoal was also identified in pit 033. However, all three features produced very large quantities of hazel nutshell, suggesting that they contained domestic hearth waste, with possible evidence for hazel nut processing. A sample of hazel charcoal from fill 033 produced an early Neolithic radiocarbon date of 3763 to 3648 cal BC (SUERC-90651) while a similar sample from fill 034 also produced a near contemporary early Neolithic radiocarbon date of 3712 to 3641 cal BC (SUERC-90652). The hearths were situated in the vicinity of pit 30002 and the carbonised assemblages from both the pit and hearths are very similar.

Area 1 – discussion

Early Neolithic pottery and a radiocarbon date suggest that the occupation of the site is early Neolithic. However, pit 044 indicates there was also occupation in the middle Bronze Age. In general, the pit fills often contained a significant proportion of oak charcoal, together with alder and hazel and hazel nutshell. The presence of large amounts of oak often suggests that structural remains are contained within the fills of a feature but if the features are Neolithic, as the radiocarbon dates suggest, oak would then still have been a very common component of the local woodlands and so would have been readily available as fuel for general domestic fires. Abundant finds of hazel nutshell are also suggestive of Neolithic dates for many of the features and the quantities involved suggest some form of processing of the nuts was taking place on site. A few carbonised barley grains were recorded from this site but these could date from the Neolithic period onwards, since barley has been a significant crop in Scotland throughout the prehistoric and historic periods. The only evidence to suggest some form of medieval or later activity on this site comes in the form of a single carbonised flax seed, as flax is rare in the Scottish archaeobotanical record until the early medieval period (Dickson and Dickson 2000).

Area 6 – results

This area was located on a mound in the southern part of the site (Figure 4).

Hill features

On the south-western slope of the mound was a group of features, mainly comprising pits. Five of them (400, 402, 405, 409 and 411) were particularly large, and pits 405 and 409 had been partially excavated into the bedrock. Their fills produced very similar carbonised assemblages of alder, hazel and oak charcoal with hazel nutshell. A sample of hazel charcoal from fill 406 of pit 405 returned a radiocarbon date range of 3627 to 3373 cal BC (SUERC-90657) spanning the end of the early Neolithic and into the middle Neolithic.

Pit 405 was lined with stones along its longest sides and there was a suggestion that it might be the remains of a cist burial, even though no bone fragments were recorded. The carbonised assemblages from this pit are more suggestive of domestic hearth waste than a burial, as cremations do not usually contain carbonised plant remains. It was also considered that pit 411 might also be the remains of a cist, since it too had a stone lining and produced small fragments of unburnt bone. However, its fills (412 and 415) produced mixed charcoal assemblages, together with numerous fragments of hazel nutshell. These assemblages are more consistent with hearth waste rather than the remains of a cist fill. A sample of alder from 412 produced a radiocarbon date range from the early Neolithic into the middle Neolithic of 3622-3371 cal BC (SUERC-90661).

Pit 400 contained some fragments of pottery and its fills 401, 428 and 429 produced mixed charcoal assemblages dominated by hazel but with alder, oak and occasionally willow also present together with numerous fragments of hazel nutshell. These assemblages are similar to those recovered from the large pits described above. The final large pit (402) with fill 419 produced smaller amounts of alder, hazel and willow charcoal, but no hazel nutshell.

A further six smaller pits were also located within this pit group (390, 392, 396, 398, 404 and 407) and most, apart from 392, produced fragments of pottery. The fills generally contained mixed charcoal assemblages with hazel the commonest type present. Fill 393 of pit 392 and fill 408 of pit 407 also produced large numbers of hazel nutshell fragments. These fills are consistent with domestic hearth waste and the large amounts of hazel nutshell might suggest a Neolithic date for these features. A shallow pit 399 dug into bedrock produced hazel charcoal that was radiocarbon dated to the early Bronze Age, 2465 to 2286 cal BC (SUERC-90656).

To the south-west of pit 404 was a thin deposit (395) that contained the remains of a Beaker vessel. The carbonised assemblage from it consisted of small amounts of alder and hazel charcoal together with fragments of hazel nutshell. On the opposite side of pit 404 were two postholes 424/420 and 425/426 that produced only small amounts of hazel charcoal and hazel nutshell and do not appear to contain evidence for posts burnt *in situ.*

To the north-east of the above pit grouping was a further pit 388/389 and a linear feature 387/386. The fill of pit 388, produced a large amount of oak charcoal with some birch also present. During excavation, four small fragments of iron were recovered and so this may be a pit containing the remains of metalworking waste. The linear feature 387 produced only small amounts of oak charcoal.

Lower features

A number of other features were located on the lower-lying ground to the south-west of the mound, including eight pits (437, 438, 442, 444, 448, 452, 454 and 461), three deposits (446, 451 and 460), and four postholes (433, 434, 435 and 440).

Pit 12502/12501 was located during the second phase of excavation and produced sherds of Neolithic pottery. Its fill contained significant amounts of oak charcoal, traces of birch charcoal and hazel nutshell. Although oak is often indicative of structural remains, the likely Neolithic date and additional presence of birch and hazel nutshell, suggests that this material is domestic hearth waste. Pits 437, 454, and 461/462 had charcoal assemblages entirely composed of oak charcoal, with large quantities of oak in the latter. This material could be structural, but the presence of Neolithic pottery within pit 12501 might suggest these are earlier prehistoric waste pits.

Pits 438, 442 and 444, produced only small amounts of charcoal, which might be domestic hearth waste but could also be residual from general domestic hearth waste scattered across the site.

Isolated pit 452/453 was unusual in having a significant amount of both elm and hazel charcoal present. Elm is unusual in charcoal assemblages from Scotland, although it tends to be more common during the earlier prehistoric period. It is difficult to say whether this assemblage represents waste from a specific activity or whether it is just an unusual deposit of hearth waste.

Pit 448/447 was larger than the rest and was located further from the main group in the south-western part of the site. Burnt bone was recorded from its fill, which also produced very large quantities of charcoal, with over a hundred fragments each of alder, birch and hazel identified, together with smaller quantities of oak. However, the most notable finds from it were large amounts of carbonised cereal grain. Barley and cf barley were the commonest types identified, although small amounts of oats were also recorded. This mixed cereal assemblage suggests a medieval or later assemblage, unless the oats were simply weeds in a barley crop rather than evidence of a crop in their own right.

Deposit 446 was truncated by pit 438 and produced a mixed charcoal assemblage of hazel, oak and elm, with traces of hazel nutshell. A manganese rich deposit (451) was thought to be anthropogenic in origin as the charcoal assemblage produced large quantities of oak charcoal, with small amounts of alder and hazel also present, and traces of hazel nutshell. A sample of hazel charcoal from this deposit was radiocarbon dated to the early Neolithic, 3711-3644 cal BC (SUERC-90662). The abundance of oak charcoal might suggest an industrial or a structural original for this deposit. The final deposit in this area was 460, which contained

only small amounts of alder, hazel and willow and so probably represents scattered domestic hearth waste.

A group of four postholes 440/430, 433/431, 434/432 and 435/441 were located close to pit 448. Their fills all contained small amounts of oak charcoal, together with fragments of hazel nutshell. The quantities of charcoal recovered are not sufficient to suggest the burning of posts *in situ* and the charcoal is more likely to represent the remains of hearth waste that has trickled down into the posthole fills.

Area 6 – discussion

The DSR suggests that several of the hill features may be cist burials, even though finds of bone were scarce. The archaeobotanical analysis of these features produced mixed charcoal assemblages with hazel nutshell, suggesting the presence of hearth waste. Some form of ritual deposition of this hearth material into cist burials cannot be ruled out but the author has not found the presence of carbonised plant remains to be a common component of Scottish cist burials. The fills of other pits in the area produced similar carbonised assemblages to those recorded from the putative cists and so it would be more likely that they all represent hearth waste from domestic hearths. Large quantities of hazel nutshell were recorded from some of the pit fills, suggesting an early to middle Neolithic date for many of these features as is collaborated by three radiocarbon dates from these features. One radiocarbon date indicated the use of hazel in the early Bronze Age.

Pits from the lower terrace of this site often had oak as the main component of their charcoal assemblage, but other types were generally present as well. Elm was also noted in a couple of contexts and this wood type is more commonly found in earlier prehistoric rather than later sites. As discussed above, oak can be an indicator of structural remains but the mixed nature of the assemblages from Area 6 suggests it is being used for fuel and so suggests an earlier prehistoric/ Neolithic date for many of these features.

Only one pit 448 produced evidence for cereals in this area, and it also contained very large quantities of charcoal. Barley and cf barley were the commonest types identified, but with small numbers of oat grains also present. As before, a mixed cereal assemblage, with oats, suggests a medieval or later date for this feature but the low quantities of oats involved could also indicate that they were weeds within a barley crop. The large numbers of cereals involved suggest loss during the final stages of drying during processing.

Area 10 – results

This area produced a very large number of archaeological features that were divided up into a series of groups by interpretation.

Posthole alignment in the north-east

An alignment of nineteen postholes ran NNW/SSE (Figure 7) but only fifteen of these were analysed for the presence of carbonised remains (085, 086, 089, 094, 122, 123, 124, 125, 176, 179a, 181, 183, 188/189a, 190 and 195). Of these, postholes 086, 123, 176, 179a, 181a, 183a and 190 did not produce any charcoal remains. The remaining postholes produced only small amounts of mixed charcoal, with the fill of posthole 188 containing larger amounts of predominantly hazel charcoal. None of the postholes shows evidence for the original post having been burnt *in situ*.

North group

The group contained a range of pits, a posthole and a series of deposits. The largest pit 095/254/255 (Figure 7) contained three fragments of prehistoric pottery. Its fills both produced substantial quantities of oak charcoal, but the upper fill (254) also contained a large quantity of alder charcoal. This suggests two episodes of deposition. Oak on its own may suggest structural remains but the mix of oak and alder in the upper fill, together with the presence of prehistoric pottery suggests that this is simply domestic hearth/midden waste.

Pit 259/260 contained fragments of burnt bone and pitchstone. Its fill produced large amounts of oak charcoal, with smaller amounts of hazel charcoal and hazel nutshell also present. As discussed previously this suggests domestic hearth waste. A sample of hazel charcoal produced an early Neolithic date range of 3908 to 3702 al BC (SUERC 90704). Pit 296/297, contained only traces of alder and oak charcoal, whilst the smallest pit 107/211 produced only traces of oak charcoal.

A number of deposits were also recorded from this area. An upper deposit (278) contained small amounts of hazel, oak, willow and elm, with traces of hazel nutshell. The presence of elm within the upper deposit suggests it could be early prehistoric in date and represent domestic hearth waste No carbonised remains were produced from deposit 283 beneath, and the lowest deposit (282) contained only a trace of oak charcoal.

A linear feature 215/247 (Figure 7) was perpendicular to the pit alignment to the west. Pits 259 and 296 lay to the north of it, pit 107 lay to the south and pit 095 truncated it. The fill of the linear feature comprised large amounts of oak, with smaller amounts of alder and hazel, with fragments of hazel nutshell. This assemblage is similar to the fills of pit 095 and 259 and so some mixing of material may have occurred between the fills of these features. A sample of hazel charcoal from the fill of the linear feature returned an early Neolithic radiocarbon date range of 3941 to 3713 cal BC (SUERC 90700). Other deposits within this area include 108, which has a similar assemblage to that of 215 and 095, and 216 which only contained traces of indeterminate charcoal.

A gravelly clay surface (087 and 293) was truncated by linear feature 215 and pit 259. These surfaces produced very similar assemblages of alder, hazel and oak charcoal, but again some mixing of deposits may have occurred.

Middle group

This group comprised eight pits (093, 096, 103, 105, 110, 113, 265 and 291), two postholes (207 and 209), and five stakeholes (294, 298, 300, 302 and 304) (Figure 7).

The largest pit 093 contained four fills 111, 178b, 179b and 180b and a number of fragments of possible Neolithic pottery were also recorded. Fill 179b contained the largest amount of charcoal with oak, hazel and hazel nutshell. Traces of alder charcoal were identified from 111 and traces of oak in 180b. This feature was thought to be a hearth/fire-pit, possibly located within the centre of a structure formed by the posthole alignment to the west. A sample of hazel charcoal from 179b was radiocarbon dated and it produced an early Neolithic date range of 3703-3642 cal BC (SUERC-9066).

Pits 096, 103 and 113 were located immediately east and north-east of pit 093 and also produced fragments of prehistoric pottery. The fills of pit 096/183b/228 produced a carbonised assemblage of alder, hazel, oak and elm charcoal, together with traces of hazel nutshell. The fill of pit 103/112 contained very large quantities of oak charcoal, but with alder, hazel, willow and elm also present. The fill of pit 113/110 contained a mixed charcoal assemblage of birch, hazel, oak, willow and a single fragment of hazel nutshell. The carbonised assemblages from these pits are all consistent with prehistoric domestic hearth waste and suggest that there may be a structure associated with them.

Pit 265/266 was located to the north-west of pit 093 and its fill was dominated by large amounts of hazel charcoal and hazel nutshell, with smaller amounts of oak, willow and alder charcoal also present. As with the previously discussed pits, this assemblage is consistent with prehistoric hearth waste.

Two postholes 207/208 and 209/210 were also located in this interior grouping but their fills only produced traces of oak charcoal and do not provide any evidence for posts burnt *in situ*. Five stakeholes were located between pits 093 and 265 and were thought to be related to the possible structure in this area. Although hazel charcoal was present in all the stakehole fills, alder and oak were also present to a greater or lesser extent in some of the fills and so it is unlikely that this material represents the remains of stakes burnt *in situ* and the charcoal within the fills is more likely to be the remains of scattered hearth waste.

South group

This group comprised a series of pits and postholes to the immediate south of the middle group.

Pit 090/198 was located towards the middle of this group of features and contained a fill that was very charcoal-rich, with large quantities of alder, hazel and oak charcoal present, together with smaller quantities of elm and hazel nutshell. This species assemblage has been recorded elsewhere on the site and points to earlier prehistoric hearth waste. To the south-east of pit 090 was pit 118/182b whose fill contained

a mixed charcoal assemblage consistent with prehistoric hearth waste.

To the north-west of pit 090 were pits 101/193 and 205/098. The fill of pit 101 was initially thought to be waste from a nearby hearth but it is an elongated linear feature. The carbonised assemblage consisted of large quantities of oak charcoal together with a single fragment of hazel charcoal. The abundance of oak might suggest that a short length of fence or a windbreak could have been located within the feature. The fill of pit 205 produced only small amounts of alder and hazel charcoal, which could be scatter from elsewhere in the grouping.

Three postholes (099, 100 and 160/214) were also located in this group but only the fill of posthole 160 produced significant amount of charcoal, dominated by oak charcoal but the addition of alder suggests that this is also hearth waste rather than evidence of burnt structural material.

West group

This western group of features comprised a series of seven pits. Pits 082, 083, 126 and 128 formed an arc to the south-west, pits 119 and 121 formed a corresponding arc to the south-east and pit 081 lay to the north-west.

The pits 082, 083, and 126 all contained significant amounts of hazel charcoal, with traces of elm and hazel nutshell the only other carbonised material present. Prehistoric pottery, possibly dating to the Neolithic, was recovered from pit 082. These assemblages could be the remains of burnt hazel wattle, although hearth waste cannot be ruled out. Hazel charcoal from the fill of pit 082 was radiocarbon dated to between 3655 and 3380 (SUERC- 90664), the early Neolithic to the middle of the middle Neolithic. The fill of pit 128/132 produced only small amounts of hazel, alder and hazel nutshell, suggesting scattered hearth waste.

The fills of the south-eastern pits 119/137 and 121/186a contained only small amounts of mixed charcoal and hazel nutshell and so probably represent the remains of scattered hearth waste.

The fill of north-west pit 081/080 contained significant amounts of charcoal, most of which was identifiable as alder, but with hazel, oak and hazel nutshell also present, again indicating hearth waste.

South-west group

This group comprised four pits (062/074/075, 063/070/071, 065/072/073 and 93003/93004) that were clustered together to the south-west of the above structural groups. The fills of pit 062 contained a significant amount of hazel charcoal with traces of willow and hazel nutshell. The fill of pit 063 also produced a carbonised assemblage that solely comprised hazel charcoal. A very large quantity of hazel charcoal, together with some oak and traces of hazel nutshell was recovered from the fill of pit 93003. The abundance of hazel charcoal in these pits might suggest the remains of burnt hazel wattle. However, the fills of pit 065 produced a more mixed charcoal assemblage consistent with domestic hearth waste.

Outlying features

A total of 32 contexts were designated as outlying features, with no apparent relationship to one another.

Two postholes with particularly large concentrations of oak charcoal included the fill of posthole 076/077 and the fill of posthole 135/136. These assemblages suggest burning of oak posts *in situ.* Large quantities of oak charcoal were also found in the fill of fire-pit 069/066, the fills of pit 092/204 and pit 243/241. Again, this might represent structural material but, as many of the contexts across the site appear to be early to middle Neolithic in date, it is also possible that this material is simply hearth waste from this early period of occupation.

Large quantities of hazel charcoal were recorded from the fills of pits 134/127, 109/139, 234/235 and particularly pit 229/237. There is no indication that any of these features are linked to structures and therefore, although hazel is often linked to the remains of wattle, it seems more likely that this material is the remains of hearth waste. The fill of pit 109/139 also contained very large quantities of hazel nutshell fragments as did the fill pit 225/226. These assemblages may indicate that the hazel nuts were being processed by roasting in order to make it easier to remove the shells and to make the nuts more palatable. Fill

226 also contained a significant quantity of alder and hazel charcoal. These two types were also present in significant quantities in the fills of pits 223/224 and 149/227. These specific charcoal assemblages could suggest that these three pits may be contemporary. Radiocarbon dates from a sample of hazel charcoal from the fill of pit 149 indicates it was in use during the latter part of the middle Neolithic, from 3330 to 3021 cal BC (SUERC-90699). A secondary deposit (169) within the group of features also provided a radiocarbon date from alder charcoal. The date range of 3786 to 3661 cal BC (SUERC-90665) indicates activities in the early Neolithic period. None of the other contexts in this group produced significant amounts of charcoal or any unusual carbonised finds.

Area 10 – discussion

Area 10 was thought to provide evidence for the remains of prehistoric settlement, although a posthole alignment was the only clear evidence for structural remains. The carbonised remains from the fills of these postholes did not provide any evidence for posts burnt *in situ* and so it is not possible to suggest what wood was used for this structure.

Early and middle Neolithic pottery was recorded from Area 10, which gives a preliminary date for some of these features. However, if this is a Neolithic structure as the radiocarbon dates indicate, then it is unusual in providing no evidence for cereals on the site. It would be expected that a settlement that had been inhabited on a permanent basis would have left at least traces of carbonised grain in the archaeobotanical record. Hazel nutshell is present in many of the pit fills etc. in small amounts but pit 109/139 was the only one to produce extremely large numbers of hazel nutshell suggesting some degree of processing was being undertaken. However, this pit 109 lay outside the groups of features thought to be structural in origin and so does not provide evidence for food preparation in structures.

Mixed charcoal assemblages are generally recorded from this area, with oak, once again, being one of the commonest types present. Elm also forms a component of a few assemblages, perhaps lending further weight to the suggestion that the features from this area are earlier prehistoric in date. All the radiocarbon dates from this area indicate an early to middle Neolithic date for its occupation and use.

Area 11 – results

On this area of bedrock outcrop was a series of nine postholes, the majority of their fills contained either no charcoal or only very small quantities. Only the fill of posthole 268/155 produced significant quantities of oak charcoal and so may contain evidence for a post burnt *in situ.* The fill of posthole 324/325 produced a sample of hazel charcoal which was radiocarbon dated to 2199 to 2032 cal BC (SUERC-90705), suggesting it was associated with early Bronze Age activities. Likewise the fill of posthole 333/334 produced a slightly earlier early Bronze Age date range of 2332 to 2144 cal BC (SUERC-90706) from alder charcoal. A sample of alder charcoal was also dated from the fill of posthole 339/340. It produced a date range of 2201 to 2036 cal BC (SUERC-90707), also from the early Bronze Age.

Other features in Area 11

Three pits (271, 308, 309) in this area (Figure 8), were located to the west and north of the rock outcrop. The fill of pit 271/272 contained only oak charcoal, but although the quantities were significant, it is not possible to say whether this is evidence for structural remains as oak seems to have been used as domestic fuel over much of this site during the prehistoric period. The fills of pit 308/319/332 produced significant amounts of hazel charcoal, with only traces of oak and hazel nutshell. The fill of pit 309/314 produced only traces of oak charcoal. This material is probably hearth waste rather than structural material.

A series of linear features (335, 343 and 345) (Figure 8) were located to the north of the bedrock outcrop but these features did not contain any significant carbonised remains.

In the north-west of the site were two further pits (306 and 315). The fill of pit 306/307 (Figure 8) contained only relatively small amounts of oak charcoal. However, the fill of pit 315/318 contained a very significant carbonised assemblage that contained large amounts of oak and elm charcoal, with smaller amounts of alder, birch and hazel also present. This diverse assemblage indicates hearth waste but the dominance of oak and elm suggests an early prehistoric date for this feature.

A further four features were located in the south-west of the site. Pits 144, 145 and 147 produced only traces of mixed charcoal whilst the fill of a stakehole (151/150) did not produce any carbonised remains.

A curvilinear ditch (347/354d) (Figure 8) produced single fragments of flint and chert. The fill of the ditch contained a mixed charcoal assemblage of alder, hazel, willow and hazel nutshell, which suggest scattered hearth waste had become incorporated into it. Two early Bronze Age radiocarbon dates were produced from its fill. Willow charcoal provided a date range of 2461 to 2295 cal BC (SUERC-90708) and hazel charcoal from another sample indicated a time period of 2113 to 1920 cal BC (SUERC-90709) for activities associated with the ditch.

Area 11 – discussion

This are also showed some evidence for structural remains in the form of a series of postholes cut into a rocky outcrop. However, as previously, these posthole fills did not produce clear evidence for posts burnt *in situ*, although a single posthole 268 contained significant quantities of oak charcoal and so may provide some evidence for oak posts having been used to construct this feature.

As with Area 10, many of the pit fills contained some evidence of hearth waste but the quantities involved were generally small. As with Area 10, no evidence for cereal grains was recorded from this site. The radiocarbon dates from this area indicate that activities were taking place during the early Bronze Age.

Other areas

Area 2

A mixed assemblage of fuel was recorded from the hearth and associated pit in this area including an abundance of hazel nutshell fragments. There is some evidence for *in* situ burning but the lack of structural indications may suggest that the hearth/burning episodes do not represent permanent settlement. In this case

Area 3

The charcoal assemblages from this area were dominated by oak but little else was present to indicate the function of the pits examined. A single radiocarbon date suggests human activity was present in the late Mesolithic during the period 4707–4555 cal BC (SUERC-90654).

Area 5

The pit fills and deposits from this area tended to have charcoal assemblages dominated by alder, hazel, with several fills also including substantial numbers of carbonised cereal grains. The cereal assemblages contained a substantial proportion of unidentifiable grains, suggesting either high temperatures or repeated burning, which broke down the structure of many of the grains. The main identifiable cereal type present was barley, although the poor preservation meant that none of the barley grains were obviously attributable to the hulled variety. In addition, small quantities of carbonised oats were also recorded from most of the contexts containing cereals. Oats tend to become much more common in mainland Scottish archaeobotanical contexts from the medieval period onwards but they can also occur occasionally as crop weeds during earlier periods. The single radiocarbon date for this area suggested that activities were early-medieval (eighth to tenth century AD). No chaff or other crop weeds were recorded from any of the cereal containing contexts and so these remains may suggest loss during the final stages of cereal processing.

Area 7

The charcoal assemblages recorded from fire-pits and/or pits are similar, and are thought to represent continuing hearth waste with oak, hazel and willow present in all cases. These charcoal types might suggest a Neolithic date for these features.

Area 8

A hearth and possible waste pit had similar carbonised assemblages dominated by oak. Although structural remains cannot be ruled out, it is clear from this site as a whole that oak is being used extensively for fuel during the prehistoric period.

Area 9

Further hearths and pits were located in this area but the quantities of charcoal recovered were

much less than in Areas 7 and 8. However, oak was not the commonest type present. A late Mesolithic date was returned of 4945–4788 cal BC (SUERC-90663).

Soils analysis

Clare Wilson[2]

Introduction

Multi-element analysis was used to help to determine if there were discernible differences between soil collected from and within two pits: pit 400 and the stoned-lined pit 405 from Area 6. The aim was to ascertain whether the pits were related to the interment of human remains or whether they had been used for other anthropogenic activities.

12 samples were sent to the University of Stirling for multi-element analysis using X-ray Fluorescence (XRF). These samples were collected from pits identified during the archaeological works (Figure 1). Three further samples were collected as controls away from the archaeological features.

Areas that have seen past human occupation and settlement have a propensity to have an increased intensity of certain elements within the soil such as Zinc (Zn) associated with Lead (Pb) and Tin (Sn) that could be related to metal working (Cook *et al.* 2005). Elevated levels of Phosphorus (P), Barium (Ba) and Manganese (Mn) can be linked to previous site activity such as soil augmentation for agricultural purposes and the disposal of organic waste. Similarly, the analysis of Calcium (Ca), Strontium (Sr) and Potassium (K) are also examined to determine and interpret sites thought to have been utilised as human settlement (Entwistle *et al.* 1998). Increased concentrations of Iron (Fe) and Manganese (Mn) can be related to the application of pigments to dwellings or butchery areas (Entwistle *et al.* 1998; Parnell *et al.* 2002; Wilson *et al.* 2008). However, this can also indicate that there has been an increased level of waterlogging in the soil (Lindbo *et al.* 2010). Multi-element soil analysis could help identify spatial patterns within a study area and elucidate whether it was likely to have been used for human and/or animal activity in or around the locale or whether it has been affected by localised landscape changes.

Methodology

12 bulk soil samples were collected from a gridded pattern across the pits (Figure 9). Ten elements commonly identified in increased intensity at archaeological settlement sites were considered for statistical analysis (Cook et al. 2005; Entwistle *et al.* 1998; Parnell *et al.* 2002; Wilson *et al.* 2008).

Pellets of 5 cm diameter were prepared by pressing approximately 10 g of air-dried soil, previously sieved to 2 mm, to a pressure of 12 tons using a Perkin-Elmer press. Element concentration determination was performed with XRF spectrometry using an Energy Dispersive Thermo Scientific NITON handheld XL3 Series analyser. Five replicates were measured per sample for quality control.

Basic statistical analysis and Analysis of Variance (ANOVA) was performed using MINITAB 17 statistical analysis software to test the samples from the control areas against the samples from the pits to determine whether a relationship was identifiable between elemental concentrations. Tukey's 95% simultaneous confidence intervals and Pairwise comparisons were carried out between groups (controls and pits 400 and 405).

Results

The XRF provided details of the concentration of 36 chemical elements in the samples. An initial examination of the data showed that most of these elements appeared in very small concentrations; therefore, ten elements displaying increased concentrations were selected for statistical analysis. The subgroup of elements comprised Barium (Ba), Strontium (Sr), Zinc (Zn), Iron (Fe), Manganese (Mn), Calcium (Ca), Potassium (K), Phosphorus (P) and Sulphur (S), were chosen to indicate the variability of the inorganic composition the soil. Additionally, Aluminium (Al) identified as the most abundant element in the samples was also chosen to determine if initial soil composition was different at the sample locations.

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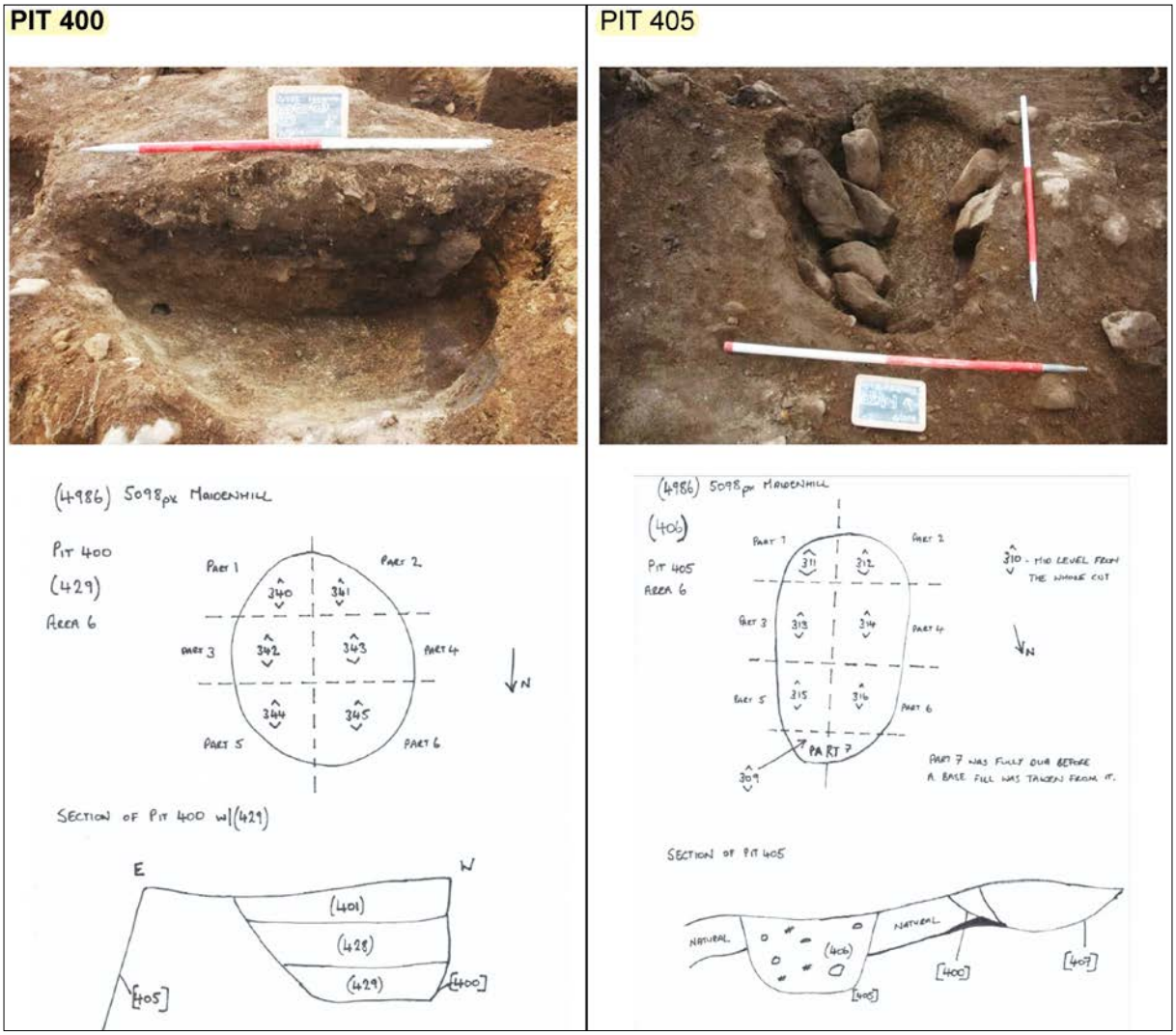

Figure 9: Image and schematic of the sample location in pit 400 (left) and pit 405 (right) in Area 6. Pit 400 samples: 340-345 and pit 405 samples: 311-316.

Basic statistical analysis (Table 2) of the samples indicated that there was higher concentration of P in the pit samples that in the controls, similarly there were higher concentrations of Mn, Ca, S and Ba. Lower concentrations of Fe, Zn and Sr were identified in the pit samples when compared to that of the controls. Al shows high concentrations in all samples with little variability.

Figure 10 displays the mean concentration of elements in the samples and controls, excluding Fe and Al as these elements obscured the other elements. K exhibits the highest concentrations in the samples and controls, with P displaying higher levels in pit 400, while Ca has the highest concentrations in pit 405.

It is evident from Figure 11 that there is a higher concentration of P in samples pit 400 (samples: 340 345) that in the other sample, with sample 344 from part 5 of the sampling grid (Figure 9) having the highest concentration. The highest concentrations of Ca are exhibited in pit 405 (311-316), with samples 312, 314 and 316 all having similar levels, all from the right hand side of the pit.

The results of the ANOVA testing are displayed in Table 3. It is evident that there is a significant difference in the elemental concentrations of Mn in both pit 400 and pit 405, while Ca and Ba concentrations in pit 400 are significantly different to that of the Controls. ANOVA also identified that there was a significant difference in the concentration of Al and P in pit 405.

Location		Ba	Sr	Zn	Fe	Mn	Ca	K	Al	P	S
Samples	Mean	602.16	64.92	75.4	68617.58	2272.45	5915.59	16449.05	131295.65	4176.92	986.3
	SD	73.91	7.73	9.173	2960.14	472.24	933.41	461.44	7394.08	1407.31	238.19
	Min	517.22	54.43	57.68	64963.73	1639.05	4312.42	15708.09	120279.86	2658.12	729.54
	Max	793.16	80.26	91.42	74602.76	3216.35	6988.66	17114.08	143747.08	6374.83	1655.16
Controls	Mean	534.76	67.45	78.94	72351.1	1223.55	4122.43	14834.71	112588.51	3153.16	1110.1
	SD	56.82	24.5	13.19	10480.47	483.782	1380.49	2753.33	16656.92	851.77	228.72
	Min	477.58	40.27	67.61	65143.18	691.13	2746.9	11661.78	93376.03	2183.37	954.27
	Max	591.22	87.83	93.42	84373.78	1636.19	5507.81	16595	122978.13	3779.99	1372.68

Table 2: The mean, standard deviation (SD) minimum and maximum elemental concentrations in the samples and controls (ppm).

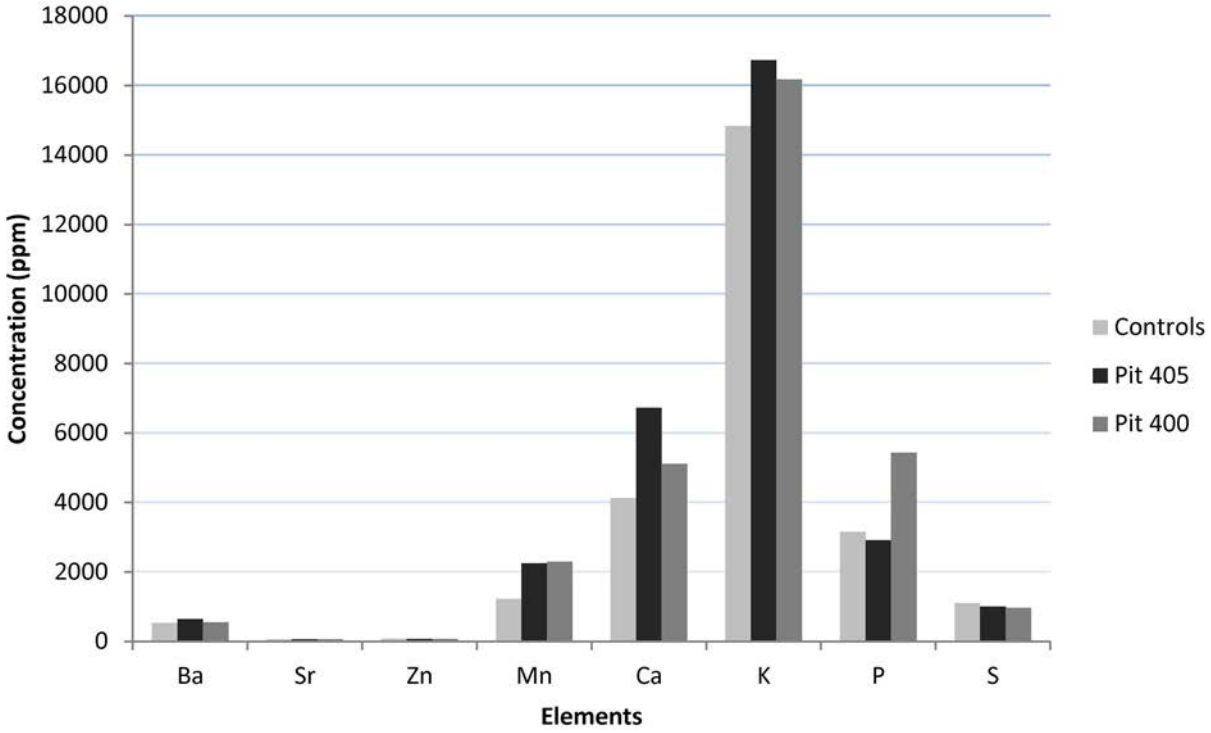

Figure 10: Mean trace element concentrations identified in the three locations: pit 400, pit 405 and Controls (Excluding Fe and Al).

Location	Element									
	Ba	Sr	Zn	Mn	Ca	Al	K	P	Fe	S
Pit 400	0.04	0.99	0.96	0.03	0	0.09	0.09	0.84	0.79	0.68
Pit 405	0.87	0.89	0.76	0.02	0.14	0	0.28	0	0.32	0.83

Table 3: Results of the ANOVA where pit 400 and pit 4025 were tested against the controls samples. Statistically significant differences (p=<0.05) are in bold indicating the elemental concentrations are significantly different between the control and some samples from the pits.

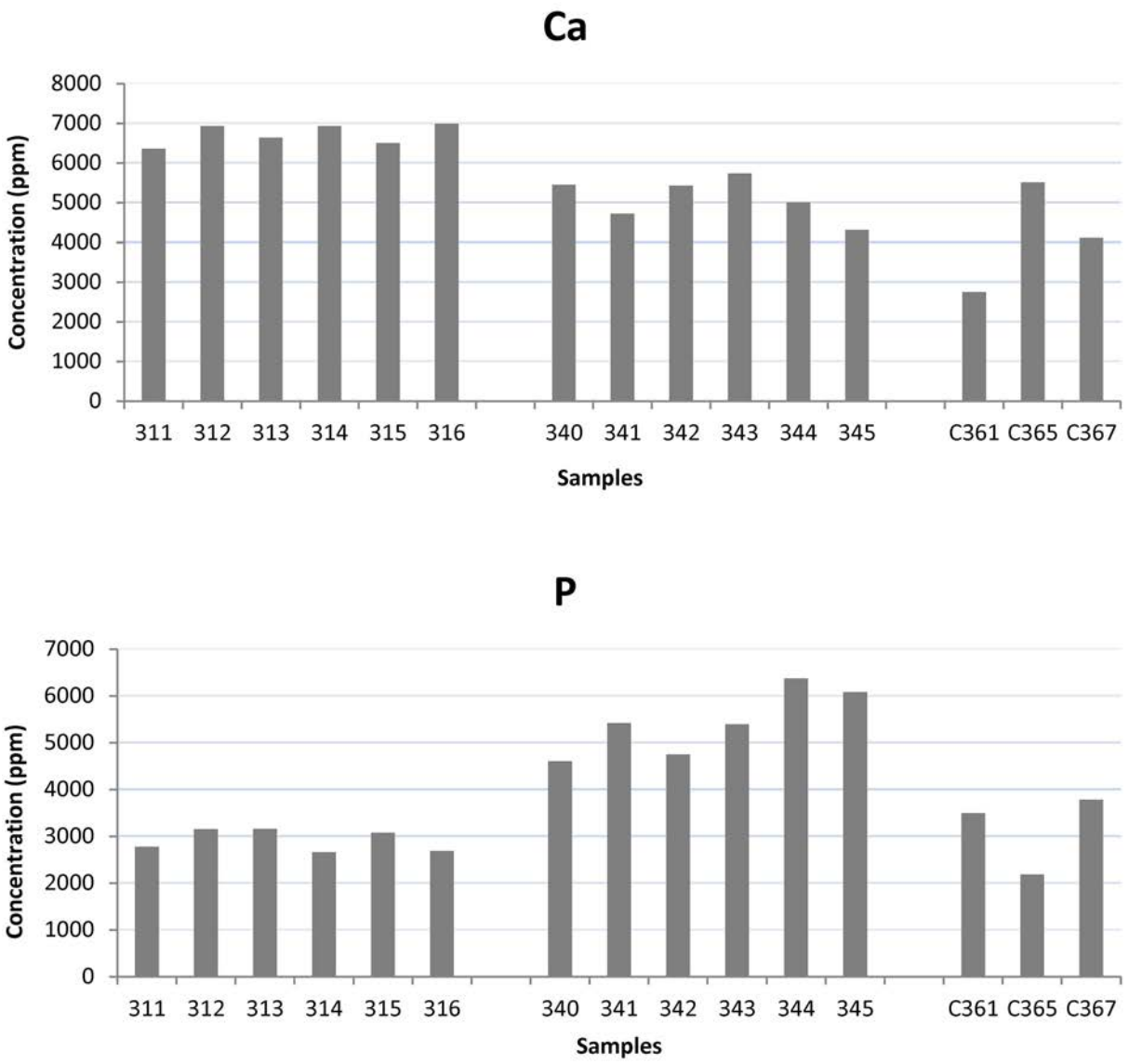

Figure 11: Concentrations of P and Ca in the samples from pit 400, pit 405 and the Controls.

Interpretation

The multi-element analysis of the control samples provided a chemical signature that could be compare to the multi-element signatures in pits 400 and 405. This analysis identified that the increased levels of K in all samples is due to the underlying parent material of the soil, this being basalt derived from the Clyde Plateau Volcanic formation (digimap.edina.ac.uk). Additionally, the high levels of Al can also be attributed to local geology.

Variability in the levels of Fe and Mn in the samples and controls suggests there has been waterlogging of the soil, particularly in the pits, where there are higher concentrations. Increased concentrations of Mn are typically affected by prolonged reduction and oxidation conditions in soil (Lindbo e*t al.* 2010; Nierop *et al*. 2002; Van Breemen 1988) this being intensified by the digging of both pits. Significant differences identified by ANOVA confirm this.

The significant difference in the levels of Ba in pit 400 could relate to soil amendment, however there is also an increased level of Ca in this location, suggesting that there had been an addition of organic waste; possible 'middening'. The higher Ca may, therefore, relate to the possible addition of bone relating to the disposal of domestic waste. There was, however, no

significant difference in the increase of P in pit 400, while the increased level of Ca were confined to the right-hand side of the pit that may indicate deposition of Ca-rich bone in one particular area of the pit, thus a single deposit.

Increased concentrations of P are evident in pit 405, which was not evident in pit 400 with increased levels in several of the samples within a small area of the pit (samples 344 and 345). The location of the increased P concentrations, with ANOVA indicating significant difference to concentrations in the controls, suggesting P has been an augmentation to the soil possibly through the deposition of organic material (Entwistle *et al.* 1998).

Conclusions

From the multi-element analysis it is evident that there was significant difference in the element concentrations found in the control samples and those of the pits. It is apparent that the local basaltic geology had a significant effect on the composition of the soil with increased levels of Al and K identified in all sample locations.

Analysis of pit 400 indicated that there had been augmentation of the soil with significant difference in the concentration of Ca and Ba. A significant difference in the concentration of P, from that of the controls, was also identified in pit 405. The presence of Ca, Ba and P suggest that both pits had been used to the deposition of material, with bone being deposited into pit 400 and organic material into pit 405.

Multi-element analysis can therefore indicate that there had been disposal of materials into the pits; however the data obtained cannot determine whether the organic matter and bone are from a human inhumation or from midden material and the disposal of anthropogenic waste.

Cremated bone[3]

Iraia Arabaolaza

This report focuses on the cremated bone found across the site but particularly that from a stone-lined cist in Area 6 and a pit in Area 10.

Aims and objectives of analysis

The aims and objectives of the analysis were to:

- Identify the species and minimum number of individuals present in each deposit;
- Determine the age at death, as either adult or sub-adult and biological sex
- Identify any non-metric traits and pathological conditions to assess the health status of the individual(s) present
- To gain insight into the mortuary rituals practised within the locale
- Assess the material for radiocarbon dating and isotope analysis potential

Methodology

Bone was passed through three stacked sieves with meshes measuring 10 mm, 5 mm and 2 mm. All the bone over 10 mm and 5 mm was sorted into either specific or main skeletal elements where preservation allowed, catalogued and weighed. The bone material less than 5 mm was visually inspected for any diagnostic skeletal elements and catalogued and weighed. The bone fragments were then weighted, and the largest and smallest bone fragments were measured to identify the range of fragment size. Some fragments were recorded as unidentified; those that could not be identified as specific or main skeletal elements. The bone from the < 2 mm fraction was scanned and any diagnostic fragments recorded.

The bone was recorded in accordance with the British Association of Biological Anthropologists and Osteoarchaeologists/Chartered Institute for Archaeologists standards from human bone analysis (Brickley and McKinley 2004) and Historic Environment Scotland framework for the treatment of human remains in Archaeology (Historic Environment Scotland 2016).

3 The full Cremated Bone report from all the intevention of the project area can be found in the site archive

Preservation

The process of cremation is one of dehydration and oxidation of the organic component of the body. As it combusts the bone mineral re-crystallises resulting in the bone to shrink, distort and fracture (Holden *et al.* 1995). As a result, cremated bone is more friable and susceptible to mechanical damage than un-burnt bone.

All of the bone within the present assemblage was assessed for preservation based on two criteria, its overall surface appearance and the percentage fraction size of each deposit. Factors influencing preservation include original cremation ritual, collection, and burial of the deposit. Post-depositional processes including weathering such as freeze/thaw and/or water percolation can result in surface changes and fragmentation to the bone. Other factors influencing bone preservation include the archaeologist's skill during excavation and subsequent handling of the bones following removal from the soil. All these factors can result in further bone deterioration and fragmentation.

Determination of species

The distinction between human and animal bone is more difficult when the bones have been cremated. This is due to the cremation process shrinking, warping, fragmenting and changing the colour of the bone. It therefore changes the main characteristics in which the identification is based such as the size, morphology, density, surface texture and colour of the bone (Gejvall 1969; McKinley 1989). Animal bone does, however, have a greater ratio of cortical to trabecular bone and the trabecular bone structure itself is finer thus allowing a determination of species.

Animal bone was identified together with human remains in Area 10 pit 113.

Minimum number of individuals

The minimum number of individuals (MNI) was calculated by identifying any repeated skeletal element from the same side (left/right) or different age categories.

Age at death

The methods employed in the determination of age at death in cremated remains are the same as those used on inhumation: dental eruption and epiphyseal fusion in sub-adult remains and degenerative changes in auricular surface, pubic symphysis and sternal rib ends and cranial suture closure in adult remains (Bass 2005; Brooks and Suchey 1990; Buisktra and Ubelaker 1994; Lovejoy et al. 1985; Meindl and Lovejoy 1989; Scheuer and Black 2004).

Very few of these methods were applicable to the cremated bones discussed below, due to the lack of preservation and conservation of the skeletal elements. Consequently, the different age categories identified in these cremated remains were based largely in observations of the size and thickness of fragments of skull and of cortical bone. Even though these observations can be quite problematic, since the bone elements can shrink up to 15% during the cremation process two different age categories were identified on the cremated remains recovered in several contexts. Adult refers to individuals older than 18 years of age while sub-adult refers to any individual less than 18 years of age (see Table 4). This differentiation was based on the cranial size and thickness and cortical bone thickness.

Foetus:	< birth
Infant:	b - 3 years
Child:	3 - 12 years
Adolescent (AO):	12 - 20 years
Young Adult (YAd):	20 - 35 years
Middle Adult (Mad):	35 - 50 years
Old Adults:	50 years +
Sub-adult:	Refers to any individual less than 18 years of age
Adult:	Individuals of adult size and development where no more precise indicators of age are present

Table 4: Age categories (based on Buisktra and Ubelaker 1994).

Biological sex determination

The sex determination of human remains is based on pelvic and cranial morphology, and post cranial metric data. Only one individual within the assemblage was identified as to possible biological sex based on skull morphology due to poor bone preservation of the required elements.

Non-metric traits

The non-metric traits, as their name indicates are not measurable traits which are simply recorded

as present or absent. Some of them are related to genetic causes while others are thought to be linked with the environment, occupation and lifestyle. Consequently, they are generally used to identify and compare different genetic groups. No non-metric traits were identified during the analysis of these cremated remains.

Pathology

Evidence of disease or trauma can be identified on cremated bone although differential diagnosis is made more difficult due to the very fragmented nature of the remains. Surface erosion and none or partial survival of the appropriate skeletal element can also hinder diagnosis of any pathological condition. Studies have shown that certain disease groups have been recovered from cremated bone. These include trauma, degenerative joint disease, dental disease and infections including periostitis and osteomyelitis. All the bone within the assemblage was observed for evidence of pathology and then recorded as to possible cause.

Cremation process and mortuary practice

The colour of the bone from each context was recorded as this can give some indication on the temperature in which the bones were burnt. The colour range varies from brown/orange (unburnt), to black (charred; c. 300°C), blue and grey (up to c. 600°C) to the fully oxidised white (>c. 600°C) (Shipman *et al.* 1984). In this assemblage the bones were mostly white, although some light grey/ blue coloured bones were recorded too. This range indicates that the bones were subjected to a temperature between 645 - <940°C. Most of the grey/blue colours recorded were visible either in the trabecular or interior of the bone, although some were also recorded in the outer surfaces of some bones, which indicate their exposure to a lower temperature. Some of the bone recovered during the mitigation works (4986) had visible green/blue staining including fragments of long bone outer surface recovered as SF 52 (Plate 11). Some unidentified bone fragments recovered from samples present this staining too, SF 55 had some green staining at the apex of a tooth root and SF 154 skull fragment had staining visible in its exocranial surface. This could be indicative of copper alloy-based items in contact with the bone when burning (Buisktra and Ubelaker 1994).

Plate 11: Green/blue staining on long bone from SF 52.

Most of the cremated bone showed surface cracking, with transverse cracks and U-shaped noted along long bone shafts. Some warping was also noted on several bones. These cracks indicate that when the bone was cremated it was still “green” or covered with flesh (Buisktra and Ubelaker 1994). However occasional vertical splitting was also noted which is often indicative of the bones being dry or without flesh when the cremation occurred although irregular vertical splitting, as in this case, has also been noted in “green” bones (Buisktra and Ubelaker 1994).

The total weight of the cremated bone found in each context was just a fraction of the average weight of a complete adult cremation. As indicated by McKinley (1993) the average weight of a modern complete cremated skeleton is 1615.7 g for a female and 2283.5 g for a male. This suggests that all cremated bone found on this site had been re-deposited and move from their original pyre sites into pits and urns.

The smaller average weight of the bones as well as the absence or small number of some of the elements is a common trait in some Bronze Age cremation. It could be due to few causes: taphonomic agents, secondary deposition of the remains after their initial cremation and the possible selection of certain bones or by an unintentional avoidance of some fragments, maybe due to their size, when collecting them. McKinley also states the possibility of another (or more) “unknown location” for this bone, i.e. somewhere other than the burial place, or the pyre site. It compares with ethnographic evidence from the nineteenth century Aborigines, where cremated bone was given to mourners as keepsakes (McKinley 1997).

Animal bone fragments were identified in numerous deposits either recovered as small finds or samples. It is unknown whether these bones were part of the cremation process and burnt alongside the corpse or added later as part of deposition and burial or even later intrusion from an unrelated feature. No pyre sites were observed during excavation although recent research by Henriksen (2019) notes the lack of physical evidence for burning during reconstruction cremation experiments using pig carcasses.

Results of the analysis

Targeted excavations were carried out across seven different areas. Cremated bones were recovered either as small finds or samples from four of these areas: Area 5, 6, 10 and 11 (Table 5). The remains were mostly unidentifiable and considered either animal or human. However, some remains identified as possible human remains were also recorded in one of the features in Area 10 and from a cist burial 411 in Area 6 and these are described in detail here.

Located in Area 6 on a large mound of bedrock, stone-lined cist 411 contained two fills 412 and 415. A total of 1.7 g of fragments of burnt bone, all of them recovered as small finds, were collected from 412 as there were no bone remains from the external fill 415. Human remains of at least one individual were identified in SF 111 and SF 112. All the bone was either cream or light brown in colour with some surface cracks. The only skeletal element represented were joint surfaces of unidentified long bones of an adult individual. Due to the fragmentation of the remains, and the lack of any sexual dimorphic bones, the sex of the remains was undetermined. SF 113 and SF 132 were both unidentified and thus considered either human or animal. Further remains identified as animal bone were also recovered from the northern part of the cist as sample 317. Fragments of prehistoric pottery, mostly retrieved from the southeast end, and a worked flint were found in this same context (412). Early Neolithic dates were obtained from alder charcoal from this context.

Area	Find	Sample	Context	MNI	Age and Sex	Animal bone present
	8		10	1	Adult, sex?	
	10		112	1	Undetermine, either animal or human	
	11		111	1	Undetermine	Y
	12		114	1	Undetermine, either animal or human	
	14		115	1	Undetermine	
	31		172	1	Undetermine, either animal or human	Y
	52		110	1	Adult, possible male?	
	55		110	1	Adult, sex?	
	68		Unstrat	1	Sub-adult, sex?	
	77		266	1	Undetermine	
Area 6	111		412	1	Possible adult, sex?	
Area 6	112		412	1	Undetermine	
Area 6	113		412	1	Undetermine, either animal or human	
	129		410	1	Undetermine	
Area 6	132		412	1	Undetermine, either animal or human	
	135		410	1	Undetermine	
	153		446	1	Undetermine	
	154		436	1	Undetermine, either animal or human	Y
	155		445	1	Undetermine	
	156		447	1	Undetermine	
Area 10		46	73	1	Undetermine, either animal or human	
		48	75	1	Undetermine, either animal or human	
Area 10		53	110	2	Possible adult and sub-adult, sex?	Y
		54	112	1	Undetermine, either animal or human	
Area 10		58	112		Animal	Y

Table 5: Cremated remains from the excavations

Area	Find	Sample	Context	MNI	Age and Sex	Animal bone present
Area 10		59	136		Animal	Y
Area 10		190	198	1	Undetermine, either animal or human	
Area 10		193	87	1	Undetermine, either animal or human	
Area 10		197	178	1	Undetermine, either animal or human	
Area 10		198	179	1	Undetermine, either animal or human	Y
Area 10		200	183		Animal	Y
Area 10		203	198		Animal	Y
Area 10		205	111	1	Undetermine, either animal or human	
Area 10		206	178		Animal	Y
		207	179		Animal	Y
		209	110	1	Undetermine, either animal or human	Y
Area 10		214	226		Animal	Y
Area 10		219	183B	1	Undetermine, either animal or human	
Area 10		220	228		Animal	Y
Area 10		229	254		Animal	Y
Area 10		230	255		Animal	Y
Area 10		237	260		Animal	Y
Area 10		253	266		Animal	Y
		254	278	1	Undetermine, either animal or human	
Area 10		262	295	1	Undetermine, either animal or human	
Area 10		265	293	1	Undetermine, either animal or human	
Area 10		269	2	1	Undetermine, either animal or human	
Area 11		289	348		Animal	Y
Area 5		293	370		Animal	Y
Area 5		294	277		Animal	Y
Area 5		295	374	1	Undetermine, either animal or human	
Area 5		296	368	1	Undetermine, either animal or human	
Area 5		300	385	1	Undetermine, either animal or human	
Area 6		304	391		Animal	Y
Area 6		305	395	1	Undetermine, either animal or human	
		306	394	1	Undetermine, either animal or human	Y
Area 6		308	397		Animal	Y
Area 6		309	406		Animal	Y
Area 6		317	412		Animal	Y
Area 6		322	408	1	Undetermine, either animal or human	
Area 6		338	436		Animal	Y
Area 6		340	429	1	Undetermine, either animal or human	
Area 6		341	429	1	Undetermine, either animal or human	
Area 6		343	429		Animal	Y
Area 6		345	429	1	Undetermine, either animal or human	
Area 6		348	445	1	Undetermine, either animal or human	
Area 6		349	446		Animal	Y
Area 6		350	447	1	Undetermine, either animal or human	
Area 6		351	447		Animal	Y
Area 6		352	447		Animal	
Area 6		353	447	1	Undetermine, either animal or human	
Area 6		354	447		Animal	Y
Area 6		355	447		Animal	Y
Area 6		358	460		Animal	Y
		360	462		Animal	Y

Table 5 (continued): Cremated remains from the excavations.

Other features in Area 6, part of a group possibly associated with the stone-lined cist 411 included small pits 390, 392, 396, 398, 404 and 407 as well as larger pit 400 and the putative empty stone-lined cist 405. Some of the pits contained animal bone (390 and 396), unidentified bones (404 and 407) or both (400), while no bone was recovered from pit 398 and fire pit 392. Unidentified either animal or human bones were also recovered from deposit 395 located to the immediate west of cist 411, along with fragments of an All Over Corded (AOC) Beaker and a small barbed and tanged arrowhead.

The majority of the cremation remains from Area 10 were recovered from pit 113 (context 110). Pit 113 was part of a series of features found close to each other near the top of a hill slope. Even though the weight of all the cremated bone retrieved from this context is very small at 85.6 g, the size of the larger fragments allowed the identification of at least two individuals, an adult and a sub-adult. This minimum number of individuals, identified from the cremated bone remains collected, was based on the skull size and thickness. Remains of adult cremated bones were also identified from small finds SF 52 and SF 55 collected from this same context. A frontal bone from SF 52 showing the supraorbital margin indicates a possible male biological sex for the remains (Plate 12). Most of the identifiable bone elements within context 110 were either skull or long bone fragments, however, a rib was identified in sample 53 and an articular facet of a thoracic vertebra and a fully closed tooth root of a possible molar were also recorded within SF 55. The bone appeared completely calcined, apart from blue/green staining recorded in the apex of the tooth root found in SF 55 and some unidentified long bones from SF 52 (Plate 11). This might indicate the presence of grave goods such as a copper object within the pyre which has not survived the firing/collection process (McKinley 1994).

The rest of the cremated remains recovered from Area 10 were identified either as animal or human in origin, although several were identified as probable animal. Animal bone was also recovered from sample 53 of pit 113.

Plate 12: Frontal bone from SF 52 showing male sex biological trait in the supra orbital margin.

Discussion

The treatment of the dead varied during the prehistory, ranging from crouched inhumations in cist burials to urned or un-urned cremations, either as isolated features or as part of a burial complex. At Maidenhill the preferred method appears to have been cremation, with the cremated remains placed directly into small pits with no obvious cairn or capping stones to mark the site as in Area 10, or placed in a stone-lined cist as in Area 6. The presence of an empty stone-lined cist in Area 6, along with the recovery of sherds of an All Over Corded (AOC) Beaker and a small barbed and tanged arrowhead from a nearby deposit (395) suggests that this was an area used for ritual activity.

All the bone assemblages retrieved from Maidenhill have substantially less bone than that weighed in the average modern cremation (see above), indicating that none of the cremation remains were complete burials. The incompleteness of burials, particularly so with cremations, is often assumed to be due to non-survival of the bone either as the result of human pre-burial actions and/or post-depositional decomposition processes. The latter include how effective the combustion process was, the sorting and collecting of the bones post-burning from the collapsed pyre material, and the burial conditions with weathering, such as freeze/thaw and the soil chemical properties. These are significant factors in bone erosion. Excavation and handling of the bones after lifting are also further significant factors. Research by Henrikson (2019) on reconstructed pyres using pig carcasses has postulated that the collection

of bone following the cremation process is easier than envisaged and complete collection of body parts is achievable in a relatively short amount of time. He suggests, as others do, that the incomplete body parts found within a single burial is a deliberate choice made by those collecting, rather than post-depositional processes or the increased effectiveness of the combustion method resulting in fewer bones surviving. These burials have been described as 'token' burials with the burial 'rite' or rites more important than the burial itself.

The lack of pyre material on site indicates that the cremations were secondary depositions rather than primary burials and were deposited away from their pyre location. The placement of the cremated remains, in cist 411 and in the central area of pit 113 could further suggest their deliberate selection and placement.

Most bones within the assemblage were fully oxidised with temperatures over 600 degrees centigrade attained during the firing process. It suggests that the corpse was positioned on the pyre stack where heat and oxygen would have circulated most freely, and combustion would have been complete rather than partial. The few bones that were noted to be grey/white and only partially combusted were generally the internal area of the bones that would have been subject to less heat. Small area of green/blue staining was noted in several bone fragments which could suggest that a copper alloy-based item was in contact with these bones during burning. However, no metal object was noted during the excavation although its absence might be due to its non-collection (McKinley 1994). Other sites have produced bone with staining suggestive of possible metal grave goods and include Crantit in Orkney (Roberts *in* Ballin Smith 2014) and Sannox Quarry, Isle of Arran (Arabaolaza 2012). However, the Orkney bone staining was attributed to soil chemical processes as opposed to grave goods.

Conclusions

The bone assemblage at Maidenhill has revealed that cremation was the most common method of body disposal/modification practiced on site. The cremation deposits probably represent symbolic deposition rather than actual burial, although many missing elements from single pits could have been deposited in several different contexts across the site. The surface texture of the bones, cracks and warping suggest that most bones were fleshed prior to burning. Most individuals were adult in age based on the relative size of the bones, with one individual presenting possible male traits on the skull. Sub-adult remains, based on the thickness of the skull, were found alongside adults in pit 113. This is quite common in prehistory and could suggest they were burned at the same time (McKinley 1997). A few grave goods were also found in stone-lined cist 411, and although no grave goods were found within pit 113, the staining on a few of the cremated remains suggests that they might have been on the body or in the pyre during the cremation, and they were not collected for later deposition.

Lithic analysis

By Torben Bjarke Ballin

Introduction

Eleven areas of archaeological interest were highlighted following completion of an initial phase of trial trenching (McNicol 2018; Kilpatrick and Atkinson 2018). Targeted excavation of four of these areas commenced in 2017, but only Area 1 produced lithic artefacts. The final seven areas (including Areas 5, 6, 10 and 11) were excavated in 2018 and further features of archaeological interest were uncovered. The material culture recovered included lithic artefacts (172 artefacts and 106 crystals of rock crystal). One of the most interesting elements is a sub-assemblage of pitchstone microblades and other debitage (48 pieces).

The purpose of the present report is to characterize the lithic artefacts in detail, with special reference to raw-materials, typo-technological composition, and on-site distribution. From this characterization, it is sought to date and interpret the various groups of finds. The report has been subdivided by area and the analysis of the lithic material is based upon a detailed catalogue[4] of all the lithic finds from Maidenhill referred to by their number CAT no.

4 The catalogue forms part of the site archive

The assemblage

General overview

From the excavation, 172 lithic artefacts were recovered, supplemented by 106 crystals of rock crystal. These pieces are listed in Table 6. In total, 96% of the artefact assemblage is debitage, whereas no cores were recovered and 4% are tools. The crystals represent 38% of the overall total.

Table 7 shows the composition of the pitchstone assemblage (included in Table 6), with most of the pitchstone artefacts deriving from Area 10 and Trench 30 (crossing Area 1).

The *definitions* of the main lithic categories are as follows:

Chips: All flakes and indeterminate pieces the greatest dimension (GD) of which is ≤ 10 mm.

Flakes: All lithic artefacts with one identifiable ventral (positive or convex) surface, GD > 10 mm and L < 2W (L = length; W = width).

Indeterminate pieces: Lithic artefacts which cannot be unequivocally identified as either flakes or cores. Generally the problem of identification is due to irregular breaks, frost-shattering or fire-crazing. Chunks are larger indeterminate pieces, and in, for example, the case of quartz, the problem of identification usually originates from a piece flaking along natural planes of weakness rather than flaking in the usual conchoidal way.

Blades and microblades: Flakes where L ≥ 2W. In the case of blades W > 8 mm, in the case of microblades W ≤ 8 mm.

Cores: Artefacts with only dorsal (negative or concave) surfaces – if three or more flakes have been detached, the piece is a core, if fewer than three flakes have been detached, the piece is a split or flaked pebble.

Tools: Artefacts with secondary retouch (modification).

Raw materials

The 172-piece lithic assemblage from includes 111 pieces of flint, 48 pieces of pitchstone, nine pieces of quartz, two pieces of chert, one piece of agate, and one piece of Cumbrian tuff (CAT 278). In addition, 106 small crystals of rock crystal were recovered.

	Areas						
	1	5	6	10	11	Tr 30	Total
Debitage							
Chips	16	4	8	12	1	70	111
Flakes	6	1	4	3	2	15	31
Blades				1	1		2
Microblades	1			16		2	19
Indeterminate pieces		1					1
Total debitage	23	6	12	32	4	87	164
Tools							
Leaf-shaped arrowheads						1	1
Barbed-and-tanged arrowheads			1				1
Short end-scrapers			1				1
Scraper-knives			1				1
Pieces w edge-retouch			1	2			3
Flake from polished stone axehead				1			1
Total tools			4	3		1	8
Total Artefacts	23	6	16	35	4	88	172
Crystals							
Crystals, chip-sized			18		45		63
Crystals, 10-15mm			3		26		29
Crystals, 15-20mm					5		5
Crystal frags, chip-sized					9		9
Total crystals			21		85		106
Total including crystals	23	6	37	34	89	88	277

Table 6: General lithics artefact list.

Type	Area 1	Area 10	Area 11	Tr 30	Total
Chips	2	2	1	16	21
Flakes	1	2		2	5
Blades		1			1
Microblades	1	16		2	19
Indeterminate pieces					
Pieces w edge-retouch		2			2
Total	4	23	1	20	48

Table 7: Pitchstone artefacts.

The flints are generally of the opaque form referred to as Antrim flint, but two well-executed pieces from Area 6 may be of Yorkshire flint (Ballin 2011). The term Antrim flint covers a form of flint which occurs in Antrim, Northern Ireland, as well as along the shores of south-west Scotland (Smith 1880). It is possible to distinguish between the two types of flint by their sheen, with Yorkshire flint being translucent and highly vitreous, whereas Antrim flint tends to be more opaque. It is thought that most of the flint from Maidenhill is Antrim flint procured from local beach walls, but it is possible that CAT 15 (Figure 12) from Area 11 may represent importation from Northern Ireland, as it must be based on the reduction of a fairly large nodule. This proximal-distal blade fragment has a length of 62 mm and may have been 70-80 mm long before it broke, meaning that the parent nodule would have had a greatest dimension of possibly 80-100 mm. The two pieces of Yorkshire flint are based on flint imported from the greater Yorkshire area in north-east England.

The pitchstone is all aphyric and black, and it was procured from the Isle of Arran in the Firth of Clyde (Ballin 2009; Ballin and Faithfull 2009). The fact that all pieces are of aphyric pitchstone with excellent flaking properties suggests that the raw material was obtained from sources in eastern Arran, probably the Corriegills/Fairy Glen/Monamore area. However, the assemblage includes several different forms of aphyric pitchstone, with different degrees of purity, sheen, and presence/absence of spherulites or crystallites. Some pieces are exceptionally pure and glassy, whereas others have a more greasy sheen; one piece has inclusions in the form of spherulites (a devitrification product), whereas others are characterised by crystallites (very small skeletal or dendritic crystals, often Fe-Mg silicates; banding in pitchstones is often marked by variation in crystallite density). Combined, this suggests that pitchstone may have been procured from a variety of sources within eastern Arran.

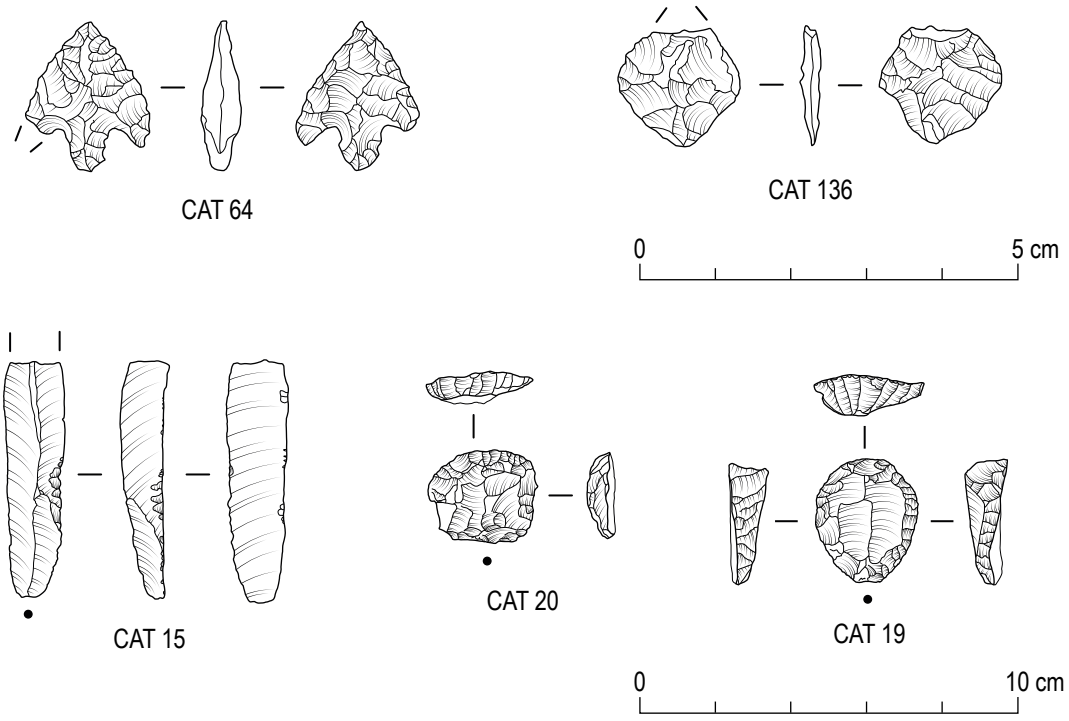

Figure 12: Illustrated lithic artefacts.

Pebbles of quartz may have been procured from local beach walls or from streams (Ballin 2008). Chert is present throughout southern and central Scotland, but it was hardly used at all in the coastal zone where flint was available. Approximately 80 km from the coast the flint:chert ratio of assemblages reached c. 50:50 (cf. Finlayson 1990, 46) and, further inland, chert became completely dominant (cf. Ballin and Ward 2013). Agate would have been present in the local igneous rock outcrops, and it is possible that the many quartz crystals recovered at Maidenhill formed clusters within pebbles or veins of chalcedony or agate (cf. Ballin 2018; Nicol and Ballin 2019). A flake from a polished stone axehead of Cumbrian tuff (CAT 278) was recovered from Area 10. This raw material, or the entire finished axehead, was obtained from the Great Langdale area in the Lake District, and it represents exchange between the Scottish Central Belt and north-east England.

Area 1 and trench 30

Area 1 yielded 23 pieces of debitage, but no tools or cores. Apart from one quartz flake (CAT 164) and four pieces of pitchstone (CAT 22, 23, 36 and 42), all pieces are of flint. Most of the pieces appear to be knapping waste. CATs 22-23 are two small pitchstone chips and they were found within context 033, a charcoal-rich deposit (knapping-floor?) associated with flint debris, some burnt bone and a hearth. CAT 36 is a burnt pitchstone flake consisting of two refitting fragments and deriving from pit 028. CAT 42, the proximal fragment of a small pitchstone microblade (width 4.2 mm), was found in the same pit. Pit 028 contained some flint, as well as much pottery, burnt bone and hazel nutshells, and it may have been a hearth, a ritual deposition or a burial. Some of the pottery has been identified as Carinated Ware, suggesting an early Neolithic date. This date is supported by the pitchstone microblade CAT 42 (Ballin 2015; 2017) and a radiocarbon-date of 3712–3641 cal BC (SUERC-90652).

Area 1 was cut by evaluation Trench 30 which contained pit 30002, immediately next to charcoal-rich deposit context 033. It is possible that these two areas form one activity area. Pit 30002 contained 67 pieces of flint, mostly chips and small flakes, as well as 20 pieces of worked pitchstone. Most of the pitchstone artefacts are minuscule chips, but two pieces are refitting parts of one microblade (CAT 92 and 94). Much of the flint debris is burnt (27 pieces), suggesting activities which required the use of fire. It is possible that pit 30002 was a fire-pit (a hearth) around which knapping took place. This is supported by the small size of the pitchstone artefacts which are more likely to be knapping debris than pieces selected for deliberate deposition (see Area 10, below). A damaged leaf-shaped arrowhead of flint (CAT 136, Figure 12) was also recovered from this pit, indicating a date in the early Neolithic period (Butler 2005).

Area 5

Only six lithic artefacts were recovered from this part of the site. They are all debitage and include four chips, one flake and one indeterminate piece. They are all of flint and undiagnostic.

Area 6

In total, 16 lithic artefacts were recovered from this area, 12 pieces are debitage, whereas four are tools; no cores were found. Apart from one flake of agate (CAT 75) and one chip of quartz (CAT 71), all artefacts are of flint. In addition, 37 crystals of rock crystal were also recovered.

The debitage includes eight chips and four flakes, and the tools comprise one barbed-and-tanged arrowhead, one short end-scraper, one combined scraper-knife and one piece with edge-retouch. The arrowhead (CAT 64, Figure 12) is a small specimen of Green's Sutton B Type (Green 1980), measuring 20 by 17 by 4 mm, which has lost the outermost tip of one barb. The surviving barb is pointed, and the tang is also pointed. CAT 20 is a well-executed, squat short end-scraper, and it has a convex, steep working-edge at the distal end (Figure 12). The highly regular scraper-edge may have been made by pressure-flaking. It measures 25 by 30 by 8 mm, and as the flint is more translucent than opaque, it is more likely to be of Yorkshire flint (Ballin 2011) than of Antrim flint.

CAT 19 is also a well-executed piece, and it was defined as a combined tool (scraper/scale-flaked knife, Figure 12). It measures 32 by 27 by 9 mm. It has a convex, steep scraper-edge at its distal end, as well as one along its left lateral side. In addition, it has an acute, scale-flaked cutting-edge along its right lateral side. The piece also has flat

use-wear along this edge, ventral face, showing that it was indeed used as a knife. Like CAT 20, this piece is probably also of Yorkshire flint. One piece, CAT 72, was defined as a flake with edge-retouch, function unknown. The crystals are all fairly small (most are chip-sized) and it cannot be ruled out that these pieces occurred naturally in the local environment.

The arrowhead was recovered from context 395, a deposit at the top of a hill north of a pit group which also included pit 411. This deposit also yielded a Beaker sherd, and it is highly likely that these finds represent a disturbed early Bronze Age pit burial. The well-executed combined scraper-knife was recovered from context 412, a fill of cist 413 in pit 411. This pit also contained charcoal, bone and pottery. The well-executed end-scraper is an unstratified find, but it most probably also derives from a disturbed burial.

The arrowhead, scraper and combined tool probably (the arrowhead definitely) all date to the early Bronze Age period. This is supported by the arrowhead's association with a Beaker sherd, and the fact that the combined tool was recovered from the internal fill of cist 413. However, a sample from the fill of the cist was radiocarbon-dated to the early/middle Neolithic transition 3622–3371 cal BC; (SUERC 90661), and parts of an early Neolithic Carinated Bowl were recovered from the fill of pit 411 outside the cist. Most likely, the cist burial dates to the early Bronze Age, but the radiocarbon sample and the carinated vessel both represent back-fill/erosion, and the radiocarbon date is not associated with the cist but with the carinated vessel.

Area 10

The lithic finds from this area include 32 pieces of debitage, two edge-retouched flakes, and one flake from a polished stone axehead. Apart from six quartz chips and four chips and one flake of debitage of flint, the remaining 23 pieces are all of pitchstone (Tables 6 and 7). The 11 pieces of flint and quartz may represent disturbed knapping floors and this material will not be dealt further. The focus of this section is therefore the objects of pitchstone and the polished flake.

In total, 23 pieces of pitchstone were recovered from Area 10, including two chips, two flakes, one blade, 16 microblades and two pieces with edge-retouch (CAT 50 and 52). The retouch of CAT 50 is fresh and shiny and may be modern damage ('trowel retouch'), whereas that of CAT 52 is sporadic and could possibly be use-wear. All but three pieces (CAT 13, 43 and 48) were retrieved from a stone-lined pit 259. CAT 13 (a burnt blade) was found in the fill of stakehole (context 294) which also contained some burnt bone; CAT 43 (a chip) was in the lower fill of pit 065; and CAT 48 (also a chip) in a clay deposit (context 087) which was cut by pit 259.

The 20-piece pitchstone assemblage from pit 259 includes three flakes (one with fresh 'retouch') and 17 microblades (one with fine sporadic retouch or use-wear, Plate 13). All pieces were detached from their parent cores by the application of pressure-flaking. The average dimensions of the microblades are 19.8 by 6.0 by 5.4 mm.

Plate 13: Area 10 pitchstone microblades and a flake.

Figure 13 shows the length and width of the 11 intact microblades, whereas Figure 14 shows the width of all microblades. The curve of Figure 14 is twin-peaked, but this may be a result of the small population ('random statistical fluctuation'). A trendline (moving average) was inserted into

Figure 14, forming a perfect bell-shaped curve (peak at 6-7 mm), suggesting that the microblades are probably contemporary. Contemporaneity is supported by the fact that it was possible to refit several pieces. CATs 7a and 7b are refitting proximal and distal ends. These pieces could have broken during production, but they could also have broken in connection with recovery (trowel damage). However, it was also possible to refit a number of pieces dorsal to ventral faces, where CAT 7a/b fits on top of CAT 50 which fits on top of CAT 49 (a four-piece refit complex). This latter refit complex represents a reduction sequence, suggesting that these pieces may have been produced in connection with the deliberate deposition of the pitchstone assemblage in pit 259. However, the assemblage includes several different types of pitchstone, defined by different forms of purity, sheen, and presence/absence of spherulitese or crystallites (Ballin and Faithfull 2009, 5), indicating that a number of pebbles or blocks/plates were reduced in connection with this event. The presence of CAT 52, a piece with fine retouch or use-wear, shows that used pieces were also deposited in pit 259.

The pit 259 deposition is reminiscent of the deposition of 10 pieces of pitchstone a pit (507) beneath the facade-end of the long-barrow at Fordhouse Barrow, Angus (Ballin 2004). This small sub-assemblage has a high refit ratio, with nine pieces being conjoinable in some form or combination. The high refit ratio suggests that the ten pieces were struck from the same small nodule, probably shortly before deposition in the pit. This deposition also included a fragment of a large bifacial piece (48 by 33 by 6 mm) which may be the remains of a leaf-shaped point. The convex-concave curvature of the worked edge indicates that the form of the original piece was ogival, possibly similar to Green's Type 1Cc (Green 1980, 70), but larger. This dates the deposition to the early Neolithic period, and the construction layers on top of the pit were dated to 3960–3640 cal BC (OxA-8222-4). A sample (SUERC-90704) from pit 259 was radiocarbon-dated to 3908–3702 cal BC, or the first half of the early Neolithic period.

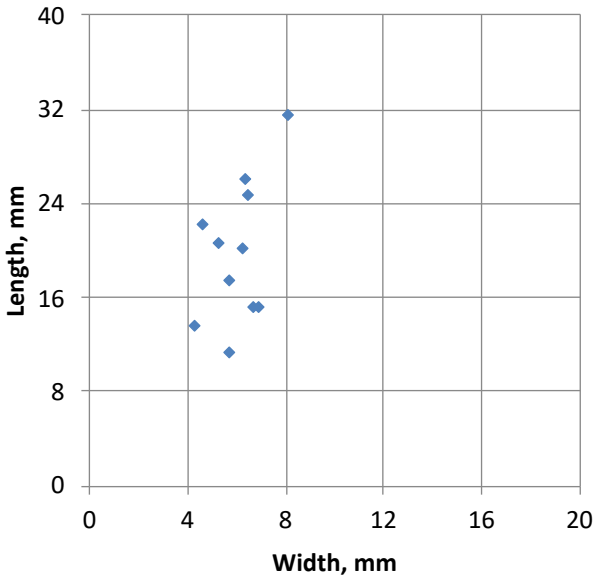

Figure 13: The dimensions of the pitchstone microblades from Pit 259.

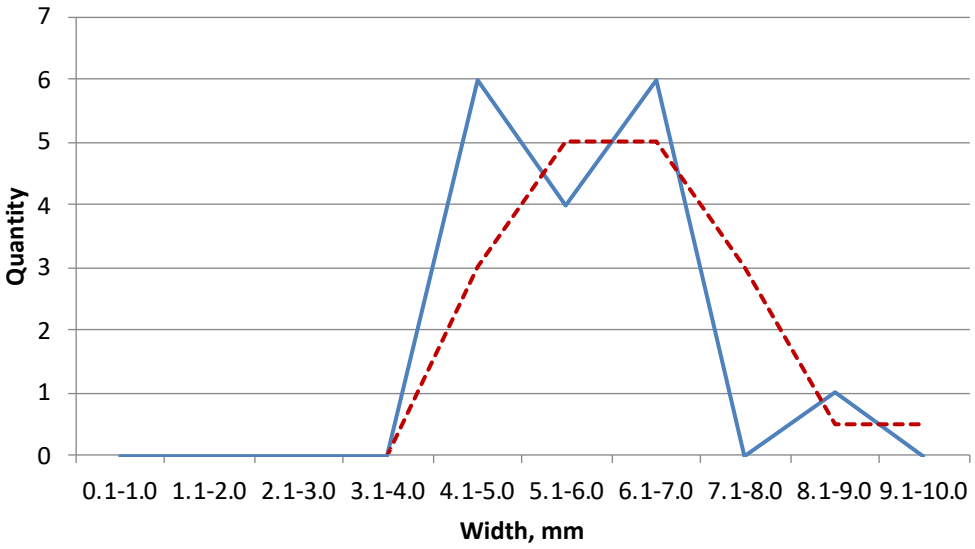

Figure 14: The width of the pitchstone microblades from Pit 259. A trendline has been inserted.

The recovery of burnt blade CAT 13 in stakehole 294 suggests that this may also be a deliberate deposition. At Doon Hill, East Lothian, a large burnt slab of pitchstone comprising four refitting fragments measuring approximately 60 by 40 by 30 mm had been deposited in wall posts 11 and 12 of the early Neolithic timbered hall (Ballin forthcoming). The chip from pit 065 may be knapping waste which entered the fill of the pit when it was backfilled. Chip CAT 48 from a deposit which was cut by pit 259 may be part of the pit assemblage or it may be knapping waste pre-dating this deposition.

Although a (very) small number of pitchstone artefacts have been dated to the late Mesolithic period (Ballin et al. 2018), most radiocarbon-dated pitchstone from southern and eastern Scotland dates to the early Neolithic period (Ballin 2015; 2017).

CAT 278 is a hard-hammer flake from a polished stone axehead of Cumbrian/Great Langdale tuff (Group VI; Clough 1988, Table 3). The piece measures 38 by 33 by 6 mm, and its entire dorsal face as well as the platform remnant are polished. The polish is fine, although with notable parallel striations. The polished platform remnant meets the dorsal face at an angle of slightly less than 90 degrees and it is possible that it represents part of a lateral facet. Information on the finds bag suggests that the piece is from pit 149, but also that it is an unstratified find, and the relationship between this flake and the pit is therefore uncertain. Most likely, CAT 278 was found on top of, or near, pit 149, but not recovered from the its fill.

Pottery from pit 149 may be middle Neolithic (see Prehistoric pottery, below), whereas polished axeheads of Cumbrian tuff tend to date to the early Neolithic period. Flakes from polished Great Langdale axeheads occasionally form parts of intentional deposits which also include microblades of Arran pitchstone and sherds of early Neolithic Carinated Pottery (e.g. the pit from Carzield in Dumfriesshire; Maynard 1993; Ballin 2015). It is therefore suggested that this piece may have been dragged c. 20 m down slope in connection with modern ploughing from pits in Area 10's north-eastern corner, where some pits included deposits of Carinated Pottery (e.g. pits 90 and 118), and one contained an impressively large assemblage of pitchstone microblades (pit 259). A sample (SUERC-90699) was radiocarbon-dated to the middle Neolithic period 3330–3021 cal BC, which supports the suggested date of the pottery.

Area 11

From Area 11, one flint blade (CAT 15, Figure 12), two chert flakes (CAT 14 and 16), and one pitchstone chip were recovered. In addition, 85 small crystals of rock crystal were retrieved from a possible pit or posthole (361).

Flint blade CAT 11 is a large platform blade (62 by 16 by 11 mm) of mottled-grey possibly Antrim flint with fine use-wear along both lateral edges from cutting. It was found in curvilinear ditch (354). Chert flake CAT 14 is an unstratified find, whereas chert flake CAT 16 was also found in the ditch. Pitchstone chip CAT 58 was recovered from the ditch segment (343). The regularity of macroblade CAT 15 suggests a date in the Neolithic period rather than the Mesolithic period (cf. Ballin 2011).

Plate 14: Area 11 deposit of crystals from pit/posthole 361.

Eighty-five crystals of rock crystal (CAT 171-255) were retrieved from a possible pit or posthole (361). Forty-five of these crystals are chip-sized; 26 measure 10-15 mm across; five measure 15-20 mm across; and nine are chip-sized fragments of crystals. Although small crystals have been recovered elsewhere within Maidenhill,

suggesting that small crystals may occur naturally in the local soil, the presence of so many crystals within one small feature measuring 0.3 by 0.4 by 0.12 m, indicates that this may be a deliberate deposition (Plate 14).

Summary and discussion

A large number of the flint and other pieces of debitage may be the remains of disturbed knapping floors, and as such they have little research potential. However, a number of lithic-bearing features and contexts are highly interesting:

- Area 1/Trench 30 is a highly complex area that included a deposit (33) and two pits (028 and 30002). Most of the lithic finds have the appearance of knapping debris, including most of the minuscule pieces of pitchstone, and it is uncertain whether the pits had domestic (as fire-pits or hearths) or ritual functions, and some of the finds may represent deliberate deposition. Other finds from this area and its surfaces and pits include pottery (some identified as rarely Neolithic Carinated Ware), burnt bone and hazel nutshells. Pit 028 returned a date of 3712–3641 cal BC (SUERC-90652) or the later part of the early Neolithic.
- Deposit 395 in Area 6 yielded a barbed-and-tanged arrowhead (CAT 64) as well as a Beaker sherd, and it is possible that this may be a disturbed early Bronze Age burial.
- A number of interesting finds were recovered from pits 411/413 in Area 6, including a well-executed scraper/knife of Yorkshire flint (CAT 19), charcoal, burnt bone and pottery. This is probably also an early Bronze Age burial. However, a sample from pit 413 was radiocarbon-dated to the transition of the early/middle Neolithic periods, 3622–3371 cal BC (SUERC 90661), and it is suggested that this could may represent back-fill and that it may be associated with a carinated pot found in the fill outside the cist rather than from within the cist.
- Pit 259 in Area 10 yielded 20 pitchstone artefacts (CAT 2-12, 49-57), 17 of which are microblades. Refitting showed that most of these were probably produced specifically for this deposition, but one microblade with sporadic retouch or use-wear is clearly an 'old' used piece (CAT 52). This case shows similarities to the knapping of microblades at Fordhouse Barrow in Angus (nine of ten pieces forming part of refit complexes), and immediate deposition of these pieces (Ballin 2004). Pit 259 was radiocarbon-dated to 3908–3702 cal BC (SUERC-90704) or the first half of the early Neolithic period.
- One flake from a polished Great Langdale axehead (CAT 278) was found near pit 149, but it may have been dragged down-slope by ploughing from the pit complex in the north-eastern corner of Area 10, which also included pit 259. Early Neolithic ritual depositions may include either flakes from Great Langdale axeheads, pitchstone microblades or carinated pottery, or – like the pit from Carzield in Dumfriesshire – the 'full package'.
- A piece of burnt pitchstone (CAT 13) in stakehole 294, Area 10, may also be a deliberate deposition. Burnt pitchstone had clearly been deposited in postholes of the early Neolithic timber hall at Doon, East Lothian (Ballin forthcoming).
- A large blade (CAT 15) of possibly imported Northern Irish Antrim flint may have been deposited deliberately in curvilinear ditch 354 in Area 11.
- A total of 85 small crystals of rock crystal may have been deposited deliberately from a small pit 361, also in Area 11.

Although some knapping debris suggests that domestic activities took place within this site, most of the lithic finds are of a nature, or associated with features, which suggest deliberate deposition in connection with either burials or other rituals. Some of these events took place during the early Neolithic period, whereas others were dated to the early Bronze Age period. These finds include many exotic pieces, such as well-executed blades or tools of Antrim or Yorkshire flint, one flake from a Great Langdale axehead, as well as microblades of Arran pitchstone. It is impossible to say whether the exotic flint objects were imported fully formed or whether they were produced at Maidenhill, but refitting of several pitchstone flakes and microblades shows that pitchstone may have been imported in the form of raw nodules which were subsequently reduced at Maidenhill, mostly immediately prior to deposition.

Prehistoric pottery

By Beverley Ballin Smith

Summary

A total of 16 pottery vessels were identified from the collection of pottery recovered from the archaeological interventions at the various sites across the investigated area. The pottery indicates that early Neolithic Carinated Bowls were present on Area 1, with a mixture of pottery types and dates from Area 6, although the predominant vessels are early Bronze Age in date, including fragments of an All Over Corded (AOC) Beaker and a possible cup. Area 10 produced both early Neolithic Carinated Bowl pottery and middle to late Neolithic Impressed Wares. The distribution of pottery on the sites and the occasional occurrence of different ages of pottery in the same feature suggest that prehistoric habitation on some sites has been of long duration and that there has been much reworking of deposits and features.

Introduction

The results of trial trenching and targeted excavated areas at the site in 2017 (McNicol 2018), were that Area 1 produced sherds of prehistoric coarse pottery. The following year when further excavation took place Areas 5, 6, 9, 10 and 11 produced additional sherds of pottery, some in large quantities (Kilpatrick and Atkinson 2018).

Preliminaries

This assemblage is a collection of handmade, prehistoric pottery. All the sherds in this collection were washed before analysis due to their being coated in mud. All sherds were examined using a x6 hand lens, and their attributes and statistics compiled in an archivable table devised using Microsoft Excel. The pottery was analysed according to the revised guidelines of the Prehistoric Ceramics Research Group (2010), the CIfA's *Standards and guidance for the collection, documentation, conservation and research of archaeological materials* (2014, revised 2020), and the *Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives* (2014, revised 2020).

Analysis and description of the pieces

The analysis of this collection includes the description of its general attributes followed by a description of the pottery from each site. The total number of sherds is 483 and the total weight of the whole assemblage, including fragments, is 3854.6 kg. Most sherds were recovered and bagged on site during the excavations, but a small number of sherds and fragments, were retrieved from soil samples that were processed after the excavations. There are no complete pots, but the remains of 16 individual vessels have been identified and recorded. There were undoubtedly more vessels, suggested by other fragmentary or highly abraded rim sherds, many of which could belong to those vessels already determined, but their identification is uncertain.

Table 8 displays the total number and type of sherds recognised across the individual sites. Fragmentary pieces of pottery smaller than 10 by 10 mm were found on most of the sites. They are included in the table but are not counted as sherds.

The total weight of sherds identified vessels is recorded in Table 9 along with their average sherd weight and thickness. In some cases the average sherd weight is high, for example, Vessel 11 and V14 where only single sherds remain of these pots. In other vessels, such as V3, V4 and

Area	Rims	Carinations	Bases	Body sherds	Fragments	Total Nr sherds*
1	20	8	-	81	21	109
5	-	-	-	4	-	4
6	17	7	10	128	66	162
10	32	8	-	163	70	203
11	2	-	-	3	2	5
	71	23	10	379	159	483

** excluding fragments*

Table 8: Pottery sherd forms.

V12, the weight per sherd is considerably less indicating much more fragmentation and also possibly thinner vessels. The average sherd thickness also helps identify vessels that are thin-walled from those that are more robustly made (Table 9), and to some extent is an aid in checking the range, date and type of vessels found in a collection.

Area	Vessel	Total weight (g)	Average sherd weight (g)	Average thickness (mm)
1	1	779.5	17.7	10.3
	2	301.6	11.6	8.3
6	3	96.7	5.4	7.6
	4	256.5	2.9	5.7
	5	55.1	13.8	9.9
	6	51.3	17.1	12.7
	7	12.2	6.1	9.1
	8	6.1	6.1	8.2
	9	17.8	17.8	12.5
	10	7.4	7.4	10.4
10	11	46.4	23.2	11.1
	12	129.8	4.6	7.1
	13	37	12.3	5.1
	14	43.3	43.3	17.4
	15	9.1	9.1	13
	16	34.8	8.7	10.5

Table 9: Vessel thickness and weight.

Pottery temper

All the pottery in this collection contains temper (both mineral and organic) that was added to the raw clay by the potter. This material has several functions. The addition of organic temper enables clay to be more pliable and vessels can be relatively light in weight with thin walls, while mineral temper (stone) adds strength and weight to the finished vessel, and prevents the clay from shrinking and cracking during the drying process. However, added stone (especially quartz) helps the vessel to withstand thermal shock (being heated and cooled) during firing and when in use on the hearth (Kilikouglou *et al.* 1998).

The pottery from the project area is considered to be of local manufacture, using clay and stone from nearby sources. Two small streams cross the development area today that may have been more substantial in the past. It is not inconceivable that clay and gravel, including some quartz sand, were collected for pottery making from the beds and sides of the streams.

Small stones and occasionally broken up rock were added to clay with the addition of chopped dried grasses, cereal straw or chaff – the waste materials from cereal processing. Most of the mineral temper (greyish-brown in colour) is unidentified, but given that the local geology is of igneous origin, most of it is likely to be small stones from basalt and related volcanic rock types (BGS 2019). Identified minerals include: some rock quartz that was found in the pottery of most sites, quartz sand in the pottery from Area 1, possibly some coal flecks in sherds from Area 5, and mica and dolerite in the pottery from Areas 6 and 10. The widespread presence of mica can be explained as a natural occurrence in some of the local clays, but this has not been tested. Quartz veins are associated with volcanic activity and glaciated pebbles of quartz could occur in the subsoil.

Post depositional changes

Most of the sherds show signs of abrasion including worn edges and the loss or removal of surface finishes. Root infiltration has been noted in some sherds, probably those located close to the topsoil.

Fragmentation is most noticeable amongst the pottery of Areas 6 and 10, and this is possibly explained by the lower contours of the development area to the east that has allowed ploughing to take place that has disturbed buried deposits. However, badly abraded and rolled sherds have been identified from Area 1, indicating that any kind of soil movement can disturb sub-surface remains.

Manufacture of the pottery

The processes of transforming the raw materials of clay, stone and organic materials into pots is similar throughout prehistory, but the different forms of the pots, their rims, carinations and bases can tell us much about the type and function of vessels and when they were made. The intended function of vessels will have largely determined not only their shape and height but also the form of the rim and its diameter.

Rims

The collection produced 71 rims (Table 8), and usually they are the most commonly identified diagnostic elements and can appear in high

numbers. In this collection the rim types are displayed in Table 10, along with their diameters, where measured, and the percentage survival of the vessel rim.

Area	Vessel	Rim type	c. Diameter (mm)	c. % survival
1	1	unevenly rolled/ rounded and everted	160	24
1	2	unevenly rolled/ rounded and everted	n/m*	n/m
6	3	rounded and straight	50	25
6	4	slightly everted	140	34
6	5	wide flat-topped & T-shaped	160-170	7.5
6	6	rolled and everted with an internal bevel	n/m	n/m
6	8	straight with flattened top	n/m	n/m
6	9	everted and wedge-shaped (exterior bevel)	n/m	n/m
10	11	straight with wide interior bevel	160	12.5
10	12	rounded and everted, unevenly moulded	n/m	n/m
10	13	open and everted	210	13
10	14	rounded and everted with a flat top	225	4
10	16	rounded and everted, unevenly moulded	n/m	n/m

Table 10: Rim diameters and percentage survival by vessel.

The shape of a rim can vary according to the period to which the vessel belongs and also to its intended use. Rims are rounded and everted, uneven, inverted, flat or with a bevelled top, and some with interior bevels or flanges indicate they may have been made to take a stone or wooden lid. The earliest rims from the early Neolithic are nearly all rolled and everted but many are badly formed or moulded, which suggests that the potter of some vessels may not have been highly skilled in making a consistent rim shape. Vessel 13 contrasts with the others of this period in that it is distinctly well-made, with a more open rim form (more wedge-shaped than rolled) and with a predominantly flat edge to it (Figure 15). The evidence suggests that the potter who made this vessel was highly experienced. The rims that could be measured indicate pots with diameters of c. 160-210 mm, but in each case less than 25% of the rim survived.

Two vessels, V11 and 14, from the middle to later Neolithic display entirely different rim forms from the earlier examples (Figure 15). Vessel 11 has a wide interior bevel to a straight rim and V14 is everted but with a flat top. Both are heavy rims that are decorated (see below) and are probably from bowls where the rim shape and its decoration were meant to be visible.

The two early Bronze Age rims are V3 and V4. Vessel 3 is a tiny vessel, possibly a cup with a straight rounded-topped rim with a diameter of only c. 50 mm. Vessel 4 is a Beaker vessel with its simple plain everted rim with a rounded edge and a diameter of c. 140 mm. A good third of this rim survives (Figure 15).

The rims from the remaining vessels - V5, V6, V8 and V9 are difficult to determine because of either the small size of the rim sherd or because they are non-typical examples (Figure 15). Vessel 5 with its wide flat-topped rim which is everted to both the exterior and interior of the pot is most likely from later in the Bronze Age. Its rim is c. 160-170 mm wide, suggesting an average-sized vessel.

Carinations

All the early Neolithic pottery, the carinated bowls, would have had shoulders (carinations), where the junction between the neck and the belly of the vessel was marked by a change in angle of the pot e.g. V1 and V2 from Area 1 (Figure 15). The carination from V1 was made by applying additional clay to the body of the vessel and moulding it to shape. It is up to 14 mm in breadth and protrudes 8 mm from the surface of the pot. In contrast, the carination from V2 was pinched out from the vessel body.

Other carinated sherds were found in Area 10, often in association with abraded or small rim sherds. One of the best preserved pieces from this area is SF 65 a well-delineated and burnished piece with a sharp edge (not illustrated). SF 67 also from Area 10 is a prominent carination from a heavier vessel, but in SF 70 the carination (4 sherds) is weak and rounded and more than one vessel may be represented.

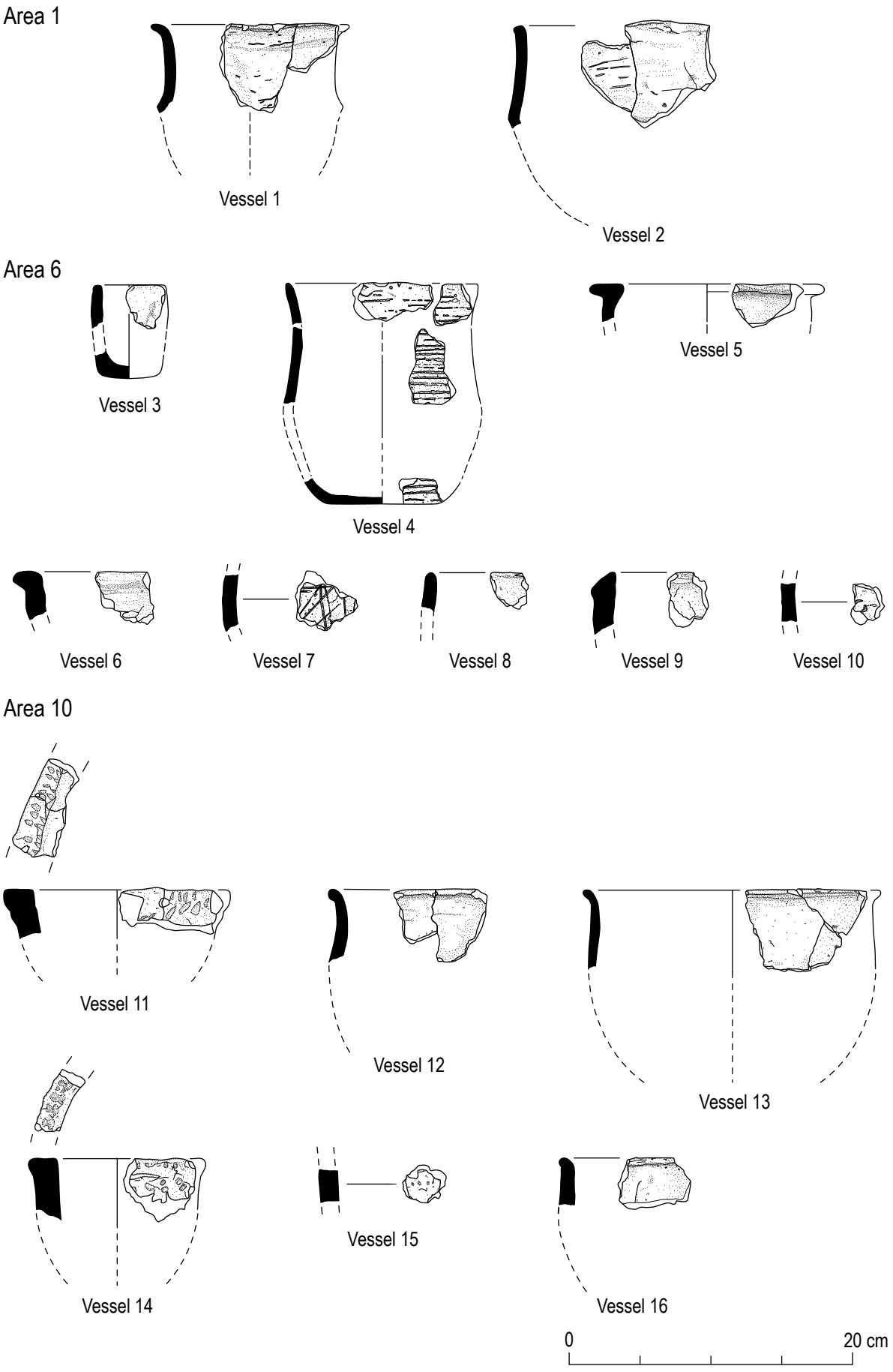

Figure 15: Illustrated pottery sherds.

The only other vessel to have a carination is the late Neolithic/early Bronze Age Beaker, V4, which has a weak carination between its long, slightly concave neck and its convex body.

Bases

All the early Neolithic vessels would have been round bottomed, but apart from the occasional thicker burnt sherd from these pots, nothing identified as a base survived, being largely burnt through during use on the hearth.

Only two flat bases were recorded and these were both from Area 6 (see Table 11). The vessels are both early Bronze Age in date, V3 a possible cup and V4 a Beaker. Their rounded base edges may be a product of the vessels being manufactured using the thumb-pot method of construction rather than slab and coils. Vessel 3 had a near complete base in spite of the fragility of the pottery, whereas 25% of the Beaker base survived. Bases from other later vessels have not survived.

Area	Vessel	Base type	c. Diameter (mm)	c. % survival
6	3	Flat with a rounded base edge	50	85
6	4	Flat with a rounded base edge	100	25

Table 11: Basal diameter and percentage survival.

Surface treatments and residues

The application of surface treatments took place after the vessel had been formed but when it had dried to leather hardness. These were the final touches of the finishing processes before the vessel was fired. Not all pots were treated the same, and it is important to note that through burial in the ground and the taphonomic processes that it is subjected to, the surfaces of vessels and sherds will change, and in many cases evidence of the finishing is removed. Abrasion through natural or mechanical processes will also affect the survival of evidence.

The finishing of pots includes the smoothing of the surfaces. This can be done with the hands and fingers but often a handful of grass or other dry fine organic material was used to rub or wipe the exterior surface down, to remove finger marks and other inconsistencies. However, other marks were left behind from this process include grass marks beneath rims, and generally on the exterior surfaces of sherds from this collection.

In the early Neolithic vessels were finished by burnishing. The potter using a smooth rounded pebble or bone with a flat edge would rub the exterior surface until it shined. Evidence of burnished surfaces survives on sherds from V1, V2, V12 and V13 (Figure 15). The process removed protruding grits and brought fine minerals in the clay to the surface, such as mica. It also made the pots aesthetically pleasing to the eye. Surviving moulding indentations were found on a few sherds, but they did not form parts of recognisable vessels.

The main residue found in the collection is that of carbon either as burnt food adhering to interior or exterior surfaces, or as soot from when the pot was positioned close to the fire. This type of residue is a strong indicator that vessels were used as cooking pots.

Decoration *(see Appendix for catalogue of pottery with images)*

As part of the finishing process, some of the vessels were decorated. The decoration could encompass the whole vessel or be confined to the rim or rim bevel. Tools used were finger nails, fine bird bones, possibly finely pointed twigs, twine (woollen cord) and possibly a sharp flint or other stone. A total of six vessels were decorated.

Middle to late Neolithic

The earliest decorated vessels in this collection are V10, V11, V14 and V15 (Figure 15). One of the simplest means of decorating the pottery surface was by using the potter's finger-nails. In the case of V10 a small amount of clay on the vessel surface was pinched between the thumb and forefinger to create a motif. In other collections, for example at Colinhill, Strathaven (Ballin Smith 2019b, Figure 10), similar motifs were used in regular rows as an all over decoration on the body of the vessel.

Finger nails were also used to incise the bevel of V11. In this example the forefinger nail was pressed vertically into the clay to produce a closely positioned row of semi-circles. This example had

two parallel rows but with alternately placed finger nails incisions. One row was pressed more deeply than the other. The same motif was used just below the rim edge with a further row of more wide spaced finger nail incisions below. It is possible that the rest of the body of the vessel was similarly decorated. Given the position of the impressions, the potter was right-handed.

The decoration on the rim top of V14 was made by a fine bird bone, perhaps the end of a humerus, pressed deeply into the clay. The bone produced a double dot motif. Further incisions of this motif were positioned on the neck, with small finger-nail (?) scoops on the rim edge. These motifs were probably part of a more extensive design down the body of the vessel.

Although given a separate vessel number, V15 could be part of the same or a similar vessel to V14, but here a pointed twig or bone may have been used to create a line of small oblique incisions in the clay.

Late Neolithic and early Bronze Age

Two later vessels were also decorated. Vessel 4 was decorated from just below the rim to just above the base by a fine twisted cord. The cord was wound round the vessel and gently pressed into the clay in regular horizontal parallel lines (see Pottery Catalogue). It is one of the earliest forms of Beaker decoration.

Vessel 7 (Figure 15) is likely to be an early Bronze Age vessel, but in contrast to V4, it was more randomly decorated with incised lines, criss-crossing each other on the belly of the vessel. Although only two sherds of this vessel survive, they suggest that the decoration was extensive and probably executed by the potter using a fine knife, probably of flint.

Firing conditions

Due to post-depositional abrasion and the small size of some of the sherds is difficult to examine the evidence of the firing conditions of the pottery. Subsequent heating/burning of the pot through use of the vessel for cooking or by accident (breakage and falling into the fire) is noted on many of the sherds.

The predominant colour of most sherds is Munsell Color 10YR 4/2 dark greyish brown, suggesting this is roughly the colour after firing. However, later heating changed the pottery colours into brown, strong brown and reddish yellow. On the whole, clay and temper are well integrated in this assemblage, but with vesicles created by the burning out of organic material during firing. Only Vessel 3 is fragile, and this may be because it was not fired to a sufficient temperature before it was discarded and buried.

Distribution and dating of pottery by area

The evidence indicates that the two carinated bowls from *Area 1* are clearly early Neolithic (Table 12). Vessels 1 and 2 were found in conjoined pits 028 and 036 and could be interpreted as contemporary. The radiocarbon date from context 34 (from which V1 was discovered), the fill of pit 028, returned an early Neolithic date range of 3712-3641 cal BC (SUERC-90651) (see Table 1). A pitchstone microblade (CAT 42) supports this date and the finding of hazel nutshells and burnt bone suggests the pit(s) was probably a hearth or fire-pit, and the vessels were cooking or storage pots. These pits and their pottery were also located close to evaluation Trench 30, where fragments of pitchstone were found (see Lithic artefacts).

Area	Vessel	Type of vessel	Suggested date
1	1	Carinated bowl	early Neolithic
	2	Carinated bowl	early Neolithic
6	3	cup or plain beaker	early Bronze Age
	4	All-Over Corded Beaker	late Neolithic/ early Bronze Age
	5	Cooking pot	middle to late Bronze Age?
	6	Cooking pot	early Neolithic?
	7	uncertain	early Bronze Age?
	8	Cooking pot	uncertain Bronze Age
	9	cooking pot	early Bronze Age?
	10	Impressed ware bowl	middle/late Neolithic
10	11	Impressed ware bowl	middle/late Neolithic
	12	Carinated bowl	early Neolithic
	13	Carinated bowl	early Neolithic
	14	Impressed ware bowl	middle/late Neolithic
	15	Impressed ware bowl	middle /late Neolithic
	16	Carinated bowl	early Neolithic

Table 12: The type and approximate date of vessels by area.

Area 6, with the highest number of vessels (8), suggests activity was present from the early Neolithic (V6), through the middle to late Neolithic with an Impressed Ware bowl (V10, Figure 15) and a late Neolithic/early Bronze Age All-Over Corded (AOC) Beaker (V4) (Table 12). Use of the site continued into the early Bronze Age, with the presence of cooking pots V8 and V9, a decorated pot (V7) and a possible cup or small beaker (V3), and into the middle to late Bronze Age with the occurrence of another cooking vessel (V5).

The distribution of pottery from this site is interesting as it is concentrated in the pits close to feature 413, possibly a cist, built within pit 411. V3 was found in a shallowly dug pit context 398 close to the southern end of the feature. The Beaker V4 came from a thin deposit (context 395) to the west of it, possibly the remains of a pyre. Vessels 5 and 9 (probably both Bronze Age), part of V6 (early Neolithic), and V10 (middle to late Neolithic) came from context 428, the middle fill of pit 400 to the south-west of the cist. Other sherds of V6 were located in the infilling material of the cist. The decorated early Bronze Age V7 was found in context 391, the fill of pit 390 lying to the south-east of the cist, which also contained burnt bone and flint, could suggest burial activity. V8, undated but possibly early Bronze Age, was located in the fill of pit 404 dug to the immediate west of the cist.

The cist seems to have been the focus of much of the (early) Bronze Age activity in its immediate vicinity but the mixing of pottery sherds from a variety of different vessels from different periods suggest there was prior early and middle to late Neolithic activity on the hill slope. Sherds of V6 and V10 seem to have been disturbed from their original context and gathered into the backfilling of the cist and also the fire-pit or hearth context 400.

The radiocarbon dates from this site need to be treated with caution. The late Neolithic/early Bronze Age transition date range of 2465-2286 cal BC (SUERC-90656) (see Table 1) is plausible for V3, lying close to the cist and assumed to be early Bronze Age. The nearly identical dates that have come from the cist infill of 3622-3371 cal BC (SUERC-9066), early to middle Neolithic, and the fill of pit 405 of 3627-3373 cal BC (SUERC-90657) seems to date the occurrence of early Neolithic material in the area and not the Bronze Age activity. This discrepancy was also noted by Ballin (this volume) who suggests the burial was disturbed as he identified an arrowhead, scraper and combined tool (all are probably early Bronze Age in date) from the cist infill, rather than its floor. The complex story of activities over time, including a burial, demonstrates the reuse of favoured locations and the palimpsest nature of even apparently simple prehistoric features.

The occurrence of pottery on *Area 10* (Table 12) spans the early Neolithic (V12, V13 and V16) and into the middle/later Neolithic (V11, V14 and V15). The latter pots were found in context 227, the fill of pit 149, located south of the main features, but towards the eastern part of the site. A radiocarbon date from the fill produced a comparable middle Neolithic date range of 3330-3021 cal BC (SUERC-90699). There is some suggestion that V14 and V15 may in fact be the same vessel, but the occurrence of two, possibly three, Impressed Ware pots in this pit indicate the use of the area during the middle part of the Neolithic.

V16 (Figure 15) was an isolated occurrence towards the southern part of the site. This pottery, comprising four rim sherds, was found in the fill of pit 225, a possible fire-pit.

The focus of the main activity on the site was in the north where a linear arrangement of postholes associated with larger pits suggests domestic activity. The occurrence of pottery associated with this structure is limited to V12 in a posthole in the south of the remains, and V13 from a linear feature in the surviving northern part. Both vessels are early Neolithic carinated bowls, with V13 being a well-made pot (see Catalogue). The conjoining sherds of V12 were found in the fills of pits 90 and 118, suggesting some contemporary use or closure of the features. The carbonised food remains on the pottery indicate that it was a cooking pot. Sooting was also noted on V13 indicating its possible use on the hearth, but its location in the fill of feature 215, suggests that a drain or trench was levelled up with material incorporating sherds of the pot.

Discussion

Recent work in the wider area south and west of Glasgow has brought to light prehistoric settlement at a number of places in South Ayrshire, East Ayrshire and South Lanarkshire that share similarities with the results of the Maidenhill investigation.

Early Neolithic Carinated Bowl pottery is commonly found on prehistoric sites and one of the largest recent collections in the region was that identified from Snabe Quarry in South Lanarkshire (Ballin Smith 2015b). Thirteen vessels, predominantly plain, with rolled and everted rims and carinations came from a small number of pits that were dated to the first half of the fourth millennium BC, both contemporary and somewhat earlier than the pots from Maidenhill. Ten vessels were deliberately placed together in one pit at Snabe Quarry indicating intention closure of it (Ballin Smith 2015b, 18-19). The large number of sherds comprising V1 (44) and V2 (26) from Area 1 at Maidenhill may suggest a similar action with the purposeful burial or disposal of the pots in the two adjoining pits before they were filled in and not used again.

The recently published Colinhill at Strathaven (Spence 2019) produced settlement from the Neolithic and the Bronze Age with a range of contemporary pottery. Pit A011 from that site contained hazel nutshells, burnt bone, at least one pottery vessel and pitchstone artefacts. Its date range of 3708-3637 cal BC (SUERC-67765) is similar to that of pit 028 from Area 1 at Maidenhill, as is its variety of finds, including the preservation of sherds of an early Neolithic Carinated Bowl (Spence 2019, 8-9; Ballin Smith 2019b, 28, figure 10).

The Colinhill site is also interesting in that it also produced middle/late Neolithic Impressed Ware bowls, vessels 5 and 6, both from pit groups. Vessel 6 is similar to Maidenhill's V11 and V14 with decoration on the top of the rim and body of the pot. The design in this example was created by a bird bone, like Maidenhill V14, rather than a finger nail as in Maidenhill V11. However, the shape and motif distribution on these vessels shows cultural similarity, with potters using easily available tools to create elaborately decorated pots that were different from what had been made earlier. Other similarities between the two sites are the occurrence of fragments of a late Neolithic/early Bronze Age Beaker and later Bronze Age sherds with T-shaped rims.

Work in advance of development on a terrace besides the River Ayr in Ayr produced a number of vessels, predominantly of middle to late Neolithic Impressed Ware (Ballin Smith 2019a and figure 9). The pottery was found in pits, a posthole and in a deposit within the excavated area and produced a variety of decorative motifs produced by bird bones, twine and finger nails on the tops of rims and down the body of the vessels, not unlike the examples already discussed. The radiocarbon dates for this pottery span the middle Neolithic period.

Impressed Ware vessels have also been recently found at Ladywell, Girvan, South Ayrshire (Ballin Smith forthcoming), with associated radiocarbon dates of between 3366 to 3037 cal BC – the middle Neolithic. Eight other similar pots were found at Monkton (Ballin Smith 2015a, Figure 6), one from Barassie, also South Ayrshire (Ballin Smith 2017, 74-83), and sherds of other vessels from Laigh Newton, East Ayrshire (Ballin Smith 2011, 21-22). These distinctive bowls, once considered to be late Neolithic in date are now firmly considered to be middle Neolithic (the second half of the fourth millennium BC) due to increasing numbers of recently discovered sherds and vessels and their close association with reliably radiocarbon dated samples.

Sherds of Beaker pottery are commonly found on prehistoric sites, either whole if buried in a cist for example, or as fragments. They have been noted at Ayr Academy, Colinhill and Monkton, and many fragments were decorated with closely positioned horizontal lines incised by a cord (see references above for these sites). V4, an All-Over Corded Beaker of late Neolithic/early Bronze Age date, was mostly likely buried as a complete or near complete vessel on Area 6. It was located in a pit on the west side of the cist in pit 411 and within three metres of it. It was mirrored on the east side of the cist by another pit with the scant remains of a possible second (domestic) beaker V7, with incised designs. Lying between the two, and south of the cist, in a shallow pit was V3 a cup, one of the more unusual vessels recorded from Maidenhill. All three vessels are

likely to be products of early Bronze Age ritual activity, although not necessarily contemporary, and are most likely intimately associated with the construction, use and backfilling of the cist.

Highly decorated miniature vessels are known from the early Bronze Age often associated with cremation rituals and burials (see Ballin Smith 2021) but this plain pot is slightly different. It is of local, traditional manufacture with organic and quartz temper, and was not well finished or well fired. It is possible that it was hurriedly made in order to fulfil a purpose for activities associated with a cremation or burial. Although small plain vessels, mainly bowls, are known from Fife and North Berwick in Scotland (see Clarke 1970, Vol 2, 284) that are closely associated with All-Over Corded Beakers, there does not seem to be an immediately recognisable parallel for this pot.

The collection from Maidenhill, when viewed with associated artefacts and comparison of features in which it was found, displays remarkable similarities with other archaeological sites in the area. A common culture is described in the pottery – in vessel manufacture, in shapes, designs and decorative motifs and the placement of those motifs. There may be slight differences in the execution of designs, indicating individual potter's interpretations of the attributes of that common culture, but a middle Neolithic Impressed Ware vessel is easily recognisable, and suggests close association between settlements of the period. The early Bronze Age cup is an anomaly but may be a rare example of expediency for a specific event.

Appendix – Vessel Catalogue (appended)

Interpretation and discussion

The archaeological interventions revealed a wealth of information about landscape uses of this site, but the complexities and uncertainties of interpretation are highlighted by the radiocarbon dates, archaeobotanical information, and research into the material culture left behind. The excavated areas are discussed from the earliest to the latest based on the radiocarbon dates, but even this is very subjective.

Like many excavated sites in the region, and beyond, for example, Main Street, Monkton (Rennie 2015), Snabe Quarry, Drumclog (Kilpatrick 2015) and the excavations at the Ayr Academy (Arabaolaza 2019) a background of late Mesolithic presence is often reported from radiocarbon dated samples from pits. This background presence of late Mesolithic activity, mainly in the form of fire-pits, was also identified in Area 3 and Area 9. In both areas, pits are the rare identifiable remains of a camp, as hunter-gatherers moved through the landscape.

A multiplicity of features

One of the earliest dated areas, and the most complex, is *Area 10*. Apart from other widespread and isolated features in its southern part, it had a concentration of features packed into a roughly 20 m^2 flattish area of loose stone and visible bedrock to its north-east (Plate 15). The pits and postholes excavated there formed three discrete groups, two of which are difficult to interpret. The earliest dated features, a number of large pits, postholes, surface deposits and stakeholes are situated in the north-east, where their interpretation is made complex by the radiocarbon dates, their location near the crest of the hill, and the intrusion of animal burrows.

The posthole alignment running through the area was the dominant feature but it contained a paucity of organic material and no artefacts. The radiocarbon date from alder charcoal from the infilling of posthole 084 could have incorporated domestic hearth waste from the hearths of early Neolithic date to the west. There alder was used as a fuel, and a similar radiocarbon date of the 3703–3642 cal BC was produced from a sample from fire-pit 093. The interpretation of the posthole alignment as early Neolithic is uncertain. It is undoubtedly a barrier, a field-boundary or similar, but its actual date of construction and use is ambiguous.

The features to the east of the line of postholes are a mixture of large pits, mostly fire-pits, and those used for domestic hearth waste, some small postholes and stakeholes, and they also include the remains of surface deposits in the north. A narrow trench or linear feature seemed

to link two of the deposits. The latter are problematical as they appear to be redeposited subsoil containing only small amounts of carbonised organic matter and no cultural material. The two main features of this area are pits 259 and 095. Pit 259 was a large stone-lined fire-pit in which oak and hazel fuel was used. The remains of hazel nutshells indicated they were gathered for roasting for food. This pit was used more than once, and the excavator considered it initially to be two pits that became one. The large number of pitchstone fragments including flakes and microblades found in the pit, is considered to be a deliberate deposition, similar to that found under the barrow at Fordhouse Barrow, Angus (Ballin 2004), but most likely after the final use of the feature during the latter centuries of the fourth millennium BC.

Alder and oak wood were used as fuel in both firings of pit 095, and cultural material in the form of a small number of pottery sherds formed part of its fill. The problem is the relationship of this pit to linear feature 215, through which it was dug, and the relationship of the linear feature to the thin surface deposits of redeposited subsoil, which were considered to be earlier. The difficulty of excavating this area, its stony character, plus the likely intrusion of burrowing animals makes interpretation uncertain, but it is likely that 215 is a burrow rather than an archaeological feature, and the surface deposits may be the results of its excavation. The occurrence of sherds of early Neolithic pottery from its fill and its early Neolithic radiocarbon date implies that early Neolithic activity from the latter part of the fourth millennium BC certainly took place in the immediate vicinity, but was most likely associated with the repeated use of the pits.

From the evidence of other pits, the hill top was visited more than once during the early Neolithic, for perhaps longer and repeated stays, and also during the middle Neolithic, as demonstrated by pits to the west of the posthole alignment. Here, a small group, included a larger fire-pit (082) within which hazel wattle-work from perhaps an old windbreak, was burnt between the middle centuries of the fourth millennium BC. Similar evidence was produced from the south-west group of pits some distance away from the concentration at the top of the rise, where copious hazel wood, was burnt in the pits.

Plate 15: Area 10 the features in the NE group during excavation.

The pattern of features further to the south suggests the hillslope was a favoured spot for visits probably by small numbers of people. The most informative pit was 149, south of the concentration of features at the crest of the hill. It was a shallow pit that produced a middle Neolithic radiocarbon date of the first half of the fourth millennium BC. It contained both early and middle Neolithic pottery, and a fragment of a polished stone axe in Cumbrian tuff, of early Neolithic date, was found closely associated with it. The situation was not unlike the contents of the pit at Carzield in Dumfriesshire (Maynard 1993, Ballin 2015), but it also emphasises that the reuse of pits was a common feature of this area.

The hillslope was still used for activities in the early Bronze Age as a large elongated and unlined pit 113/110 was dug into the southern part of the early Neolithic group of features in the north-east. Cremated human bone, and some animal bone, was placed in the centre of the fill of the pit. During post-excavation analysis it was clearly identified as a burial pit for a possible male adult and a sub adult. Green staining on some of the bone fragments could indicate the presence of copper-alloy as pyre goods during the cremation, although soil chemical processes cannot be ruled out of the explanation for the colouration. A radiocarbon date was not produced for this pit, but it is most likely to be early Bronze Age in date. The pit, although not formalised as a cist, was orientated NW/SE and lay below the crest of the hill, which are common attributes of cist burials in the early Bronze Age (Ballin Smith 2014, 131).

Tradition or belief

Although mundane activities of gathering, food preparation and the knapping of new tools or the repair of old ones were being carried out on *Area 10* in the early Neolithic, there are also elements of possible belief systems. The deposition of pitchstone fragments in one pit, and a fragment of an 'expensive' polished stone axe in another, suggests other dimensions to people's lives. These items can perhaps be considered as offerings for a safe journey, a good harvest or a hunt, or by leaving something of their selves behind it would ensure a return visit for the travellers.

The motives for deposition can only be conjectured because of the distance in time. However, in their recent study of the incidence of older objects found in later prehistoric contexts, Knight *et al*. (2019, 4-5) interpret objects in five different categories that are equally valid for the deposition of objects at Maidenhill in pits with a contemporary use. For example, was the polished stone axe fragment an heirloom? Did it embody memory, the identity of the owner, or was it considered magical? The pitchstone fragments could be considered reused or recycled objects, or the products of manufacture, but they could also embody the depositor's or owner's cultural identity. It is quite possible that objects were deposited because of remembering the place itself, the time of year, the choice of companions, etc.

To some extent, part of what is suggested as tradition or belief in the early Neolithic, is also present in the burial of the two individuals at a later time. By leaving the remains of people at this place, it is marked as 'special' and a place to be remembered. The burials can also be a statement of past or present ownership of the land, and they provided memories for others that were present at the burial. The hillside had been considered a 'special place' for a long period of time in prehistory.

The 'perfect' camp site

Other early human activity was identified in *Area 1*, in the form of pits found during trial trenching and later excavation. They were located in the highest contours of the investigated area with views towards the east and the north, and overlooking an eastwards flowing stream. The small groups of pits, identified as fire-pits, were the remains of short visitations to the site, but there was no evidence of permanent settlement. From the high number of carbonised hazel nutshells from pits 028 and 036 in the southern part of the area, it is assumed that nuts were harvested and roasted for food. Fuel for the fires consisted of hazel, alder and oak gathered from the immediate surroundings, and whist people sat round the fires lithic artefacts were made, including a leaf-shaped arrowhead, with knapping debris falling into the fire. The stones utilised for tools were pitchstone, flint and a little quartz, brought by the visitors to the site, as they were not local stones. The contents of fire-pit 028 also included fragments of burnt bone from the remains of hunted animals or birds, and sherds

of two carinated bowls probably used for cooking purposes. The pots were either broken during use, or deposited deliberately as fragments in the fire-pit during the filling in processes.

Ballin Smith (see Prehistoric Pottery, above) suggests that pots were not carried by travellers on their journeys. They were heavy and easily breakable, and most likely made as required when people stayed at a camp for more than one night. Before they moved on they had to divest themselves of the pots and a fire-pit was an obvious location. The survival of mainly rims is due to their thickness and the lack of contact with the fire, but they are parts of pots that reflect, in this case, the early Neolithic identity of the travellers.

Other knapping debris from tool manufacture formed part of a deposit (033) and the fill of a nearby pit (30002), which contained many fragments of both flint and pitchstone from knapping. This evidence combined with radiocarbon dates, indicates that it most likely took place during the the second half of the fourth millennium BC in the early Neolithic period, and overlaps in time scale with some activities on Area 10 (above).

One pit in the north of this area indicated there was a much later camp or visit where hazel was used on the fire and where barley was being processed or eaten. The radiocarbon date from barley suggested this camp was established in the middle Bronze Age, between the 13th and 15th centuries BC.

Special deposits and early Bronze Age burials

Area 6, like Area 10, was characterised by a cluster of pits dug into bedrock in the centre of the excavated area, with other pits and postholes surrounding them mainly to the south. The pit cluster, located near the top of the hillslope (Plate 15) was established in the early Neolithic in the middle centuries of the fourth millennium BC. A number of smaller pits surrounded the main feature 411, which was a stone-lined pit or cist.

A small amount of cremated human bone from one individual was recovered from the fill of the cist along with some animal bone. When the pit was filled in sherds of an early Neolithic carinated bowl and a scraper/scale-flaked knife probably of Yorkshire flint, were either deliberately placed in it during backfilling or formed part of the backfilling material (see Lithic analysis). It is quite possible that the pit was reused during the late Neolithic/early Bronze Age from its original use in the early Neolithic.

The complications of understanding the use and dating of these pits is demonstrated by pit 400, located a few metres to the south of pit 411, and positioned adjacent to the equally large but rock-cut pit 405. As well as the remains of charcoal from mixed woodland resources, pit 400 also contained a fragment of the same early Neolithic bowl, V6, as in pit 411, fragments of a middle Neolithic decorated vessel V10, an early Bronze Age pot (V9), and one of the middle to late Bronze Age (V5). Also in this group, pit 398 produced an early Bronze Age cup, and pit 395 contained fragments of Beaker vessel and a small barbed and tanged arrowhead. Both these pits are considered to be late Neolithic to early Bronze Age in date.

This cluster of pits is complex and reflects the various visits to the area over a long period of time. The use of the pits and their inconsistent dating could have been the result of burrowing animals, such as badgers that often target less stony material for their sets. The presence of a cup and a Beaker suggest feasting, and although used in domestic activities they are most often associated with burial rituals. The deposition of an early Neolithic scraper/knife and a much later arrowhead in two separate pits, demonstrates the longevity of beliefs of leaving something behind (see above).

The features south and north of the cluster produced little material culture but provide information on the mixed woodland in the vicinity from the early Neolithic. The southernmost pit (448), is not radiocarbon dated but large quantities of barley with some oat grains and a few fragments of burnt bone were found within its fill. The pit was used as a simple kiln to dry barley after harvesting. The burnt subsoil in the base of the pit and the presence of burnt clay, indicate that this was heated to high temperatures. A medieval or later date is suggested for this feature (see Archaeobotany, above).

Latest activities

The area that produced the later radiocarbon dates, predominantly from the Bronze Age is *Area 11.* Like the other areas discussed above, this too had a cluster of features in its central part, some of which were dug into bedrock, with only a small number of pits located in the wider stripped and excavated area.

An arc of a curved ditch is the largest feature. Although it was considered to form a small enclosure it did not form a link to the bedrock outcrop at its southern end. Arcs of two ditches identified as palisade trenches at West Acres (Toolis 2005, 492-493) were excavated c. 1 km away from Maidenhill and were closely associated with early and middle Bronze Age activities.

A small group of undated postholes lay to the east of the Maidenhill curved ditch that might have been associated with it. As with many other features, the ditch was filled with domestic hearth waste, and included a fragment each of flint and chert waste. Two radiocarbon dates from the ditch indicated that the material filling it was probably from the second half of the third millennium BC, and therefore earlier in date than those from West Acres (ibid.). A line of three, possibly later pits led west from the bedrock, and together with the location of the curved ditch may indicated alterations to a boundary.

Postholes located further to the east from the ditch also returned early Bronze Age radiocarbon dates of the second half of the third millennium BC, and indicate repeated visits to the area. It is unlikely that any of the features were contemporary. The only other feature worthy of mention is pit or posthole 361, which contained a cache of 85 rock crystals, most likely deposited deliberately in its fill. Otherwise this area was noted for its paucity of artefactual remains.

Conclusions

The information from these excavations is patchy, with radiocarbon dates and other evidence not always in agreement. The evidence people left behind provides a picture of activities from the very end of the late Mesolithic, through the early and middle Neolithic, and into the early Bronze Age. As no permanent settlement was discovered, this landscape seems to have been a zone of transition, with people moving through it: they camped for what appears to have been short periods of times, and at certain times of the year. From the almost ubiquitous occurrence of hazel nutshells from pit fills, autumn seemed to be the time of greatest activity – gathering wild food, perhaps even hunting, as bones and flint fragments indicate. Grains of cereals were absent reinforcing the suggestion that travellers lived off the land.

The remains of camp sites are the fire-pits, refuse pits, the occasional posthole and stake holes. After use some of the pits received deposits of specific items prior to, or during, backfilling. These included 'exotic' items of pitchstone, a fragment of a polished stone axe, and Antrim or Yorkshire flint, all from beyond the immediate area, as well as sherds of locally made pottery, which could have had meaning beyond that of the commonplace disposal of rubbish (Brophy and Noble 2012, 68-71). Pits with similar 'special' deposits have been found in the wider area at Colinhill in Strathhaven, South Lanarkshire (Ballin 2019, 26-2; Ballin Smith 2019b, 31), Hillhouse, South Ayrshire (Green *et al*. 2021) and Snabe Quarry in Drumclog, South Lanarkshire (Kilpatrick 2015, 25-26), to name but a few. The movement of peoples carrying with them exotic pieces of stone, whose significance is unknown, indicate that there may, already in the early Neolithic, have been established transport/exchange/knowledge routes between the Firth of Clyde/Irish Sea area and the Firth of Forth and the North Sea. The movement of peoples and the transitory nature of much of the evidence on the excavated sites suggest that somewhere in the adjacent landscapes there were permanent settlements.

The burial of the remains of at least three people in a pit and a cist, and the occurrence of contemporary pottery and flint artefacts emphasises the importance of the area in at a time when people where settled and lived permanently on the land. The position of the burials, as well as the pit alignment in Area 6, and the structure beside the bedrock outcrop in Area 11, suggests parts of the landscape were owned and demarcated by fences or other boundaries.

According to Alexander and McCrae (2012, 43) very little early settlement activity has been found in this locale, possibly due to poor environmental

conditions inhibiting significant settlement at the time, or the picture is skewed by the lack of archaeological intervention. Much of the area is still dominated by open upland farming with little recent infrastructure or housing development. The present work is therefore important as it indicates that prehistoric activity occurred from an early period around the edges of the upland areas, and that those individuals who passed through this landscape brought with them ideas and practices from further afield.

The excavations emphasise the importance of archaeological intervention before new development in East Renfrewshire, even though it can often be complex and difficult to interpret.

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4757-5098 Maidenhill Pottery Catalogue V1 191125

Context and location	*Vessel description*	*Image*
Area 1		
Vessel 1 SF 4 Context 34 the fill of pit 028. Conjoined with pit 036	A total of 44 sherds comprise this vessel, which includes 6 rim sherds, four carinations and 34 body sherds. Together they weigh c. 780 g. The sherd thickness varies depending on the type of sherd. Rims are thinnest with carination and body sherds varying considerably. The fabric of the vessel contains irregularly shaped fine to coarse quartz sand, quartz rock and other minerals, and includes organic material. Two and two rim sherds conjoin (see image opposite). The rim form is a simply everted with a rounded back, but it is inconsistently moulded. There is also some loss of surface from the sherds. The estimated rim diameter is c.160 mm and c. 24% of the rim survives. Four thicker sherds carrying evidence of a carination may be part of the same vessel. The carination was made by applying more clay to the body of the vessel and moulding it. It is c. 14 mm in breadth and protrudes 8 mm from the vessel. Several large body sherds (2 conjoin), with other smaller sherds are predominantly from the upper part of the vessel or from below the carination. Although some sherds are burnt none are recognised as from the base of the pot. Some are burnished and others are smoothed where the burnishing has worn away. There is evidence of wiping with grass/straw and carbonised food remains are common. Early Neolithic carinated bowl.	

Vessel 2 SF 4 and 5 Context 34 and 35, the fill of pit 036 which was conjoined with pit 028	This vessel comprises a total of 26 pieces including, 5 rims, 4 carinations and 17 body sherds. Their total weight is 301.6 g. The average thickness of the pottery is 8.3 mm. As the location of this vessel and Vessel 1 overlap there is some mixing of sherds from the two vessels. The fabric is similar, with quartz and organic material suggesting they are contemporary vessels. The rim is unevenly moulded, but like V1 it is also rounded and everted, but badly finished on the exterior of the pot. It was not possible to estimate the rim diameter from the surviving sherds. The neck of the vessel is slightly convex. In contrast to V2 sherds show a weak and poorly formed carination. It was only slightly pinched out of the clay forming the shoulder of the vessel. The largest sherd is burnt. Body sherds are more heavily abraded than V1, some are burnt and the exterior surface has been lost in some cases. The finishing is as V1. Early Neolithic carinated bowl.	
Area 6		
Vessel 3 SF 107 Context 399 the fill of a shallow pit dug into bedrock	This small plain vessel comprises 18 sherds (2 rims, 5 flat base sherds and 11 body sherds. Several sherds conjoin, but a full profile has not been achieved. The total weight of the pottery is 96.7 g and the average thickness of sherds is 7.6 mm. The pottery included fine to medium angular grits including some quartz and organic material. Other minerals were not identified. The pottery is extremely fragile and was excavated from a block of soil. The pieces are not well fired as the grit is not integrated with the clay. It was probably made as a little thumb pot with a flat base, rounded basal edge and straight rounded-topped rim. The rim is estimated to have been c.50 mm in diameter and c. 25% survives. The base measures c. 50 mm in diameter and c.85% remains. There is no evidence of finishing apart from smoothing. The pieces are abraded and possibly burnt. Small cup – EBA?	

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Vessel 4 SF 105 Context 395, a thin grey deposit on hill top	This beaker comprises 88 sherds (7 rims, 7 carinations, 5 flat-base sherds and 69 body sherds. The total weight of the sherds is 256.5 g and their average thickness is 5.7 mm. The clay contains fine – medium grains of quartz and finely ground/coarse grains of other minerals. Organic material is also present. Fragments of an S-shaped beaker, with a slightly everted rim from a concave neck. The top of the rim is flattened slightly. The rim measures c. 140 mm in diameter and c. 34% is present. The decoration of an impressed Z-twist cord starts c.10 mm below the rim top and carries on down the vessel to the base. The carination is weak but two sherds conjoin. There are five base/base edge sherds, some conjoin, and the decoration is impressed close to the base edge. The pot was probably made using the thumb pot method. The base measures c. 100 mm in diameter and c. 25% survives. The finish of the vessel is not clear due to slight abrasion of the exterior surface, but it was smoothed before being decorated. The vessel is slightly corky because of the burning out of organic material. Grass impressions are noted. All Over Corded Beaker – LN/EBA	
Vessel 5 SF 139, 140, 147, 150 The middle fill in pit 400	Four sherds comprise this pot. Two are rims and 2 are body sherds. The total weight of the pottery is c. 55.1 g with the average sherd thickness of 9.9 mm. The unidentified temper in the pottery is medium-coarse but organic material is also present. The rim is T-shaped with flat rim top 24 mm wide, and which is everted to the exterior by c. 11 mm. It is also slightly everted to the interior. The rim is unevenly moulded but the measurement from the interior of c. 160 -170 mm and c. 7.5 % is present, is uncertain. The rim edge is rounded. One additional rim sherd is unevenly moulded. The plain body sherds are slightly lumpy because of the grits. Some wipe and grass marks are present along with sooting. Probably later BA.	

Vessel 6 SF 130 and 143 Context 412 and 428 fill of cist 411/413 and and middle fill in pit 400	This vessel comprises only three sherds (2 rims and 1 body sherd) weighing 51.3 g with an average sherd thickness of 12.7 mm. The pottery contains fine-coarse temper, some of which is mica and organic material. The rim is thick and everted with a 17 -18.5 mm wide interior bevel. Its top and edge are rounded but its exterior surface is abraded and burnt. The join between the body and the rim is noted on the interior surface of the sherd. Exterior carbonised food remains, wiping, and grass marks are present. The abrasion could suggest this sherd was residual and became part of the infill of the cist rather than deposited deliberately. Probably EN	
Vessel 7 SF 104 Context 391 fill of pit 390	Only two body sherds from this site have been recognised as decorated with incised lines. They weigh 12.2 g and have an average sherd thickness of 9.1 mm. The mineral content of the clay is largely unidentified but possibly includes coal fragments as well as organic material. The two sherds are part of the same vessel and are decorated with finely incised lines in an oblique criss-cross design, reminiscent of EBA burial urns or Beakers. The pottery was smoothed, and has evidence of wiped and grass marks. EBA pottery?	
Vessel 8 SF 106 Context 394 fill of pit 404	A single rim sherd comprises this vessel. It weighs 6.1 g and has a sherd thickness of 8.2 mm. The minerals in the clay are unidentified but it does contain organic matter. The rim is straight with a flattened top. It is unusual in this collection as the coarse temper/grits protrude through surface, indicating there were problems finishing the pot to a high standard. The exterior was smoothed and there are grass impressions, and sooting is visible. Undated.	

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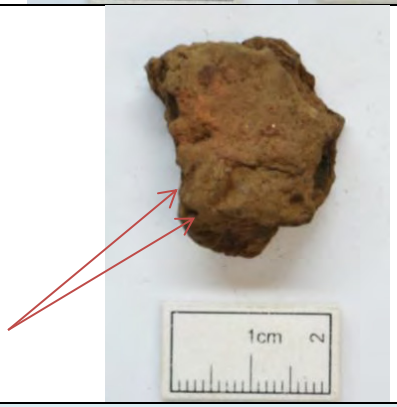
Vessel 9 SF 120 Context 428 middle fill in pit 400	This single rim weighs 17.8 g and has a sherd thickness of 12.5 mm. The minerals added to the clay are unidentified but are fine to coarse in size. The rim is everted and wedge-shaped with a significant bevel to the exterior, 18 mm wide. The edge of the rim is rounded and the neck of the vessel is straight. The pot seems to have been smoothed top of the rim, and the sherd has exterior carbonised food deposits. Undated but possibly EBA.	
Vessel 10 SF 128 Context 428 middle fill in pit 400	This single sherd weighs 7.4 g and has a sherd thickness of 10.4 mm. It is an irregularly shaped sherd, with unidentified minerals and the presence of organic material. The sherd is decorated with a faint impression of a thumb and first finger ( ) pinch motif (arrowed), characteristic of the MN/LN. The sherd is also burnt and abraded but interior carbonised food remains are present. This piece could be residual. MN.	
Area 10		
Vessel 11 SF 23 and 24 Context 149 pit filled with 227	Two conjoining rim sherds and a separate body sherd form this vessel. The weigh 46.4 g and average 11.1 mm in sherd width. The mineral temper is unidentified but organic material is present in the clay. The rim sherds broke at a coil join with the body of the vessel. They are straight rims but with a c. 18 mm wide bevel to the interior (shown). The interior of the rim measures c. 160 mm in diameter and with c. 12.5% present. The sherds are decorated by two parallel rows of incised finger nail design, closely positioned on the bevel. The upper motif is deeper than the lower line. Just below the rim edge on the exterior is a closely positioned horizontal line of finger nail incisions, with wider spaced larger finger nail incisions below (made by a right hand). The sherds are burnt internally. MN impressed ware.	

Vessel 12 SF 43-45, 47, 49 Context 182 and 198 fill of pit 118 and pit 90	A total of 28 sherds form this vessel (9 rims and 19 body sherds), weighing 129.8 g with an average sherd thickness of 7.1 mm. These sherds are probably all from the same vessel. The clay body includes quartz, mica and unidentified minerals as well as organic material. The rim form is straight but with an unevenly moulded top, but is everted with a rounded top and back to a slightly concave neck. Some rim sherds are rolled over and are poorly finished. It was not possible to measure the rim diameter because of it being inconsistently moulded. The body sherds are plain and some are burnt. The vessel has been smoothed and polished, some sherds are burnished. Others show wipe and grass marks and carbonised food remains are present. The exterior surfaces and rim tops are smooth. EN carinated bowl.		
Vessel 13 SF 62 and 63 Context 247 deposit in linear feature 215	Three sherds (two rims and a body sherd) conjoin to form this vessel. Together they weigh 37 g and have an average sherd thickness of 5.1 mm. Although the mineral temper is largely unidentified, there is some quartz, and organic material is also present. The rim has an open form and is everted with a rounded back and a flat/rounded edge. The moulding is slightly uneven but it is estimated that the rim diameter was c.210 mm and c. 13% of it survives. The neck of the vessel is straight. The pottery is smoothed, and has been wiped as grass marks are present. It was probably burnished, and some sooting is visible. EN carinated bowl.		

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Vessel 14 SF 60 Context 227 fill of pit 149	A single rim weighting 43.3 g forms this vessel. It has a thickness of 17.4 mm. The coarse temper in the clay includes some quartz, dolerite and other unidentified minerals as well as organic material. The rim is robust and flat- topped and its edge is round and everted. Some large grits show through the surface which would have made decoration difficult. The rim would have been c. 225 mm in diameter and c. 4% survives. The decorative motifs are impressed using a bird humerus. Four impressions survive on the rim top, 3 simple and small scoops are noted on the rim edge, and 2 humerus motifs surviving on the curve of the neck, which are deeply pressed into the clay. Any continuation of the decoration is missing. There is evidence of some wiping and possibly smoothing. MN impressed ware.	
Vessel 15 SF 57 Context 227 fill of pit 149	This single body sherd weighs 9.1 g and has a sherd thickness of 13 mm. It is Heavily gritted with very coarse gravel/stone, with some quartz, other unidentified stone and organic material. The sherd is decorated with a faint horizontal line of 3-4 slightly oblique single impressions from a small pointed stick or other implement. They measure c. 1.5 mm across. No further evidence was recorded from this sherd. Given that it was found with Vessel 14 suggests some relationship (parts of the same vessel?) but this has not been verified. MN impressed ware.	
Vessel 16 SF 74 Context 226 fill of pit 225	This vessel comprises four rims with a combined weight of 34.8 g and an average sherd thickness of 10.5 mm. The temper in the clay is unidentified apart from the organic material. It is likely that all the rims are from the same vessel even though their moulding is uneven and the rim diameter could not be measured. The rim is small, simple and everted with rounded back to a straight neck. The finish is poor. Some smoothing, grass marks and sooting are noted on the exterior surface. EN carinated bowl.	

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