



Society of Antiquaries
of **Scotland**

SCOTTISH ARCHAEOLOGICAL INTERNET REPORTS

e-ISSN: 2056-7421

**A Bronze Age barrow cemetery and a medieval enclosure at Orchardfield,
East Linton, East Lothian**

How to cite:

Kirby, M 2018 'A Bronze Age barrow cemetery and a medieval enclosure at Orchardfield, East Linton, East Lothian', *Scottish Archaeological Internet Reports* 80. <https://doi.org/10.9750/issn.2056-7421.2018.80>

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A Bronze Age barrow cemetery and a medieval enclosure at Orchardfield, East Linton, East Lothian

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Funding

Miller Homes Ltd (Scotland East Region)

e-ISSN: 2056-7421

<https://doi.org/10.9750/issn.2056-7421.2018.80>

Published by the Society of Antiquaries of Scotland with the
Archaeology Data Service archaeologydataservice.ac.uk.

Society of Antiquaries of Scotland
National Museums Scotland
Chambers Street
Edinburgh EH1 1JF
United Kingdom

Managing editor: Catherine Aitken
Copy-editor: Susan Milligan
Production: Raspberry Creative Type, Edinburgh

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1. ABSTRACT

Three ring-ditches, interpreted as a Bronze Age barrow cemetery, and a large ditched enclosure of likely medieval date were excavated at East Linton in advance of residential development. Cremation burials were recovered from all three of the ring-ditches, from their upper ditch fills and from a central pit in one of the ring-ditches. Also mixed into the fills were sherds of pottery, a few lithics, and two stone grinders/rubbers. A large pit close to one of the ring-ditches, which may have been used to dispose of the residue ash from one or more funeral pyres, was also excavated and provides an insight into the wider ritual activity taking place on or near the site. To the east of the barrow cemetery, a meandering length of ditch is considered to be medieval in date and probably forms an enclosure. Radiocarbon determinations produced Middle Bronze Age dates for samples of cremated human bone, with charred grain producing Iron Age and medieval dates.

2. INTRODUCTION

CFA Archaeology Ltd (CFA) was commissioned by Miller Homes Ltd to undertake a programme of archaeological trial trenching in advance of a proposed residential development on land adjacent to Orchardfield, East Linton. The area was located on the western side of the southern outskirts of the village on an area of agricultural land bordered to the north by the East Coast Mainline Railway (NGR NT 588 771, Illus 1; NMRS No. NT57NE 247). Situated on fertile low-lying ground and within *c* 400m of the River Tyne, this area was considered to have excellent archaeological potential, with the high possibility of uncovering prehistoric remains being reflected in the number of known archaeological sites within the immediate vicinity.

Trial trenching in 2010 led to the identification of two groups of features, one consisting of two ring-ditches and the other of what appeared to be a number of linear features. Mitigation measures agreed with the East Lothian Council Archaeology Service resulted in two areas (Area 1 and Area 2, Illus 1) being soil-stripped and subjected to a comprehensive programme of excavation during October and November 2011. The soil stripping operations identified a third ring-ditch in Area 1 and showed the linear features to represent a single continuous meandering ditch in Area 2, possibly representing part of a larger enclosure.

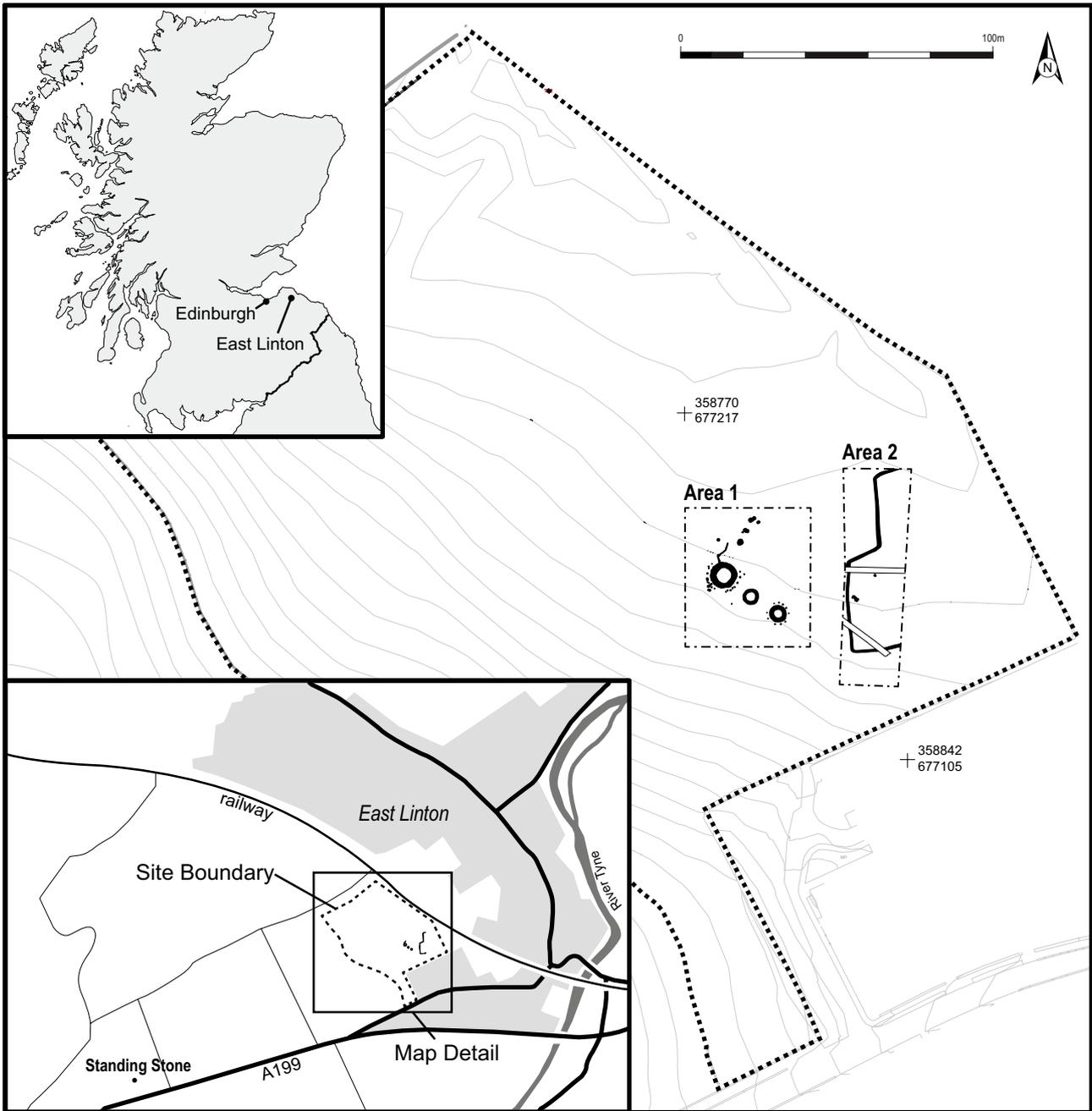
2.1 Topography and soils

The topography of the area in which the archaeological features were situated consisted of

undulating farmland at an altitude of *c* 30m AOD, sloping very gently downwards from south-west to north-east, with the River Tyne to the east. The features had been cut into the natural substrate, which varied from very hard compact sandy gravel and degraded sandstone bedrock to very soft loose sand. Overlying these features there was *c* 0.8m of topsoil and overburden. Due to the depth of the overburden it is unlikely that the features have suffered from modern plough damage. Consequently, any truncation to these features is likely to have affected only the part of the feature cut into the then existing overburden (barrow material or topsoil) and not the part of the feature extending down into the natural. The truncation of the 'above natural' part of the features is likely to have been a result of erosion or of early agricultural practices.

2.2 Methodology

Area 1, measuring 40m by 40m, was opened around the trenches containing the two ring-ditches identified during the evaluation, and Area 2, measuring 70m by 20m, was opened around the trial trenches containing the linear features. This work was carried out under constant archaeological supervision using a tracked mechanical excavator equipped with a smooth-bladed ditching bucket. The entirety of both areas was then intensively cleaned by hand to reveal the full extent and form of the archaeological features exposed. Within Area 1, all three identified ring-ditches were wholly excavated, whereas within Area 2 *c* 14% by length of the exposed enclosure ditch was excavated.



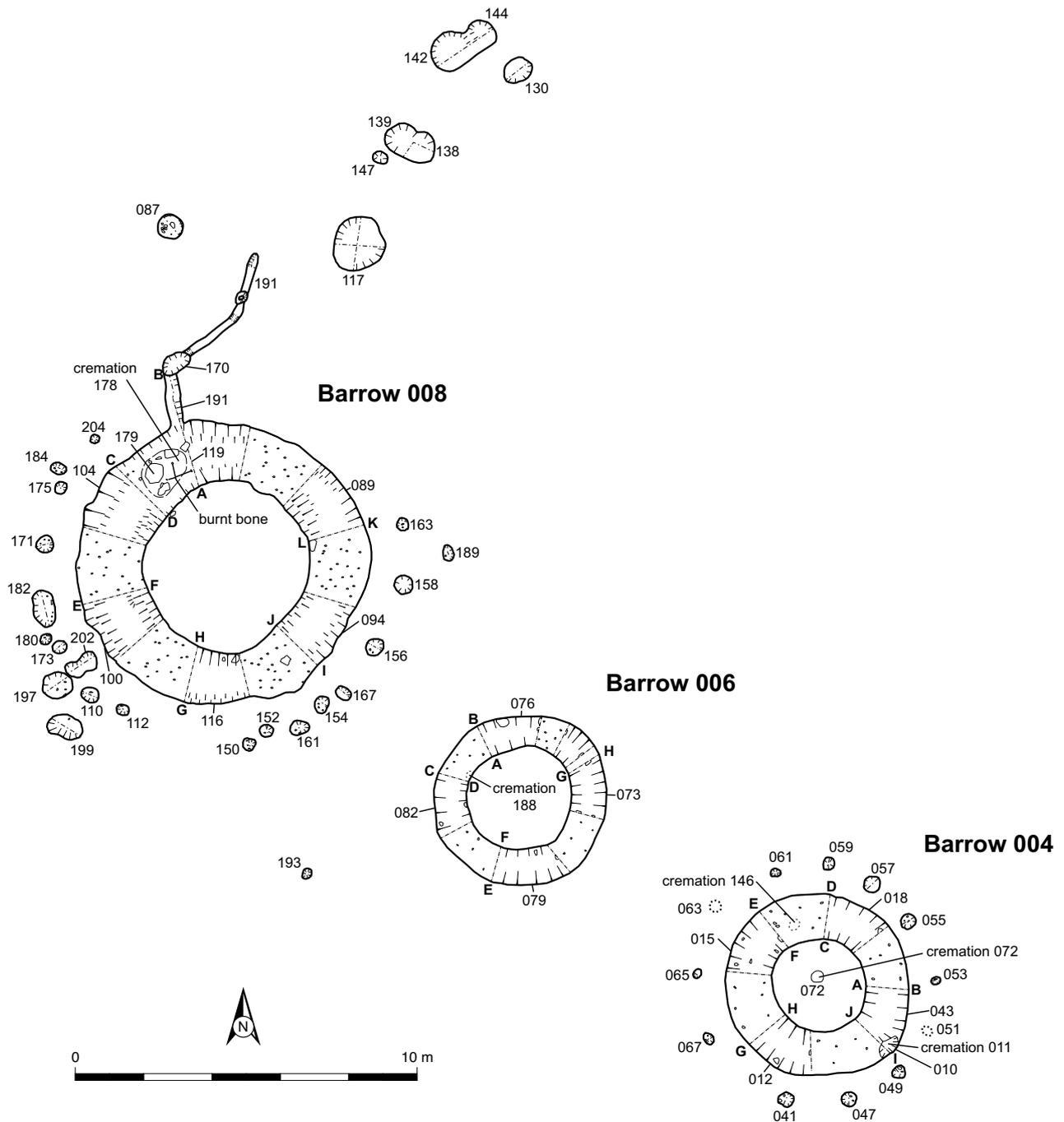
Illus 1 Location map and site plan. © CFA Archaeology Ltd

3. AREA 1: RING-DITCHES AND OTHER FEATURES

Area 1 contained three ring-ditches (004, 006 and 008, Illus 2 & 3) cut into the natural substrate (Context 003). The ring-ditches are considered to represent the remains of Bronze Age barrows, the upstanding parts of which have been destroyed by a combination of erosion and ploughing. A number of pits/possible post holes were identified associated with Ring-ditch 004

and with Ring-ditch 008, but there were no additional features associated with Ring-ditch 006.

Cremation burials were recovered from all three ring-ditches. These produced calibrated radiocarbon dates (Table 6) ranging from 1398–1220 BC (SUERC-43912) to 1208–1011 BC (SUERC-43913), placing them within the Middle Bronze Age. Two of the pits around Ring-ditch 008 produced much later dates, of 162 BC–AD 20 (SUERC-43915)



Illus 2 Plan of Area 1. © CFA Archaeology Ltd

and AD 1262–1382 (SUERC-43916). This might suggest that not all of the features were contemporary, but it could also indicate later intrusive material (see 7.1 ‘Archaeobotanical and charcoal analysis’ below). In addition to the ring-ditches and their associated features, a number of isolated pits were identified, including one containing a large amount of ash and small fragments of cremated bone (087) capped by a large flat stone (086).

3.1 Ring-ditch 004

Ring-ditch 004 was near-annular in plan with an external diameter of 5.2–5.6m and an internal diameter of 2.6–2.8m. The ditch itself generally measured *c* 1.3m wide by 0.8m deep, and had steeply sloping sides and a fairly flat base (Illus 4). It contained three fills, with the deposits consisting of light brown silty sand overlain by a deposit of yellowish-brown to grey/grey-brown silty sand, and



Illus 3 Pre-excavation photo of ring-ditches from the south-east. © CFA Archaeology Ltd

an uppermost fill of dark brown to orange-brown silty sand. Further details of these deposits are contained within the soil micromorphology report (see 7.2 ‘Soil micromorphology’ below). Three cremation burials (Contexts 011, 072 and 146) were associated with this ring-ditch.

Cremation 072 was located slightly offset from the centre of the ring. It had been placed within a sub-circular pit (071) surviving to *c* 0.3m in diameter by 0.1m deep. A sample of cremated human bone produced a radiocarbon date of 1226–1027 BC (SUERC-43911, Table 6). The human remains consisted of a small proportion of one adult, probably female (see 6 ‘Cremated bone’ below and Table 4). There are several possible interpretations for the presence of C072: this cremation could have been a primary burial placed centrally below a barrow or cairn, or could have been inserted at a later date through the putative overlying barrow/cairn, or perhaps the ring-ditch did not enclose

a barrow at all and therefore we cannot know whether the insertion was primary or not; it should be noted, however, that there is no archaeological evidence surviving to confirm or deny the presence of a barrow/cairn. The date from the sampled bone of C072 is very similar to the dates from the cremations (C011, C146 and isolated fragments of bone) which are considered to be secondary on the basis of their position within the upper ditch fills (SUERC-43906, SUERC-43907, SUERC-43913; Table 6), which means that either there cannot have been a significant time delay between primary and secondary burials or that C072 is not actually a primary burial and was inserted at the same time as the cremations within the upper ditch fills. The soil thin section analysis provides limited data on the mode of formation of the middle and upper fills of the ditch but does suggest that the lowermost fills were eroded into the ditch and that there was puddling of water, indicating it was an open ditch at

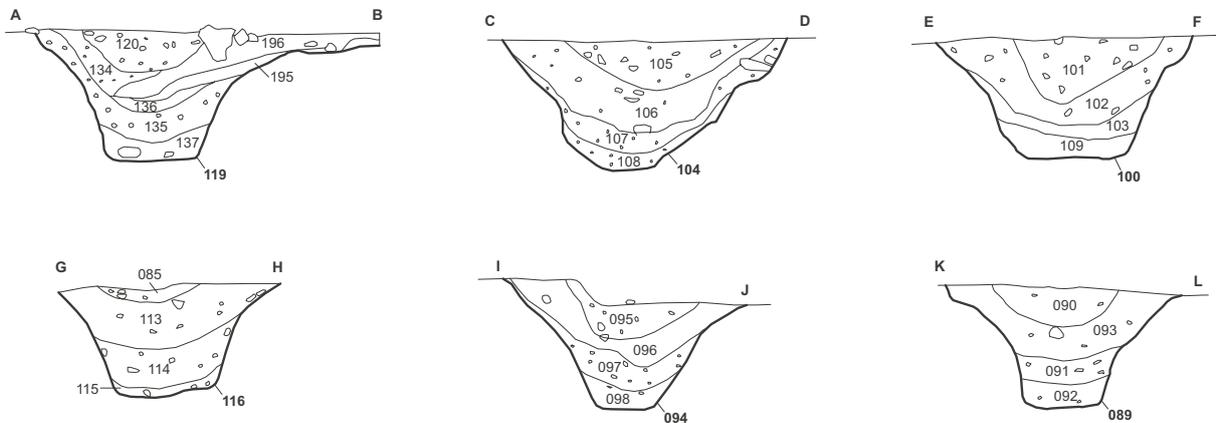
least in its earliest period following excavation. This, along with the radiocarbon dates, perhaps makes it less probable that the cremations were inserted at different times.

Cremation 011 had been placed within a sub-oval pit (010) measuring 0.6m north-east/south-west by 0.3m by 0.35m deep, which had been cut into the edge of the ring-ditch, partially cutting natural subsoil and partially cutting ditch fill (Illus 4, G–H). A sample of cremated human bone produced a radiocarbon date of 1260–1052 BC (SUERC-

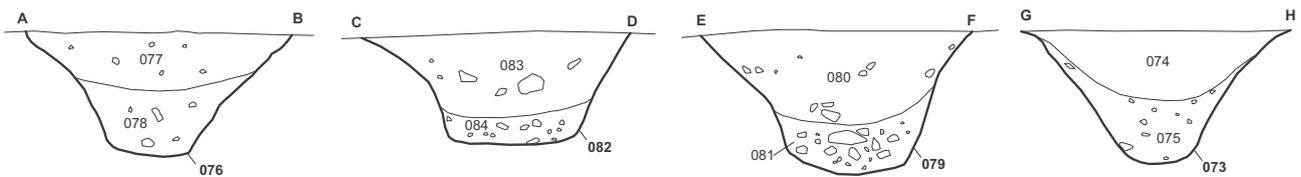
43907, Table 6). The remains consisted of at least two people, an adult and a juvenile, and the bones were abraded (see 6 ‘Cremated bone’ below and Table 4). Oak charcoal was recovered from the soil samples.

Cremation 146 was similar in nature to 011, located within the ring-ditch fill, but in this instance there was no clear evidence of a cut: the deposit was simply a rather dispersed concentration of cremated bone located within the upper ditch fill (C005/016). The human remains consisted of an

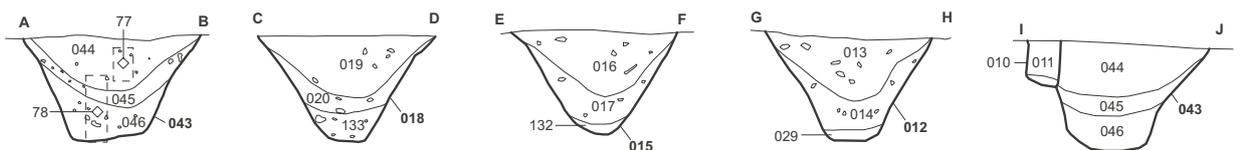
Barrow 008



Barrow 006



Barrow 004



Illus 4 Ring-ditch sections. © CFA Archaeology Ltd

adult of unknown sex (see 6 ‘Cremated bone’ below and Table 4). Oak charcoal was recovered from the soil samples. Sherds of prehistoric pottery were recovered from within the region of this cremation but there was insufficient material to suggest that it was the remains of a vessel for containing the cremated remains; however, it did consist of rim, base and body sherds, with the rim sherds of an upright and flat-topped form decorated along the top of the rim with incised chevrons (vessel P3, see 5.1.1 ‘Results’ below). A single chunk of agate was also recovered (see Table 2). A sample of cremated human bone produced a radiocarbon date of 1208–1011 BC (SUERC-43913, Table 6).

Away from the main concentration of material, further isolated fragments of cremated bone were recovered from the upper fill of the ditch in deposits C005/016. One of these fragments produced a very similar radiocarbon date, of 1372–1113 BC (SUERC-43906, Table 6). The method by which

these cremated remains entered the ditch is rather uncertain, but they may have originally been located within pits cut into the barrow material or existing overburden and have become dispersed within the upper fills as a result of early agricultural practices and/or erosion. It is also possible that they may have been deliberately scattered within the backfill of the ditch as part of the burial rite. The remains comprise small fragments of an adult and a probable juvenile (see 6 ‘Cremated bone’ below and Table 4). A further chunk of chert was found in deposit 005 (Table 2).

The presence of cremated human bone within the upper fills of the ditch and in a pit cutting the edge of the ditch (010) indicates that these deposits were inserted later in the life of the monument once the ditches had become filled in. The amount of time that passed between the excavation of the ditch and the insertion and/or dispersal of the cremations is, however, unknown.



Illus 5 Post-excavation photo of ring-ditches from the south-east. © CFA Archaeology Ltd

A ring of ten pits (041, 047, 049, 053, 055, 057, 059, 061, 065 and 067) was identified running around the circumference of the ring-ditch (Illus 2 & 5). The vestigial remains of two additional pits (051 and 063) were identified and located on the pre-excavation plan, but were eliminated during site cleaning. The centres of the pits were located *c* 0.8m from the outside edge of the ring-ditch, and they were generally *c* 1.5m to 1.8m apart measured from centre to centre. The regular spacing between the pits suggests that a possible thirteenth pit may have been present located between Pits 041 and 067, but no trace of it was identified. Due to the depth of topsoil and overburden, it is unlikely that this possible pit was removed by modern ploughing, but it may originally have been excavated only into the existing overburden deposits without extending into the underlying natural, and it may be that all traces of it have since been eliminated by erosion and earlier agricultural practices. The pits measured up to 0.48m in diameter by up to 0.23m in depth and each contained a single fill consisting of mid-brown silty sand. They might represent post holes, suggesting that there was a ring of upstanding posts around the barrow at some point during or after its original use.

3.2 Ring-ditch 006

Ring-ditch 006 was near-annular in plan with an external diameter of 5.0–5.2m and an internal diameter of 3.0–3.1m. The ditch itself generally measured 1.05m wide by 0.55m deep and had steeply sloping sides and a flat base (Illus 4). This ditch contained two fills consisting of light brown sandy silt overlain by mid-brown sandy silt.

There was no evidence of a central burial associated with this ring-ditch, suggesting that it was either never there in the first place or that it had been placed within the barrow material rather than being cut into the underlying natural. However, a concentration of cremated bone (C188) was identified close to the surface of the ditch fill. This cremation was very similar to cremation 146 (Ring-ditch 004), being rather dispersed within the upper fill of the ring-ditch; the remains could not be identified as to either age or sex (see Table 4). Two plain, very abraded sherds of prehistoric pottery were also recovered from this deposit (C188)

during wet sieving; their fabric is similar to the other vessels recorded. Given its position within the upper fill, this cremation deposit is likely to have been a secondary insertion or re-deposition. A stone grinder was also recovered from the ditch fills, as well as two small flakes of chert (see 5.2 ‘Flaked lithics and stone tools’ below). Oak charcoal was recovered from the soil samples.

3.3 Ring-ditch 008

Ring-ditch 008 was the largest of the three, with an external diameter of 8.2–8.6m and an internal diameter of 4.6–5m (Illus 6). The ditch itself measured 1.6–2.0m wide by 0.8m deep and had steeply sloping sides and a flat base (Illus 4). Generally it contained four fills with a basal fill consisting of mid to light brown sandy silt and sandy gravel overlain by light reddish-brown sandy gravel and sandy silt, then brown sandy gravel, and an upper fill of yellowish-brown to reddish-brown sandy gravel.

As with Ring-ditch 006, there was no surviving evidence of a central burial, but a rather dispersed cremation deposit (C178) was uncovered towards the top of the upper ditch fill, consisting of possibly more than one individual (see 6 ‘Cremated bone’ below and Table 4). The cremated bone was accompanied by almost 100 sherds of prehistoric pottery, the vast majority of which were plain body sherds with the exception of one small sherd which has a wide incised line. Several large stones were present within the backfill partially covering the cremation deposit. It is unclear if these stones had been deliberately placed or if their positioning was coincidental. A fragment of the cremated human bone produced a radiocarbon date of 1387–1129 BC (SUERC-43914, Table 6). Again, given its position within the upper fill, this cremation deposit is also likely to have been a secondary insertion or re-deposition. Nine small flakes of chert, flint and quartz were also recovered (Table 2), along with two stone slabs which are likely to be natural in origin (see 5.2 ‘Flaked lithics and stone tools’ below).

Twenty-two pit features and one linear feature were identified around the periphery of Ring-ditch 008 (Illus 6). Pit 170 measured 1m north-east/south-west by 0.6m and had a depth of 0.5m. A small fragment of calcified long bone, possibly a

human femur, was recovered from this pit during the evaluation phase of the works. Pit 170 cut a shallow curving linear gully (C191) measuring 0.3m wide by 0.09m deep, which ran from the edge of the ring-ditch in a north-easterly direction for a distance of *c* 7m. The fill of this gully extended beneath the upper fill of Ring-ditch 008, indicating that the ring-ditch was at least partially open at the time when the gully was silting up.

Pits 110, 112, 150, 152, 154, 156, 158, 161, 163, 167, 171, 173, 175, 180, 184 and 204 were sub-circular to sub-oval in plan, measuring between 0.25m and 0.5m in diameter and up to 0.3m deep. They all contained a single fill consisting of mid grey-brown to reddish-brown clay-silt to sandy silt. The centres of these pits were located between 0.8m and 1.2m from the outside edge of the ring-ditch, concentrating around its west and east sides. They might represent the remains of a ring of posts around the circumference of the barrow, with

possible further posts completing the ring having been cut only into the overburden and all trace of them having subsequently disappeared as a result of erosion and early agriculture. However, they did not form the well-defined and regularly spaced ring observed around Ring-ditch 004; and it is possible that the posts represent several different phases of insertion, which would perhaps account for this. Pit 189 was very similar in nature, but lay considerably further away from the outside edge of the ring-ditch at a distance of *c* 2.1m.

Pits 182, 197, 199 and 202, located immediately to the south-west of the ring-ditch, were considerably larger, measuring up to 1.1m in length, but were very shallow, measuring up to a maximum of 0.19m in depth. Consequently, they are considered unlikely to have been post holes. A burnt soil deposit (C201) was identified within the fill (C200) of Pit 199, but the remaining features contained only a single fill ranging from mid grey-brown clay-sand to



Illus 6 Ring-ditch 008 showing post holes. © CFA Archaeology Ltd

dark-brown silty sand. These pits appeared randomly spaced, lying between 0.35m and 2m from the edge of the ring-ditch, and their purpose is unknown.

3.4 Other features

To the north of Ring-ditch 008, Pit 087 was circular in plan with a diameter of 0.9m and a depth of 0.3m. It had almost vertical sides and a flat base. The primary fill (C099) of this pit consisted of black sandy silt containing burnt human bone and numerous pieces of large, blocky fragments of oak charcoal from branch wood or timbers; a small amount of hazel charcoal was also recovered. A number of flat stones measuring up to 0.2m in length were present within the fill, but there was no indication that these formed any kind of structure. Deposit 099 was overlain by deposit 088, which consisted of mid-brown sandy silt containing flecks of burnt bone and some large stones measuring 0.15m to 0.2m in length. In Section 6 'Cremated bone' (below) it is suggested that this pit may have been used to dispose of the residue ash from one or more funeral pyres. Deposit 088 was overlain by a large flat stone (086) measuring 0.75m by 0.68m by 0.15m thick. The human remains from C088 and C099 consist of at least three individuals, including an adult male, an adult probable female, and a juvenile, with a high proportion of abraded fragments (see 6 'Cremated bone' below and Table 4). A sample of cremated bone produced a radiocarbon date of 1398–1220 BC (SUERC-43912, Table 6). A stone cobble tool was also discovered in this pit, along with 20 small flakes of chert, agate and quartz, a flake of chert and two burnt flint flakes.

Pits 117, 130, 138, 139, 142, 144 and 147 were located to the north of the ring-ditches within an area of sandy natural subsoil. Pit 117 was the largest of the pits, measuring 1.9m north/south by 1.7m by 0.45m deep. It had sloping sides and a concave base, and the fill consisted of mid-brown silty sand. Pit 139 was found to cut Pit 138. The similarity between the fills in Pits 142 and 144 meant that it was not possible to establish if one pit cut the other or if they were contemporary. A flake of flint was recovered from the fill of Pit 144. Pit 130 may have been a geological deposit and not archaeological in nature, and Pit 147 was a small circular feature with a diameter of 0.42m and a depth of 0.22m.

Pit 193 was located to the south of Ring-ditch 008 within an area of degraded bedrock natural. It was circular in plan with a diameter of 0.25m and a depth of 0.06m, and it had gently sloping sides and a slightly concave base. The fill (C194) of this pit consisted of black silt containing fragments of burnt animal bone (see 6 'Cremated bone' below). This material possibly represents the waste from ritual feasting.

4. AREA 2: DITCH AND PIT FEATURES

Area 2 contained a length of ditch (021), an isolated pit (121) and two intercutting pits (123 and 125) (Illus 7). These features had been cut into sandy-gravel natural (C003).

The c 80m exposed length of Ditch 021 meandered across the site, changing direction four times. This ditch measured between 0.65m and 1.2m in width and between 0.2m and 0.55m in depth. A single sherd of pottery recovered from the ditch was of probable medieval date. A sample of carbonised barley grain recovered from the fill was submitted for radiocarbon dating and produced a date of AD 1467–1637 (SUERC-43917, Table 7).

Pit 121 was sub-circular in plan with a diameter of 0.8m and a depth of 0.1m. It had irregular gently sloping sides and an uneven base. The fill (C122) of this feature consisted of greyish-brown to black sand containing pieces of clinker and included hazel charcoal and a high concentration of carbonised grain, consisting of a mixture of barley and glume wheat, and one flax seed (see 7.1.2 'Results' below). A sample of carbonised wheat (*Triticum* sp) submitted for radiocarbon dating produced a date of 1878–1662 BC (SUERC-44515, Table 7), but a sample of emmer wheat grain from the same feature contained too little carbon to produce a date. This was the earliest date returned from the site. The presence of cereal grains is perhaps indicative of a more domestic function, indicating that this is an unrelated feature pre-dating the barrow cemetery. The absence of chaff and weed seeds indicates that the grain has been cleaned (threshed and winnowed), and the specialists (see 7.1 'Archaeobotanical and charcoal analysis' below) suggest that, on the basis of the condition of the burnt grain, it may be the remnants of a store of grain that has become damp,

with the spoilt grain having been discarded and burnt as being inedible.

Pits 123 and 125 were intercutting and measured 1.35m east/west by 1.04m by 0.32m deep, and 1.2m north/south by 0.72m by 0.32m deep respectively. The fill of both these pits consisted of mid-reddish-brown sandy silt. Due to the similarity of the fills, it was not possible to establish if one pit pre-dated the other, or if they were contemporary.

5. THE FINDS

During the excavation soil samples were retained from all ring-ditch fills, cremation fills and fills of associated pits for palaeoenvironmental analysis. One hundred and twelve soil samples were retained; thirty-six of these samples, from features in Area 1, were fully processed, which included all samples containing cremated bone and the basal fills of each ring-ditch and some of the pits. These samples were considered to be representative of the main deposits and features uncovered (see Table 1). The majority of the pottery sherds were hand-retrieved during the excavation, while in contrast the only stone objects hand-retrieved during the excavation were grinder SF003 and the two unworked sandstone slabs; the remaining stone and lithic artefacts were recovered from sample processing.

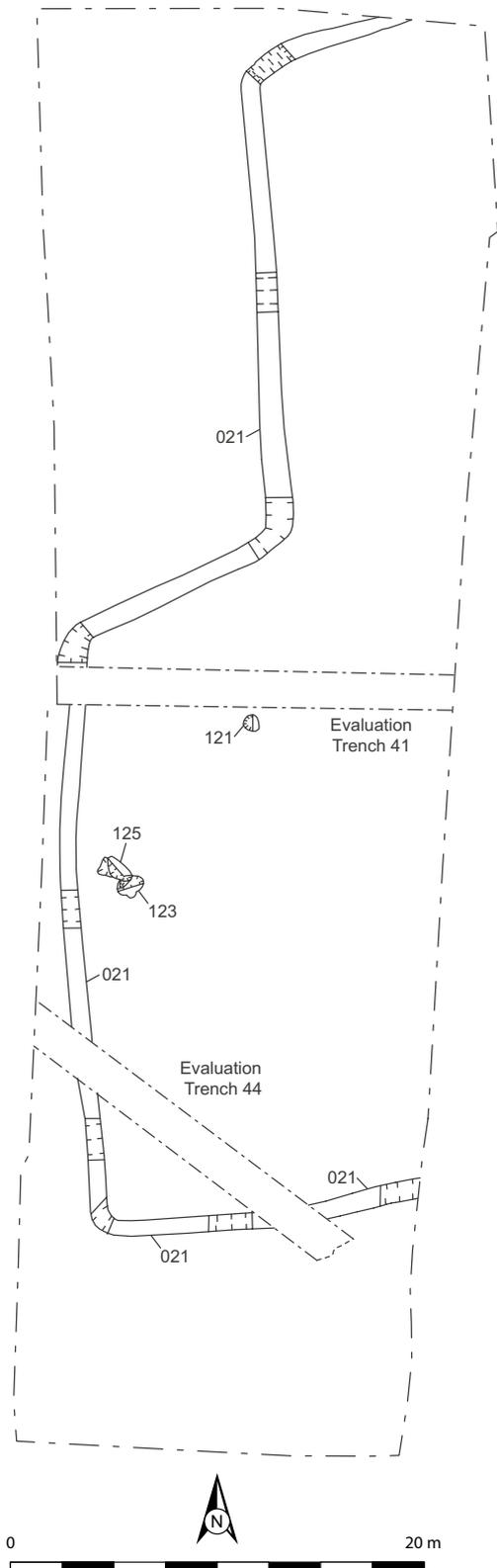
5.1 Prehistoric pottery

Melanie Johnson

The assemblage was recorded in accordance with the Guidelines for Analysis and Publication set out by the Prehistoric Ceramics Research Group (2011). The sherds were weighed and described and a full catalogue can be found in the archive (Treasure Trove reference number TT/75/14): catalogue numbers are prefixed with 'P'.

5.1.1 Results

Three deposits of pottery were catalogued (P1–3), consisting of 126 sherds weighing 767g. The recorded locations of these were all on the north-west side of the ring-ditches in the upper fills. Two of the vessels consist only of undiagnostic body sherds while the third included rim and base sherds. However, on the basis of similarities of fabric, it is



Illus 7 Plan of Area 2. © CFA Archaeology Ltd

Table 1 Samples processed

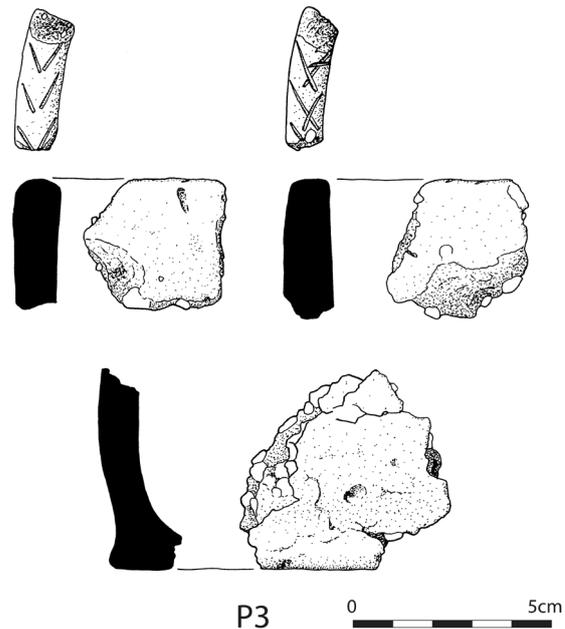
Feature type	Sample number	Context numbers
Cremation	1, 21, 26, 83, 97, 105, 108	011, 032, 072, 178, 188, 194
Ring-ditch	3–4, 29–30, 46–47	016, 017, 077, 078, 102, 103
Pit	39–41, 44, 49, 63–64, 67, 69, 81–82, 88, 111–112	088, 099, 118, 122, 126, 140, 145, 157, 198, 200/201
Post hole	10–11, 14, 16, 50, 85, 90, 93, 101, 103	056, 058, 048, 068, 111, 151, 160, 168/169, 183

considered that they are all of the same period and date broadly to the second millennium BC.

Within Ring-ditch 004, pottery (P3) was found loosely associated with dispersed cremated human bone (C146) within upper fill C044. There were 27 sherds weighing 179g. Cremated bone from this deposit has been dated to 1208–1011 BC (SUERC-43913, Table 6). The pottery consists of rim, base and body sherds, probably all from the same vessel but with so little of the profile surviving that the overall shape of the vessel is not certain (Illus 8). The two rim sherds are upright and flat-topped, diameter not measurable, and are decorated along the top of the rim with incised chevrons. The four base sherds are slightly footed rising to a slightly rounded body, and with a diameter of approximately 11–12cm.

Two plain, very abraded and probably burnt body sherds (P1) were recovered from wet-sieving the deposit of cremated human bone (C188) dispersed within the upper fill of Ring-ditch 006. It is difficult to say more about this material, but its fabric is very similar to the other two vessels recorded and thus is likely to be of similar date.

Within Ring-ditch 008, pottery (P2) was associated with dispersed cremated human bone (C178) within upper fill C009, partly covered over by stones. There were 97 sherds weighing 586g, making this the largest deposit of pottery recovered. Cremated bone from this deposit has been dated to 1387–1129 BC (SUERC-43914, Table 6). The sherds are all plain body sherds except for one small sherd which has a wide incised line. Despite some small variations in colour between sherds, it would be safe to assume that the sherds all belong to the same vessel, as wall thickness and fabric are consistent. A small number of the sherds appear to be burnt to a brighter orange.



Illus 8 Pottery vessel P3. © CFA Archaeology Ltd

None of the vessels display any sooting or charred residue, and surfaces are generally smoothed and finger marked, with inclusions protruding. Colours are generally brown, with a small number of sherds more yellow or more red-brown in colour, while the interior colour varies from yellow-brown/brown to dark grey.

5.1.2 Discussion

There is no evidence at Orchardfield to confirm whether these vessels formerly contained the cremated bone and were buried upright or inverted, or whether a whole vessel ever accompanied the cremations and had subsequently been plough-damaged and parts lost, or whether only a few sherds were intended to be buried, or indeed whether the

vessels were found in their original locations. Where pottery sherds (P1, P2, P3) were found associated with cremations, the material was found dispersed within the upper fills of the ring-ditches. It seems likely in at least one case that the vessel (P2) had been shallowly buried at the top of the ditch fill in Ring-ditch 008 and covered with stones.

The coarse urns could be categorised as Bucket Urns due to their apparent association with cremated human remains. This ware covers a range of shapes and sizes of coarse, undecorated urns across Scotland with a long period of use in the second millennium BC, and into the early part of the first millennium BC, and such pots containing cremations are often found buried upright rather than inverted. A number of Bucket Urns have been provided with dates through the NMS *Dating Cremated Bones Project* (Sheridan 2003).

5.2 Flaked lithics and stone tools

Ann Clarke

The assemblage of flaked lithics comprises 31 tiny flakes, three slightly larger flakes and two chunks, with chert, agate, flint and quartz all represented (Table 2). All of the lithics are classed as débitage and none is diagnostic of a particular prehistoric period.

The two stone tools were used for grinding/rubbing. The flat-based grinder (SF003, Illus 9) from Ring-ditch 006 is a rounded cobble of medium-grained sandstone; with its domed and

lightly pecked upper face and flat worn base, it most closely resembles a Knap of Howar grinder, though smaller in overall dimensions by about 1.5cm (Clarke 2006).

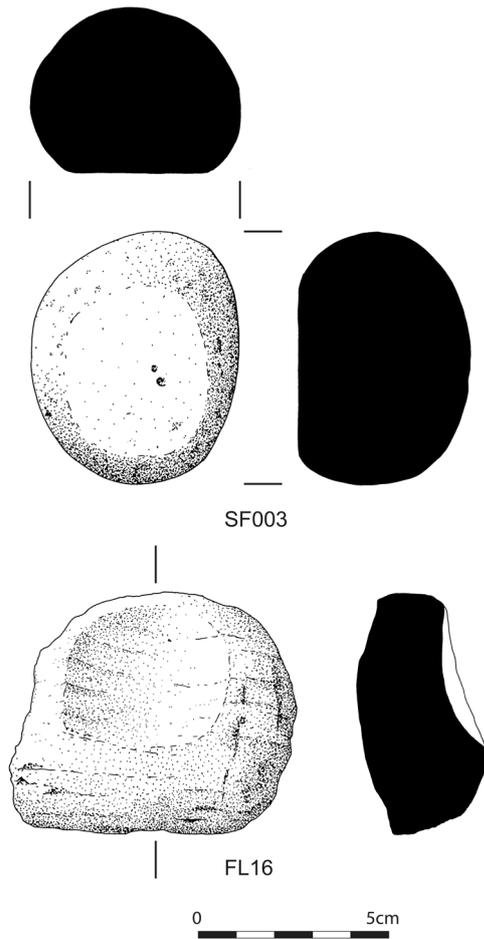
The other stone object (FL16) is a thick secondary flake from a rounded sandstone cobble, found in Pit 087. The centre of the inner ventral face of the flake has been worn smooth and there are visible striations as if from having been used to burnish or rub something.

It is interesting that both of the stone tools are forms of grinders or smoothers/rubbers rather than simply hammerstones; however, the uses to which they were put is unknown and we cannot know just what role they played in the activity on the site. Nor can their context provide clarification: the grinder (SF003) is from the fill of Ring-ditch 006 while the ground stone (FL16) is from Pit 087; the flaked lithics from both these contexts are composed of simple undiagnostic débitage. Apart from the similarity of one of the tools (SF003) to grinders from Grooved Ware sites in Orkney, there are no other immediate comparisons for either tool type, and for the moment at least their presence at East Linton must remain slightly enigmatic.

Two large slabs of sandstone (SF179A and B) were recovered from the backfill of Ring-ditch 008 in association with cremation 178. The former had a naturally produced undulating surface which was not the result of deliberate shaping or decoration, and the latter was a rounded block which had been

Table 2 Flaked lithics and stone tools by context

	Small flakes	Flakes	Chunks	Coarse stone
Ring-ditch 004				
Ditch fill 005			1 chert	
Cremation 146			1 agate	
Ring-ditch 006				
Ditch fills 077, 078, 080	2 chert			Grinder/ smoother
Ring-ditch 008				
Cremation 178	9 chert, flint, quartz			Two stone slabs in backfill
Pit 087	20 chert, agate, quartz	2 burnt flint, chert		Ground/smoothed stone
Pit 144		1 flint		



Illus 9 Stone tools SF003 and FL16. © CFA Archaeology Ltd

roughly fractured at the end and across one face, possibly from shaping the block or else as incidental damage during infill of the feature.

6. CREMATED BONE

Sue Anderson

Nine groups of cremated bone were analysed, and included both hand-retrieved material and material recovered during sample processing. Bone was recovered from within the fills of the three ring-ditches (Contexts 005, 016, 146, 178 and 188), from a central pit (Pit 071) enclosed by Ring-ditch 004, from a pit cutting Ring-ditch 004 (Pit 010), from a 'pyre pit' (Pit 087) and from an isolated pit (Pit 193).

In addition, four features (Post holes 047 and 067 and Pit 199 around the ring-ditches, and isolated Pit

121) contained less than 0.1g of burnt bone each; these groups will not be considered further.

6.1 Methodology

Bone was retained from ten contexts, representing nine groups. The samples were processed by wet-sieving and later sieved to produce four fractions (<2mm, >2mm, >4mm and >10mm). The bone was hand-separated from this residue for weighing (in some cases only a sample was sorted, the remaining bone weight being estimated from the percentage weight within the sample). The bone from each context was sorted into five categories: skull, axial, upper limb, lower limb and unidentified. All fragments within each category were weighed to the nearest tenth of a gram, and those in the identified categories were also counted to produce an average fragment weight. Measurements of maximum skull and long bone fragment sizes were also recorded. Observations were made, where possible, concerning bone colour, age, sex, dental remains and pathology. Identifiable fragments were noted. Methods used follow the Workshop of European Anthropologists (WEA 1980) and McKinley (1994, 2004).

6.2 Quantification, identification, collection and survival

Table 3 shows the bone weights, percentages of identified bone from the features containing cremation deposits, and the proportions of bone identified from the four areas of the skeleton (skull, axial, upper limb, lower limb). Expected proportions for a complete body are provided in the last row.

Most of the deposits produced relatively small quantities of bone. Mays (1998: table 11.2) notes that the combusted weight of an adult skeleton has a mean of around 1,500g for females and 2,300g for males. The largest quantity of bone in this assemblage came from Context 011, at just over 1,000g (Table 3), but there is evidence for more than one individual in this group (see 6.3 'Demography' below), and the same is true of the other large group from Pit 087. Therefore none of the excavated groups comprises even half the quantity of bone expected from an average adult cremation.

In most of the cremation deposits, skull and lower limb fragments are over-represented among the

Table 3 Percentages of identified fragments out of total identified to area of skeleton. (RD = ring-ditch; * expected proportions from McKinley 1994: 6)

Feature	Context	Total wt (g)	% Ident	% Skull	% Axial	% Upper limb	% Lower limb
RD 004	005	22.0	56.4	12.9	–	–	87.1
RD 004	016	3.2	0	–	–	–	–
RD 004	146	63.5	36.9	67.5	–	–	32.5
RD 004 (Pit 010)	011	1063.4	43.5	17.1	5.5	10.8	66.7
RD 004 (Pit 071)	072	291.5	59.5	47.7	2.6	7.5	42.2
RD 006	188	4.3	0	–	–	–	–
RD 008	178	354.6	26.0	32.5	2.0	29.7	45.8
Pit 087	088, 099	881.1	25.5	29.5	5.7	17.2	47.7
Pit 193	194	34.5	31.3	62.8	24.5	12.8	–
<i>Expected*</i>				18.2	20.6	23.1	38.1

identifiable material, and other areas of the skeleton are generally under-represented, although axial fragments were also over-represented in one case and the upper limb in one. It has been suggested that ‘it should be possible to recognise any bias in the collection of certain areas of the body after cremation’ (McKinley 1994: 6). However, there is also some bias inherent in the identification of elements. McKinley notes the ease with which even tiny fragments of skull can be recognised, and conversely the difficulty of identifying long bone fragments. The figures in Table 3 can therefore provide only a rough guide to what was originally collected.

Fragment sizes were generally small and consequently rates of identification were low. In all contexts the quantities of the >4mm fractions were larger than the >10mm fractions, although this varied between features. The average weight of the fragments was calculated by context for each of the four areas of the skeleton (skull, axial, upper limb, lower limb). The skull fragments varied between 0.3g and 1.2g in average weight, while long bone fragments were on average 0.7–2.3g in weight. This reflects the presence of a few larger pieces, but in general pieces were small: the largest skull fragment in the group was from Pit 010 and measured 50mm across, with the median being 24mm and the smallest fragment measuring 16mm across. The largest long bone fragment, from burial 071, was 66mm long, with the median of all long bone

fragments being 25mm and the smallest measuring 17mm long. Most of the contexts examined (Table 3) contained some heavily abraded bone.

6.3 Demography

The burials are summarised in Table 4. A minimum number of individuals is difficult to calculate for this assemblage. Only one burial appears to be in its original position (Pit 071), with evidence of abrasion and mixing in all the other groups suggestive of re-deposition. In the case of cremation 011, the cremated remains are partially cut into the ditch backfill and partially cut into the adjacent natural. It is possible that there were originally three primary burials within the ring-ditches or the barrows which they presumably enclosed, but erosion and early agriculture has resulted in the bone from these being scattered. Some of the material from the upper fills of the ring-ditches is likely to represent this material. However, the bone recovered from in and around Ring-ditch 004 appears to represent at least three individuals (juvenile, old adult and ?female adult). The very small quantity from Ring-ditch 006 may also represent a separate individual, as may the larger quantity from Ring-ditch 008. If Pit 087 does represent the remains of a pyre, or (more likely) burial of pyre material in a pit dug for the purpose (see 6.5 ‘Evidence for the cremation ritual’ below), then the remains from this feature could be from the same individuals buried within the ring-ditches. The

Table 4 Summary of cremation deposits

Feature	Deposit	Age	Sex	Notes
Ring-ditch 004 (Pit 071)	072	Adult	F?	Central pit enclosed by Ring-ditch 004. Probable truncated burial pit containing a small proportion of a single individual. Fragments of cranial vault (occipital seems fairly smooth), right maxilla (sockets of five teeth), ribs, vertebral facets, humerus, radius, femur, tibia, fibula (several joining fragments).
Ring-ditch 004 (Pit 010)	011	Adult, old? Juvenile	–	Pit cut into the upper fill of Ring-ditch 004. Large quantity of bone representing at least two people. Fragments of cranial vault, zygoma, tooth roots, mandible, ribs, scapula (including ?juv acromion), vertebrae (including fragments of body with large osteophytes), humerus, ulna, distal radius, lunate, ?navicular, femur, tibia, fibula, talus, metatarsals. Lots of abraded bone, no definite duplication of elements.
Ring-ditch 004	146	Adult	–	Dispersed deposit within the ring-ditch fill. Fragments of cranial vault, leg bones and small pieces of long bone, all abraded. At least one fragment probably animal.
Ring-ditch 004	005	Adult	–	Upper fill. Small quantity of hand-collected bone including cranial vault, tibia and small fragments of long bones.
Ring-ditch 004	016	Juvenile?	–	Upper fill. Small abraded fragments of long bone.
Ring-ditch 006	188	–	–	Dispersed deposit within the ring-ditch fill. Small quantity of abraded long bone fragments.
Ring-ditch 008	178	Adult	–	Dispersed deposit within the ring-ditch fill. Fragments of cranial vault, tooth roots, scapula, rib, humerus, femur and tibia. High proportion abraded, some probably animal but definite human bones too, probably more than one individual.
Pit 087	088/099	Adult Adult Juvenile	F? M	Possible pyre pit. Large quantity of bone recovered from six samples of the two fills. High proportion of abraded fragments. Fragments of cranial vault (one smooth glabella), maxilla, ?mandible, tooth roots (two not fully formed), ribs, vertebrae, sacrum, humerus, radius (prox and dist), ?lunate, navicular, fingers, juvenile metacarpal and phalanx, femur, tibia, fibula, talus, metatarsals, toes, 4 sesamoids (different sizes, suggests 2+ individuals).
Pit 193	194	–	–	Small pit to south of ring-ditches. At least some of this group is animal bone, and none can be definitely identified as human. Fragments of cranial vault, ribs, vertebral facets, ?radius shaft. Two fragments of a deer distal phalanx, four other probable animal fragments and an animal tooth root fragment.

bone from Pit 193 may be entirely of animal origin.

Due to the high degree of fragmentation and abrasion in this group, few individuals had any evidence for sex or age. A possible sex has been ascribed to two groups but the identifications are tentative and based on minimal evidence. However, it is clear that the group includes the remains of at least one child, one older adult, and adults of both sexes.

6.4 Pathology

The only pathological changes seen in this group were large osteophytes on two fragments of vertebral body in Pit 010.

From the surviving dental remains, it appeared that no significant dental disease had affected any of these individuals.

6.5 Evidence for the cremation ritual

The majority of the bone was fully oxidised and cream to white in colour. The presence of a high proportion of white bone indicates firing temperatures in excess of *c* 600°C (McKinley 2004: 11), which corresponds with the charcoal analysis where the presence of vitrified charcoal indicates a temperature above 800°C (see 7 'Environmental Evidence' below).

The degree of fragmentation was quite high. This is more typical of Middle Bronze Age groups, which are often less well preserved than Early Bronze Age groups and more heavily fragmented (as noted at cemetery sites where both periods are represented, such as St Osyth, Essex; Anderson 2007: 85). This suggests a change in the ritual, perhaps with less consistent collection and a greater attempt to crush the remains in the later period.

There were very few fragments of the easily broken cancellous or 'spongy' bone in this group, suggesting that some material may have been lost through post-mortem decay. The abrasion of fragments which had been heavily oxidised to a powdery white may indicate that higher fired pieces were more susceptible to post-depositional changes in acidic soils, but is also likely to be due to re-deposition of material.

Pit 087 appears to be a special deposit. The pit is unlikely to represent the actual position of the pyre,

since pits were rarely used below these structures. The remains recovered from it – charcoal mixed with burnt bone – appear to represent several episodes of burning. This is based on the presence of bone in a range of conditions from highly abraded white to quite 'fresh' buff-coloured bone, and the presence of at least three individuals. There was no evidence of layering in the pit, which might be expected if it represented an under-pyre pit used on several occasions. The cremated bone recovered from it was different in make-up to the other groups from the site, containing much greater numbers of small pieces such as tooth roots, finger and toe phalanges, small sesamoid bones and other pieces which might have been easily missed during post-cremation collection. The quantities of >10mm bone in this feature, in comparison with the presumed in situ burial Pit 072 (see Illus 1), are very low. It seems likely that the pit was used to bury the ash left on one or more pyre sites. The presence of heavily abraded bone suggests that it was used for this purpose some time after the pyre debris had been created, perhaps at the end of the use of this cemetery as a kind of closing ritual. The stones laid over the charcoal layer and on top of the pit would appear to support this suggestion.

6.6 Summary and discussion

The nine groups of bone possibly represent as many as 11 individuals, and a minimum of five individuals. These comprise seven adults and three juveniles, with the adults including at least one older individual, one male and two females. This is a large assemblage for this region.

The total weight of bone indicates that the entire skeleton is unlikely to have been present in any of the burials.

Very little pathological evidence was present in these remains, although lesions which were present indicate that one of the individuals had suffered from joint disease represented by osteophytes of some of the joints of the spine.

Some insight into the cremation ritual can be gained based on the evidence of the colour of the bone and the degree of fragmentation. The colour of the bone from this site indicates that firing probably reached the high temperatures normally associated with cremation at that time. There is evidence for

a high degree of fragmentation, with low average weights and many small pieces of long bone and skull occurring in almost every deposit. There is a possibility that a closing ritual took place in which the pyre remains were disposed of in a purpose-made pit.

7. ENVIRONMENTAL EVIDENCE

7.1 Archaeobotanical and charcoal analysis

Mhairi Hastie and Mike Cressey

Varying amounts of wood charcoal, charred cereal remains (grain/rachis), weed seeds, nutshell and underground stem fragments (rhizomes/tubers) were recovered from the samples.

7.1.1 Methodology

Wood charcoal. All fragments of charcoal >4mm in diameter were identified, where possible, to species level. The 2mm fraction was also scanned for the presence of any interesting carbonised inclusions. Any small fragments (<2mm in diameter) were considered to be below the limit of identification (BLOI) due to the amorphous shape of the charcoal and problems encountered in obtaining a transverse cross-section on such small fragments. Identifications were carried out using a binocular microscope (magnifications ×50 to ×400). Anatomical keys, listed in Schweingruber (1990), and in-house reference charcoal was used to aid identifications. Asymmetry and morphological characteristics were recorded using standard in-house methodology.

Other plant remains. The plant remains recovered were scanned using a binocular microscope (magnifications ×10 to ×100). Identifications were made with reference to the modern collection of CFA Archaeology Ltd and standard seed atlases.

7.1.2 Results

In most cases the plant assemblages recovered from each sample were low. The bulk of the wood charcoal assemblage was amorphous in character and below the limit of identification (BLOI), while the other plant remains were generally abraded and fragmentary. The results are summarised in Table 5.

Where identification of the wood species present was possible oak (*Quercus* sp), hazel (*Corylus avellana*), and pine (*Pinus* sp) were identified. The cremation pits (C011, C146 (Ring-ditch 004) and C188 (Ring-ditch 006)) contained oak (combined weight of 18.5g). Oak charcoal was the only species present within the ring-ditch contexts (C078, C102, C103 and C178). Pit fill C099 (Pit 087) contained a large quantity of oak charcoal (3.3kg) of which 25 individual fragments weighed 41g. The large blocky fragments were derived either from large branch wood or timber. Hazel was recovered from Pit 087 (1g) and Pit 121 (4.8g) (Area 2). Pine is represented by a single fragment from Pit 087 (0.1g).

Carbonised cereal grains were recovered from 23 of the samples. The bulk of the grains were recovered from the upper fills of the ring-ditches and associated pits. Where identifications were possible it was noted that oat (*Avena* sp), barley (*Hordeum* sp) and possible wheat (*Triticum* sp) including both bread wheat (*Triticum aestivo-compactum*) and glume wheat (emmer/spelt wheat (*Triticum dicoccum/spelta*)) were present. A high concentration of grain was recovered from the fill of isolated Pit 121, in Area 2; the assemblage contained a mixture of barley and wheat. The wheat grains were particularly squashed and deformed and identification to species level was not possible, although many of the grains did have specific characteristics (ie dorsal ridge) of glume wheat (emmer/spelt). A small quantity of cereal chaff (grain husks) of wheat was also recovered from this pit. The chaff remains were poorly preserved and could not be identified to species level, although one spikelet was characteristic of emmer (*Triticum dicoccum*).

Fragments of hazelnut shell were recovered from the fills of all the ring-ditches, cremation pits (C104 and C146), a post hole (067) associated with Ring-ditch 004, seven pits (087, 117, 121, 125, 144, 167, 199), and a ditch (021). The nutshell was much abraded and generally no greater than 5mm in diameter.

One possible flax seed (*Linum* sp – linseed) was found in the fill of Pit 121 in Area 2; the seed was poorly preserved and it was not possible to distinguish between the wild and cultivated species. Three tentatively identified legume seeds (vetch or pea (*Vicia* sp/*Lathyrus* sp)) were recovered from the fills of two pits (117 and 199) and the dispersed cremation fill (C178) respectively.

Table 5 Composition of carbonised plant remains (+ = rare (1–10 items); ++ = occasional (11–50 items); +++ = common (51–100 items); ++++ = abundant (101+ items); RD = ring-ditch; CRE = cremation; PH = post hole; DIT = ditch; uf = upper fill; mf = middle fill; lf = lower fill; cf = tentative identification; BLOI = below the level of identification; a = amorphous fragments; b = blocky fragments)

Description	Context	Volume (litres)	Cereal grain		Chaff	Weed seeds		Nutshell	Charcoal		Tuber	Twiggy material
			Quantity	Type		Quantity	Type		Quantity	Type		
Ring-ditch 004 – Area 1												
RD (uf)	016	15	+	1 × oat 1 × cf oat 1 × unident					+	BLOI	+	
RD (lf)	017	15							+	BLOI		
CRE 010	011	20	+	1 × cf barley					+	oak (a)		
CRE 071	072	15							+	BLOI	+	
CRE 146	146	20	+	2 × oat 1 × barley 1 × unident				+	+	oak	+	
Pit 057	058	15	+	1 × barley					+	BLOI		
PH 047	048	7.5	+	1 × oat 2 × barley 1 × unident					+	BLOI		
PH 055	056	15							+	BLOI		
PH 067	068	7.5						+	+	BLOI		
Ring-ditch 006 – Area 1												
RD (uf)	077	15	+	1 × oat 1 × cf bread wheat 2 × barley 2 × unident				+	+	BLOI	+	
RD (lf)		15	+	1 × cf barley				+	+	oak (a)	+	
CRE 104	188	15	+	1 × oat				+	++	oak (a)	+	

Table 5 cont

Description	Context	Volume (litres)	Cereal grain		Chaff	Weed seeds		Nutshell	Charcoal		Tuber	Twiggy material
			Quantity	Type		Quantity	Type		Quantity	Type		
Ring-ditch 008 – Area 1												
RD (mf)	102	15					+		+	oak (a)	+	
RD (lf)	103	15							+	oak (a)		
RD	178	270	++	oat ++ barley +		+	1 × cf legume	+	++	oak (a)	++	
Pit 156	157	15	+	2 × oat					+	BLOI		
Pit 197	198	7	+	1 × unident					+	BLOI		
Pit 199	200/201	5				+	1 × cf legume	+	++	BLOI		
PH 110	111	15	+	3 × oat 2 × barley 1 × cf bread wheat 3 × unident	+	+	1 × ribwort 1 × unident		+	BLOI		
PH 150	151	5	+	1 × cf oat 1 × barley					+	BLOI		
PH 158	160	15	+	1 × oat 1 × barley 1 × cf wheat					+	BLOI		
PH 167	168/ 169	10	+	4 × oat 2 × barley				+	++	BLOI		
PH 180	181	7	+	1 × oat 2 × barley					+	BLOI		
PH 182	183	15	+	1 × barley					+++	BLOI		

Table 5 cont

Description	Context	Volume (litres)	Cereal grain		Chaff	Weed seeds		Nutshell	Charcoal		Tuber	Twiggy material
			Quantity	Type		Quantity	Type		Quantity	Type		
Pit 087 – Area 1												
Pit 087 (uf)	099	135	+	1 × oat			+		++++	oak (b) hazel pine	++	+++
Transition 088/099 between pit fills												
		15						+++		oak (a)		+
Pit 087 (lf)	088	90	+	1 × cf barley 2 × unident			+		++++	oak (a)	++	
Individual features – Area 1												
Pit 117	118	15					+		++	BLOI	+	
Pit 138	140	15										
Pit 144	145	15	+	3 × cf barley			+		+	BLOI		
CRE 193	194	2							+	BLOI	+	
Individual features – Area 2												
DIT 021	032	30	++	3 × oat 4 × barley 1 × cf wheat 4 × unident			+		+	BLOI		
Pit 121	122	15	++++	+++ barley +++ spelt/emmer	+	+	+		++	hazel	+	
										1 × cf linseed 1 × persicaria 1 × grass		
Pit 125	126	15	+	2 × unident			+		++	BLOI		

Small fragments of carbonised underground rhizomes (monocotyledon fragments/tubers) were recovered from 13 samples, including the fills of the ring-ditches, several cremation pits and other individual pits. The bulk of the rhizomes were bulbous and tentatively identified as onion couch grass (cf *Arrhenatherum elatius*). Much of the rhizomes were recovered from the remnants of a possible cremation pyre pit (087), which also contained high concentrations of charred fine plant stem material.

7.1.3 Discussion

7.1.3.1 Possible pyre pit 087

The largest amount of charcoal was recovered from the fill of a pit (087) which has been identified as the possible remains of a pyre pit (or burial of pyre material). The bulk of the charcoal recovered from this feature consisted of large branch wood or timbers of oak. Oak is generally the most commonly identified pyre fuel from British archaeological deposits of all periods (Barnett 2008). Tipping (1994) records that oak was a dominant species in the Bronze Age in the eastern lowlands of Scotland and it would have been readily available for exploitation as pyre fuel. The process of cremation requires a large amount of dead wood (green wood will not burn) of varying size. Experimental research in pyre structures (McKinley 1994) has demonstrated that approximately one tonne of wood is required to consume an adult human body. Traditional methods of construction employed the use of substantial billets/poles of wood to form a rectangular platform which would provide support to the body and produce a longer-lasting fire. As oak wood is dense, it would have provided a strong pyre base, while also producing the prolonged high temperatures that would have been necessary for cremation (Barnett 2008).

High concentrations of charred plant stem and tubers (rhizomes) were also recovered from the pyre debris; the tubers tentatively identified as onion couch grass (or false-oat grass). Plant tubers have been recovered from other cremation burials from both British and Scandinavian sites, and onion couch grass has been particularly associated with Middle and Later Bronze Age cremations (Robinson 1988). Robinson (1988) suggests that the dried stems of onion couch grass would have been useful

tinder for lighting fires and that the tubers/stem material were uprooted with the plant.

7.1.3.2 Prehistoric food remains – Pit 121

A high concentration of cereal grains was recovered from isolated Pit 121, in Area 2. The grains were found along with some burnt cereal chaff, a single seed of flax (linseed) and two seeds from common weeds of arable fields (*Polygonum persicaria* (persicaria) and Gramineae indet (grass)). The cereals comprised a mixture of barley and glume wheat (emmer/spelt wheat), which is consistent with the prehistoric date gained for a sample of wheat from this pit (1878–1662 BC, SUERC-44515, Table 7). General absence of chaff and weed seeds indicates that the grain has been cleaned (threshed and winnowed). The grain, particularly the wheat grain, from this pit fill was very distorted and squashed and some were stuck together. None of the grains showed signs of having elongated embryo ends to suggest that the grain had started to germinate; however, the distorted nature and the presence of some fused grains does suggest that at least some of the material had been wet prior to being charred. These burnt grains may therefore be the remnants of a store of grain that has become damp, the spoilt grain having been discarded and burnt as being inedible.

7.1.3.3 Possible later contamination

Charred cereal grains and the remains of two possible legume seeds were recovered from the fills of four ring-ditches and a number of features associated with these, within Area 1. In all cases the plant material was much abraded and fragmentary and principally recovered from the upper fills of the features. Oat, barley and possible bread/club wheat was recovered and, although the amount of grain present was small, it appears overall that there is a slightly greater proportion of oat to barley. Taken as a whole the assemblage would be more in keeping with a potential medieval (or post-medieval) date rather than being typical of the Bronze Age. Oat was not generally cultivated during the Bronze Age and only became a main cultivar during the later Iron Age period; equally, bread wheat, although grown in small amounts during the Neolithic period, was not principally cultivated until the medieval period in Scotland.

In this case many of the samples contained modern, uncharred weed seeds, suggesting that there had been some mixing of earlier deposits with later material, and during the excavation it was noted that the soil matrix consisted of free-draining sands and gravel which would allow movement of material down the soil profile through a combination of bioturbation (reworking of the material in the soils by earthworms and insects) and rainwater (see 7.2.2 'Discussion' below). Indeed, a radiocarbon date gained from grain from one of the features, Post hole 158, produced a medieval date (AD 1262–1382, SUERC-43916, Table 6), which would be consistent with these observations.

The excavated site lies close to the deserted medieval village of Markle (SM 6680), and cartographic sources (Roy's Military Map of Scotland 1747–55) indicate that the site was under cultivation during the post-medieval period. Assuming that the small plant assemblage from the selected samples reflects the plant assemblage for the whole of the excavated area, it is possible that some of the charred remains are indeed later contaminants, either from midden/manure spread onto the cultivated fields or potentially from later activity on the site.

7.2 Soil micromorphology

Clare Ellis

Four Kubiena samples were taken from a large monolith sample of consecutive ditch fills (Contexts 046, 045, 044) from Ring-ditch 004 (see Illus 4).

The samples were prepared for thin section analysis by G McLeod at the Department of Environmental Science, University of Stirling using the methods of Murphy (1986). Water was removed and replaced by acetone exchange and then impregnated under vacuum using polyester crystic resin and a catalyst. The blocks were cured for up to four weeks, sliced and bonded to glass and precision lapped to 30µm with a cover slip.

The four samples were assessed using a MEIJI ML9200 polarising microscope following the principles of Bullock et al (1985), FitzPatrick (1993) and Stoops (2003). A range of magnifications (×40 to ×400) and constant light sources (plane polarised light – PPL, cross-polars – XPL, circular polarised light and oblique incident light – OIL) were used

in the analysis. The summary results are given below and full descriptions are provided in the site archive.

7.2.1 Results

The sampled sediments are predominantly poorly sorted sandy silts. The microstructure of all three contexts is dominated by fused excrement pellets derived from soil biota which imparts a vughy structure. Within the excrement aggregates the arrangement of the coarse and fine material is generally single spaced porphyric with a random pattern of the mineral component. However, within the basal portion of Context 046 the sediment exhibits graded bedding, where medium sand is overlain by fine sand, which is capped by coarse silt and finally this is capped by fine silt. The lowermost context (C046) has slightly less sand content than the upper two (C045) and (C044). The sand component is bimodal with roughly equal portions of fine and medium sand-sized grains; coarse sand and grit-sized grains are few in occurrence. The coarse mineral component in all the contexts is dominated by quartz and feldspar grains, with few weathered rock fragments that comprise mainly phonolite and schist. All the contexts exhibit very few fragmentary phytoliths.

There is very little charcoal in any of the sampled contexts and where present the charcoal is moderate to well rounded and of fine to medium sand-size; there is little to no silt-sized charcoal. The amount of amorphous organic matter increases up the profile; none of this organic matter (apparent from clasts of charcoal) is burnt.

Goethite, in the form of small rounded clasts (reworked by soil biota) replaces a considerable amount of the organic matter and masks the clay minerals. There are very few orange, often dusty clay coatings in all of the contexts; these coatings accumulated after bioturbation had ceased. All the contexts have been extensively reworked by soil biota.

7.2.2 Discussion

The lowermost ditch fill (C046) is poorly sorted sandy silt. At the base of the sample is a small area where graded sediment accumulation has not been destroyed by the activities of soil biota. The

observed fining upwards sequence is indicative of a reduction in velocity of water with time. The best preserved sequence could easily represent the initial erosion of upcast back into the ditch following its excavation, with the event triggered by rainfall and the subsequent puddling of water within the ditch. Further similar events are suggested by the survival of small areas of graded bedding within the lower third of the thin section. The concentration of rock fragments in the central third of the thin section is possibly due to the collapse of a large clod of upcast back into the ditch. What little charcoal there is has most probably been incorporated by wind action, and similarly two small rounded fragments of burnt peat or turf and a sub-rounded clast of wood ash are also likely to have been incorporated by aeolian action. The red colour of all the fine material is due to the leaching of iron oxide from the dominant natural rock, volcanic phonolite. The sediment has been subject to post-depositional bioturbation, which has largely destroyed the original fabric. Following the accumulation of the upper ditch fills and the cessation of bioturbation, there were periodic episodes of water percolation down through the profile, which resulted in the illuviation of silt and clay within a few of the vughs.

The middle ditch fill (C045) is very similar to C046. Ditch fill 045 has a slightly higher sand content and appears to have fewer rock fragments. It is very likely that this material is also derived from an upcast mound or bank, but because of the intensive bioturbation it is not possible to distinguish whether the material represents the accumulation of gradually eroded upcast or deliberate backfill. Following the cessation of bioturbation, orange clay was translocated from the overlying sediment and accumulated within a few of the vughs.

The upper ditch fill is a moderately sorted sandy silt with less fine sand than the lower two contexts. It too is likely to have been derived from the upcast mound or bank but, as in Context 045, bioturbation has destroyed any relict evidence of the mode of formation.

7.2.3 Conclusions

The results indicate that at least some of the lowermost ditch fill (C046) was eroded into the ditch by surface runoff, with finer sediment

gradually dropping out of suspension within water trapped within the ditch. It has also demonstrated that the upper two ditch contexts have been reworked by soil biota, largely destroying original fabrics. Overall there are minimal inclusions of anthropic origin and the charcoal content is likely to have been incorporated by wind action.

8. RADIOCARBON DATES

8.1 Area 1: Ring-ditches and other features

Radiocarbon dates were obtained from three cremation burials (C011, C072 and C146) associated with Ring-ditch 004 and one cremation burial (C178) associated with Ring-ditch 008 (Table 6). Additionally, a date was obtained from cremated bone found in Pit 087, and from fragments of cremated bone dispersed throughout the general fill of Ring-ditch 004 (C005). All of the dates obtained from the cremated bone fell within a very tight date range (1398–1220 BC to 1208–1011 BC at 2σ), indicating that the date at the time of death falls into the Middle Bronze Age. Of the six dates, only two do not overlap with each other when calibrated at 2σ : these are SUERC-43912 (Pit 087; 1398–1220 BC) and SUERC-43913 (Ring-ditch 004, Context 146; 1208–1011 BC). However, these two dates, excluding each other, do overlap with each of the other four dates (Illus 10, Table 6).

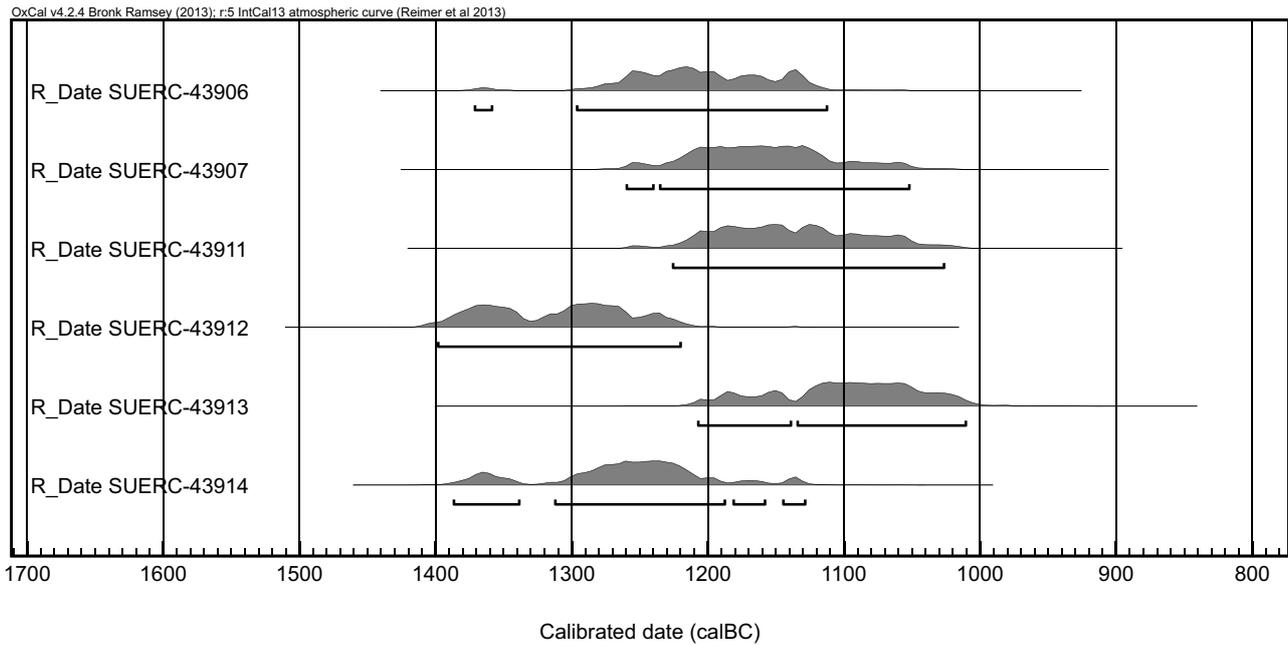
The dated cremated remains were retrieved mainly from the upper fills of the ring-ditches (Contexts 005, 146, 178, 188) and from a pit cut into the top of the ditch fill and the adjacent natural (C011), with one sample recovered from cremated material dispersed throughout Context 005. This means that the ring-ditches must have been infilled or were still infilling prior to the deposition of these cremated remains into these fills. The soil micromorphology appears to indicate that there was an initial period of silting up, with the lowermost sediments in the ditch forming from the postulated surrounding bank through surface runoff and with the likelihood of some standing water within the ditch, with subsequent episodes of water percolation. The high degree of bioturbation in the middle and upper fills of

Table 6 Radiocarbon dates Area 1 (calibrated using OxCal 4.2.4)

SUERC Lab no.	Context	Feature	Material	Date BP	Calibrated 1 σ	Calibrated 2 σ	$\delta^{13}\text{C}$
43906	005	Ring-ditch 004	human cremated bone	2982 \pm 30	1260–1130 BC	1372–1113 BC	-22.0‰
43907	011	Pit 010 cut into Ring-ditch 004	human cremated bone	2952 \pm 30	1214–1120 BC	1260–1052 BC	-25.4‰
43911	072	Central pit 071, Ring-ditch 004	human cremated bone	2936 \pm 30	1210–1090 BC	1226–1027 BC	-20.5‰
43912	099	Pit 087	human cremated bone	3045 \pm 30	1384–1236 BC	1398–1220 BC	-22.1‰
43913	146	Ring-ditch 004, upper fill	human cremated bone	2908 \pm 30	1188–1031 BC	1208–1011 BC	-22.3‰
43914	178	Ring-ditch 008, upper fill	human cremated bone	3013 \pm 30	1370–1212 BC	1387–1129 BC	-22.5‰
43915	111	Post hole 110	grain: barley	2047 \pm 27	94–1 BC	162 BC – AD 20	-21.7‰
43916	160	Post hole 158	grain: wheat	706 \pm 26	AD 1271–94	AD 1262–1382	-21.0‰

the ring-ditch mean that it was not possible to discern whether the fill was the result of a slowly eroding bank or a deliberate backfilling episode. It is therefore not possible to estimate the length of time between the ditch being excavated and it being infilled, so it is not clear how much time passed between the construction of the feature and the deposition (or re-deposition) of the human remains into the upper fills. This has some impact on the interpretation of the radiocarbon dates, the mode of deposition of the human remains and the function/visibility of the ring-ditches/barrows. If it is assumed that the deposits of cremated bone are in their original position, they must have been deposited following the almost complete infilling of the ring-ditches, and therefore the barrows were constructed some time before *c* 1400 BC. If it is assumed that the cremated bone has been displaced somehow from its original burial location, through erosion, truncation or other re-deposition, then it remains possible for the ring-ditch construction to be contemporary with the age of the bone. The similarity in date between the human bone found within Pit 087 and that found associated with the ring-ditches, including the material dispersed through the fills as well as from the upper fills and the central pit, suggests that all of these cremations were deposited within the same time period. The cremated bone itself was abraded and fragmented, and none of the excavated groups comprised even half of the quantity of bone expected from an average adult cremation, suggesting that the bones were subject to post-depositional processes.

Samples of carbonised wheat and barley from two of the post holes (110 and 158) around Ring-ditch 008 produced dates of 162 BC–AD 20 and AD 1262–1382 at 2 σ , making them Iron Age and medieval respectively. As discussed above, however, the presence of charred grains dating to the Iron Age and medieval periods could be explained as being the result of bioturbation and mixing of deposits due to later agricultural activity on the site, and these dates do not necessarily reflect the date of digging of these post holes.



Illus 10 Radiocarbon plot showing Middle Bronze Age dates only. © CFA Archaeology Ltd

8.2 Area 2: Ditch and pit features

Two radiocarbon dates were obtained from Area 2 (Table 7). These were very different, with a late medieval date obtained from material within the fill of Ditch 021 and a Bronze Age date obtained from material within the fill of Pit 121. The medieval date for the ditch was supported by the only find from this feature, which consisted of a single sherd of medieval pottery.

The slightly earlier Bronze Age date obtained for the grain from Pit 121 suggests prehistoric activity pre-dating the ring-ditches. Unfortunately a second sample taken from Pit 121 had insufficient carbon to be able to confirm this earlier date. It is not unreasonable to suppose that earlier Bronze Age activity was occurring within the vicinity of the ring-ditches, however, and the nature of the archaeobotanical assemblage from Pit 121 suggests that the contents of the pit were the burnt remains

of a spoilt grain store and thus comprise a single period of deposition.

9. DISCUSSION

The importance of East Lothian’s heritage is reflected in the rich archaeological landscape within the vicinity of the Orchardfield site. Evidence of early settlement can be seen in the standing stone at Pencraig Hill (NMRS No. NT57NE 4), cursus monuments at Preston Mains (NMRS No. NT57NE 29) and Drylawhill (NMRS No. NT57NE 67), and a cup and ring marked stone at East Linton (NMRS No. NT57NE 93). Cropmark evidence would indicate that settlement may have been fairly extensive within the East Linton area, with significant concentrations of features being identified around Drylawhill (NMRS Nos NT57NE 27, NT57NE 68, NT57NE 69 and NT57NE 84), Overhailes (NMRS Nos NT57NE 33 and NT57NE

Table 7 Radiocarbon dates Area 2 (calibrated using OxCal 4.2.4)

SUERC Lab no.	Context	Feature	Material	Date BP	Calibrated 1σ	Calibrated 2σ	δ ¹³ C
43917	032	Ditch 021	grain: barley	344±27	AD 1488–1631	AD 1467–1637	-26.0 ‰
44515	122	Pit 121	grain: wheat	3437±30	1860–1690 BC	1878–1662 BC	-24.1 ‰

71), Phantassie (NMRS No. NT57NE 28) and Preston Mill (NMRS No. NT57NE 104). There is also a fort at East Linton (NT57NE 17), and evidence of more recent activity with the medieval village at Markle (NMRS No. NT57NE 3).

The three ring-ditches identified during the programme of works carried out at Orchardfield are almost certainly the surviving remains of a small Bronze Age round-barrow cemetery. Somewhere in the region of 90 ring-ditches are listed by the National Record of the Historic Environment (NRHE) in East Lothian and, while a large number of these are likely to represent ring-ditch houses, it seems reasonable to suggest that at least some of them are likely to be the remains of round-barrows. However, the vast majority are sites that are known from aerial photographs only and have never been excavated. A further 11 sites in East Lothian are specifically recorded as containing barrows, with a single site at Penston (NT47SW 57) being recorded as a possible barrow cemetery, but again, these are largely known from aerial photographs and invasive archaeological work has not been undertaken. This situation appears to be similar throughout Scotland, where there are 17 records categorised as barrow cemeteries, which contain round and square barrows (and in some cases are also associated with other features), and 19 records categorised as round-barrows or groups of round-barrows, some of which again are associated with square barrows; these numbers do not distinguish prehistoric barrows from the later Pictish barrows, however, due to the primary identification of many of these sites from aerial photography rather than excavation. Further research into these East Lothian cropmark sites might prove that the use of round-barrows was a more widespread burial tradition than previously thought within an area where the majority of known Bronze Age burials were in stone cists, pits or cinerary urns.

The lack of excavated sites makes direct comparisons problematic, with the closest excavated barrow cemetery being Rullion Green, Glencorse, Midlothian (Watkins 1986). A possible enclosed Bronze Age funerary monument was excavated at St Germain's, East Lothian (Alexander & Watkins 1998), but the date and function of this penannular ring-ditch remain uncertain

and this interpretation is conjectural. Further afield, two ring-ditches possibly representing the remains of Bronze Age barrows were excavated at Newbarns, near Inverkeilor, Angus (McGill 2004), but again, no clear evidence for burial was identified.

The excavated examples at Rullion Green were on a very similar scale to the largest of the Orchardfield ring-ditches, typically enclosing an area of *c* 5–6m. However, they differed from the Orchardfield barrows in that they survived as upstanding monuments rather than just the ring-ditches. They may also have been slightly later, with a single radiocarbon date of 795–375 BC being obtained from charcoal found in association with a cremation deposit, but further dates would be required in order to confirm this apparent time gap.

Each of the Rullion Green barrows gave evidence of a complex and sometimes contradictory sequence of construction, such as that relating to the ditch, which had been dug and then deliberately backfilled. Watkins (1986) describes the barrows as consisting of a ditch and two annular banks, one on the inside of the ditch and the other on the outside. The upstanding features had been constructed from subsoil-derived material brought in from elsewhere rather than from the upcast from the ditches. Tentative evidence of upstanding features at Orchardfield was identified from the soil micromorphology of the ditch fills. It has been suggested (see 7.2.2 'Discussion' above) that some (and potentially all) of the ditch fill material could represent the erosion of upcast bank into the ditch following its excavation, suggesting that there may have been upstanding earthen features within close proximity.

Due to taphonomic processes related to erosion and agriculture, it was not possible to determine the original form of the Orchardfield barrows. The lack of any evidence of a central burial within Ring-ditch 006 and Ring-ditch 008 suggests either that they were never there in the first place, or that they were simply placed within the barrow material rather than cut into the underlying natural. Cremation burials identified as dispersed deposits within the ditch fills may represent the remains of the central

burials or other burials placed within the barrow material, which had entered the ditches as a result of erosion and early agricultural practices. This deposition process would perhaps account for the abraded nature of some of the cremated remains, as noted already (see 6 'Cremated bone' above). The very shallow nature of the ring of post holes surrounding Ring-ditch 004 perhaps indicates that there may have been further shallow features (possibly including further cremation burials) which had simply been cut into the existing topsoil/overburden without being deep enough to affect the underlying natural. Material from possible features of this nature may also have ended up within the barrow ditches.

Deliberate backfilling appears to have been carried out in relation to all eight of the ring-ditches excavated at Rullion Green. Unfortunately it was not possible to determine if this had been the case in relation to Orchardfield, as the results of bioturbation (see 7.2.2 'Discussion' above) had destroyed any relict evidence of the mode of formation. The similar dates obtained for the central burial (C072) and the cremation (C011) cut into the ditch backfill (Ring-ditch 004) do perhaps suggest that the ditch was filled shortly after the construction of the monument, and this apparently short timescale does appear to suggest deliberate backfilling rather than being the result of gradually eroding upcast. However, the aforementioned observation in Section 6 'Cremated bone' above regarding the abraded nature of the cremated bone at Orchardfield does perhaps suggest possible re-deposition, and consequently the possibility remains that the cremation deposit was originally stored elsewhere and was only inserted into the ditch fill at a later date after it had filled up as a result of natural silting, or that agricultural or other processes resulted in the movement of the cremation from its original location.

Parallels with the ring of posts surrounding Ring-ditch 004 and the possible ring of posts surrounding Ring-ditch 008 could not be found, but it is possible that these took the place of the outer banks associated with the Rullion Green barrows. Radiocarbon dates from material within the pits associated with Ring-ditch 008 were found to post-date the Bronze Age. The medieval

date from grain from Post hole 158 came from the lower fill, potentially representing a reasonably secure context, while an Iron Age date for grain from Pit 110 came from the upper fill of this feature. This might suggest that they were unrelated to the ring-ditch, although it cannot be ruled out that the material from which the dates were taken was intrusive. Assuming that these were contemporary with the ring-ditch, the number of post holes within close proximity to the south-western side of the monument would appear to indicate that several phases of activity may have taken place.

Similarities between the Rullion Green site and the Orchardfield site extend to the burial rites, with three of the four barrows excavated by Watkins during the 1984 season having a central deposit of cremated human remains. However, rather than being contained within a pit, as was the case with Ring-ditch 004 at Orchardfield, these had been deposited loose upon a surface made from local sand and gravel subsoil. The excavator attributes the central burial to the primary phase of barrow construction, and it is likely that this was also the case with the central burial within Ring-ditch 004 at Orchardfield. Possible central burials associated with Ring-ditches 006 and 008 may also have been placed directly on the surface or within the barrow material, where they would have been more vulnerable to erosion/agriculture and consequently would no longer survive.

Scattered fragments of cremated bone away from the main focus of burial at Rullion Green have led the excavator to suggest that the remains were brought in loose prior to deposition. This may also have been the case with some of the burials at Orchardfield, but fragments of pottery associated with some of the secondary burials may be the remains of vessels used to contain the remains. The quantity of bone recovered is also of note. At Rullion Green, this varied between 118g and 505g, with the 291.5g recovered from cremation 072 falling well between these two figures. With complete adult cremations generally weighing in the region of 1,500–2,300g (see 6 'Cremated bone' above), this might make a strong case for re-deposition, with only a token deposit being placed within the barrow. In the case of Orchardfield, cremated bone could have been

lost as a result of erosion/agriculture, but this is unlikely to have been the case in regard to Rullion Green, as it survived as an upstanding monument.

In terms of other material culture, both sites produced small quantities of lithics, with those from Rullion Green consisting of flint, whereas those from Orchardfield consisted largely of chert, but with flint, quartz and agate also represented (see 5.2 'Flaked lithics and stone tools' above). While it is considered conceivable that small quantities of lithics could represent residual material, their presence at both sites is perhaps more indicative of their relating to the burial rites associated with ring-ditch barrows of this nature.

Despite some clear similarities, to suggest that the barrows at Orchardfield would have been exactly the same as those at Rullion Green would be largely conjectural. In areas where large upstanding barrow cemeteries still survive, such as Normanton Down in Wiltshire, a variety of round-barrow types are exhibited. Woods (1963) lists six main types and a further five variants of Bronze Age round-barrow. These vary from a simple rounded circular mound of earth (bowl with no ditch) through to a ring-ditch with an external bank surrounding a level central platform with no central mound (ring). Those in between have internal mounds of varying size and shape, the largest of which cover the entire area of the interior and the smallest of which are just sufficient to cover the area of the central burial. Although direct cultural parallels with the southern English examples cannot be inferred, the wide variety of types demonstrated does indicate a range of possibilities for the Orchardfield barrows.

The possibility that the features at Orchardfield were multi-phase would not be unusual within Bronze Age funerary traditions, with at least some of the cremated human remains being re-deposited or inserted only once the ditches had infilled and therefore being secondary to the use of the monuments, while the variability in the size and depth of the pits around Ring-ditch 008 could suggest more than one phase of pit digging activity. Multi-phase burial activity is known from Bronze Age cairns and henges and other hengiform structures; for example, at Tomnaverie (Bradley 2000) Middle and Late Bronze Age cremation burials were inserted into the earlier Clava cairn.

Further afield, the sequence of cairns at Cnip, Isle of Lewis (Close-Brooks 1995) was multi-phased with the final kerb cairn being later Bronze Age in date. A group of henge-type monuments dating to the Bronze Age includes North Mains in Perthshire, Kiltaraglen on Skye and Pullyhour in Caithness. Limited excavation at Pullyhour (Bradley 2011) indicates that this small hengiform monument was in use over a period of time in the second half of the second millennium BC, with remodelling during that time. The Kiltaraglen hengiform ditch (Suddaby 2013) was open for an unknown period of time, again within the second half of the second millennium BC and into the first millennium BC, and ditch fills contained Late Bronze Age pottery and a deposit of re-deposited human bone dating to the Early Bronze Age. The henge at North Mains, Strathallan (Barclay 1983) was also a multi-phase monument, with the henge displaying secondary burial activity from the Early (Beakers, Food Vessels and Collared Urns) and then from the Later Bronze Age; a nearby barrow contained secondary inserted burials of the Early Bronze Age (Food Vessels). The henge at Balfarg, while demonstrating reuse for burial, was much earlier, with the inserted burial dating to the Beaker period (Mercer 1981).

The discovery of the unusual assemblage contained within Pit 087 has led to the conclusion that this was a pyre pit; this feature, isolated from the barrows and capped by a large flat stone, contained burnt human bone mixed with charcoal, dating to the same period as the cremation deposits within the ring-ditches. Section 6 'Cremated bone' (above) records that the make-up of the human bone content was unusual, being more abraded and comprising much greater numbers of small bones such as tooth roots, finger and toe phalanges and small sesamoid bones, and notes the overall smaller fraction size of the cremated bone present. It is therefore suggested that this pit was used to dispose of the residue ash from one or more funeral pyres, into which these small bones were mixed and that they were missed during the collection of cremated bone from the pyre for burial. This is an extremely interesting discovery, as it provides evidence for the wider ritual activity that was taking place on the site outside of the final interment of cremated bone within the barrows and their ditches. It

demonstrates that not all of the bones were picked out of the pyre debris for burial and that smaller bones were missed, later to be gathered together with leftover pyre debris and deposited away from the focus of the burials beneath a stone cap, perhaps at the end of the use of this cemetery, as a closing ritual. The burnt tubers and oak charcoal present in the pit are likely to be the remains of tinder and fuel for the pyre.

Following the evaluation phase of works, there was some speculation that the ditch feature within Area 2 might have been the remains of a cursus monument. This type of monument appears to have been fairly common within the East Linton area, with known examples at Preston Mill and Drylawhill. However, the morphology of this feature does not correlate with known cursus monuments, which tend to have straight parallel sides and rounded ends rather than the rather random outline of the excavated ditch with its numerous changes in direction. There is also the question of the finds and the radiocarbon dates obtained from the ditch fill, which appear to place it within the late medieval period. A medieval date was also obtained for grain from one of the pits associated with Ring-ditch 008, as noted in the preceding paragraph, indicating that medieval activity may have extended into the area of the barrow cemetery. Medieval activity is well documented within the East Linton area, with a village from this period recorded at Markle (NMRS No. NT57NE 3). A single pit from Area 2 produced a much earlier Bronze Age date than those obtained for the barrow cemetery and is considered to be unrelated to either site. Charred plant remains recovered from this pit suggest that it may have been a grain store (see 7.1.3.2 'Prehistoric food remains – Pit 121' above).

10. CONCLUSION

Comparisons between this site and the excavations undertaken at Rullion Green have served to highlight the limitations of excavating a site after it has been reduced to negative features rather than when it was upstanding. Whereas the excavator at Rullion Green was able to identify various phases of construction, construction materials, banks,

platforms etc, the information on the structural elements of the Orchardfield barrows is largely conjecture based on the morphology of upstanding examples. The variety in round-barrow types, as highlighted in the upstanding examples elsewhere in Britain, perhaps serves as a timely reminder of the limitations of interpreting any kind of monument based on its ground-plan. This is highlighted even further by the brief mention within the discussion of other excavated ring-ditches at Newbarns and St Germain's, where the surviving remains were insufficient to be able to say with any degree of certainty that they did in fact represent the remains of a Bronze Age funerary monument.

Despite upstanding remains no longer being present, much more in the way of positive evidence was identified in relation to the nature of the funerary activities on the site. In common with the Rullion Green site, the burials consisted of cremations, with evidence of both possible primary burial at the centre of one of the ring-ditches and secondary burial within the backfilled ditches. A pit containing cremated bone and charcoal appears to represent a pyre pit where the remains of a number of funeral pyres were deposited at the end of the life of the barrow cemetery, with small bones and fragments being missed during the collection of the cremated bones for burial and being deposited in this pit with charcoal; evidence from this pit suggests that oak was the main material being used on the funeral pyre with onion couch grass tinder.

Cropmark evidence suggests that barrow sites may be relatively common in the archaeological landscape of East Lothian, but because these are known sites they tend to be avoided by developers, and consequently examples where invasive archaeology has been undertaken are few and far between. This excavation suggests that at least some of the ring-ditches identified on aerial photographs do in fact represent the remains of Bronze Age round-barrows, but further research would be required to identify how widespread this burial practice was.

11. ARCHIVE

The full project archive will be deposited with the National Record of the Historic Environment. Finds have been allocated through Treasure Trove

procedures to East Lothian Museums Service (TT/75/14). Full specialist reports for all classes of material are provided in the site archive.

12. ACKNOWLEDGEMENTS

CFA Archaeology Ltd and the author would like to thank Miller Homes Ltd (Scotland East Region) for

funding this project; Andrew Robertson, the East Lothian Council Archaeology Officer, for advice and guidance throughout; and Trevor Watkins for providing access to unpublished information. Thanks also to the internal editors (Andrew Dunwell and Melanie Johnson) and the excavation team.

While thanks are due to the above, responsibility for the final form and content of this report lies with CFA Archaeology Ltd and the authors.

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