Archaeological Excavations at Lochinver Quarry, Elgin, 2013-2019

Artists reconstruction of the Middle Bronze Age roundhouse identified during the excavations at Lochinver Quarry

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EXECUTIVE SUMMARY

Archaeological Research Services Ltd was commissioned by Tarmac Ltd to undertake an archaeological strip, map and sample excavation at Lochinver sand and gravel quarry, Elgin, Moray. The excavations took place across the quarry extension area prior to mineral extraction. An area totalling over c.*12.5 hectares was stripped of topsoil revealing truncated archaeological deposits cut into the sand and gravel substratum. Excavation and sampling of the site took place in April 2013, February 2014, March 2015, September 2015, November 2015, May 2016, April 2017, February 2018, and February 2019. The site has produced a sequence of important archaeological remains, mostly of prehistoric date, albeit in highly truncated form and surviving primarily as pit, gullys, ditches, postholes, hearths and construction slots. The remains document a sequence of settlement from the Neolithic, through the Bronze and Iron Ages and into later periods. The Bronze Age remains form an important addition to understanding lowland Bronze Age settlement in north-east Scotland, whilst the Iron Age remains provide some of the earliest evidence for Iron smelting on Scotland as well as evidence for what appears to be salt production, as well as settlement. There is an informative assemblage of Neolithic and Bronze Age pottery, as well as human cremation remains, together will well-preserved assemblages of palaeobotanical remains shedding light on early agriculture. These are rare discoveries and together with the important suite of radiocarbon dates add significantly to understanding prehistoric settlement in Moray.*

The archaeological remains identified were all heavily truncated by ploughing and include:

- *A Neolithic post-built building/house*
- *Three Early-Middle Bronze Age cremations, each contained within an inverted pottery vessel and placed within a small pit*
- *A Middle Bronze Age small palisaded settlement with a single roundhouse inside (Roundhouse 1)*
- *Four further unenclosed Bronze Age roundhouses with associated pits (Roundhouses 2, 3, 4 and 5)*
- *A Middle Bronze Age domestic waste area including 13 pits and postholes*
- *Fourteen pits possibly associated with the Bronze Age cremations including one large stone-filled pit, possibly the setting for a large post or marker stone*
- *Three iron smelting furnace bases or hearths of probable Iron Age date*
- *One pit of confirmed Iron Age date and one pit of probable Iron Age date*
- *A post-built structure and associated well of Iron Age date*
- *A palisaded enclosure of probable medieval date*
- *Sixty nine pits of unknown date and function, 41 of which were filled with rounded cobbles*
- *Two undated kidney-shaped pits and an associated arcing gully*
- *Two undated isolated postholes*
- *One undated isolated linear ditch*

The small palisaded settlement and the cremation cemetery, together with Roundhouse 2 and the isolated pit found during the evaluation all appear to be associated with each other and form part of a Bronze Age sequence of settlement with associated burial ground and other roundhouses. Additional unenclosed post-built roundhouses were also found and dated to the Middle and Late Bronze Age. The remains so far recovered suggest an area of settlement site that was active from the middle centuries of the 2nd millennium cal BC to the beginning of the 1st millennium cal BC. Settlement evidence for this period is rare and particularly in low lying areas where such remains have typically been removed by ploughing. Comparing the range for each calibrated Bronze Age radiocarbon date provides a tentative sequence for when the various features were in use and whether or not their use overlapped.

Analysis of the pottery and fired clay objects has identified four unusual dumbbell-shaped clay objects which may be briquetage stands associated with salt-working. In addition to the three fragmentary cremation urns, sherds from a Flat-Rimmed Ware ceramic vessel of likely mid 2nd - 1st millennium cal BC date, placed on a piece of worked bark, was found in pit F046.

A total of 69 undated pits were found and excavated across the site. Forty one of these pits were crammed full of rounded cobbles, an unusual occurrence that has left the function and date of these pits unknown.

Two kidney-shaped pits and one arcing gully were found associated with two potential waste pits at the north-western extent of the area covered by Phase A and have been interpreted as broadly contemporaneous due to the similarity of the features in both form and deposit composition. Potential post-pipes were identified in two of the kidney-shaped pits indicating that they may be construction slots into which timber uprights were set. The two pits found in proximity to the two kidney-shaped pits have been interpreted as waste pits. No material culture was recovered from the fills of any of the pits, and consequently no date has been able to be ascribed to these features although they are considered likely to be late prehistoric in date.

Metallurgical analysis indicates that two heavily truncated iron smelting furnaces or hearths were present on the site, but only a very small quantity of smelting slag was recovered. The assemblage comprises a small quantity of tapped smelting slag, typical of slag freezing as it flows through the basal filling of a furnace. No material suitable for radiocarbon dating was found associated with either of these features. The slag morphology is indicative of an early Iron Age date. If the date for these features really is this early, then the site is of potential national significance and a full archaeometallurgical analysis should be undertaken to characterise the slag to indicate the technological level of the smelting technology. This would contribute to the understanding of early Iron Age iron technology in Britain, and specifically in Scotland, which is exemplified by the use of steel at Broxmouth in the early first millennium cal BC.

The iron smelting hearths, two of which contained furnace bases, contained slag fragments that have been assessed as being of Iron Age character. The lack of hammer scale associated with the smelting furnaces indicates that smithing was not undertaken in the immediate vicinity of the smelting, which may suggest that these furnaces stood on the outskirts of a settlement, rather than within it. A significant late Iron Age rectangular post-built building with associated well was identified in the northernmost part of the stripped area which might relate to a settlement. In combination with the hearths identified, this could find some

support in the evidence from aerial photography transcription which identified the cropmarks of several circular ditched features that could be the truncated remains of Iron Age round houses, or possibly Bronze Age barrows, within Phases E and D of the quarry. These latter phases have yet to be investigated archaeologically.

Palaeoenvironmental assessment of sampled contexts revealed evidence for burning in the form of charcoal fragments throughout all contexts. Charcoal species identified in this analysis included oak, birch, alder, elder, lime, hazel, aspen/willow, and the apple/hawthorn/whitebeam family. Fragments of branchwood and twigwood were identified in several samples.

Wheat and barley grains were identified in (048), one of the metalworking hearths, and the fill of the palisaded enclosure slot (1097). The seed species identified in the same assessments show a significant number of seeds from the Brassicaceae family, suggesting the cultivation of one of the crop species in this family such as cabbage, turnip, radish or mustard. Further substantial quantities of emmer wheat and barley, as well as cereal chaff, were found within contexts associated with Roundhouses 2 and 3 and is suggestive of both local agriculture and food processing in and/or around the roundhouses. It is likely that some cereal processing was undertaken within the roundhouses themselves and that the charred grains are the accidental result of some grains falling into the edge of the fires. The presence of both emmer and barley from both roundhouses suggests both buildings were used in a similar way and the presence of cereals is consistent with them being domestic structures.

The hazel and elder charcoal from many of the postholes and pits within Roundhouses 2 and 3 comprising branches and twigs is considered most likely to have resulted from the use of fires used for domestic purposes rather than for industrial use, for which a higher proportion of tree heartwood would be preferable in order to sustain high temperatures for extended periods.

1. INTRODUCTION

1.1 This report describes the successive phases of consecutive archaeological strip, map and sample investigation undertaken at Lochinver Quarry, near Elgin, Moray between 2013 and 2019 by Archaeological Research Services Ltd (ARS Ltd) on behalf of Tarmac. The strip, map and sample excavation took place over three phases: A, B, and C of the quarry. Phase A was excavated in April 2013 and February 2014. Excavation of Phase B took place in stages over April 2013, February 2014, March 2015, September 2015, December 2015, May 2016 and April 2017. Excavations in Phase C were carried out in February 2018 and February 2019. All the phases were stripped of topsoil revealing archaeological deposits cut into the natural sand and gravel substratum. The accumulated excavation and sampling of *c*.12.5 ha has now taken place following the soil strip.

1.2 Prior to these excavations, ARS Ltd produced a transcription of aerial photographic images for the site in 2010. This transcription identified the high potential for truncated and buried prehistoric archaeological remains to survive on the site. Circular features (ring ditches or possible roundhouses) and curvilinear ditch features thought to be of Bronze or Iron Age date, as well as ridge and furrow cropmarks were identified from aerial photography (Bacilieri and Knight 2010), although these areas still await soil stripping.

1.3 A Cultural Heritage Statement was produced by SLR Consulting in 2011 that identified the presence/absence, date, character and significance of the known cultural heritage resources surviving within or near to the quarry site (SLR 2011). It aimed to assess the likely significant impacts of the quarry upon those and any currently unknown remains (SLR 2011). The statement identified two notable areas of cropmarks within the quarry site that would require preservation 'by record' (i.e. archaeological excavation) prior to mineral extraction.

1.4 Following these assessments, ARS Ltd was commissioned to undertake staged evaluation trenching within the site to determine whether archaeological remains survived and characterise their nature, importance and likely extent. Four 50 x 2m trenches were excavated across Phases A and B. Trench 1 uncovered a shallow, ovoid pit that produced sherds of prehistoric pottery and contained medium-sized stones towards its base. A sample from the fill of the pit was found to contain charcoal, cereal grains, and gathered wild resources. Radiocarbon dating of a sample of roundwood oak charcoal recovered from the pit provided a date of 1616-1454 cal BC (95.4% probability) (SUERC-62308), though a broader date range of 1607-1500 cal BC (68.2% probability) is also likely (SUERC-62308). Both ranges date the pit to the late Early Bronze Age period. This finding demonstrated the archaeological potential at Lochinver Quarry for understanding the diet, economy and land use practices of the early farming communities in the region. Trench 2 contained a large pit which cut through a shallow curvilinear stone-filled palisade construction slot. Though the two features are thought to be associated - no dating evidence was recovered from either the pit or the construction slot during the evaluation stage. Trench 3 contained a small pit that did not produce any artefacts or ecofacts and it was not possible to ascribe it a date or function (Scott *et al*. 2012).

2. LOCATION, LAND USE AND GEOLOGY

2.1 The quarry extension comprises large arable fields to the north of the hamlet of Miltonduff, immediately to the north and east of the existing Lochinver Quarry site and just to the west of Elgin (Figure 1). Phase A is a long thin strip immediately to the north of the existing quarry and covers an area of *c*.3.34ha, centred on NJ 1813 6125 (Figure 2). Phase B is located to the east of the road that separates the extension site from the existing site and covers an area of *c*.7.61ha. Phase C is located directly to the north of Phase B and covers an area of *c*.3.28ha.

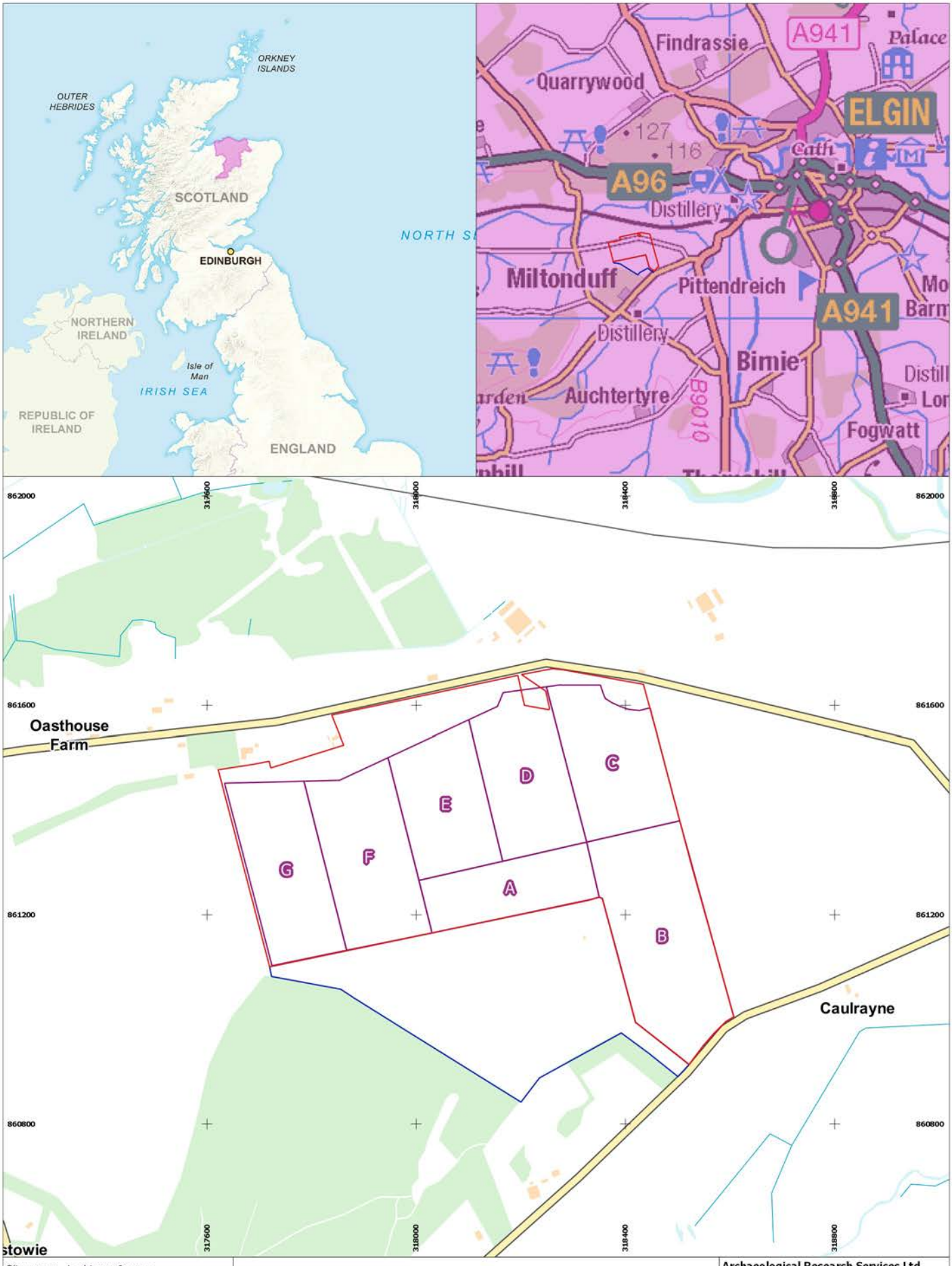
2.2 The solid geology of the area comprises pebbly sandstones from the Alves Beds formations across most of the site although the south-east corner of the extension area is underlain by pebbly sandstone from the Kingsteps sandstone formation with a fault line, running north-east to south-west, separating the two. The bedrock geology is overlain by glacio-fluvial ice-contact deposits comprising gravels, sands and silts which have the potential to contain peat-filled ice wastage features such as kettle holes which may contain palaeoenvironmental information, as well as being areas that were attractive to past human activity from the early Holocene onwards (BGS 2012).

3. ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

3.1 Cropmark evidence for Iron Age settlement and farming activity has been identified within the wider landscape around the development site. These include the Scheduled henge monument at Quarrywood 2.77 km to the north of Lochinver Quarry, along with historic buildings of national and regional significance, including a unique 16th century dovecote. More information on the archaeological and historical background of the Lochinver Quarry site can be found in the Heritage Statement (SLR 2011).

4. METHOD STATEMENT

4.1 All of the archaeological excavation works were carried out in accordance with the Written Scheme of Investigation prepared for the site (see Appendix 3), as well as the *Code of Conduct* and the *Standards and Guidance for Archaeological Field Evaluation of the Charted Institute for Archaeologists* (CIfA) (2014a; 2014b).



Site name: Lochinver Quarry, Date: July 2019 Drawn by: DGC Scale: Varies		**Archaeological Research Services Ltd** The Eco Centre Windmill Way Hebburn Tyne and Wear NE31 1SR Tel: 01914 775111 www.archaeologicalresearchservices.com
	Figure 1: **Site location**	Phases of work Quarry Extension Previous Quarry Boundary

5. STRATIGRAPHIC REPORT

5.1 This section describes the results of the excavations. The excavated features can be summarised as follows:

- Neolithic post-built building
- Three Early-Middle Bronze Age cremations, each contained within an inverted pottery vessel and placed within a small pit
- A Middle Bronze Age small palisaded settlement with a single roundhouse inside (Roundhouse 1)
- Three further unenclosed Bronze Age roundhouses with associated pits (Roundhouses 2, 3 and 4)
- A Middle Bronze Age domestic waste area including 13 pits and postholes
- Fourteen pits possibly associated with the Bronze Age cremations including one large stone-filled pit, possibly the setting for a large post or marker stone
- Three iron smelting furnace bases or hearths of probable Iron Age date
- One pit of confirmed Iron Age date and one pit of probable Iron Age date
- Iron Age post-built building, associated well and pits
- A palisaded enclosure of medieval date
- Sixty nine pits of unknown date and function, 41 of which were filled with rounded cobbles
- Two undated kidney-shaped pits and an associated arcing gully
- Two undated isolated postholes
- One undated isolated linear ditch

5.2 All features on the site were truncated as a result of past ploughing of the site which can be observed to go back to at least medieval times, and probably earlier, meaning that features survive only to a shallow depth. No archaeological features survived within the topsoil, and only those features that were cut into the natural glaciofluvial sand and gravel substratum survived as truncated features. Visibility of features on the ground was generally good with features standing out as dark brown/grey against the paler and more orange-brown natural sediments. Survival of organic remains was limited to those that had been charred as the acidic nature of the soil does not allow for the survival of unburnt organic remains. The features and deposits are discussed individually, but arranged under headings according to their period, associations with other features and their type.

5.1 Site Taphonomy

5.1.1 The topsoil (001) at Lochinver Quarry consisted of a dark-brown sandy soil containing coarse to medium gravel inclusions and was loosely compacted. It lay directly above the natural glaciofluvial substratum. The natural glaciofluvial deposits (002) consisted of pale yellow/orange sand and gravel.

5.1.2 With only a few exceptions most archaeological features excavated within Phase B were concentrated in a strip measuring approximately 50m wide that ran from south-south-east to north-north-west through the field. This part of the field is within a low dip and the natural geology in this area has a much higher sand content which would most probably have made it a more desirable location for occupation activity due to its ease of digging compared to the more dense gravel which formed the slightly raised areas. The lower ground would also have provided a certain degree of shelter from the elements.

5.2 Neolithic

Post-built-building 1

5.2.1 Post-built-building 1 was situated towards the northern end of Phase C at the western extent of the stripped area (Figure 5). The post-built-building was defined by the remnants of 10 surviving postholes (F4538, F4540, F4542, F4544, F4546, F4548, F4550, F4588, F4590, and F4572) and 3 internal stakeholes (F4554, F4556, and F4558) (Table 1, Figure 5 to Figure 8).

5.2.2 The majority of the post-built-building was beyond the limit of excavation and what was present in the stripped area had suffered severe truncation and extensive interference from bioturbation. The remaining elements of the structure indicated a maximum internal diameter of *c.*8.8m. The postholes measured an average of c 0.2m in diameter and c. 0.1m in depth but displayed extensive bioturbation. Despite the distortion, the general profile of the postholes featured concave sides with rounded bases.

5.2.3 Two body sherds of a plain vessel were recovered from one of the larger postholes (F4554) and a fragment of charred cereal grain recovered from a stakehole (F4548) produced a radiocarbon date range of 3764 – 3653 cal BC (95.4% probability) but is likely to fall within the range 3709-3662 cal BC (68.2% probability) ((GU51526) (SUERC 87239)).

Feature No.	Context numbers	Description	Max. dimensions (mm)	Max. depth (mm)	Colour of fill	Composition	Calibrated date range (95.4% probability)
4538	4538, 4539	posthole	280 x 250	90	Black-brown	Sand	
4540	4540, 4541	stakehole	180 x 180	180	Black-brown	Sand	
4542	4542, 4543	stakehole	220 x 210	100	Black-brown	Sand	
4544	4544, 4545	posthole	280 x 260	110	Black-brown	Sand	
4546	4546, 4547	posthole	250 x 240	80	Black-brown	Sand	
4548	4548, 4549	posthole	500 x 480	120	Black-brown	Sand	3764 – 3653 cal BC
4550	4550, 4551	posthole	400 x 300	160	Black-brown	Sand	
4552	4552, 4553	posthole	460 x 200	70	Dark brown	Sand	
4554	4554, 4555	stakehole	700 x 340	100	Dark brown	Sand	

Feature No.	Context numbers	Description	Max. dimensions (mm)	Max. depth (mm)	Colour of fill	Composition	Calibrated date range (95.4% probability)
4556	4556, 4557	stakehole	400 x 200	110	Dark brown	Sand	
4558	4558, 4559	stakehole	150 x 140	160	Dark brown	Sand	
4572	4572, 4573	stakehole	150 x 150	120	Dark brown	Sand	
4588	4588, 4589	posthole	310 x 210	80	Dark brown	Sand	
4590	4590, 4591	posthole	360 x 300	100	Light brown	Sand	

Table 1. Features associated with Post-built-building 1

5.3 Bronze Age

Urned cremations

5.3.1 Three separate cremation burials were excavated within the northern half of Phase B (Figure 3). Each cremation burial was contained within an inverted ceramic pottery vessel in individual small pits arranged in a small arc. Cremation Burial 1 (F1104) was the southernmost with Cremation Burial 2 (F1106) located 7.4m to the north-east. Cremation Burial 3 (F1108) was situated 5m north of Cremation Burial 2 (F1106) and XXm X of Cremation Burial 1 (F1104).

5.3.2 All the pits were heavily truncated therefore none of the vessels retained their bases or belly sections. Cremation Burial 1 (F1104) suffered the greatest degree of truncation but fragments of pottery and burnt bone were scattered around all the features as a result of the soil strip. Recording and removal of the surviving vessel fragments and cremated bone was undertaken carefully but burials' fragility and the friability of the urn vessel fabric made this a difficult process.

5.3.3 None of the burial pits exceeded 0.25m in diameter and had been dug just wide enough and deep enough to fit a vessel inside. A small volume of dark brown sandy silt with occasional small pebble inclusions backfill was identified within each pit. The entirety of which was extracted for sampling. Small fragments of burnt bone dislodged from within the vessels identified during this process were reunited with the rest of the cremation material from the corresponding pot for osteological analysis.

Cremation 1 (F1104)

5.3.4 Osteological analysis of Cremation 1 (1142) identified the remains as those of a late juvenile (1-12 years old) or early adolescent (13-17 years old) of indeterminate sex (Figure 9). Apart from the pottery vessel containing the cremation, no other finds were recovered within or around the cremation though a pelvis fragment from a small mammal was identified during analysis. This was interpreted as the residual remains from a later intrusive nesting mammal. A degree of green staining was identified on the remains that suggests that the individual was cremated with a copper alloy object on or around them. The ceramic vessel containing Cremation 1 is described and discussed below (see Section 6).

Cremation 2 (F1106)

5.3.5 Analysis of Cremation 2 (1143) indicated that that the remains belonged to a young adult 26-35 years old at the time of death (Figure 10). The weight of the cremated bone from the burial suggests that the body was not de-fleshed prior to cremation in its entirety. As in Cremation 1, the remains exhibited a degree of green staining suggesting that the individual was burnt with a copper alloy object on or around them.

5.3.6 A radiocarbon date was obtained from a piece of bone from Cremation 2. The sample returned a calibrated date of 1686-1512 cal BC (95.4% probability) with a probable tighter date range of 1639-1533 cal BC (68.2% probability) (SUERC-69268 (GU41853)). This places Cremation 2 in the final century of the Early Bronze Age. The ceramic vessel containing Cremation 2 is described and discussed below (see section 6).

Cremation 3 (F1108)

5.3.7 Analysis of Cremation 3 (1144) showed that they were the remains of an adult (17+ years old) of indeterminate sex (Figure 11). Similar to Cremation 2 (1143), their weight suggests that the body was not de-fleshed before being cremated whole. Parallel to both Cremations 1 (1142) and 2 (1143), the bones demonstrated a degree of green staining that suggests the individual was burnt with a copper alloy object on or around them. The ceramic vessel containing Cremation 3 is described and discussed below (see Section 6).

5.3.8 The morphological resemblance and spatial proximity between the cremation burials as well as the similarity in mortuary practice suggests that all these burials are broadly contemporary. Given the radiocarbon date obtained from Cremation 2 (1143), it can be reasonably assumed that the other burials also date to the end of the Early Bronze Age.

Palisaded enclosure settlement, including Roundhouse 1

5.3.9 A small enclosed settlement defined by a shallow palisade construction slot (F1097) and an internal roundhouse (Roundhouse 1) with associated features was identified in the Phase B area of the quarry. The palisade construction slot was severely truncated and graded out on the north-eastern side so that its circuit was no longer visible (see Table 1, Figure 12 and Figure 15). Survival was best on the south-south-east side where a small entrance measuring 1.12m wide was identified. The surviving remains of the palisade construction slot indicated that the enclosure had an ovoid shape in plan that measured 35.5m in length from north-north-west to south-south-east. If the north-eastern side still been intact, the enclosure would have measured approximately 14m in width from east to west. The palisade construction slot had a maximum depth of 0.27m from the start of the archaeological horizon and had an average width of 0.4m. Although this was much less elsewhere where it had been impacted by truncation. The palisade enclosure slot [1098] had noticeably vertical sides at the entrance terminals where it survived to its greatest depth. The fill (1097) consisted of mid-brown sandy silt with frequent large sub-angular and rounded packing stones.

5.3.10 No artefacts were recovered from this material of the palisade slot but palaeoenvironmental sampling produced a charred cereal grain that was radiocarbon dated to 1617-1450 cal BC (95.4% probability) but is likely to fall within the range 1608-1499 cal BC (68.2% probability) (SUERC-69267 (GU41852)). This dates the construction of the palisade enclosure to the late Early Bronze Age.

5.3.11 No evidence of a bank associated with the palisaded enclosure was identified but the possibility of upcast material being used to shore-up a timber palisade is likely.

Extensive ploughing over many centuries, if not millennia, means any slight earthworks such as an associated embankment will have been long since ploughed flat. Located just within the enclosure's entrance was a pit (F1072) that measured 1.17m in length and 0.61m in width and a maximum depth of 0.3m. No datable material was recovered from the dark orange brown sandy silt (1072) accumulated fill within this pit. The placement of the pit within the enclosure's entrance indicates that it was deliberate positioning therefore it is probable that it represents a threshold deposit that would be crossed by anyone entering the enclosure.

5.3.12 A total of 11 internal features were recorded within the palisaded enclosure (Figure 15). They comprised the remains of a heavily truncated roundhouse featuring post pits, a central hearth and a possible south-east facing entrance. Roundhouse 1 had a maximum internal diameter of *c*.5.8m from north-east to south-west. Its structure consisted of eight pit/posthole features that ranged in size from 0.58 x 0.35m to 0.98 x 0.81m (Table 2). These formed the load-bearing support for the roof plate on which the roof would have rested. The wattle and daub walls of the roundhouse were not load bearing and would have been located beyond these posts. This would make the maximum extant diameter of the roundhouse between 8-10m during its use. The remains of a porch (F1074) was represented by a single posthole located at the south-eastern extent of the roundhouse. The rest of which had not survived by the time of excavation.

5.3.13 An ovoid pit (F1078) located close to the southern entrance of the roundhouse contained both primary and secondary fills (Figure 14). The lowest fill of dark sandy silt (1079) was rich in charcoal and produced a sherd of Bronze Age pottery. A sample of hazel charcoal from this deposit was radiocarbon dated to 1503-1310 cal BC (95.4% probability) though it is likely to fall within the tighter range of 1495-1403 cal BC (68.2% probability) (SUERC-69266 (GU41851)). The upper, secondary light grey sandy-silt fill (1078) of pit (F1078) contained inclusions of large sub-rounded stones.

5.3.14 In the centre of the roundhouse, a patch of reddened, heat-affected sand (1103) was identified and interpreted as the remains of a hearth. This is typical of domestic structures such as Bronze Age roundhouses. An associated waste pit (F1117) was located outside of the roundhouse to the north of the main structure.

5.3.15 The morphological features and spatial relationships of this structure and associated radiocarbon dates from the palisade construction slot (F1097) and ovoid pit (F1078) date the roundhouse and its surrounding palisade to the Early to Middle Bronze Age transition. This is similar to the radiocarbon date obtained from Cremation 2 which was dated to the end of the Early Bronze Age and located relatively close by.

Feature No.	Context numbers	Description	Max. dimensions (mm)	Max. depth (mm)	Colour of fill	Composition	Calibrated date range (95.4% probability)
1072	1072, 1073	Sub-circular pit at enclosure entrance	1170 x 610	300	Dark orange/brown	Sandy silt	
1074	1074, 1075	Large elongated pit	3070 x 1590	390	Mid brown	Sandy silt	
1076	1076, 1077	Sub-circular pit/posthole	600 x 470	240	Dark grey	Sandy silt	

1078	1078, 1079, 1080	Ovoid pit	600 x 640	170	Pale to dark grey	Sandy silt	1503-1310 cal BC
1081	1081, 1082	Ovoid pit/posthole	720 x 890	130	Light to mid grey	Sandy silt	
1083	1083, 1084	Small kidney-shaped pit/posthole	400 x 900	360	Dark black/brown	Sandy silt	
1085	1085, 1086	Ovoid pit/posthole	790 x 600	100	Mid grey	Sandy silt	
1087	1087, 1088	Ovoid pit/posthole	400 x 560	120	Pale brown/grey	Sandy silt	
1089	1089, 1090	Ovoid feature/burning deposit	800 x 400	200	Grey/white	Sandy silt	
1091	1091, 1092	Ovoid burning deposit	400 x 500	100	Black and white	Sandy silt	
1093	1093, 1094, 1095, 1096	Circular pit	970 x 815	300	Orange to black	Sandy silt	
1097	1097, 1098	Ovoid enclosure ditch	400 (width)	280	Mid brown	Sandy silt	1617-1450 cal BC

Table 2. Features associated with the palisaded settlement, including Roundhouse 1.

Roundhouse 2

5.3.16 Roundhouse 2 was situated towards the north of Phase B at the western extent of the stripped area (Figure 3). The roundhouse had a maximum internal diameter of *c*.8.5m defined by the remnants of 12 surviving postholes and one internal pit (see Table 3, Figure 16 to Figure 20). The eastern part of the roundhouse had suffered severe truncation and, as a result, no postholes had survived on this side.

5.3.17 Six postholes (F1152, F1155, F1157, F1159, F1163 and F1167) of a similar size and depth were arranged in an arc forming the western and northern sides of the roundhouse. The postholes were spaced roughly 1.8m apart from each other. One posthole (F1152) contained the remains of a post-pipe consisting of a dark, charcoal-rich deposit, (1152), within redeposited natural sand and gravel backfill (1153) (Figure 17). No evidence of post-pipes remained on the other postholes but many had very dark, charcoal-rich fills indicating that the posts had been burnt and a large fragment of oak (*Quercus* sp.) charcoal presumed to be the remains of a charred wooden post was recovered from posthole F1159. In addition, a charred emmer wheat grain from fill (1155) was radiocarbon dated to 1506-1416 cal BC (95.4% probability) although it is likely to fall within the tighter date range of 1497-1436 cal BC (68.2% probability) (SUERC-74094 (GU44489)). This places the posthole in the late Early – Middle Bronze Age and overlaps with the dates from Roundhouse 1 and its palisade.

5.3.18 Two additional smaller and shallower postholes (F1145 and F1147) were located in the south-eastern area of the roundhouse. Posthole F1145 measured only 0.08m in depth from the start of the archaeological horizon and posthole F1147 measured 0.05m. Therefore these might have been relatively shallow post sockets for the purpose of holding a post in place by utilising the weight of the roof. It is common for Bronze Age roundhouses to have external porches situated on their south-east sides. Therefore it is probable that

these postholes (F1145 and F1147) represent internal support for such a porch structure. Another posthole (F1165) located within the south-eastern area of the roundhouse might represent additional internal porch support or roof support perhaps added at a later date as part of a repair.

5.3.19 Three additional postholes (F1150, F1161, F1169) were located outside of the principle arc of roof support postholes in association with Roundhouse 2.These outer postholes might have formed part of a complete outer ring that supported the external wall of the roundhouse. Posthole F1150 was situated immediately to the south of posthole F1152, posthole F1169 was located to the north of posthole F1163 and posthole F1161 was located to the north of posthole F1159. The fills of these outer postholes (F1150, F1161, F1169) were much paler with a smaller volume of charred organic remains in comparison with the inner postholes (Figure 18).

5.3.20 The further feature within Roundhouse 2 was a large, ovoid pit situated within the northern part of the roundhouse's interior. This pit (F1171) contained two distinct fills (1171) and (1172) and measured 1.23 in length and 0.78m in width with a maximum depth of 0.14m from the start of the archaeological horizon (Figure 19). The lower fill (1172) was a charcoal-rich dark brown/black sand containing small fragments of burnt bone that had been deliberately backfilled by a mid-brown sand (1172) in order to seal the darker deposit. No evidence suggested *in-situ* burning but rather that the lower deposit (1172) had been deliberately buried then rapidly backfilled with sand (1171) to extinguish further burning or smouldering. Given the burnt bone and charcoal-rich quality of the deposit, it is probable that the lower deposit (1172) represented a raked-out hearth deposit.

5.3.21 Radiocarbon dating of a charred emmer wheat grain recovered from fill (1171) produced a date of 1599-1421 cal BC (95.4% probability) although there is a probable tighter range of 1506-1446 cal BC (68.2% probability) (SUERC-74095 (GU44490)).

5.3.22 The dates obtained from the hearth waste pit (F1171) and the posthole (F1155) securely place the roundhouse within the Early – Middle Bronze Age transition period. These dates overlap with those obtained from the palisaded settlement (including Roundhouse 1) and the cremation burials.

Feature No.	Context numbers	Description	Max. dimensions (mm)	Max. depth (mm)	Colour of fill	Composition	Calibrated date range (95.4% probability)
1145	1145, 1146	Posthole	200 x 300	80	Orange/grey	Sandy silt	
1147	1147, 1148	Posthole/postpad	320 x 300	50	Orange/grey	Sandy silt	
1149	1149, 1150, 1151	Posthole	250 x 250	110	Mid brown	Sandy silt	
1152	1152, 1153, 1154	Posthole	520 x 520	250	Light yellow/orange	Sandy silt	
1155	1155, 1156	Posthole	680 x 500	140	Black/brown	Sandy silt	1506-1416 cal BC
1157	1157, 1158	Posthole	420 x 440	230	Black	Sandy silt	
1159	1159, 1160	Posthole	460 x 460	270	Mid brown/grey	Sandy silt	
1161	1161, 1162	Posthole	400 x 440	390	Light brown/grey	Sandy silt	
1163	1163, 1164	Posthole	350 x 390	200	Black	Sandy silt	

1165	1165, 1166	Posthole	400 x 430	220	Orange/grey	Sandy silt	
1167	1167, 1168	Posthole	380 x 430	300	Black	Sandy silt	
1169	1169, 1170	Posthole	450 x 280	220	Grey/brown	Sandy silt	
1171	1171, 1172, 1173	Pit	1260 x 799	160	Dark brown/black	Sandy silt	1599-1421 cal BC

Table 3. Features within Roundhouse 2.

Roundhouse 5

5.3.23 Roundhouse 5 was situated towards the northern end of Phase C near the centre of the stripped area (Figure 21). The roundhouse had a maximum internal diameter of *c*.8.12m defined by 20 surviving postholes and three pits (see Table 4).

5.3.24 The structure consisted of an outer ring of ten postholes (F4699, F4707, F4709, F4711, F4713, F4722, F4724, F4730, F4738, F4742), nine inner postholes (F4695, F4697, F4701, F4703, F4734, F4736, F4744, F4746, F4728), and three pits (F4693, F4705, F4727) The outer postholes were spaced roughly 2.5m apart from each other. Two outer postholes (F4707 and F4713) and two inner postholes (F4734 and F4736) contained the remains of post-pipes consisting of a light grey deposits within darker backfills (Figure 22 and Figure 23). No evidence of post-pipes remained on the other postholes but many had very dark, charcoal-rich fills indicating that the posts had been burnt. Fragments of hazel (*Corylus avellana*), oak (*Quercus* sp.), and ash (*Fraxinus excelsior*) charcoal were identified within the fills of these postholes.

5.3.25 Two pits (F4693 and F4727) were situated in the northern interior and one ovoid pit (F4705) was located in the southeastern interior of the roundhouse. The northern ovoid pit (F4693) contained a fill of dark grey brown sandy silt (4694) was rich in charcoal and produced a charred barley wheat grain which produced a radiocarbon date of 1420-1286 cal BC (95.4% probability) although there is a probable tighter range of 1410-1304 cal BC (68.2% probability) (SUERC-74095 (GU44490)). Adjacent to this ovoid pit (F4693), a large dark spread (F4727) was identified in the northeastern corner of the roundhouse which contained a possible posthole cut within it. This appears to be a threshold deposit similar to those identified in other roundhouses within the Lochinver excavations but its situation in the northeastern corner could indicate that it is the result of an occupation spread or levelling-up material. The ovoid pit (F4705) at the southern portion of the roundhouse appeared to have a profile indicative of intercutting postholes (Figure 24).

5.3.26 The spatial relationships of this structure and associated radiocarbon date from ovoid pit (F4693) date the roundhouse to the Middle Bronze Age similar to the domestic waste area identified downslope. There is some overlap with the latter end of the sequence of Roundhouse 2.

Feature No.	**Context numbers**	**Description**	**Max. dimensions (mm)**	**Max. depth (mm)**	**Colour of fill**	**Composition**	**Calibrated date range (95.4% probability)**
4693	4693, 4694	Pit	1620 x 1160	180	Dark brown	Silty sand	1420-1286 cal BC
4695	4696, 4750	Posthole	460 x 400	380	Dark brown	Silty sand	
4697	4697, 4760	Posthole	340 x 340	170	Dark brown	Silty sand	
4699	4699, 4759	Posthole	590 x 590	290	Dark brown	Silty sand	
4701	4701, 4702	Posthole	340 x 320	80	Dark brown	Silty sand	

4703	4703, 4704	Posthole	680 x 500	320	Dark brown	Silty sand	
4705	4705, 4706	Pit	1400 x 860	120	Grey brown	Silty sand	
4707	4707, 4708, 4767	Posthole	710 x 580	300	Grey brown/Drark brown	Silty sand	
4709	4709, 4710	Posthole	450 x 450	180	Black-brown	Silty sand	
4711	4711, 4712	Posthole	520 x 400	220	Dark brown	Silty sand	
4713	4713, 4714, 4766	Posthole	440 x 400	220	Grey brown/Drark brown	Silty sand	
4722	4722, 4723	Posthole	520 x 460	220	Grey brown	Silty sand	
4724	4724, 4725	Posthole	560 x 460	240	Yellow brown	Silty sand	
4727	4726, 4727	Threshold	1000 x 1000	180	Black	Silty sand	
4728	4728, 4729	Posthole	860 x 580	180	Mid brown	Silty sand	
4730	4730, 4731	Posthole	500 x 400	420	Dark brown	Silty sand	
4732	4732, 4733	Posthole	760 x 660	160	Dark brown	Silty sand	
4734	4734, 4761, 4762	Posthole	730 x 730	260	Black-brown	Silty sand	
4736	4736, 4763, 4764	Posthole	530 x 530	450	Dark brown	Silty sand	
4738	4738, 4765	Posthole	530 x 530	280	Brown	Silty sand	
4742	4742, 4758	Posthole	420 x 420	230	Brown	Silty sand	
4744	4744, 4745	Posthole	400 x 380	120	Grey brown	Silty sand	
4746	4746, 4747	Posthole	400 x 340	160	Dark brown	Silty sand	

Table 4. Features within Roundhouse 5.

Domestic Waste Area

5.3.27 Thirteen features (F1213-F1241) thought to be associated with waste deposition were discovered in Phase C near the centre of the stripped area (Figure 26 and Figure 28). Nine of these features were waste pits (F1215-F1237) measuring between 0.6 x 0.6m and 2.8 x 1.7m in width and had depths ranging from 0.1m to 0.7m below the start of the archaeological horizon. Each pit had a similar fill of mid to dark grey/brown silt with occasional small pebble inclusions and each had a fairly regular cut with a rounded base. An additional tenth pit (F1224) deeper than those above was located at the southern side of the pit cluster. This waste pit measured 1.28 by 0.7m in plan and was 0.78m deep below the start of the archaeological horizon. Three fills were identified within the pit – the lowermost was a brown silt containing several stones (1225) which was overlaid by a yellow brown sandy silt (1224) and the uppermost was a grey brown silt containing frequent inclusions of sub-rounded stones (1223). The profile of this waste pit [1222] was defined by near vertical sides leading to a rounded base. No finds or dating evidence were recovered from this feature. This sequence of deposits is indicative of two phases of waste deposition separated by an interim period of abandonment.

5.3.28 Two pits (F1215 and F1217) were located in the southern part of the domestic waste area (Figure 27). Waste pit F1217 comprised a sub-rectangular feature [1216] which measured 1.7m x 1.3m in plan with concave sides dug to 0.2m below the archaeological horizon. Waste pit F1217 was filled by a single, deliberately deposited black silt deposit (1217) containing occasional medium stones. This was truncated by another waste pit F1215 at its western extent. Waste pit F1215 was a near gradual slope sided, sub-rectangular pit [1214] that measured 2.8m by 1.7m in plan and cut 0.2m below the archaeological horizon into both the natural sand and gravel (002) at its eastern extent and waste pit F1217. Pit

F1215 was filled by a single, deliberately deposited, black silt (1215) that contained moderately large stone inclusions.

5.3.29 Though fragments of later prehistoric courseware were identified in both pits, a charred barley grain from fill (1215) within pit F1215 produced a calibrated radiocarbon date of 1411-1280 cal BC (95.4% probability) but is likely to fall within the range of 1396-1299 cal BC (68.2% probability) (SUERC-80671 (GU48200)) which places the feature within the Middle Bronze Age. This date overlaps with those obtained from Roundhouse 1 and Roundhouse 5 indicating that the domestic waste area and the roundhouse were probably in use at the same time.

5.3.30 A posthole (F1213) was located in the southern part of the domestic waste area that truncated the lattermost waste pit (F1215) described above. This posthole (F1213) comprised a circular feature [1212] with sharp, vertical sides and measured 0.3m in diameter and was dug to a depth of 0.5 below the archaeological horizon filled by a single, deliberately deposited, dark grey silt (1213). This feature was interpreted as the remains of a potential marker.

5.3.31 The largest feature in the domestic waste area F1239 was located in the north-western part of the domestic waste area and truncated waste pit F1237 of the main waste pit cluster above. The large domestic waste area F1239 measured 8.8m by 3.2m in plan and featured a near gradual slope sided, sub-irregular profile [1238] dug through the natural sand and gravel (002) and the fill of pit F1237 at its south-western extent to maximum depth of 0.25m below the archaeological horizon. Waste area F1239 was filled by a single, deliberately deposited, black silt (1239) containing occasional stones. This area appears to be the replacement for the individual domestic waste pit cluster.

5.3.32 Two pits (F1276 and F1278) were identified approximately 5m south of the domestic waste area. The larger pit F1276 measured 1.4 m by 1.16m in plan featuring a profile with irregular but near vertical sides with a flat base [1275] dug to a maximum depth of 0.6m below the archaeological horizon. This pit contained a fill of grey-brown silt (1276) that included pottery fragments dating to the later prehistoric period as well as heat-affected stone. The adjacent pit F1278 had a similar profile to pit F1276 but measured 0.98m by 0.76m in plan and was dug to a maximum depth of 0.3m below the archaeological horizon. The pit was filled by a brown silt (1278) with frequent medium sized stone inclusions. No finds, datable material or evidence of heat action were identified from pit F1278. These pits were interpreted as 'overspill' relating to the domestic waste area.

Feature No.	Context numbers	Description	Max. dimensions (mm)	Max. depth (mm)	Colour of fill	Composition	Calibrated date range (95.4% probability)
1213	1212, 1213	Posthole	300 x 300	500	Dark grey	Silt	
1215	1214, 1215	Waste pit	2800 x 1700	200	Black	Silt	1411-1280 cal BC
1217	1216, 1217	Waste pit	1700 x 1300	200	Black	Silt	
1219	1218, 1219	Waste pit	800 x 800	300	Dark brown	Silt	
1221	1220, 1221	Waste pit	1350 x 1150	700	Blackish brown	Silt	
1224	1222, 1223, 1224, 1225	Waste pit	1280 x 980	780	Greyish brown/yellowish brown/Brown	Silt/Sandy silt/Silt	

1227	1226, 1227	Waste pit	1100 x 900	300	Blackish brown	Sandy silt	
1229	1228, 1229	Waste pit	650 x 580	140	Black	Silt	
1231	1230, 1231	Pit	600 x 600	100	Dark brown	Silt	
1233	1232, 1233,	Waste pit	1280 x 700	450	Dark greyish brown	Silt	
1237	1236, 1237	Waste pit	960 x 900	300	Dark brown	Silt	
1239	1238, 1239	Waste area	8800 x 3200	250	Black	Silt	
1241	1240, 1241	Waste pit	900 x 850	350	Dark brown	Silt	
1276	1275, 1276	Waste pit	1400 x 1160	600	Greyish brown	Silt	
1278	1277, 1278	Waste pit	980 x 760	300	Brown	Silt	

Table 5. Features associated with domestic waste area

Roundhouse 4

5.3.33 Roundhouse 4 was situated towards the north of Phase C at the western extent of the stripped area (Figure 4). The roundhouse was defined by the remnants of seven surviving postholes, with 2 internal pits and had a maximum internal diameter of *c*. 8.84m (see Table 2; Figure 29). No postholes had survived on the northern part of the roundhouse which suffered severe truncation.

5.3.34 Four postholes (F1252, F1254, F1261, and F1262) were of a similar size (averaging 0.8m in diameter) and depth (an average of 0.15m below the archaeological horizon) forming an arc that comprised the eastern and southern sides of the structure. The pits were spaced on average 1.5m apart from each other. These pits did not display evidence of post-pipes but many had very dark, charcoal-rich fills indicating burning. A slightly larger, more easterly pit (F1250) was adjacent and partly truncated by one of these posthole (F1252). This pit measured 0.8 by 0.7m with a maximum depth 0.13m from the start of the archaeological horizon and contained a blackish-grey silty sand fill (1250). The similarity between the fills of pit F1250 and F1252 could indicate an extension of the post-pit arc of Roundhouse 4. Radiocarbon dating of a charred barley grain from fill (1263) of pit F1262 produced a date of 1192-999 cal BC (95.4% probability). Although it is likely to fall within the range of 1112-1029 cal BC (68.2% probability) (SUERC-80677 (GU48203)).

5.3.35 Another posthole (F1247) and two additional pits (F1259, and F1265) were part of the arc of the roundhouse. Posthole F1247 and pit F1259 were noticeably larger than the rest of the pits discussed above. Posthole F1247 measured 1m by 0.92m in plan. The profile of the cut [1248] had sloping sides and a flat base that measured 0.15m to the start of the archaeological horizon. It was filled with blackish-grey sandy silt (1247) (Figure 29 and Figure 30). This posthole was the northernmost surviving feature associated with Roundhouse 4. Pit F1259 measured 1.05m x 0.65m in plan. The profile of the cut [1258] had straight sides and flat base that measured 0.24m to the start of the archaeological horizon. Pit F1259 was filled with a greyish brown sandy silt deposit (1259). Fragments of Flat Rimmed Ware dating from the Middle to Late Bronze Age were recovered from the top of the fill. The section of pit F1259 indicates that it might have been a posthole truncated by later agricultural activity. A charred barley grain produced by fill (1259) of posthole F1259 was radiocarbon dated and produced a calibrated date of 1196-1013 cal BC (95.4% probability) although it is likely to fall within the range of 1154-1046 cal BC (68.2% probability) (SUERC-80672 (GU48201)).

5.3.36 Pit F1265 was slightly smaller and shallower than the rest of the features discussed above and measured 0.5m by 0.5m in plan. The profile of the cut [1264] had rounded concave sides and base that measured 0.08m to the start of the archaeological horizon. This pit F1265 filled with a greyish black sandy silt deposit (1265). No finds were recovered from this feature that appears to have been heavily truncated by deep ploughing.

5.3.37 A mid-sized ovoid pit (F1257) was situated within the roundhouse's interior. This pit measured 0.7m by 0.5m in plan with a maximum depth of 0.44m from the start of the archaeological horizon. There was no evidence to suggest *in-situ* burning but flecks of charcoal were identified within the blackish-grey sandy silt fill (1257). Two additional pits (F1267 and F1269) and a small palisade trench (F1211) were located *c.* 2.07m south of the immediate principle arc of pits associated with Roundhouse 4 (Figure 30). In contrast with the central features of Roundhouse 4, the fills of these three features (F1211, F1267, and F1269) had lighter brown/grey fills and produced a very small volume of organic remains.

5.3.38 From the radiocarbon dates obtained from pit F1259 and F1262, Roundhouse 4 can be dated to the late Middle Bronze Age which corresponds with the identification of the Flat Rimmed Ware recovered from pit F1259. This postdates the use of the domestic waste area and roundhouses detailed above by a small margin.

Feature No.	Context numbers	Description	Max. dimensions (mm)	Max. depth (mm)	Colour of fill	Composition	Calibrated date range (95.4% probability)
1211	1210, 1211	Palisade	3720 x 1930	250	Greyish brown	Sandy silt	
1247	1247, 1248	Posthole	1000 x 920	150	Blackish grey	Sandy silt	
1250	1249, 1250	Pit	800 x 700	130	Blackish grey	Silty sand	
1252	1251, 1252	Posthole	850 x 600	140	Blackish grey	Sandy silt	
1254	1253, 1254	Posthole	800 x 700	190	Blackish grey	Sandy silt	
1257	1256, 1257	Pit	700 x 500	440	Blackish grey	Sandy silt	
1259	1258, 1259	Pit	1050 x 650	240	Greyish brown	Sandy silt	1196-1013 cal BC
1261	1260, 1261	Posthole	940 x 740	280	Greyish black	Silty sand	
1262	1262, 1263	Posthole	720 x 720	160	Greyish black	Silty sand	1192-999 cal BC
1265	1264, 1265	Pit	500 x 500	80	Greyish black	Silty sand	
1267	1266, 1267	Posthole	420 x 420	70	Brownish grey	Silty sand	
1269	1268, 1269	Pit	420 x 360	80	Greyish brown	Sandy silt	

Table 6. Features associated with Roundhouse 4.

Roundhouse 3

5.3.39 Roundhouse 3 was situated towards the eastern edge of the northern part of Phase B (Figure 3). This structure consisted of seven postholes (F1176, F1178, F1180, F1182, F1185, F1189, and F1196) set in an almost complete circle though the eastern part of the roundhouse suffered greater truncation (Figure 31 and Figure 33). Roundhouse 3 had an approximate internal diameter of 5.9m. These postholes were all of a similar size (average diameter of 0.25m) and depth (average distance of 0.15m from the archaeological horizon). Each posthole had a black, charcoal-rich fill (see Table 3). Two of the postholes (F1180 and F1182) were located at the south-eastern extent of the roundhouse. These postholes were

spaced slightly closer to each other than the remaining features and it is probable that they were the remains of an external porch. The high charcoal content of the fills within the postholes indicates that the posts are likely to have been charred, similar to Roundhouse 2. Posthole F1189 contained a number of rounded cobbles within its fill that could be packing inserted to hold the post in place (Figure 32). A radiocarbon date was obtained from a charred emmer wheat grain from posthole F1178 produced a date of 1111-928 cal BC (95.4% probability) although it is likely to fall within the range of 1052-942 cal BC (68.2% probability) (SUERC-74096 (GU44491)).

5.3.40 A large, ovoid pit (F1187) which had a gently sloping sided cut [1188] was situated 1.6m north-north-west of the probable entrance porch within the probable interior of Roundhouse 3. The pit contained a very dark grey fill (1187) that included a large number of rounded cobbles. Some of these displayed evidence of having been fire-cracked. The natural sand and gravel on the interface between the fill and the cut of the pit also displayed evidence of having been fused by high temperatures and had been turned a red/orange colour by the heat. Using hot stones for heating purposes is well attested in the Bronze Age, not least in the use of burnt mounds and their attendant stone troughs. This feature appears to have been used for generating heat, although whether this was for heating the building and/or cooking is not entirely clear.

5.3.41 Beyond the roundhouse to the north, there were two possible associated pits (F1200 and F1204). Pit F1204 was situated *c.* 2.16m north-west of the main axis of Roundhouse 3. It measured 0.65m by 0.58m plan and was dug a depth of 0.14m below the archaeological horizon containing a dark brown/black sandy silt (1204) containing small to medium-sized, rounded stone inclusions and frequent pieces of charcoal. Pit F1200 was located 1.37m north of the main axis of Roundhouse 4. Overall this pit was slightly larger at 0.8 by 0.8m wide in plan and 0.27m deep below the archaeological horizon and also filled by dark brown/black sandy silt (1200) containing small stones. These pits produced no finds but contained abundant charred organic remains that most likely result from the disposal of hearth debris.

5.3.42 The radiocarbon date from posthole F1178 dates to the Middle to the Late Bronze Age transition. The spatial relationship between that posthole and the remainder of the axis of Roundhouse 3 would date the remainder of that structure to that period. This associates Roundhouse 3 as contemporary to the dates obtained from Roundhouse 4 and the domestic waste area.

Feature No.	**Context numbers**	**Description**	**Max. dimensions (mm)**	**Max. depth (mm)**	**Colour of fill**	**Composition**	**Calibrated date range (95.4% probability)**
1176	1176, 1177	Posthole	260 x 220	40	Black/brown	Sandy silt	
1178	1178, 1179	Posthole	250 x 230	100	Black		1111-928 cal BC
1180	1180, 1181	Posthole	270 x 240	110	Black	Sandy silt	
1182	1182, 1183	Posthole	200 x 350	200	Black	Sandy silt	
1185	1185, 1186	Posthole	260 x 240	80	Black	Sandy silt	
1187	1187, 1188	Pit, central hearth?	940 x 1000	220	Very dark grey	Sandy silt	
1189	1189, 1190	Posthole	380 x 380	210	Black/brown	Sandy silt	

1196	1196, 1197	Posthole	300 x 350	110	Black	Sandy silt	
1200	1200, 1201	Pit outside RH2	800 x 800	270	Black/brown	Sandy silt	
1204	1204, 1205	Pit outside RH2	580 x 650	140	Black/brown	Sandy silt	

Table 7. Features within Roundhouse 3.

Pit Cluster

5.3.43 A small cluster of three pits was situated *c*.6.5m to the west of Roundhouse 3 and was quite probably associated with it (Figure 3, Figure 34 and Figure 36). Two of the pits (F1198 and F1202) were of a similar size (*c.* 0.5m in diameter), depth (*c.* 0.2m below archaeological horizon), and very similar mid to dark brown sandy fills containing frequent stone inclusions.

5.3.44 The third pit (F1184) measured 1.1m by 1.3m in plan and had a maximum depth of 0.32m below the archaeological horizon (Figure 35). This feature contained a number of distinct fills representing different backfilling episodes. The primary fill (1194) was a charcoal-rich lens probably representing secondary deposition of hearth material as there was no evidence of *in-situ* burning. A layer of redeposited natural sand and gravel (1193) had then been backfilled on top of deposit (1194) before another layer of charcoal-rich material, possibly from the same source as deposit (1194), was deposited above this. More redeposited sand and gravel (1191) was discarded into the pit before a final deposit of grey sand (1184) was added. No finds were recovered from any of these pits but they each produced an abundance of charred organic remains.

5.3.45 A charred emmer wheat grain from F1184, fill (1191), was radiocarbon dated and produced a calibrated date of 1046-895 cal BC (95.4% probability) although it is likely to fall within the range of 997-923 cal BC (68.2% probability) (SUERC-74097 (GU44492)). The proximity of this pit to Roundhouse 3 and the overlapping radiocarbon dates are indicative of their contemporary use and supports the Late Bronze Age date assigned to the roundhouse. These would broadly place this as being broadly contemporary with Roundhouse 4 and the domestic waste area.

Feature No.	**Context numbers**	**Description**	**Max. dimensions (mm)**	**Max. depth (mm)**	**Colour of fill**	**Composition**	**Calibrated date range (95.4% probability)**
1184	1184, 1191, 1192, 1193, 1194, 1195	Pit	740 x 1330	320	Various	Sandy silt	1046-895 cal BC
1198	1198, 1199	Pit	600 x 600	190	Mid-dark brown	Sandy silt	
1202	1202, 1203	Pit	460 x 460	260	Mid-dark brown	Sandy silt	

Table 8. Features within pit cluster.

5.4 Iron Age

Pits

5.4.1 Two isolated pits (F020 and F046) were identified the central southern area in Phase A (Figure 2 and Figure 39).

5.4.2 Pit F020 consisted of an irregular profile [021] with uneven sides which contained dark brown sandy silt (020) with sub-angular stones (Figure 37). Four, dumbbell-shaped, fired clay objects were identified within pit F020. Each measured between 90-95mm in height and all were of the same shape, size and proportions. These unusual objects were shaped by hand from a single piece of red clay and clearly served the same purpose. They could be briquetage stands, perhaps as supports for a saltern, related to salt-working (see Section 8). Alternatively pit F020 and the clay dumbbells might be related to the metalworking furnace pits (F048, F052 and F055) located approximately 160m to the east (see section 5.4.4 below). Palaeoenvironmental sampling from the fill (020) produced birch and oak charcoal, modern roots and some uncharred seeds. As a long-lived tree species, oak charcoal was unsuitable for radiocarbon dating but the charcoal from shorter-lived birch yielded a calibrated radiocarbon date of 760-429 cal BC (95.4% probability). This is likely to fall within the range of 751-510 cal BC (68.2% probability) (SUERC-62309 (GU38365)) but both ranges indicate an Early Iron Age date for this pit and the clay pedestals.

5.4.3 Pit F046 contained a single fill (046) which displayed evidence of reddened sand around its edges (Figure 38). This indicates *in-situ* burning suggesting that the feature was a fire pit or hearth. The pit contained the partial remains of a pottery vessel sitting on a piece of bark. The vessel was very fragmentary and had been hand-made using either a coil or slab method of production (see Section 6 below). Based on the fabric and form, the vessel can be ascribed a late prehistoric date. Palaeoenvironmental sampling of the pit's fill produced a single charred wheat grain that yielded a calibrated radiocarbon date of 1403-1450 cal AD (95.4% probability) or more probably 1416-1440 cal AD (68.2% probability) (SUERC-62310 (GU38366)). Given the lack of consistency with the pottery vessel this is thought to be an intrusive sample that entered the pit fill via ploughing or bioturbation.

Feature No.	Context numbers	Description	Max. dimensions (mm)	Max. depth (mm)	Colour of fill	Composition	Calibrated date range (95.4% probability)
020	021, 020	Irregular pit	810 x 540	180	Dark brown	Sandy silt	760-429 cal BC
046	046, 047	Small circular pit	600 x 630	400	Dark brown	Silt	1403-1450 cal AD (intrusive)

Table 9. Summary of Iron Age pits.

Metalworking hearths

5.4.4 Three small pit features (F048, F052, F055) were identified towards the eastern central area of Phase A (Figure 2, Figure 40, and Figure 42). These were located *c.* 160m from pit F046 that contained the clay pedestals. These features were clearly associated with each other spatially and excavation revealed them to be hearths containing clay-formed metalworking furnaces.

5.4.5 Hearth 1 (F048) consisted of a shallow ovoid scoop containing a red/black fired clay structure (051) (Figure 41). This structure (051) formed a furnace with an opening on one side that faced south-east. This contained black silt (048) featuring pieces of slag and

charred wood that also accumulated around the structure. Palaeoenvironmental sampling was taken from the black silt (048) produced a charred barley grain as well as oak and birch charcoal. Radiocarbon dating of the charred barley grain produced a date of 1801-1939 cal AD (95.4% probability) with a likely date range of 1691-1925 cal AD (68.2% probability) (SUERC-62307 (GU38363)). This is thought to be intrusive with the grain most probably entering the deposit via ploughing and/or bioturbation.

5.4.6 Hearth 2 (F052) consisted of a shallow ovoid scoop containing an orange-grey heat-affected clay which formed a collapsed domed structure (053). This structure sealed two related fills within the scoop. The primary fill (057) consisted of a thin lens of very black silt accumulated against the rear of the furnace and was overlain by a fine grey silt (052) within the mouth of the furnace structure. This furnace showed fewer signs of repeated use compared to Hearth 1, however the black silt deposit (057) does indicate that it was in use for a limited period. Environmental samples were taken from contexts (052), (053) and (057) however only context (057) produced any charcoal.

5.4.7 Hearth 3 (F055) consisted of a shallow truncated scoop that included a deposit of black silt (055). This probably represents the remains of a third truncated metalworking furnace. An environmental sample was taken from context (055) which produced alder charcoal and modern roots.

Feature No.	Context numbers	Description	Max. dimensions (mm)	Max. depth (mm)	Colour of fill	Composition	Calibrated date range (95.4% probability)
048	048, 049, 051	Hearth 1	600 x 400	170	Black	Silt	1680-1939 cal AD (intrusive)
052	052, 053, 054, 057	Hearth 2	440 x 420	110	Black	Silt	
055	055, 056	Hearth 3	600 x 300	70	Black	Silt	

Table 10. Summary of metalworking hearths.

Post-built-building 2

5.4.8 Post-built-building 2 was situated in the north-western corner of Phase C situated near the northern edge of the limit of excavation (Figure 43 and Figure 45). It was represented by twelve main postholes (F4515, F4517, F4519, F4523, F4561, F4562, F4563, F4565, F4566, F4568, F4569, F4571), three ancillary postholes (F4564, F4567, F4570), four porch postholes (F4530, F4532, F4593, F4594), eight associated exterior postholes (F4595, F4596, F4597, F4598, F4599, F4600, F4601, F4608), one internal posthole (F4521), and two external pits (F4602, F4606).

5.4.9 The building comprised a framework of twelve timber uprights, representing the external walls forming a rectangular plan orientated on a broadly north-west/south-east alignment. The walls of Post-built-building 2 were defined by two parallel lines of regularly spaced postholes (an average distance of 2.2m apart) which contained an internal area measuring 11.96m x 5.09m or 60.88m^2. The postholes measured an average 0.74m in diameter and all postholes displayed sloping, concave sides with rounded or flat bases. A charred barley grain from posthole F4571 produced a radiocarbon date of 350-59 cal AD (95.4% probability) with a likely date range of 203-113 cal AD (68.2% probability) (SUERC-87244 (GU51528)). An interior posthole (F4521), at the centre of the building suggests that a

central post supported the roof. No evidence of a hearth exists within the building. Four postholes (F4530, F4532, F4593 and F4594) were positioned on the buildings' western and eastern sides. These were placed as a pair in a relatively uniform position on the west (F4530 and F4532) and east sides (F4593 and F4593) of the post-built structure. These postholes may have been used to support a porch entrance.

5.4.10 Three postholes were associated with the eastern wall of Post-built-building 2 (F4564, F4567 and F4570). These postholes were different in size and form to the identified building postholes discussed above. The postholes measured an average 0.6m in diameter and all postholes displayed sharp vertical sides with tapered bases. These postholes might have been used as additional support during construction, re-enforcing during its use or they are possibly unrelated postholes. No similar postholes were positioned on western wall.

5.4.11 Six postholes (F4596, F4597, F4598, F4599, F4600, and F4601) were aligned north-east/south-west coaxial to the main structure of Post-built-building 2. These postholes were similar in size and form to the postholes of Post-built-building 2 discussed above. The postholes measured an average 0.75m in diameter and all postholes displayed sloping, concave sides with rounded or flat bases. The distance between these postholes was much larger than those in main structure of Post-built-building 2 averaging 3.5m apart. Two smaller ancillary postholes: F4595 and F4608 were identified in proximity to postholes F4596 and F4601 respectively. Similar to postholes F4564, F4567 and F4570, these may represent additional support during construction or re-enforcement. These features could represent an extension or additional structure to the main post-built-building such as the remains of a fence line or stock enclosure. Another possibility is that it could represent the truncated remains of another building but the similarity in form would indicate a relatively short-period in time between the two structures.

5.4.12 A large waste pit F4606 was located *c.* 6.5m north-west of Post-built-building 2. This pit measured 2m by 1.5m in plan and had a maximum depth of 0.4m below the archaeological horizon (Figure 46). This feature contained a charcoal-rich fill of dark grey silty sand (4606) with frequent large to small sized sub-angular stone inclusions, which also contained a fragment of pottery which dated to the Iron Age.

5.4.13 A well F4602 was located *c.* 4.8m east of Post-built-building 2 which measured approximately 4m in diameter and was excavated to a maximum depth of 1.6m below the archaeological horizon (Figure 47 to Figure 50). The well contained a number of successive fills representing different backfilling episodes. The primary fills (4667/4672/4678/4684/4715) consisted of fine orange accumulated redeposited natural sand deposit which represented an initial phase of disuse. This material was overlaid by a mid-brown humic sandy silt (4666/4671/4676/4677/4683) at a maximum depth of 1.49m below the archaeological horizon. This material was in turn overlaid by another deposit of naturally accumulated orange sand (4675/4680/4682) which in turn was overlaid by a successive deposit of mid-brown sandy silt (4674/4679/4681). These were capped by a deposit of mid-brown sandy silt (4662) containing orange lensing and flecks of charcoal at a maximum depth of 0.96m below the archaeological horizon which might represent a deliberate deposit within the well to signify an end of use. Another disuse deposit of natural accumulated orange sand (4660) overlaid this that in turn was sealed by the uppermost deposit in the pit (4659). The uppermost fill of the well was a mid-grey brown sandy silt

(4659), which contained frequent inclusions of small to large-sized sub-rounded stones as well as fragmented bone including cattle teeth.

Feature No.	Context numbers	Description	Max. dimensions (mm)	Max. depth (mm)	Colour of fill	Composition	Calibrated date range (95.4% probability)
4515	4514, 4515	Post pit	1000 x 1000	250	Grey brown	Sand	
4517	4516, 4517	Post pit	800 x 650	150	Grey brown	Silty sand	
4519	4518, 4519	Post pit	1100 x 1100	200	Grey brown	Silty sand	
4521	4520, 4521	Posthole	490 x 380		Grey brown	Silty sand	
4523	4522, 4523	Post pit	1100 x 1000	300	Grey brown	Silty sand	
4530	4530, 4629	Posthole	750 x 750	100	Brown	Sand	
4532	4532, 4628	Posthole	1100 x 1100	150	Brown	Sand	
4535	4534, 4535	Posthole	400 x 350	80	Grey brown	Silty sand	
4537	4536, 4537	Posthole	440 x 400	60	Grey brown	Silty sand	
4561	4561, 4634	Post pit	1050 x 900	80	Grey brown	Silty sand	
4562	4562, 4636	Post pit	500 x 400	150	Grey brown	Silty sand	
4563	4563, 4639	Post pit	900 x 900	100	Grey brown	Silty sand	
4564	4564, 4644	Posthole	450 x 450	250	Grey brown	Silty sand	
4565	4565, 4799	Post pit	1000 x 900	250	Brown	Silty sand	
4566	4566, 4752	Post pit	900 x 700	400	Brown	Silty sand	
4567	4567, 4753	Post pit	650 x 650	200	Brown	Silty sand	
4568	4568, 4754, 4755	Posthole	980 x 980	410			
4569	4569, 4756	Post pit	750 x 750	180	Yellow brown	Silty sand	
4570	4570, 4757	Post pit	700 x 620	220	Yellow brown	Silty sand	
4571	4571, 4740	Post pit	1000 x 500	250	Brown	Silty sand	350-59 cal BC
4593	4593, 4643, 4748	Post pit	730 x 710	300	Yellow brown	Silty sand	
4594	4594, 4640, 4641	Posthole	640 x 560	440	Brown	Silty sand	
4595	4595, 4638	Posthole	580 x 450	220	Grey	Silty sand	
4596	4596, 4637	Posthole	1040 x 990	180	Grey	Silty sand	
4597	4597, 4635	Posthole	920 x 790	140	Grey	Silty sand	
4598	4598, 4633	Posthole	880 x 720	160	Grey	Silty sand	
4599	4599, 4632	Posthole	720 x 720	170	Grey black	Silty sand	
4600	4600, 4631	Posthole	1020 x 860	170	Grey black	Silty sand	
4601	4601, 4630	Posthole	880 x 820	300	Grey black	Silty sand	
4602	4602, 4659, 4660, 4662, 4673, 4674, 4675, 4676, 4677, 4678, 4679, 4680, 4681, 4682, 4683, 4684, 4715	Well	4000 x 4000	1600	Grey brown	Silty sand	
4606	4606, 4607	Waste pit	2000 x 1200	400	Grey black	Silty sand	
4608	4608, 4609	Pit	600 x 600	160	Grey black	Silty sand	

Table 11. Features associated with Post-built-building 2.

5.5 Medieval

Palisaded enclosure

5.5.1 A second palisaded enclosure (F1209) was identified in the Phase C area of the quarry at the very eastern extent of the excavation area (Figure 51 and Figure 52). It appears that the entire eastern side of the enclosure continued beyond the limits of the excavation. From what was visible of the enclosure it had a circular or sub-circular shape in plan

measuring 32m from north-north-west to south-south-east. The palisade slot had a maximum depth of 0.4m from the start of the archaeological horizon, although this was much less elsewhere, and had an average width of 0.4m. Near the baulk on the eastern edge of the strip in Phase C, where the palisade slot [1208] survived to its greatest depth, the slot had vertical sides. The fill (1209) consisted of mid-brown sandy silt with frequent large sub-angular and rounded packing stones (1270). Fragments of a plain domestic courseware vessel were recovered from the fill of the palisade slot and an environmental sample of the fill was taken for flotation which produced four seeds from the mustard family, a single dock/sorrel seed, and two barley grains. A charred barley grain from F1209, fill (1209), was radiocarbon dated and produced a calibrated date of 1047-1223 cal AD (95.4% probability) although it is likely to fall within the range of 1157-1213 cal AD (68.2% probability) (SUERC-80673 (GU48202)). This dates the palisaded enclosure to the medieval period.

Feature No.	Context numbers	Description	Max. dimensions (mm)	Max. depth (mm)	Colour of fill	Composition	Calibrated date range (95.4% probability)
1209	1208, 1209, 1270	Palisade	20000 x 7000	400	Greyish brown	Sandy silt	1047-1223 cal AD

Table 12. Features within palisaded enclosure.

5.6 Undated features

Pits

5.6.1 A total of 76 isolated, undated pit features were identified during excavation across Phases A, B and C. These features can be split into two groups according to their composition and form.

Stone-filled pits

5.6.2 A total of 41 stone-filled pit features were identified within Phases A and B (Figure 53 and Figure 54). The pits were spread across the two areas but appeared in small clusters. These features did not appear to be structural and none of them produced pottery or other artefacts. The pits were all cut through the yellow sand and gravel natural geology (002) and were sealed by a 0.14m thick deposit of dark orange-brown topsoil (001). The pits varied from small to large, sub-circular or ovoid features with a wide range of sizes from 0.50m x 0.56m to 3.05m x 2.24. The majority of these pit features were shallow in depth although a small number had a considerable depth up to 1.4m from the start of the archaeological horizon.

5.6.3 With the exception of F063 and F092 each feature contained a single homogenous fill comprising dark brown/grey silty sand with inclusions of small to medium, rounded to sub-angular cobbles. The density and frequency of cobbles within the pit fills differed slightly across the features however in each case the cobbles made up the majority of the pits' content and they are remarkable for this. The cobbles were not concentrated to a particular area of each feature but rather composed most of the fill. These are remarkable, although unusual, features and their use and date currently remains unknown.

5.6.4 Pit F063 was situated towards the central southern area of Phase A of the quarry (Figure 55). The pit was a near vertical sided, ovoid feature cut through the natural sand and gravel and contained three fills: (063), (088) and (089). Brown sandy silt (089) was identified at the base of the pit which measured 1.2m x 1m x 0.06m and contained occasional fragments of charcoal. This was interpreted as formed by a slight, natural collapse of the sides of the pit immediately following initial excavation. Dark grey-brown sandy silt (088) with rare, small, sub-rounded stony inclusions overlaid the basal fill. This deposit measured 1.2m x 1m x 0.05m and was interpreted as a natural silting layer. The upper fill (063) of the pit had been deliberately deposited consisting of a grey/brown sandy silt containing frequent sub-angular and rounded cobble inclusions. This measured 2.7m x 1.44m x 0.84m and sealed the underlying deposit (088). The pit measured 2.62m by 1.70m in plan and measured 0.92m from the archaeological horizon to the base. A single fragment of bone was recovered from the upper fill (063) and environmental samples were taken from the uppermost fill (063) and fill (088).

5.6.5 Pit F090 and pit F066 were located *c*.4m north of pit F063 and both truncated an earlier pit F092. Pit F066 was a near vertical sided, sub-circular pit cut through both the natural sand and gravel (002) at its eastern extent and the uppermost deposit of pit F092 at its western extent. Pit F066 was filled by a single, deliberately deposited, grey/brown silty sand (066) containing frequent sub-angular and rounded cobble inclusions. The pit measured 1.46m x 1.50m x 0.68m. Pit F090 comprised a sub-oval feature which had concave sides and measured 2.28m x 1.88m x 1.38m and was filled by a single, deliberately deposited grey/brown silty sand deposit (090) containing frequent sub-angular and rounded cobble inclusions.

5.6.6 The earliest feature represented in this sequence is pit F092 which was cut through the sandy natural substrate, had near vertical sides, a flat, uneven base and two fills (092) and (095). Deposit (092) was the uppermost fill which consisted of a dark grey/brown silty sand which contained occasional charcoal inclusions and rare medium-sized cobble inclusions. The pit measured 0.76m x 0.80m x 1.0m where visible at its eastern extent and 0.24m x 1.22m x 1.24m where visible at its western extent. It was truncated by both pit cut [068] and [093], and sealed deposit (095). Fill (095) was a dark blackish-brown clayey-silt deposit containing rare, small, rounded cobble inclusions. It measured 0.90m x 0.90m x 0.68m. The high organic content of this fill is consistent with organic waste being discarded into a pit and left to degrade. The only finds to be recovered from pit F092 were two fragmentary deer or horse incisors and, coupled with the composition of deposit (095), may suggest a potential function for F092 as a waste pit. Fill (095) was truncated by pit cut [093] which measured 2.56m x 1.96m x 1.4m. No datable finds were recovered from pit F092 and F066, however environmental samples were taken from fills (090), (092) and (066).

5.6.7 Some of the stone-filled pit features contained charcoal flecks within their fills (F1005, F1010, F1012, F1056, F1060) and some contained heat-affected stones (F1005, F1007 and F1012) although there was no indication that the latter were burnt *in situ*. Pit F1005 produced a corroded iron object while pit F1016 and pit F1056 produced a large amount of charred organics including charcoal. Pit F1070 was noticeably larger and deeper than the other stone-filled pits from Phase B and can be closely compared to F063, F066 and F090 which were excavated in Phase A and each had a depth of over 0.9m (Figure 56).

5.6.8 F1036 had an area of what appeared to be heat-affected sand (1038) lying adjacent to it, although the sand itself only contained scarce tiny charcoal fragments and there was no evidence of large-scale burning. Also in the vicinity of the stone-filled pits and, most probably associated with them, was another deposit of heat-affected sand (1045) (Figure 57). The deposit consisted of fine sand that had been reddened through exposure to heat, although this was more intense on the western side. Whatever burning process had affected the sand had also affected the natural sand and gravel beneath, turning it slightly red.

5.6.9 While the larger stone-filled pit features F060, F063, F066 and F090 were all clustered together, the remaining stone-filled pits were spread across Phases A and B of the site and did not seem to conform to a coherent distribution pattern.

Feature No.	Context numbers	Description	Max. dimensions (mm)	Max. depth (mm)	Colour of fill	Composition
028	029, 028	Large circular pit	850 x 850	170	Dark brown	Sandy silt amongst fill of rounded stone cobbles
042	043, 042	Large ovoid pit	1002 x 1200	200	Light brown	Sandy silt
060	060, 062	Stone Filled Pit	1960 x 1600	600	Brown	Sandy-silt
063	063, 065, 088, 089	Stone Filled Pit	2620 x 1700	920	063- Brown 088- Brown 089- Orange	Sandy-silt
066	066, 068	Stone Filled Pit	1460 x 1500	680	Brown	Sandy-silt
075	075, 077	Large ovoid pit	3005 x 2024	380	Mid brown	Sandy silt
084	084, 085	Sub-oval pit	1700 x 1500	340	Greyish-brown	Sandy-silt
090	090, 093	Stone Filled Pit	2280 x 1880	1380	Brown	Sandy-silt
092	092, 094, 095	Oval Pit	2560 x 1960	1400	092- Brown 095- Brown	092- Sandy-silt 095- Clay-silt
1001	1001, 1002	Large pear-shaped pit	1200 x 1080	210	Dark grey brown	Sandy silt
1005	1004, 1005	Medium sub-circular pit	700 x 730	180	Dark grey brown	Sandy silt
1007	1006, 1007	Large sub-circular pit	1050 x 1130	200	Dark grey brown	Sandy silt
1009	1008, 1009	Large sub-circular pit	940 x 930	200	Dark grey brown	Silty sand
1010	1010, 1011	Medium sub-oval pit	840 x 510	360	Dark grey brown	Silty sand
1012	1012, 1013	Large sub-circular pit	1380 x 1220	210	Dark grey brown	Silty sand
1014	1014, 1015	Medium ovoid pit	1800 x 500	250	Dark grey brown	Silty sand
1016	1016, 1017	Medium sub-circular pit	1300 x 1600	280	Dark grey brown	Silty sand
1018	1018, 1019	Medium circular pit	1100 x 1000	600	Dark grey brown	Silty sand
1020	1020, 1021	Medium circular pit	1100 x 750	140	Dark grey brown	Silty sand

Feature No.	Context numbers	Description	Max. dimensions (mm)	Max. depth (mm)	Colour of fill	Composition
1022	1022, 1023	Medium ovoid pit	1200 x 750	200	Dark grey brown	Silty sand
1024	1024, 1025	Large ovoid pit	3900 x 1000	100	Dark grey brown	Silty sand
1026	1026, 1027	Large ovoid pit	2940 x 1980	360	Dark grey brown	Silty sand
1028	1028, 1029	Medium ovoid pit	1500 x 900	210	Dark grey brown	Silty sand
1030	1030, 1031	Medium ovoid pit	1700 x 1600	400	Dark grey brown	Silty sand
1032	1032, 1033	Medium sub-circular pit	980 x 1360	220	Dark grey brown	Silty sand
1034	1034, 1035	Small circular pit	500 x 560	110	Dark grey brown	Silty sand
1036	1036, 1037	Medium ovoid pit	700 x 700	100	Dark grey brown	Silty sand
1039	1039, 1040	Medium circular pit	850 x 900	160	Dark grey brown	Silty sand
1048	1048, 1049	Small sub-circular pit	1040 x 820	310	Dark brown	Sandy silt
1050	1050, 1051	Small ovoid pit	580 x 670	300	Brown/grey	Sand
1052	1052, 1053	Medium ovoid pit	1270 x 1150	320	Dark brown	Sand
1054	1054, 1055	Small sub-circular pit	850 x 540	100	Dark brown	Sandy silt
1056	1056, 1057	Small ovoid pit	1000 x 900	200	Dark grey/brown	Sand
1058	1058, 1059	Medium ovoid pit	1440 x 1200	320	Dark brown	Sand
1060	1060, 1061	Large elongated ovoid pit	2300 x 1400	220	Dark brown/grey	Sand
1062	1062, 1063	Small ovoid pit	660 x 800	150	Dark brown	Sand
1064	1064, 1065	Medium circular pit	1160 x 1300	450	Dark brown	Sand
1066	1066, 1067	Medium ovoid pit	900 x 980	300	Dark brown	Sand
1068	1068, 1069	Medium sub-circular pit	970 x 940	390	Dark reddish-brown	Sandy silt
1070	1070, 1071	Large ovoid pit	1800 2150	1150	Dark brown/black	Sandy silt
1206	1206, 1207	Medium circular pit	1200 x 1100	320	Dark brown	Sandy silt

Table 13. Pits with a stony fill.

Pits (without stony fill)

5.6.10 A total of 35 additional isolated, undated pits were excavated across the quarry in Phases A, B and C (Figure 58). These features did not appear to be associated with any form of structure and none of them contained pottery or other artefacts. They varied from small ovoid pit features to large, sub-circular pit features ranging in size from 0.32 x 0.35m to 1.5 x 1.1m. In all cases the fills of these pits were similar and comprised fine dark brown to dark grey silty sand or sandy silt, some containing occasional, small, rounded stones.

5.6.11 Pit F010 contained two fills: a sand and gravel primary fill (050) and an upper fill (010) of black silt. The nature of the primary fill suggests it represents redeposited

natural sand and gravel. The secondary upper fill (010) was a black silt deposit which shows evidence for burning, possibly associated with cooking or perhaps industrial activities.

5.6.12 There did not seem to be a pattern to the distribution of these pits as they were spread across Phases A and B of the quarry and were interspersed with the stone-filled pits discussed above.

5.6.13 Fourteen pits, F1110-F1114, and F1118-F1140 were discovered in a cluster in an area immediately to the west of the three Bronze Age cremation burials, and are thought to be associated. Thirteen of the pits measured between 0.31 x 0.34m and 0.67 x 0.9m in width and had depths ranging from 0.1m to 0.45m below the start of the archaeological horizon. Each pit had a similar fill of mid to dark grey/brown sandy silt with occasional small pebble inclusions and each had a fairly regular cut with a rounded base. The additional, fourteenth feature, F1127, was located at the far western side of the pit cluster and was much larger and deeper than those mentioned above (Figure 59). The feature measured 1.7 x 1.48m in width and was excavated to a depth of 1.12m at which point it became unsafe to continue excavation. Three fills were present within the pit, the lowest of which (1128) consisted of a finely textured mid to dark brown sandy silt with occasional sub-rounded stones. The secondary fill (1127) consisted of mid to dark brown sandy silt and was only differentiated from the lower fill by a higher frequency of sub-rounded stones. The upper fill (1126) consisted of light brown sandy silt with frequent sub-rounded stones. While this feature contained a high density of stones, it has been separated out from the other stone-filled pits discussed above due to its unusual cut. The cut of this large feature [1129] began wide at the top with sides that sloped downwards at approximately 45° for a depth of 0.5m before a sharp change of slope occurred and the cut became almost vertical until the limit of excavation. No finds or dating evidence were recovered from any of the fills within this feature. It is possible that this large feature is a setting for a large marker post or standing stone.

5.6.14 A hearth clearance pit F1274 was identified approximately 36m north-west of Roundhouse 4. This feature was sub-circular pit with concave sides, which measured 0.5 x 0.47m with a maximum depth of 0.2m. The hearth clearance pit had a dark grey sandy silt fill containing heat-affected stone and charcoal. No finds were recovered from this feature.

5.6.15 Waste pit F1284 was identified c.41m south-east of Roundhouse 4 and c.43m west-north-west of the domestic waste area. This pit was oval in plan with near vertical sides and a flat base, which measured 1.24 x 0.92m and had a maximum depth of 0.4m. The feature contained a dark brown sandy silt fill (1284) with a significant amount of stone however no finds or datable material was recovered.

5.6.16 Rectilinear pit F4603 was located c. 26.64m west of Roundhouse 5. This pit measured 3m by 2.3m in plan with near-vertical sides and a flat base that measured 0.22m deep to the archaeological horizon. This pit contained two fills both of silty sand. The basal fill was a mid-brown grey silty sand (4605) which contained flecks of charcoal overlaid by a dark brown grey sandy silt (4604) containing charcoal and inclusions of small to medium pebbles. This upper fill demonstrated evidence of a high-energy deposition which might be indicative of waste disposal but no artefacts or datable materials were recovered.

5.6.17 A hearth clearance pit F4624 was identified approximately 8.08m south-west of the limit of excavation in Phase C. This feature was sub-ovular pit with concave sides, which measured 2.75m by 2.18m with a maximum depth of 0.36m. The hearth clearance pit

contained two fills both of silty sand. The basal silty sand (4625) which contained frequent laminations which was overlaid by an accumulated mid-brown grey sandy silt (4626) containing charcoal. No finds were recovered from this feature but the lowermost laminations of the basal fill (4625) had coloured natural sand substrate below red.

5.6.18 Waste pit F4647 was identified 0.71m south east of the limit of excavation in Phase C. This pit was circular in plan with a diameter of 1.3m and near-vertical sides with a concave break of slope to a flat base at a depth of 0.5m below the archaeological horizon. This pit contained dark brown silty sand (4648) with a few small stone inclusions. A fragment of likely modern glass was identified in the upper part of the fill.

5.6.19 Clearance pit F4649 was identified 44.75m north- east of Roundhouse 5 in Phase C. This pit was slightly rectangular in plan measuring 1.5m by 1.3m with near-vertical sides with a concave break of slope to a flat base at a depth of 0.24m below the archaeological horizon. This pit contained dark brown silty sand (4648) with frequent small stone inclusions. No finds or datable material were recovered.

Feature No.	Context numbers	Description	Max. dimensions (mm)	Max. depth (mm)	Colour of fill	Composition
004	005, 004	Small ovoid pit	500 x 400	160	Dark brown	Silty sand
008	009, 008	Large ovoid pit	940 x 730	310	Dark brown	Silty sand
010	011, 050, 010	Small ovoid pit	550 x 550	240	050 – orange 010 – black	Silty sand
018	019, 018	Small ovoid pit	470 x 570	180	Mid brown	Silty sand
022	023, 022	Irregular pit	620 x 740	420	Dark brown	Silty sand with large rounded stones
024	025, 024	Small sub-ovoid pit	490 x 580	170	Mid brown	Silty sand
030	031, 030	Small ovoid pit	670 x 730	290	Dark brown	Silty sand amongst fill of rounded stone cobbles
034	035, 034	Small sub-circular pit	580 x 600	180	Mid brown	Silty sand
038	039, 038	Small sub-circular pit	320 x 350	130	Dark brown	Silty sand
040	041, 040	Large sub-circular pit	1009 x 980	100	Mid brown	Silty sand
082	082, 083	Sub-oval pit	1500 x 1100	420	Greyish-brown	Silty sand
1099	1099, 1100	Ovoid pit	660 x 940	180	Dark grey	Sandy silt
1101	1101, 1102	Sub-circular pit	800 x 1000	170	Dark grey	Sandy silt
1110	1110, 1111	Sub-circular pit	400 x 800	200	Dark grey	Sandy silt
1112	1112, 1113	Ovoid pit	400 x 550	260	Black	Sandy silt
1114	1114, 1115	Ovoid pit	670 x 900	100	Dark grey	Sandy silt

1116	1116, 1117	Ovoid pit	600 x 900	220	Dark grey	Sandy silt
1118	1118, 1119	Circular pit	500 x 550	180	Pale grey	Sandy silt
1120	1120, 1121	Ovoid pit	370 x 480	210	Dark grey	Sandy silt
1122	1122, 1123	Circular pit	400 x 600	340	Very dark brown	Sandy silt
1124	1124, 1125	Ovoid pit	330 x 540	200	Dark grey	Sandy silt
1126	1126, 1127, 1128, 1129	Large circular pit	1700 x 1480	1120	Light to dark brown	Sandy silt
1130	1130, 1131	Circular pit	1100 x 830	300	Mid grey/brown	Sandy silt
1132	1132, 1133	Sub-oval pit	630 x 410	200	Dark brown	Sandy silt
1134	1134, 1135	Sub-circular pit	490 x 450	210	Dark brown	Sandy silt
1135	1136, 1137	Ovoid pit	310 x 340	200	Dark grey/brown	Sandy silt
1138	1138, 1139	Elongated ovoid	730 x 350	120	Mid grey/brown	Sandy silt
1140	1140, 1141	Circular pit	1100 x 930	200	Dark brown	Sandy silt
1272	1271, 1272	Sub-circular pit	1700 x 1200	200	Mid orange-brown	Sandy silt
1274	1273, 1274	Hearth clearance pit	500 x 470	200	Dark greyish black	Sandy silt
1284	1283, 1284	Waste pit	1240 x 920	400	Dark brown	Sandy silt
4603	4603, 4604, 4605	Rectangular pit	3000 x 2320	220	Brown grey	Silty sand
4624	4624, 4625, 4626	Sub-circular pit	2750 x 2180	360	Brown grey	Silty sand
4647	4647, 4648	Circular pit	1300 x 1300	500	Brown	Silty sand
4649	4649, 4650	Square pit	1500 x 1300	240	Brown	Silty sand

Table 14. Pits without a stony fill.

Kidney-shaped pits

5.6.20 Two kidney-shaped pits F096 and F098 and an associated, short arcing gully feature (F078) were revealed in a small cluster at the north-west extent of Phase A in close proximity to two pits (F082) and (F084) (see Figure 60 and Figure 61). Each of the pits contained a fine, light grey-brown silty sand. Due to their relative proximity to one another and the similarity of their respective fills, they have been regarded as broadly contemporaneous. No datable finds were recovered.

5.6.21 Pit F096 was kidney-shaped and had had posthole F080 cut through it (Figure 61). Pit F096 had near-vertical sides and a sharp break of slope at the top. The feature had a

maximum width of 1.5m x 0.80m and a maximum depth of 0.72m and had two fills (096) and (081). Deposit (081) was a black/brown silty sand, measuring 0.68m x 0.62m x 0.68 and was located at the southern terminus of F096. This deposit should be regarded as the latest depositional process within F096 and has been interpreted as a naturally deposited silt within a post-pipe, formed following the collapse or decomposition of a timber upright. Primary fill (096) was a light, grey/brown, silty sand and was the earliest deposit within F096. This fill contained frequent large and small sub-angular and rounded cobble stones and, coupled with the presence of the post-pipe (081), are interpreted as packing material for the timber upright or stake. No finds were recovered from F096, although fill (081) was sampled for palaeoenvironmental residues. Pit F096 also truncated an earlier pit F082, which measured 1.55 x 1m and had a maximum depth of 0.41m.

5.6.22 Kidney-shaped pit F098 was located 5.5m south-west of kidney-shaped pit F096 and was similar in form (Figure 62 and Figure 63). Pit F098 had concave sides and a gradual break of slope at the top. This feature had a maximum width of 1.8m x 0.66m and a maximum depth of 0.32m from the top of the archaeological horizon. Deposit (100), within pit F098, was a black/brown silty sand which had a maximum depth of 0.20m. This deposit was sub-circular in plan and was located at the terminal end of F098. It is possible that deposit (100) represents a posthole, similar to deposit (080) within F096.

5.6.23 Arcing gully feature F078 was located 3.6m north-west of F098, and 2.15m west of F096 (Figure 64 and Figure 65). Although similar in both composition and shape to both F098 and F096, gully F078 was more elongated and making it more of a gully than a pit. It had near-vertical sides and a sharp break of slope at the top and bottom with maximum dimensions of 2.7m x 0.34m x 0.28m. It was filled by a light, grey/brown silty sand (078) containing frequent, large and small, sub-angular and sub-rounded stony inclusions and occasional charcoal, but no finds, and was the only deposit within the gully. The near vertical sides, and sharp break of slope suggests a potential construction slot for a small timber wind break or shelter, however no deposits similar to post-pipes (081) and (100) were identified.

Feature No.	Context numbers	Description	Max. dimensions (mm)	Max. depth (mm)	Colour of fill	Composition
078	078, 079	Arcing gully	2700 x 340	280	Greyish-brown	Silty sand
096	080, 096, 097	Kidney-shaped pit	1500 x 800	720	080- Blackish-brown 096-Greyish-Brown	Silty sand
098	098, 099, 100	Kidney-shaped pit	1800 x 660	320	098- Greyish-brown 100- Blackish-Brown	Silty sand

Table 15. Kidney-shaped pits and associated gully.

Isolated postholes

5.6.24 Two isolated posthole, F1041 and F1174, were excavated within Phase B of the quarry (Figure 3 and Figure 66). Posthole F1041 measured 0.2 x 0.18m with a maximum depth of 0.14m having steep sides and a rounded base. The fill of the feature consisted of

brown sand containing no inclusions or finds. Posthole F1174 was slightly larger at 0.3m wide but was shallower than posthole F1041.

5.6.25 A single posthole F1282 was identified approximately 39m south-south-east of the domestic waste area within Phase C. Posthole F1282 measured 0.55 x 0.44m with a maximum depth of 0.39m having slightly concave sides with a tapered base. The feature contained two fills; an initial deposit (1282) of yellowish-brown sandy silt sealed by a deposit (1281) of dark brown silt interpreted as the decayed post pipe. No finds or datable material were identified from either deposit within the feature.

Feature No.	Context numbers	Description	Max. dimensions (mm)	Max. depth (mm)	Colour of fill	Composition
1041	1041, 1042	Posthole	200 x 180	140	Brown	Sand
1174	1174, 1175	Posthole	300 x 300	100	Black	Sand
1282	1280, 1281, 1282	Posthole	550 x 440	390	Yellowish brown/dark brown	Sandy silt/Silt

Table 16. Postholes.

Linear ditch

5.6.26 A linear ditch (F1043) was excavated within the Phase B area (Figure 3 and Figure 67). The ditch ran from east to west across the extreme southern part of the site although it appeared to have been severely truncated and only *c*.22m of its length survived. The ditch measured *c*.2m wide and had a maximum depth of 0.16m from the start of the archaeological horizon with gently sloping sides and a concave base. The fill consisted of dark brown silty sand with occasional small to medium rounded stones.

Feature No.	Context numbers	Description	Max. dimensions (mm)	Max. depth (mm)	Colour of fill	Composition
1043	1043, 1044	Linear ditch	2000	160	Dark brown	Silty sand

Table 17. Linear ditch feature.

Posthole Cluster

5.6.27 A cluster of nine postholes (F4527, F4529, F4535, F4537, 4576, F4580, F4582, F4584, and F4586) and three pits (F4525, F4574, F4578) were identified in a cluster in the middle of Phase C, approximately 21.05m east of the limit of excavation (Figure 4). All the features had been extensively disturbed by bioturbation and horizontal truncation which complicated interpretation of these features as a wider structure.

5.6.28 The nine postholes measured an average of 0.5m in diameter and extended to an average depth of 0.11m below the archaeological horizon. The fills of these postholes were almost universally characterised by varying shades of grey brown silty sand which contained few small stone inclusions as well as charcoal from burnt rooting. No finds or datable material were recovered from these postholes.

5.6.29 Three pits (F4525, F4574, and F4578) were identified amongst the cluster. The largest pit F4525 was a sub-oval that measured 1.68m by 0.76m in plan and had a maximum depth of 0.16m below the archaeological horizon. The profile of pit F4525 had sloping

concave sides with an imperceptible break of slope to the flat base which indicated truncation of the feature. The brown grey silty sand (4524) fill of pit F4525 was similar in quality to that of the postholes and contained trace inclusions of small pebbles and charcoal resulting from burnt root debris. Pit F4574 was smaller than pit F4525 but similar in profile and fill. Pit F4574 was sub-circular in plan measuring 0.45m by 0.37m and extending to a maximum depth of 0.15m below the archaeological horizon. It had a shallow profile with smoothly concave sides leading to a flat base filled with a brown grey silty sand (4574) which contained inclusions of small pebbles and charcoal from burnt rooting. Finally pit F4578 was a shallow sub-circular pit which measured 0.45m by 0.42m in plan with smoothly concave sides leading to a flat base 0.05m below the archaeological horizon. In contrast with the other pits in this cluster, pit F4578 contained a fill of orange brown silty sand (4579) which was poorly sorted as a result of bioturbation evinced by the charcoal from burnt rooting. No finds or datable evidence were recovered from any of the pits.

Feature No.	Context numbers	Description	Max. dimensions (mm)	Max. depth (mm)	Colour of fill	Composition
4525	4524, 4525	Pit	1680 x 760	160	Brown grey	Silty sand
4527	4526, 4527	Posthole	340 x 340	60	Brown grey	Silty sand
4529	4528, 4529	Posthole	570 x 500	270	Brown black	Silty sand
4535	4534, 4535	Posthole	400 x 350	80	Brown grey	Silty sand
4537	4536, 4537	Posthole	440 x 400	60	Brown grey	Silty sand
4574	4574, 4575	Pit	450 x 370	150	Brown grey	Silty sand
4576	4576, 4577	Posthole	570 x 520	120	Brown black	Silty sand
4578	4578, 4579	Pit	450 x 420	50	Orange brown	Silty sand
4580	4580, 4581	Posthole	550 x 400	160	Brown black	Silty sand
4582	4582, 4583	Posthole	660 x 570	110	Brown black	Silty sand
4584	4584, 4585	Posthole	660 x 550	50	Brown black	Silty sand
4586	4586, 4587	Posthole	330 x 320	70	Brown grey	Silty sand

Table 18. Posthole cluster.

Posthole Alignment

5.6.30 Three postholes (F4685, F4687, F4690) were identified 56.34m north-west of Roundhouse 5 and 30.17m south-east of Post-built-building 2 adjacent to the limit of excavation in Phase C. These postholes were aligned north-west/south-east and measured an average of 0.6m in diameter and 0.5m in depth from the archaeological horizon. The postholes were spaced an average distance of 2m apart. The central posthole F4687 contained two fills: the lowermost is a grey-brown silty sand (4688) which contained frequent stone inclusions which was interpreted as packing. This was overlaid by a grey sandy silt (4689) postpipe with no inclusions. No datable material or artefacts were identified from any of the postholes.

Feature No.	Context numbers	Description	Max. dimensions (mm)	Max. depth (mm)	Colour of fill	Composition
4685	4685, 4686	Posthole	500 x 500	480	Grey black	Silty sand
4687	4687, 4688, 4689	Posthole	650 x 650	500	Grey brown	Silty sand

4690	4690, 4691	Posthole	600 x 600	650	Grey brown	Silty sand

Table 19. Postholes in alignment.

Rectilinear enclosure

5.6.31 A rectilinear enclosure (F4612, F4651, and F4655) and two associated postholes (F4716 and F4718) were located 43.49m east of Roundhouse 5 in Phase C. This enclosure appeared to be broadly aligned north-west/south-east but had suffered extensive truncation particularly in the central and eastern parts of the structure. The internal dimensions measured 13.13m in length and 7.05m in width with a total internal area of 92.57m^2.

5.6.32 The western ditch F4612 had an overall length of 16.8m and an average width of 0.26m and an average depth of 0.1m below the archaeological horizon. The profile of the ditch [4612] was U-shaped with rounded corners leading to a flat base. The enclosure ditch was filled by dark brown sand (4613) with well-sorted inclusions of small sub-rounded and sub-angular stones. The ditch became significantly wider at the terminus on its northern end indicating the possible remains of a posthole though there was no substantial variation in the fill.

5.6.33 The south-eastern enclosure ditch F4655 was similar in form and width to the western enclosure ditch F4612 though it was substantially shorter and shallower with a maximum length of 2.45m and a maximum depth of 0.07m below the archaeological horizon. This appeared to be indicative of substantial horizontal truncation as a result of the long history of agricultural practice on the site prior to mineral extraction. Another possible portion of the ditch F4651 survived adjacent to ditch F4655, which measured 1.74m by 0.42m in plan with a maximum depth of 0.12m below the archaeological horizon. Both ditches contained similar fills of accumulated dark brown sand (4656) and (4652) which bore a strong resemblance to that of F4612.

5.6.34 Two postholes (F4716 and F4718) were identified in association with the enclosure. The northernmost posthole (F4716) measured 0.4m in diameter and had a maximum depth of 0.25m below the archaeological horizon. Posthole F4716 appeared to be part of the line of the enclosure ditches on the eastern side and could represent the remains of a marker post for an entrance. The ashy grey sand (4717) demonstrated mottling and evidence of probable bioturbation in that area. The southernmost posthole (F4718) was outside of the possible extent of the enclosure and measured 0.44m by 0.37m in plan with a depth of 0.24m below the archaeological horizon. It contained a very dark brown sand (4719) which had bark fragments. No finds or datable material were recovered from the postholes or the enclosure ditches.

Feature No.	Context numbers	Description	Max. dimensions (mm)	Max. depth (mm)	Colour of fill	Composition
4612	4612, 4613, 4614, 4615, 4616, 4617, 4618, 4619, 4620, 4621, 4622, 4623, 4645, 4646	Western enclosure ditch	16800 x 260	100	Dark brown	Sand

4651	4651, 4652, 4653, 4654	Eastern enclosure ditch	1740 x 420	120	Dark brown	Sand
4655	4655, 4656, 4657, 4658	South-eastern enclosure ditch	2450 x 250	70	Dark brown	Sand
4716	4716, 4717	Posthole	400 x 400	250	Grey brown	Sand
4718	4718, 4719	Posthole	440 x 365	240	Dark brown	Sand

Table 20. Rectilinear enclosure and associated postholes.

6. PREHISTORIC CERAMIC ANALYSIS

6.1 Phase A Pottery

By Robin Holgate

6.1.1 A total of 35 sherds forming the remains of a single vessel were recovered from fill (046) of pit [047]. The vessel is handmade, probably either coil or slab built, with a fairly smooth surface. The wall of the vessel is of variable thickness, averaging between 12mm and 15mm. Surface colouration and condition is typical of oxidising effects obtained when fired in a clamp kiln or an open bonfire.

6.1.2 The fabric is relatively soft with a mainly buff to brown outer surface with fine mica flecks visible; the core and parts of the interior surface of the vessel are dark grey. Tempering includes poorly-sorted stone fragments from 1mm to 5mm in diameter. The clay and the inclusions are consistent with a relatively local glacio-fluvial deposit source.

6.1.3 The vessel is a bowl with a flat rim which overhangs internally; a line of fingernail tip impressions is visible immediately underneath the internal overhang resulting from creating the rim. The bowl is incomplete. Only a quarter of the vessel's rim is present. From the 'sherds that survive it is estimated that the diameter is 470mm. The base of the bowl, which is complete, is 155mm in diameter. It stood to a height of *c*.360mm.

6.1.4 The vessel could have been produced locally. Bowls of this nature occur in 1st millennium cal BC assemblages in eastern Scotland (*cf.* Cunliffe 2005, 649-51) and north-east England (*cF* Blagdon: Hodgson *et al.* 2012, 133-42).

6.2 Phase B Pottery

By Clive Waddington

Introduction

6.2.1 The corpus of ceramic material recovered from the cremations in the northern area of Phase B and the pit within the palisaded enclosure all produced fragmentary sherds of urns from Middle Bronze Age ceramic vessels. Fragments from four vessels were recovered which together totalled 73 sherds with a combined weight of 3.32 kg. None of the vessels were complete. Three of the vessels (Urns 1-3) each contained a human cremation. The vessels had been deposited in an inverted position which had resulted in the base and much of the body of each urn, and the cremation that each held, having been removed due to truncation by ploughing. A radiocarbon date was obtained on cremated human bone from Burial 2 that was inside Urn 2 and a further radiocarbon date was obtained on a fragment of charred, short-lived single entity hazel from within the same pit fill as the pottery from pit F1078. The dates from these two contexts as well as those from the palisade trench and from another pottery-producing pit F104 to the south of the cremations, all date to the middle centuries of the 2nd millennium cal BC.

Method Statement

6.2.2 The sherds were gently finger-washed in cold water and then left to air dry. Once they had dried the remaining soil was gently brushed off with a sable shaving brush. The sherds were laid out by vessel according to context. The pottery was examined macroscopically with the aid of a x10 hand lens. No microscopic analysis was undertaken. Joining sherds were refitted using HMG adhesive.

Catalogue

6.2.3 A catalogue describing each identified vessel by ceramic type is presented below.

Vessel Number	Small Find Number	Context Number	Description	Weight (grams)
Pot 1	7	F1104	14 sherds and crumbs, some of which are conjoined, from the rim and neck segments of an urn. The sherds are fragmentary and fragile although several were able to be reassembled into one large section of the rim showing it to have had an external rim diameter of *c*.220 mm. The vessel has an orange-brown outer surface a soot-blackened inner surface and medium grey core. The fabric is coarse and hard with basic burnishing of both the inner and outer surfaces. It contains coarse crushed stone inclusions av. 3-5 mm across and which frequently erupt across both the inner and outer surfaces. The orange-brown outer surface and the grey core and inner surface indicate uneven firing due to oxidation of the outer surface, typical of open or bonfire kilns. The wall thickness av. 10-11 mm. The rim is upright with a uniform internal bevel reminiscent of the broad ceramic Bronze Age forms collectively known as 'Flat Rimmed Ware'. The vessel could have been an upright vessel or a bucket-shaped vessel, but with upright neck and rim, however due to the loss of the belly and base of the pot the original form of this vessel cannot be established. No decoration is present on the surviving part of the vessel.	356.7g
Pot 2	8	F1106	41 sherds and crumbs, some of which are conjoined, from the rim, neck and upper body segments of an urn. The sherds are fragmentary and extremely fragile although several were able to be reassembled into one large section of the rim showing it to have had an external rim diameter of *c*.250 mm. The vessel has a buff brown outer surface a soot-blackened inner surface and medium grey core. The fabric is very coarse, hard and brittle with basic burnishing of both the inner and outer surfaces. It contains very coarse crushed stone inclusions some of which are over 13	2220.1g

			mm across and which frequently erupt across the inner surface, and less frequently on the outer surface. The colour differentiation of the surfaces indicates an uneven firing process typical of open or bonfire kilns. The wall thickness av. 12-14 mm. The rim is upright and plain with a flat top typical of the broad ceramic Bronze Age form collectively known as 'Flat Rimmed Ware'. Sufficient of the vessel survives to indicate an upright neck and rim, with a very gentle inward sloping body to a what would be a smaller diameter round, flat base. Insufficient of the vessel survives to estimate its original height. Two very subtle raised cordons are present running around the neck of the vessel parallel to each other, one being 33 mm and the other 59 mm below the top of the rim. No decoration is present on the vessel. A radiocarbon date of 3320±34 (SUERC-69268) from human bone is directly associated with the use and deposition of this vessel.	
Pot 3	9	F1108	17 sherds and crumbs, some of which are conjoined, from the rim, and neck segments of an urn. The sherds are fragmentary and fragile although several were able to be reassembled into one large section of the rim showing it to have had an external rim diameter of *c*.210 mm. The vessel has an orange-brown inner and outer surface with a distinctive dark grey core indicating an even firing process with oxidation of the inside and outside of the pot during firing. The fabric is very coarse, hard and brittle with basic burnishing of both the inner and outer surfaces. It contains very coarse crushed stone inclusions some of which are over 10 mm across and which frequently erupt across both the inner and outer surfaces. The wall thickness av. 13.5-14.5 mm. The rim is upright and plain with a flat top typical of the broad ceramic Bronze Age form collectively known as 'Flat Rimmed Ware'. The vessel could have been an upright vessel or a bucket-shaped vessel, but with upright neck and rim, however due to the loss of the belly and base of the pot the original form of this vessel cannot be established. No decoration is present on the vessel.	719.9g
Pot 4	10	F1078 Context 1079	One fragmentary rim sherd and some crumbs from a coarseware bowl-shaped vessel, probably an eating or serving bowl. The rim is flat with an internal bevel. The outer surface is buff brown and roughly burnished with burnt out or eroded inclusions evident by voids in the surface. The inner surface is dark brown and also rough, and has the voids of burnt or eroded inclusions. Insufficient of the rim	27.7g

			survives to be precise about its external rim diameter but it appears to be in the order of 200 mm. The inclusion voids can be up to 7 mm across. The vessel has a curving profile indicating it is a bowl and the wall thickness varies from 10 to 11 mm thick. No decoration is present. This is probably a fragment from a domestic vessel.	

Table 21. Middle Bronze Age ceramics.

Fabric

6.2.4 With the exception of Pot 3 the fabrics are largely unevenly fired indicating production in a simple bonfire kiln with limited control of the firing process. The fabric is crumbly and fragile, reflecting the hard and brittle character of the pots. The pots contain variable quantities of crushed stone temper, presumably derived from upland sources to the south of the coastal plain. The inclusions vary widely in size from 3 to 13 mm across and all sizes in between. They are generally evenly distributed throughout the fabric, although they frequently erupt on both the inner and outer surfaces. The internal and external faces have been treated by means of burnishing, although this appears to have been executed with no great skill or desire to produce a well-finished surface, as for example is found on the much earlier Carinated Bowl pottery.

6.2.5 Surface colouration can vary considerably, even within a single vessel, as is usual with ceramics fired under a bonfire and repeatedly exposed to smoke discolouration, heat and differential oxygen supply. On the whole they have a buff brown exterior, with the core and inner fabric being medium or dark grey or brown.

Form

6.2.6 Overall, the forms of the three cremation vessels tend to be simple buckets or 'urns' with an upright body or a gently internal sloping body and upright neck and rim. The rims are either flat or have an inward sloping bevel, a rim form linking these vessels to the Flat Rimmed Ware which comes to characterise northern Middle and Late Bronze Age ceramic assemblages. The neck observable on Pot 2 averages around 80 mm wide. Within the neck zone on this same pot are two, subtle raised cordons which run around the pot parallel to each other. The presence of the cordons link the pots to the Early Bronze Age urn tradition but the lack of collar, decoration and size, together with the simple rims place these vessels, typologically, between the more typical urns of the Early Bronze Age and the Flat Rimmed Ware of the Middle - Late Bronze Age. These transitional characteristics are consistent with the associated radiocarbon date from Cremation 2 which places the pot in the decades either side of *c*.1600 cal BC.

6.2.7 Few vessels are adequately represented to allow vessel reconstruction yet the range of rim diameters indicates a variety of rim sizes for the cremation urns. Pot 3 is the smallest with an external rim diameter of around 200 mm, Pot 1 has an external rim diameter of 220 mm, and Pot 2 was the largest with an external rim diameter of 250 mm. The smallest vessel is the plain bowl, Pot 4, which had an external rim diameter of 200 mm. It is notable, however, that this vessel is around a century and a half later than the cremation pots, having an associated radiocarbon date that most likely places it in the mid-15th century cal BC (SUERC-69266).

Numbers

6.2.8 A total of 73 sherds was recovered which represents four vessels. The most productive contexts were pit fills [3186] where at least 15 vessels were represented, [3180] with at least eight vessels represented and [3178] where at least seven vessels were represented.

Discussion

6.2.9 The discovery of cremations and further Middle Bronze Age pottery on the site is significant. Three elements of the site have all produced Middle Bronze Age ceramics and associated radiocarbon dates, namely the cremations, the palisade and two pits. This is a period that is not well documented or understood over much of northern Britain and therefore this site will help to advance understanding of Middle Bronze Age settlement and burial practices as well as inform on the transition from urn-related ceramics to Flat Rimmed Ware ceramics.

6.3 Phase C Pottery

By Clive Waddington

Introduction

6.3.1 The corpus of ceramic material recovered from the 2018 excavation at Lochinver Quarry comprised an assemblage of later prehistoric pottery numbering approximately 8 sherds in total (excluding crumbs and conjoining sherds). It represents a minimum of 5 vessels, all of which are hand-made. All the sherds are small and therefore none of the vessels can be reconstructed. They were recovered from the fills of truncated features including pits and a shallow palisade slot.

Method Statement

6.3.2 The sherds were gently finger-washed in cold water and then left to air dry. Once they had dried the remaining soil was gently brushed off with a sable shaving brush. The sherds were laid out according to context and then by fabric group and individual vessels. The pottery was examined macroscopically with the aid of a x10 hand lens. No microscopic analysis was undertaken.

Catalogue

6.3.3 A catalogue describing each identified vessel by ceramic type is presented below.

6.3.4 Find no. 11 comprises three body sherds from palisade slot fill (1209), which may have conjoined, from a plain coarseware pot with crumbly fabric. It measures up to 11mm thick and the fabric contains crushed stone inclusions. It has a slip on its outer surface that has oxidised an orange-brown colour during the firing process, whilst the core and inner surface is dark grey. There is some burnt residue visible on the internal surface of at least one of the sherds. The material is not particularly diagnostic and while it could be Bronze Age, it is more likely to be medieval.

6.3.5 Find no. 14 is a single rim sherd from pit fill (1259) that formed part of what appears to have been a roundhouse. The profile of the sherd indicates a bowl-shaped vessel with upright and square rim with flat top. The fabric is hard and evenly fired being a dark grey colour throughout indicating a controlled firing in a reducing environment. The fabric

contains crushed stone inclusions of varying sizes, the largest evident being up to 8mm across. The inclusions erupt occasionally at the surface but these have all been covered with the slip that has then been applied. At the rim, where the walls are thickest, the pot measures 12mm thick. This material is classic Flat Rimmed Ware and has been found elsewhere on the site as well at other sites throughout Scotland and northern England. It is likely to be of Middle-Late Bronze Age date.

6.3.6 Find no. 15 consists of three body sherds and seven crumbs of hard, brittle ceramic from pit fill (1276), all of which appear to be from the same vessel and which have a coarse fabric containing angular crushed stone inclusions with an oxidised orange-brown outer surface and grey-brown core and inner surface. The pot has had a slip applied to the outer surface whilst the inner surface appears to have been burnished. The wall averages 11mm thick. The ceramic is not particularly diagnostic but is likely to be of later prehistoric date.

6.3.7 Find no. 12 is a single body sherd from pit fill (1214). The fabric is of a distinctive hard and brittle type, the same as for find no. 13. It contains prepared finely crushed mica which gives the surfaces of the pot a sheen, or sparkly, appearance in addition to crushed stone inclusions. The fabric is consistent, evenly fired in a controlled environment and is relatively thin, measuring 8mm thick. This sherd is from a relatively well made coarseware pot likely to be of Iron Age, or possibly later, date.

6.3.8 Find no. 13 comprises three undecorated body sherds, of which two conjoin, from what is probably the same vessel from pit fill (1216). The fabric is distinctive being the same as that of find no. 12. In the case of this vessel the internal surface of one of the sherds appears to have been burnished with a slip containing finely crushed mic applied to its outer surface to produce the sparkling effect. The fabric is consistent, evenly fired in a controlled environment and is relatively thin, averaging 8mm thick. The sherds are from one or more relatively well made coarseware pot/s likely to be of Iron Age, or possibly later, date.

6.3.9 Find no. 16 consists of two body sherds from deposit (4554), from a plain vessel with hard fine fabric. It measures up to 6mm thick and contained sparse subrounded inclusions of quartzite of varying sizes, the largest evident being up to 2mm across. The external and internal surfaces had oxidised a buff brown colour during the firing process but the core is dark grey. The material is not particularly diagnostic but is likely to be prehistoric in date.

6.3.10 Find no. 17 consists of one body sherd and one base sherd from depost (4607) from a plain vessel with a hard course fabric. The body sherd has a smooth oxidised buff brown outer surface with a dark grey unoxidised core and internal surface marked with pitting and voids. It measures 7mm thick. The basal sherd has a smooth oxidised buff brown outer surface but with moderate inclusions of dark mica erupting from the surface and measures up to 10mm thick. The largest of these measured 2mm across. This material is not particularly diagnostic but it is likely to be domestic ware of a later prehistoric date.

6.3.11 Find no. 18 consists of a single body sherd from deposit (4609) from a plain vessel with a hard course fabric. It measures up to 9.5mm thick. The body sherd has a smooth oxidised buff brown outer surface with a dark grey unoxidised core. The internal surface is no longer present but moderate inclusions of dark mica are visible within the core.

The largest of these measured 3mm across. This material is not particularly diagnostic and is likely to be later prehistoric in date.

Discussion

6.3.12 This assemblage of ceramic fragments, although small, reveals several different fabric types across the different feature groups from which they were retrieved suggesting there could be three different phases of activity represented on this part of the site. The material is represented by find nos. 11 and 14 which are considered likely to be of Bronze Age date whilst the later material represented particularly by find nos. 12, 13, 17 and 18 is of a distinctive well-made fabric that utilised mica to produce a shiny, or sparkling, effect on its outer surface. This could be or Iron Age or later date.

6.3.13 All the material is from coarseware vessels likely to have been used for domestic purposes.

7. SLAG ASSESSMENT ANALYSIS

By Gerry McDonnell

7.1 Introduction

7.1.1 This assessment report describes the material classified as slag recovered from Lochinver Quarry. A detailed description and quantification of the material is presented. The significance of the material is discussed and recommendations made for further work. The assessment report follows the guidelines issued by English Heritage (Jones 2001, 7).

7.2 Slag Classification

7.2.1 The slags were visually examined and the classification is based solely on morphology. In general they are divided into two broad groups. First are the diagnostic ferrous material which can be attributed to a particular industrial process; these comprise ores and the ironworking slags, i.e. smelting and smithing slags. The second group, are the non-diagnostic slags, which could have been generated by a number of different processes but show no diagnostic characteristic that can identify the process. In many cases the non-diagnostic residues, e.g. hearth or furnace lining, may be ascribed to a particular process through archaeological association. The residue classifications used in the report are defined below. The count and weight of each slag type present in each context was recorded.

Diagnostic Ferrous Slags and Residues

7.2.2 Tap Slag (Tap) - this smelting slag is characterised by its ropey flowed morphology, indicating a flowing slag. The slag is normally black in colour. The upper surface is smooth, sometimes with ripples. Large gas bubbles may be present.

7.2.3 Hammer Scale - there are two forms of hammer scale, flake and spheroidal generated during the smithing process. The presence of hammer scale is therefore a strong indicator that smithing (primary or secondary) was carried out on the site. Their small size precludes their hand recovery, and they are usually recovered during soil sample sieving (for environmental data).

Non-Diagnostic Slags and Residues

7.2.4 Hearth or Furnace Lining - the clay lining of an industrial hearth, furnace or kiln that has a vitrified or slag-attacked face. It is not possible to distinguish between furnace and hearth lining.

7.2.5 Fired Clay – fired clay lacks the vitrified surface of hearth or furnace lining.

7.3 XRF Methodology

7.3.1 In order to analyse the slag and residues, one fragment was cut to produce a relatively flat surface for analysis by hand held XRF The hand held WRF instrument is a Bruker S1 Turbosdr operating at 15kV. A beam of x-rays is generated in the instrument and focussed on a fresh fractured surface of the sample, the x-rays interact with the elements present in the sample resulting in the emission of secondary x-rays which are characteristic (in terms of their energy and wavelength) of the elements present in the sample. The energy of the secondary x-rays are measured and a spectrum generated showing a level of background noise with peaks of the elements present superimposed on the background noise. Samples are analysed for 30 live seconds, the spectrum is stored and a normalised composition determined using a bespoke Bruker programme. All elements heavier than magnesium (Mg, Z=12), can be detected. The calculated two-sigma error on each element is calculated and overall show values of the order of +/- 0.2%. The data is normalised and hence gives data showing relative percentage of detected oxides. The technique is non-destructive.

7.4 Results

7.4.1 The morphological examination and XRF analysis of the samples confirm that the debris derives from iron smelting.

7.5 Description

7.5.1 Context 048 produced *c*.20 fragments of run tap slag weighing 1.1kg, although the slag does not conform to classic Romano-British or medieval tap slag, it has run, but not into a tapping channel. It is more likely that it is slag that dribbled through a smelt and froze on the floor of the h. Most of the fragments were irregularly shaped pieces of slag with frozen droplets and runs of slag. There were a few small finger runs of slag, with occasional larger plate like pieces of slag more typical of classic tap slag. In the larger pieces one surface was relatively smooth and the other surface was frozen flowed droplets of slag. Two of the larger pieces had large charcoal impressions, the largest 25mm wide, 40mm long with a surviving height of 10mm. Charcoal impressions in smelting slags are characteristic of Iron Age smelting slags due to their lower viscosity.

7.5.2 One fragment was cut to produce a relatively flat surface for analysis by hand held XRF (Table 6). The results indicate an iron oxide rich slag, low in manganese oxide but relatively high in phosphorous pentoxide. The other glass forming oxides (Al2O3, K2O and CaO) are very low, suggesting that the microstructure of the slag is dominated by free iron oxide and a silicate phase with a low glassy phase content. The high free iron oxide would result in a viscous slag, which accords with the slag morphology. This data indicates that a very rich iron ore and very low in glass forming oxides was utilised and either a classic bog ore or a very rich mineral ore, e.g. hematite would have been exploited.

7.5.3 The two examples of 'hearth lining' material (Context 051, Hearth 1, 3.6kg; and Context 053, Hearth 2, 3.7kg) comprised fragments of fired clay and vitrified and slagged

hearth lining. The material from Context 051 is consistent with the remains of an iron smelting furnace. The fragments from Context 053 display less vitrification and probably derived from a furnace. The difference is that only the basal lining of Context 053 survived whereas lining from higher up the furnace from Context 051 survived which was subjected to slag attack.

7.5.4 The magnetic fraction from Context 048, associated with 'Hearth 1', comprised very fine particles none of which were identified as hammer scale. The sample from context 057, the fill of 'Hearth' 2 was similar to the other sample. Iron smelting generates highly magnetic micro-residues which have not yet been characterised, but it is clear that these magnetic fractions do not derive from iron smithing.

MgO	4.5
Al_2O_3	1.0
SiO_2	9.4
P_2O_5	1.7
SO_3	0.6
K_2O	0.3
CaO	0.9
TiO_2	n.d
V_2O_5	0.1
Cr_2O_3	n.d
MnO	0.6
FeO	80.8
CoO	n.d
NiO	n.d
CuO	n.d
	100.0

Table 22. XRF analysis of tap slag sample from context (048) (n.d. - not detected; weight%).

7.6 Significance

7.6.1 The assemblage comprises a small quantity of tapped smelting slag, typical of slag freezing as it flows through the base filling of a furnace. The magnetic fractions do not contain hammerscale, but little research has been carried out on the flot magnetic fractions described from iron smelting. However these residues are highly magnetic and would be consistent with iron smelting. The samples of lining material from Context 051 is slag attacked and vitrified consistent with the remains of the base of a smelting furnace. The fragments from Context 053 display less slag attack/vitrification, but would be consistent with the very lowest level of a furnace.

7.6.2 The evidence should be compared with the data from Culduthel, Inverness-shire.

7.7 Discussion

7.7.1 The evidence indicates that two iron smelting furnaces were excavated on the site, but the there was a very small quantity of smelting slag recovered. The interpretation needs to challenge whether the furnace remains are within a settlement or are in the field

system/hinterland. This evidence should be compared with Culduthel where the furnaces were situated within the settlement. The evidence that these furnaces lay outside the settlement is supported by the absence of smithing evidence, i.e. smelting in the hinterland, and smithing within the settlement. This could be compared with Halkon's evidence in East Yorkshire (Halkon and Millet 1999) or the evidence for the Saxon manipulation of the ironworking landscape, for example at Bestwall, Dorset (Slater and McDonnell 2012).

7.8 Recommendations

7.8.1 This assessment has characterised the evidence to provide a basic interpretation of the data. No further work is required unless dating evidence places the site in the early Iron Age i.e. pre C-14 plateau c.600BC. The slag morphology indicates an early Iron Age date. If the date is early, then the site is of international importance and a full archaeometallurgical analysis should be undertaken to characterise the slag to indicate the technological level of the smelting technology. This would contribute to the understanding of early(?) Iron Age iron technology in Britain, and specifically in Scotland which is exemplified by the use of steel at Broxmouth in the early first millennium BC (McDonnell and Blakelock, in press).

8. Fired Clay Objects and Worked Bark Strips

8.1 Fired Clay Objects

8.1.1 Four complete or nearly complete cylindrical fired clay objects, one of which was in three pieces, were recovered from the fill of pit F020. Each object has been shaped by hand from a single lump of clay. The fabric of all four objects is oxidised orange with light orange to buff external surfaces. It is relatively hard with occasional stone inclusions up to 4mm in width. All four objects are similar in size and shape, with circular cross-sections and flared terminals:

A. Base diameter (maximum): 90mm; top diameter (maximum): 80mm; shaft diameter (maximum): 50mm; height: 94mm to 89mm; weight: 436g.

B. Base diameter (maximum): 97mm; top diameter (maximum: 80mm; shaft diameter (maximum: 50mm; height: 94mm to 89mm; weight: 482gm. Broken into three conjoining pieces.

C. Base diameter (maximum): 92mm; top diameter (maximum: 85mm; shaft diameter (maximum: 49mm; height: 91mm at one edge (the other top edge was broken in antiquity); weight: 491gm.

D. Base diameter (maximum): 94mm; top diameter (maximum: 90mm; shaft diameter (maximum: 48mm; height: 95mm to 89mm; weight: 486gm. Part of the top edge was broken in antiquity and part of the base was chipped, also in antiquity.

8.1.2 All four objects, found together in the fill of a small pit, are likely to have served a similar function, probably as supports for a pottery vessel over a fire in either an industrial or a domestic setting. They have been recovered, usually individually and in fragmentary form, from Iron Age sites in Britain (e.g. Blagdon Park 2, Northumberland, Croom and Hodgson 2013, 145 and 149; Dragonby, Nottinghamshire, Barford 1996; and Little Waltham, Essex, Drury 1978, 112-3) and have been linked with saltworking (Alison Sheridan *pers. comm*.).

8.2 Bark strips

8.2.1 Twelve fragments of bark up to *c*.70mm in length were recovered from the fill (046) of pit [047], the same context that produced a pottery vessel. Two of the pieces had definitely been worked: one piece had three circular holes *c*.3mm in diameter pierced in a line near one edge, whilst the other had been pierced by a single hole of similar diameter.

9. HUMAN BONE

By Milena Grzybowska

9.1 Material and methods

Material

9.1.1 The following osteological analysis focuses on the content of the urned burials comprising Cremation 1 F1104 (1142), Cremation 2 F1106 (1143) and Cremation 3 F1108 (1144) of which Cremation 2 has been radiocarbon dated to the end of the Early Bronze Age. All of the ceramic vessels were unlidded and inverted. Cremation 1 was heavily truncated and a proportion of bone had been lost. The remaining two cremations were truncated, but the surviving portions of them were uncovered *in situ*, block-lifted and secured for laboratory micro-excavation.

Methods

9.1.2 The works were undertaken in accordance with the standards laid out by English Heritage, now Historic England (*Human bones from archaeological sites: guidelines for producing assessment documents and analytical reports*, Centre for Archaeology Guidelines, 2004) as well as by the Chartered Institute for Archaeologists (*Excavation and Post-Excavation Treatment of Cremated and Inhumed Human Remains*, McKinley and Roberts, 1993) and by the British Association of Biological Anthropologists and Osteologists in conjunction with CIfA (*Guidelines to the standards for recording human remains*, Brickley and McKinley, 2004).

9.2 Laboratory excavation

9.2.1 Micro-excavation under laboratory conditions was undertaken within ARS Ltd facilities according to the standards set out by CIfA (1993). Cremated remains contained within the urns were micro-excavated in quadrants and spits. All of the fills were floated and wet sieved using a series of sieves (1mm, 5mm and 10mm). Bone fragments down to 1mm were collected for examination. Flotation samples were used to recover plant remains and charcoal.

9.3 Analysis

9.3.1 The entirety of the material was analysed macroscopically and, when necessary, with the aid of a magnifying glass (x5). The unidentified bone was sorted into three fractions of 10mm, 5mm and 1mm using UKAS accredited calibrated sieves and weighed to one decimal place. A complete inventory of identified specimens was compiled. For each context the total and group weights of bone were recorded, the level of fragmentation estimated, the maximum bone fragment lengths measured and the average fragment size per feature was noted. The level of oxidation was inferred from the colour of the bone. Dehydration indicators and exogenous staining of the bone was recorded.

9.3.2 An attempt to obtain demographic data was undertaken. Age was determined on the basis of epiphyseal fusion (as specified in Scheuer and Black 2000). Age was categorised as follows: foetus (up to 40 weeks in utero), neonate (around the time of birth), infant (newborn to one year old), juvenile (1-12 years old), adolescent (13-17 years old), young adult (18-25 years old), young middle adult (26-35 years old), old middle adult (36-45 years old), mature adult (46+) and adult (17+).

9.3.3 The minimum number of individuals (MNI) was established by combining skeletal element identification, age and sex estimation results.

9.3.4 All pathological changes to the bone and non-metric traits were recorded.

9.3.5 The osteological material was analysed without consideration of associated artefacts so that the assessment could be as objective as possible.

9.4 Results

Cremation 1 F1104 (1142)

9.4.1 The inverted vessel was fragmentary and contained a mid-brown silty sand with very occasional charcoal flecks and frequent angular and sub-angular stones. Due to disturbance of the burial upon topsoil stripping a laboratory excavation was not applied and the bulk content of the urn was wet sieved.

9.4.2 Osteological and palaeopathological analysis

TOTAL WEIGHT OF BONE: 416.2g
MNI: 1
SEX: Unknown
AGE: Late juvenile/early adolescent
GROUP WEIGHTS (SIZE RANGE): GRAMS
Skull (exc. teeth): 22.8g (36-8mm)
Teeth: 3.0g (17-2mm)
Vertebrae: 2.9g (19-8mm)
Ribs: 4.5g (29-16mm)
Scapula: 2.6g (35-7mm)
Ulna: 0.5g (16mm)
Pelvis: 0.5g (22mm)
Distal femur: 1.0g (28mm)
Distal tibia: 0.3g (18mm)
Phalanges: 4.5g (23-8mm)
Long bone shafts (upper and lower): 77.0g (70-10mm)
Epiphyses: 9.5g (30.5-6mm)

>10mm: 147.9g (35.5%)
<10>5mm: 157.8 (37.9%)
<5>1mm: 110.5g (26.5%)

PROPORTION OF THE TOTAL WEIGTH OF IDENTIFIED FRAGMENTS
Skull: 19.9%
Axial (excluding skull): 5.7%
Appendicular: 74.2%

PATHOLOGY: none
DEGREE OF OXIDATION: completely oxidised (white), very occasionally grey hue within medullary cavity of the long bones and dentine
DEHYDRATION: U-shaped and transverse fissuring on long bones, some warping of skull and long bones
AVERAGE FRAGMENT SIZE: 8mm
LARGEST FRAGMENT SIZE: long bone: 70mm; skull: 36mm
FRAGMENTATION: high, over 60% of fragments measuring less than 10mm
STAINING: green staining on parietal striae, ribs, ulna and multiple unidentified fragments of bone

Urn: fragmentary preserved
Animal bone: 0.5g (pelvis of a small mammal).
Finds: none

A small portion of bone was uncovered from outside the pot (context 1104), which had spilled from the vessel due to truncation of the urn upon stripping of the topsoil. The cremated bone from contexts (1104) and (1142) have been pooled.

Cremation 2 F1106 (1143)

9.4.3 The urn was inverted when deposited and was heavily truncated so that its base and belly were missing. It was micro-excavated from the base of the neck to the rim. The remaining parts of the vessel were very fragmentary, however all the urn content in this section of the pot was *in situ*. The cremated remains were embedded in loose silty sand with very occasional charcoal flecks and frequent inclusions of angular and sub-angular stones. The cremated remains were excavated in quadrants of six 20mm spit-levels.

9.4.4 Osteological and palaeopathological analysis

TOTAL WEIGHT OF BONE: 949.6g
MNI: 1
SEX: Unknown
AGE: Young Middle Adult (26-35)

GROUP: WEIGHT (GRAMS) (SIZE RANGE)

Skull (exc. teeth): 73.9g (50-9mm)
Teeth: 2.9g (18-3mm)
Vertebrae: 28.8g (33-10mm)
Ribs: 6.3g (53-24mm)
Clavicles: 0.5g (21mm)
Carpals: 2.7g (22-15mm)
MTC: 1.7g (23-10mm)
Phalanges – hand: 4.2g (26-10mm)
Pelvis: 24.2g (70-29mm)

MTT: 11.5g (54-19mm)
Tarsals: 8.1g (30-15mm)
Long bones upper: 4.4g (44mm)
Long bones lower: 14.9g (73-25mm)
Long bone shafts (upper and lower): 153.0g (70-20mm)

>10mm: 622.9g (65.5%)
<10>5mm: 218.8g (23.0%)
<5>1mm: 107.9g (11.3%)

PROPORTION OF THE TOTAL WEIGTH OF IDENTIFIED FRAGMENTS
Skull: 22.7%
Axial (excluding skull): 10.4%
Appendicular: 66.8%

PATHOLOGY: none
DEGREE OF OXIDATION: fully oxidised (white), very occasionally grey hue present
DEHYDRATION: U-shaped and concentric and transverse fissures present, warping
AVERAGE FRAGMENT SIZE: 20mm
LARGEST FRAGMENT SIZE: long bone: 73mm; skull: 50mm
FRAGMENTATION: moderate, over 65% of the fragments exceeding 10mm and only 10% not reaching 5mm in size
STAINING: slight green staining on fragments of skull and unidentified bone
NON-METRIC TRAITS: Ossicle at lambda

Urn: fragmentary
Finds: none

Cremation 3 F1108 (1144)

9.4.5 The urn was inverted when deposited and was heavily truncated so that its base and belly were missing. It was micro-excavated from the base of the neck to the rim. The remaining parts of the vessel were very fragmentary, however all the urn content in this section of the pot was *in situ*. The cremated remains were embedded in loose silty sand with very occasional charcoal flecks and frequent inclusions of angular and sub-angular stones. The cremated remains were excavated in quadrants of four 20mm spit-levels.

9.4.6 Osteological and palaeopathological analysis

TOTAL WEIGHT OF BONE: 939.2g
MNI: 1
SEX: Unknown
AGE: Adult

GROUP: WEIGHT (GRAMS) (SIZE RANGE)

Skull (exc. Teeth): 84.0g (43-8mm)

Teeth: 4.8g (16-2mm)
Vertebrae: 7.1g (27-6mm)
Ribs: 5.1g (45-12mm)
Scapula: 9.7g (39-21mm)
Humerus: 21.7g (73-8mm)
Radius: 2.3g (14mm)
Pelvis: 4.3g (33mm)
Talus: 3.2g (25-23mm)
MTC/MTT: 0.5g (11mm)
Phalanges: 1.3g (20-7mm)
Long bone shafts (upper and lower, unidentified): 104.0g (70-15mm)

>10mm: 427.0g (45.4%)
<10>5mm: 286.8g (30.5%)
<5>1mm: 225.4g (23.9%)

PROPORTION OF THE TOTAL WEIGTH OF IDENTIFIED FRAGMENTS
Skull: 35.8%
Axial (excluding skull): 4.9%
Appendicular: 59.2%

PATHOLOGY: none
DEGREE OF OXIDATION: fully oxidised (white) with very occasionally grey hue
DEHYDRATION: U-shaped, concentric and transverse fissures, some warping
AVERAGE FRAGMENT SIZE: 11mm
LARGEST FRAGMENT SIZE: long bone: 73.0mm; skull: 43.0mm
FRAGMENTATION: high, 45% of the fragments exceeding 10mm and 24% not reaching 5mm in size
STAINING: slight green staining on multiple fragments of bone including long bones, vertebrae, pelvis, scapula, skull

Urn: fragmentary
Finds: none

9.5 Discussion

Weight

9.5.1 Quantification of the cremated bone has the potential to inform on the cremation process, including pyre technology, collection and bone deposition. The weight of the bone recovered from a deposit may be affected by anthropogenic and non-anthropogenic influences. These include the level of protection offered to the cremated remains within the burial environment, the level of post-depositional disturbance and the age and sex of the individual.

9.5.2 In modern crematoria the average weight of the bone after cremation make up about 3.5% of the total body weight in adult individuals, 2.5% in small children and 1.0% in

infants (Warren and Maples, 1997). Although contemporary cremation processes result in the production of between 1227.4g and 3001.3g of bone, it has been suggested that in archaeological contexts whole body deposition should produce weights ranging between 1001.5g and 2422.0g (McKinley 1993).

9.5.3 The weight of the bone recovered from deposits 1143 (949.6g) and 1144 (939.2g) suggest whole-body deposition and was similar to the mean bone weight exhibited in primary Bronze Age barrow burials (1052g) (McKinley 1997), although in the case of the Lochinver burials an additional unknown amount of bone has clearly been removed by previous plough truncation when the base and belly of the pots was destroyed. Considering truncation of burial 1142 and the young age (late juvenile/early adolescent) of the individual the considerably lower weight of the cremains (416.2g) cannot be considered evidence of partial collection of the cremated elements for burial and whole-body deposition remains likely.

Skeletal elements

9.5.4 Representation of skeletal elements can inform on the pre-cremation condition of the remains. For example, a secondary cremation of disarticulated remains is not probable if most bones of the skeleton are present. In order to aid interpretation of funerary behaviour and practice, such as the selective collection of the bone from the pyre, the weights of each skeletal region expressed as a proportion of the total weight can be compared to the expected proportion estimated for the modern cremated remains (Gonçalves 2011a).

9.5.5 Bone fragments derived from the skull, the axial area, and limbs were identified within the remains recovered from all three urns. In all of the categories, the most sizeable deviation from a normal distribution was observed in the axial skeleton (4.9%, 6.2%, 10.4% vs 21%). This is a common occurrence (McKinley 2004) that could be explained by preferential destruction of trabecular bone of the axial elements and therefore is not evidence for their deliberate exclusion during bone collection.

Context	Cremation 1 F1104 (1142)	Cremation 2 F1106 (1143)	Cremation 3 F1108 (1144)	Normal distribution
Total weight (g)	416.2	949.6	939.2	-
MNI	1	1	1	-
Age category	J/Ad	Adult (?YMA)	Adult	-
Skull (%)	19.9	22.7	35.8	18.0
Axial (%)	5.7	10.4	4.9	21.0
Upper/lower limbs (%)	74.2	66.8	59.2	61.0

Table 23. Summary of the results and skeletal elements distribution.

Minimum Number of Individuals

9.5.6 Each burial contained elements that could be attributed to a single individual.

Demography

9.5.7 Funerary practices may differ according to the age or sex of a deceased individual. Biological sex of an individual can be established by macroscopic examination of the cremated remains as well as via metric analysis as a heat-related dimensional change of the bone does not have a significant impact on osteometric sexual dimorphism (Gonçalves 2011b).

9.5.8 Age estimation uses different stages of bone and tooth development and degeneration in order to calculate the age of an individual. The most reliable macroscopic methods of age estimation depend on the presence of specific areas of the pelvis (adult individuals) and identifiable teeth (subadult individuals).

9.5.9 Due to absence of diagnostic portions of the pelvis and poorly preserved dentition the most reliable ageing methods could not be applied. The age of the individuals was estimated on the basis of epiphyseal bone fusion (*Appendix I*).

9.5.10 It was not possible to establish sex for any of the individuals due to the absence of sexually dimorphic skeletal elements.

Metric and non-metric traits

9.5.11 Due to incompleteness and poor preservation of the bones no metric data could be obtained. Similarly nearly all non-metric traits were unobservable, however it was possible to identify presence of an ossicle at lamba (Cremation 2 1143).

Pathology

9.5.12 No pathological lesions of the bone were identified.

Distribution of the cremated remains within urns

9.5.13 Within urns from features Cremation 2 and Cremation 3 each spit contained comingled elements of skull, vertebral column and appendicular skeleton and all the elements were distributed evenly across the vessels. No pattern of deposition was identified in either of these cremation deposits.

Efficiency of cremation

9.5.14 Cremation efficiency relies on temperature and time of burning. The process of cremation is one of dehydration and oxidation of the organic components of the body.

Oxidation

9.5.15 Complete burning results in complete oxidation of the organic component of bone, leaving only the mineral portion of the skeleton (McKinley, 1994). Experiments have proved that the colour of the bone reflects the temperature it attained during cremation and could therefore act as a proxy for oxidation level (Shipman *et al*. 1984, Holden *et al.* 1995):

Brown/black bone= charred (c.300°)
Blue/Grey bone= incompletely oxidized (c.600°)
White bone= completely oxidized (>600°)

9.5.16 As the level of the organic content of the bone and thickness of soft tissue cover influence the degree of oxidation it is not unusual to see a range of colours within one burial or even on a single bone fragment.

9.5.17 The bone of all the cremation burials was fully oxidised. The overall appearance of the cremated remains suggested the efficient cremation of fleshed cadavers in temperatures exceeding 600°C.

Dehydration

9.5.18 Dehydration during cremation results in shrinkage, fissuring, fracturing and warping of the bone.

9.5.19 During cremation various bones within an individual reach different temperatures, depending on intrinsic (e.g. soft tissue cover) and extrinsic (e.g. weather conditions, quality of pyre) factors, therefore shrinkage of the bone varies between individuals and between different skeletal elements of the same individual and may fluctuate between 0-30% (after McKinley 2000). It has been demonstrated that the calcined bones presented a substantially larger degree of shrinkage (-14.5%) than pre-calcined bone (-4.1%) (Gonçalves 2011a). Degree of shrinkage also decreases with age as the progression of the mineralization process within bone becomes increasingly resistant to heat-induced dimensional changes; furthermore, females tended to display more shrinkage than males (Gonçalves 2011a).

9.5.20 Heat-induced warping and fissuring/fracturing patterns can aid determination of the pre-cremation condition of human remains (i.e. fleshed vs defleshed) and potentially support identification of secondary (to excarnation) cremations. Warping of the cremated bone has been identified to be an indicator of the preservation of collagen-apatite links within cremated bone (Gonçalves 2011a). Although in modern settings warping and thumbnail fracturing of the bone has been sporadically observed on the cremated 'dry bone' (i.e. defleshed prior to cremation) (Gonçalves 2011a), they are much more typical of cremations on fleshed cadavers and green bones. Longitudinal splitting and superficial checking of the external surface and less evidence of warping have been documented for dry bones, while considerable warping, more irregular longitudinal splitting and transverse as well as thumbnail fractures have been found to be characteristic of bone cremated with flesh still attached (after Ubelaker 2009).

9.5.21 All urns contained bone with predominantly U-shaped (thumbnail), concentric and transverse fissuring/fracturing. A proportion of bones also exhibited warping. Although in modern settings warping and thumbnail fracturing of the bone has been sporadically observed on the cremated 'dry bone' (i.e. defleshed prior to cremation) (Gonçalves 2011a), they are much more typical of cremations on fleshed cadavers and green bones.

Fragmentation

9.5.22 Dehydration increases likelihood of bone to fracture. McKinley (1994) after studying over 4000 urned and unurned cremated remains observed that over 50% of bone fragments were in excess of 10mm in size, while the average maximum fragment size of 45.2mm.

9.5.23 Fragmentation of bone is a result of pre- and post-burial activities, which starts with the process of cremation and continues during subsequent collection by means of raking the hot bone from the pyre site, interment, excavation, transportation and post-excavation processing (McKinley 1994). It was demonstrated that fragment sizes should be regarded as post-excavation fragment sizes rather than those of deposited fragments (McKinley 1992, 1994).

9.5.24 Quantification of bone fragmentation aids assessment of the impact of overall data retrieved from cremated remains and can inform on the pyre technology as well as

9.5.25 The maximum size of the bones was recorded prior to and after their removal. Overall preservation of the specimens was good and the size of the bone fragments pre- and post-excavation remained unchanged.

9.5.26 McKinley's (1992) study on Romano-British urned, unlidded cremated remains from St Stephens cemetery in St Albans observed that over 58.7% of bone fragments were in excess of 10mm in size, while the average maximum fragment size was 40.9mm (for skull) and 64.8mm (for long bones). Within the investigated assemblage Cremation 1 and Cremation 3 displayed slightly higher level of fragmentation. While the maximum fragment bone size for all investigated burials was slightly higher less than half of specimens from contexts 1142 and 1144 measured over 10mm. Burial 1143 show lesser fragmentation with over 65% of the bone exceeding 10mm in size.

Pyre goods and pyre debris

9.5.27 Small amount of charcoal flecks were recovered from both urns in the process of micro-excavation and subsequent flotation.

9.5.28 Within Cremation 1 a fragment of pelvis of a small mammal (indeterminate specie) was uncovered.

9.5.29 No pyre goods were identified within Cremation 2 and Cremation 3. Green staining, most likely from copper alloy, was observed on multiple specimens from all three urns. All three individuals exhibited staining of the skull. The remaining stained areas included ribs and forearms (Cremation 1), and vertebrae, scapula and pelvis (Cremation 2).

9.6 Recommendations for future research

9.6.1 Exposure of the bones to temperatures exceeding 300°C precludes ancient DNA analysis. Cremated petrous part of temporal bone from context (1143) may provide opportunity to conduct strontium stable isotope analysis that could inform on the childhood origin of the individual (Harvig *et al*. 2014).

9.6.2 It is recommended that the osteological material be retained for research purposes.

10. Animal Bone

By Milena Grzybowska

10.1 Material and Method

10.1.1 A small amount of burnt bone (2.5g) was retrieved from three contexts. These contexts were the fill of a large pit within Roundhouse 3 (1187), the charcoal-rich fill of a pit adjacent to Roundhouse 3 (1192) and the fill of another pit that was also located close to Roundhouse 3 (1200). The bone fragments were analysed following *Guidelines for best practice* (Baker and Worley 2013, English Heritage). The specimens were identified where possible. Ribs and unidentifiable fragments were assigned to a size-class: 'large mammal' (cattle-size), 'medium mammal' (sheep-size) and 'small mammal' (cat-size).

10.2 Results and discussion

10.2.1 Fill (1187) of a large pit within the Roundhouse 3 contained six fragments of bone (1.3g), including one fragment (1.2g) of upper diaphysis of metapodium of a medium size ungulate (sheep/goat, roe deer) and unidentifiable flecks of bones. Charcoal-rich fill (1192) of pit F1184 produced four fragments (1.0g) of mammal bone. Fill (1200) of a pit adjacent to Roundhouse 3 included 1 rib fragment (0.2g) of a small or a medium-size mammal. All of the fragments were white in colour indicating a full oxidation of bones, which would have resulted from heating the material for a prolonged period of time at a temperature exceeding 600°C, such as could be obtained in a fire pit, for example.

11. PALAEOENVIRONMENTAL ASSESSMENT

The paleoenvironmental assessments and analysis were undertaken by a variety of specialists throughout the duration of the project including Lorne Elliott (Archaeological Services, Durham University) and Laura Strafford, Elise McLellan, Luke Parker and Denisa Cretu (all Archaeological Research Services Ltd)

11.1 Introduction

11.1.1 This section presents the results of the analysis of charcoal and plant macrofossil remains sampled from a variety of features. The fills of 84 features were sampled for palaeoenvironmental analysis to assess whether palaeoecological material survived and to identify material present to inform understanding of individual features as well as wider activities taking place around the site, together with their potential for providing radiocarbon dating samples.

11.2 Methods

11.2.1 Environmental samples were processed via flotation through a 500µm sieve and allowed to air dry. A separate analysis of environmental material was completed following each of the seasons of excavation. Analysis of 2013 material (Table 27 and Table 28) was completed by Lorne Eliott of Archaeological Services at Durham University. Analysis of 2014 material (Table 29) was completed by Laura Strafford of ARS Ltd and Analysis of 2015 and 2016 material (Table 30) was completed by Elise McLellan of ARS Ltd. Analysis of the 2017 material recovered from the two post-built roundhouses as well as material from the 2018 excavation, was completed by Luke Parker of ARS Ltd (Table 31, Table 32 and Table 33, Table 28, Table 29). Analysis of 2019 material was completed by Denisa Cretu of ARS Ltd (Table 30, Table 31, Table 32, Table 33, Table 34).

11.2.2 All flots were 100% scanned using a low power binocular microscope (up to x60). All plant taxonomic nomenclature follows Stace (1997). Identifications were carried out by comparison with modern reference material held in the Environmental Laboratory at Archaeological Services Durham University and at ARS Ltd., and plates and guides from Martin & Barkley (2000), Cappers *et al* (2006) and Scoch *et al* (2004). Cereal identification utilised the guide by Jacomet (2006).

11.2.3 Where possible charcoal fragments were identified in order to provide material suitable for radiocarbon dating. For material from 2013, 2015, 2016, 2017, and 2019 the transverse, radial and tangential sections were examined at up to x600 magnificationusing a Leica high power binocular microscope. Identifications were assisted by the descriptions of Schweingruber (1990) and Hather (2000). Material from the 2014 excavation was examined without the use of a high powered microscope, therefore charcoal

was fractured to obtain a clean transverse section and was then sorted at x90 magnification into groups based on anatomical features. In instances where charcoal was plentiful, ten fragments were chosen for identification, selected from a range of identifiable fragment sizes. During the 2017 analysis of the roundhouse features up to 20 fragments were chosen for identification. Material suitable for radiocarbon dating was cleaned and wrapped in aluminium foil.

11.3 Results

11.3.1 The results of charcoal and plant macrofossil assessment are presented in Table 27, Table 29 and Table 30. All of the samples produced evidence of burning in the form of small charcoal fragments including alder, birch, hazel, oak, aspen or willow, the apple/hawthorn/whitebeam family and beech. Evidence for the use of branchwood and large stemwood/sapwood was provided, and fragments containing radial cracks and low levels of vitrification were also noted. Charred or semi-charred indeterminate bark was common in (046).

11.3.2 The sampled contexts from Roundhouses 2 and 3 contained a mix of both charcoal and charred plant macrofossils. Preservation of palaeoenvironmental remains from the roundhouses was generally excellent, permitting confident identifications. A few exceptions to this are present, however, with charcoal recovered from posthole fills (1152), (1161), (1176), (1180) and (1196), and pit fills (1184) generally being fragmentary, small in quantity, and charred macrofossils being absent. Posthole fill (1159) forming part of Roundhouse 2 contained what is believed to be the burnt remains of the oak (*Quercus* sp.) post still *in situ* within its original posthole. Fills from features surrounding the roundhouses contained only charcoal, but in lower abundance than the roundhouse contexts. Summaries of the palaeoecological identifications are shown in Table 31, Table 32 and Table 33.

11.3.3 Roundhouses 2 and 3 contained abundant wood charcoal within their constituent posthole fills comprising primarily oak (*Quercus sp.*), or hazel (*Corylus avellana*) charcoal. Alongside these two species were black elder (*Sambucus nigra*), hawthorn (*Crataegus monogyna*), and single fragments of both European lime (*Tilia x europaea*) and buckthorn (*Rhamnus cathartica*) charcoal. In the case of contexts either dominated by hazel charcoal, or with a balance between oak and hazel, the charcoal was predominantly fragments of roundwood, together with significant quantities of indeterminate burnt twigs/woody plant matter. These roundwood fragments were either burnt branches or very small twigs. Additionally, in the hazel-dominated roundhouse contexts, the palaeobotanical assemblages contained charred wild seeds, as well as charred cereal remains, however they tended to be absent in those contexts where oak charcoal was dominant. Posthole fill (1159) contained large, intact charred wood fragments which are believed to have been part of the original post that had been set in this posthole that formed part of Roundhouse 2. These fragments were identified as oak.

11.3.4 The charcoal from pit fills (1192) and (1194) from pit cluster F1184 is similar to the oak-dominated charcoal assemblages from within Roundhouses 2 and 3. Based on their spatial proximity and the similarity in the palaeoecological assemblages, this pit cluster is considered likely to be contemporaneous with the roundhouses. Similarly, the pit contexts adjacent to Roundhouse 3 also contain similar palaeoenvironmental assemblages and are therefore also likely to be contemporaneous with the adjacent roundhouse occupation.

11.3.5 The charred cereal grains recovered from the roundhouses were emmer wheat (*Triticum dicoccum*) and hulled barley (*Hordeum* sp.). The hulled nature of the barley can be observed from the flat-sided, more angular shape of the grains, as well as the smooth outer layer.

11.3.6 A few grains of barley and wheat were present in pit fill (046), a single barley grain occurred in hearth fill (048) and a seed of ribwort plantain (a ruderal weed) was recorded in hearth fill (057). Two wheat grains were identified from pit fill (1005) and one indeterminate grain from pit fill (1010). Thirteen weed seeds were identified. In order of abundance the identified weed species were nine from the Brassicaceae family (mustard, turnip, cabbage, radish), one Solomon's seal (*Polygonatum* sp.) seed - a weed common on chalk and limestone substrates (Preston 2002), one plantain (*Plantago* sp.) seed - a weed common in areas of disturbed ground or heavy grazing, one cleavers (*Galium* sp.) seed - a common agricultural weed, and one vetch (*Vicia* sp.) seed - a weed common in disturbed areas and sometimes grown as fodder. Although the *Vicia* sp. seed could not be identified to the exact species, the seed more closely resembled weed species than cultivated vetch species. The presence of roots suggests that the uncharred remains of the more decay-resistant seeds such as black- bindweed, fumitory, fat-hen and ivy-leaved speedwell are recent introductions.

11.3.7 The ecological material associated with the three Bronze Age cremations consisted entirely of oak charcoal, and contained no other charred botanical macrofossils. The samples from the palisade slot and pit fill (1079) within the palisade were more varied. Hazel and oak were present in both features, and a single poplar or willow fragment was identified from the enclosure ditch fill (1097). Hazel roundwood and twig wood were present in both the pit fill (1079) and the enclosure ditch fill (1097) indicating the use of smaller new growth hazel asfuel.

11.3.8 A total of nine cereal grains were recovered from the palisade slot (1097), five of which were identified as barley grains. Two of these had characteristics typical of naked barley, a variant typical of many prehistoric sites in Britain. A single naked barley grain was identified in context (048), the two grains found in (1097) provide additional evidence of the presence of this crop. A charred fumitory (*Fumaria* sp.) seed was also identified from the enclosure ditch (1097); *Fumaria* species are common agricultural weeds present alongside accidentally charred grain. Two wild grass seeds were identified from the pit fill (1079), one of cotton grass (*Eriophorum*) and one wild barley (*Hordeum*) species, likely meadow barley (*Hordeum secalinum*). These represent accidental charring of wild species present in the landscape. Both meadow barley and cotton grass are indicative of wet ground conditions, preferring wet floodplains, meadows and mires.

11.3.9 Quality of preservation for the 2018 material (Table 28 and Table 29) was very high, with charred botanical remains almost universally preserved in their entirety and with very limited fragmentation (if any). Wood charcoal was similarly well-preserved with minimal fragmentation and anatomical features clearly identifiable. The palaeobotanical assemblages encountered were notably abundant, despite the site having experienced subsequent truncation. Significant numbers of charred cereal grains, some edible plant seeds, as well as weed seeds were recovered. Deposits of cereal grains frequently contained hundreds of individual grain. For example, the fill of a post hole (1263) from Roundhouse 4 contained over 800 barley (*Hordeum* sp.) grains. Such high quality, abundance and variety of

plant food remains in heavily truncated prehistoric contexts is rare and makes this assemblage of material important for this and future study.

11.3.10 The central area of the 2018 site contained a large cluster of steep-sided pits, which were interpreted as being domestic waste pits. Pit fills (1276) and (1278) were located to the south east of the main cluster, and a large pit (1284) was located to the west of the cluster. These three pits all contained very similar fills to those in the main cluster and are considered likely to be contemporaneous. All of these waste pits contained cereal grains, with particularly significant concentrations being recovered from (1224), (1227) and (1239). The great majority of cereal grains were a hulled variety of barley. Two barley rachis fragments were recovered from the fill of the large sub-rectangular feature in the central waste pit area (1215), as well as from the fill of a small waste pit (1227). These can be identified more specifically to two-rowed hulled barley (*Hordeum distichum*). It is therefore likely that the barley grains are all two-rowed barley particularly as they lack the characteristic twisting which can be present on the grains of multi-rowed barley varieties. The presence of emmer wheat (*Triticum dicoccum*) was identified primarily through glume forks which were recovered from the large waste pit fill (1224), as well as the largest pit fill of the waste pit cluster (1239). These, particularly given the good quality of preservation, can be relatively easily identified as being emmer owing to the characteristic angularity of the lower part of the glume. Emmer grains are much harder to distinguish from the hulled barley grains, and as such those that have been identified can only be described as 'emmer-like' rather than conclusively defined as emmer. Indeed, they did lack the dorsal 'ridge' which is characteristic of emmer wheat, although this is not necessarily an indication of their absence. There are particular concentrations of emmer-like grains in the pits which contained emmer glume forks, possibly indicating instances when emmer wheat was being processed alongside barley.

11.3.11 The waste pits contained relatively low concentrations of a wide variety of different wild plant seeds, as well as a smaller number of edible fruit seeds and stones. Two varieties of spurge (*Euphorbia sp.*) were recovered from the waste pits, however, these were not identifiable to the species level. Parsley piert (*Alchemillia arvensis*), wild buckwheat (*Fallopia convulvus*), lady's bedstraw (*Gallium velum*), common nipplewort (*Lapsana communis*), and certain species of violet (*Viola sp.*) are all arable weed seeds and were likely to still be present following cereal processing. Wild buckwheat is edible and has been utilised as a cultivated food crop (Blamey and Wilson 1989), however in such small quantities relative to the cereal grains, it is more likely to be present as an arable weed. Similarly, the sorrel/dock (*Rumex sp.*), mustard family (*Brassica sp.*), and vetch *(Vicus sp.*) are also likely to be accidental inclusions with the cereal grains. A wild crab apple (*Malus sylvestris*) pip was recovered from pit fill (1254), as was a large badly fragmented fruit stone of an indeterminate species, and a hawthorn (*Crataegus monogyna L.*) stone was recovered from the fill of a small pit (1227). Hazelnut (*Corylus avellana L.*) shell fragments were also present in the fills of pits (1221), (1224), (1227), (1231) and (1233).

11.3.12 The palaeoenvironmental assemblages recovered from the archaeological features in the area of Roundhouse 4 are very similar to those of the waste pit cluster. Though overall most of the features contained fewer numbers of charred cereal grains, a notably significant number of 801 charred barley grains were recovered from posthole fill (1263). Within this same deposit there are two peas (*Pisum sativum*) and single elderberry

(*Sambucus nigra L.*), wild crab apple, and blackberry (*Rubus fruticosis*) seeds. Hazelnut shell fragments were found in this fill, as well as the fill of posthole (1257).

11.3.13 The palisade ditch fill (1209) contained relatively limited palaeoenvironmental remains. Four seeds from the mustard family, a single dock/sorrel seed, and two barley grains. These are reflective of the agricultural processes occurring in the nearby area and provide suitable material for radiocarbon dating.

11.3.14 Contexts (095), (066), (063) and (060) produced small amounts of industrial waste in the form of slag and clinker. In all cases these were very small fragments, with context (095) producing the largest examples of approximately0.5cm.

11.3.15 Suitable samples were obtained for radiocarbon dating in the form of charcoal from short-lived tree species from contexts (020), (048), (055), (057), (090), (1001), (1016), (1020), (1039) and (1079), and cereal grain from contexts (046), (1005) and (1097). A partial cereal grain was identified in context (1010) this grain is fragmentary and highly vitrified, and is unlikely to have sufficient carbon for dating. There are excellent charred botanical macrofossil samples available from a wide range of structural and functional features to radiocarbon date the two roundhouses and pit features at Lochinver Quarry. The significant quantities of roundwood charcoal, as well as charred twigs, present many opportunities for dating the archaeological remains. The charred cereal grains would, however, provide ideal dating samples due to them being short-lived, thereby avoiding any in-built age errors associated with dating wood charcoal. Charred cereal remains are widely available in the palaeoenvironmental assemblages from the site. For contexts where no cereal remains are present then roundwood charcoal are the next most suitable samples for dating. The burnt post from Roundhouse 1 (1159) would be unsuitable for dating due to it being heartwood from a long-lived tree species. The pit cluster F1184 contains a fragment of hawthorn charcoal which would be suitable for dating due to it being from a shortlived species.

11.3.16 The palaeoenvironmental remains recovered from the 2019 samples at Lochinver Quarry are shown in Table 30, Table 31, Table 32, and Table 33. Further details for identified charcoal fragments are contained within Table 34.

11.3.17 Of the total twenty-three samples pit fills, possible wells and ditch fills, seventeen have yielded charred archaeobotanical assemblages, including cereal grains and wild seeds (shown in Tables 30-33). Although the numbers of recovered archaeobotanical remains varied between these assemblages, they were very similar in their composition. They were composed predominantly of charred barley grains (*Hordeum vulgare*), with small quantities of wild seeds.

11.3.18 The quality of preservation of the archaeobotanical remains from the 2019 excavation was very good; especially in pit fill (4625), where the anatomical features of the cereal grain were very clearly visible. Two malted barley grains have been recovered from this sample, along with some barley grains displaying characteristic grain ‘twisting’, which is indicative of six-rowed barley (Figure 68). A number of the cereal grains had become unidentifiable, due to damage during the charring process. The wild seeds have shown a better degree of preservation and only a small number were challenging to identify due to extensive damage. Although the indeterminate cereal grains were too damaged and charred to be confidently identified as barley, the likelihood is they are *H. vulgare*. Two sprouted barley seeds have been recovered from this sample, however, the small quantity make it unlikely that these represent deliberate malting.

11.3.19 Of the seventeen samples that yielded palaeobotanical remains, fourteen of them contained barley (*H. vulgare*), with a single naked barley grain (*Hordeum* sp.) from well fill (4715). The naked barley grain was distinctive in the lack of the angular profile which characterises hulled barley grains, as well as the 'wrinkled' upper surface of the grain. Five samples have also shown the presence of oats (*Avena* sp.). Wild and domesticated varieties of oats are very challenging (if not impossible) to be distinguished purely based on grains. However, considering the small quantities of oats present within the assemblages here, they are assumed to be a wild variety. One grain of common wild oat (*Avena fatua*) has been identified from pit fill (4607), due to the characteristic shape of the lemma base which is still attached to the grain. The identification to the species level was only possible due to the high quality of preservation where this feature was observable. It is likely that all oats recovered here are of this wild variety.

11.3.20 Ten of the samples analysed have also yielded wild seeds, such as goosefoot (*Chenopodium* sp.), lady's mantle (*Alchemilla* sp.) and dock (*Rumex* sp.). Wild radish (*Raphanus raphanistrum*) and pale persicaria (*Persicaria lapathifolia*) have been identified from context 4625 and one charred hazelnut shell has been recovered from ditch fill (4621).

11.3.21 Charcoal fragments were present in sixteen of the twenty-three samples and they display a fairly good degree of preservation. Most fragments recovered had undergone a moderate degree of deterioration, potentially reflecting the age of the material. Charcoal assemblages have mainly shown the presence of hazel (*Corylus avellana*) and oak (*Quercus* sp.), with the occasional inclusion of other species, such as field maple (*Acer campestre*) and English ash (*Fraxinus excelsior*).

11.4 Discussion and Conclusion

11.4.1 Evidence for burning in the form of charcoal fragments was prolific throughout all sampled contexts. Charcoal species identified in this analysis include oak, birch, alder, elder, lime, hazel, aspen/willow, and the apple/hawthorn/whitebeam family. Fragments of branchwood and twigwood were identified in several samples. The presence of modern rootlets and a small number of modern seeds indicates a small amount of disturbance and bioturbation in all the sampled contexts. Context (1016) contained an unusually large amount of modern material including grass stems and complete barley grains, suggesting a higher level of disturbance.

11.4.2 Wheat and barley grains were identified in four contexts during the 2013-2016 assessments. A barley grain from (048) and two from (1097) comprised the characteristic longitudinal wrinkles and rounded triangular shape of naked barley. The occurrence of this crop is consistent with prehistoric sites in the British Isles (Greig 1991) and although its presence declines through the prehistoric it has been recorded at several Iron Age sites in Scotland (Hunter and Carruthers 2012).

11.4.3 The seed species identified in the 2013-2016 assessments show a significant number of seeds from the Brassicaceae family, suggesting the cultivation of one of the crop species in this family such as cabbage, turnip, radish or mustard. Additional seeds belong to common agricultural weeds such as cleavers or species associated with human disturbance and grazing such as *Plantago* sp. (plantain) and *Vicia* sp. (vetch) and confirm the presence of cultivated and disturbed areas of land.

11.4.4 The 2018 botanical macrofossil assemblages from both the waste pits and Roundhouse 4 are illustrative of the farming practices and diet of local inhabitants. They were primarily agricultural with the majority of the plant foods being sourced from cultivated barley. Barley would have been utilised as the primary cultivated cereal as its hardiness and resilience to wet conditions (Turney *et al*. 2016) make it suited to local conditions. It should be noted, however, that barley has other important potential uses including its use for the production of beer as well as its potential use as fodder for livestock. The small quantity of emmer wheat could be an indication of specific instances where wheat for bread-making complimented barley. The varieties of fruit seeds and nuts are non-cultivated species and are representative of the wild resources which appear to have been collected to supplement the diet.

11.4.5 The quantity of charred wood fragments together with food products likely reflects hearth clearance disposed of within the waste pits. The charcoal, composed primarily of small narrow ring-width roundwood is residue from domestic hearth usage which was utilised in food preparation. The majority of charcoal was identified as hazel (*Corylus avellana L.*) roundwood. The abundance of narrow ring-width hazel may reflect prehistoric woodland management through local coppicing practices and/or hazelnut propagation. Indeed, the practice of hazelnut consumption is confirmed through the presence of hazelnut shells.

11.4.6 The high proportion of cereal grains within these hearth clearance waste pits may be indicative of a number of instances of domestic drying and related processing and cooking activities. The drying may have accidentally charred some of the cereal grains and any such material is likely to have been disposed of along with the hearth detritus. The implication is that a dwelling or processing structure may have once stood on or around these pits, but that the structural remains of this building have since been lost due to the level of truncation across the site.

11.4.7 The palaeoenvironmental material recovered from the Roundhouse 4 postholes is likely the result of cleared hearth material which was swept into the posthole fills during occupation within the building. It is hard to determine whether the presence of cereal grains, particularly the large concentration within posthole fill (1263), is the result of gradual accumulation of charred material, or deposition during a single event. The concentration of the majority in one location may either reflect a single event which caused an accumulation in this area, or the reflection of spatial variations which would concentrate waste material to accumulate in this specific posthole on a regular basis.

11.4.8 The abundant cereal assemblages present in almost all archaeological features provide ideal material to employ for dating purposes. It is recommended that dates are obtained for the central pit cluster, roundhouse 4 and the palisade slot. This would provide chronological control for these spatially separate clusters of features, test their contemporaneity, as well as dating the agricultural activity and the ceramic styles in use as represented by the finds from each of the three clusters. The charcoal roundwood fragments are also suitable for radiocarbon dating; however the focus should be assigned to the dating of cereal grains and potentially the hazelnut shells as they are the most shortlived of the species present.

11.4.9 The slag/clinker present in some of the samples was in all cases very small and the lack of any larger fragments identified during excavation of the features suggest that the

examples observed in the flots are likely to be residual fragments, and that the features from which they came are not directly associated with industrial processes. Nonetheless, the presence of industrial material in more than one of these features suggests that some sort of industrial process was occurring on or within very close proximity to the site.

11.4.10 The hazel and elder charcoal from many of the postholes and pits within Roundhouses 2 and 3 comprising branches and twigs is considered most likely to have resulted from the use of fires used for domestic purposes rather than for industrial use, for which a higher proportion of tree heartwood would be preferable in order to sustain high temperatures for extended periods. In these domestic fires, the smaller branch and twig wood would likely have been used as kindling and easily lit firewood, following which oak is more likely to have been used as the main fuel logs. The burnt *Chenopodium sp.* (goosefoot) seeds may be evidence of herbaceous plants being intentionally disposed of on the fire.

11.4.11 The presence of emmer wheat and barley, as well as cereal chaff, is suggestive of both local agriculture and food processing in and/or around the roundhouses. It is likely that some cereal processing was undertaken within the roundhouses themselves and that the charred grains are the accidental result of some grains falling at the edge of the fires, rather than intentional attempts of cereal grain disposal (disposal of cereal remains in fires has been shown to completely destroy and prevent preservation within the archaeological record - see Sievers and Wadey 2008). The small quantity of chaff relative to grains may have resulted from the intentional disposal of the chaff within the fires leaving only a few charred fragments around the edge of the hearths. The elder seeds are likely to be present as a consequence of the use/consumption of elderberries, the presence of which is further attested by the elder charcoal.

11.4.12 The presence of both emmer and barley from both roundhouses suggests both buildings served the same purpose and the presence of cereals is consistent with them being domestic structures. The presence of oak charcoal in certain feature fills is considered most likely to have come from the timbers used in the roundhouse structure, and potential fragments of log fuel from internal hearths.

11.4.13 A small piece of tin was recovered from posthole (1157) within Roundhouse 2; however it is unlikely that metal processing was undertaken within the roundhouses. Such activities would likely result in a greater quantity of metallic residue being present. The presence of the tin does, however, suggest that metalworking may have taken place in the vicinity of this site.

11.4.14 Barley and wild oats are common grains found in Bronze Age and Iron Age archaeobotanical assemblages (Hall and Huntley 2007). Barley was by far the most common cereal found at Lochinver from the 2019 samples and several grains have been identified as the six-rowed variety. This is indicative that barley was probably being cultivated at this time and it represented the main source of subsistence. The naked barley grain (*Hordeum* sp.) recovered from well fill (4715) – located near the post-built rectangular structure – is a variety of cereal found almost exclusively during the Neolithic and Bronze Age period in Britain (Lister and Jones 2013). Barley is dried as part of the final stages of cereal processing, in order to remove the glume from the grain; the recovery of charred barley grains from these assemblages (particularly with some still retaining their glumes) is probably the result of accidental charring during the drying process.

11.4.15 Oats were generally an agricultural weed, not a cultivated grain, prior to the early medieval period (Mckerracher 2018). Indeed, one of the grains from pit fill (4607) has been confidently identified as a wild oat variety. All of the wild seeds recovered from the archaeobotanical assemblages can be found on either disturbed ground or agricultural environments. Goosefoot (*Chenopodium* sp.), dock (*Rumex* sp.), forget-me-not (*Alchemilla* sp.) and pale persicaria *(Persicaria lapathifolia)* are common agricultural weeds, which live on disturbed ground. Their recovery from the archaeobotanical assemblages would be the result of weeds growing alongside cultivated cereal crops and therefore the seeds were unintentionally included with the grains during processing.

11.4.16 Pit fill (4625) yielded the highest concentration of archaeobotanical remains. The presence of laminations and the recovery of charred grains and weed seeds indicate the feature was a clearance pit which has been used multiple times for the disposal of hearth material. The recovery of palaeobotanical assemblages dominated by cereal grains indicates that the main form of subsistence was agriculture, supplemented by gathered resources, such as hazelnuts (*Corylus avellana*).

11.4.17 The charcoal assemblages (Table 34) show the presence of a combination of heartwood and roundwood, identified on the basis of the ring curvature of the charcoal fragments and the presence of tyloses (which is indicative of heartwood). Pit fills (4625), (4694), (4737) and (4739) have yielded charcoal fragments that have the highest degree of ring curvature, which suggests that branches and smaller tree fragments might have opportunistically been gathered by hand. Charred oak fragments from pit fills (4604) and (4741) have shown the presence of tyloses and very little to no curvature of the rings, indicating that oak trees were being chopped down and possibly used as fuel. The recovery of hazel fragments with high curvature might be indicative of coppicing practices, as coppice silviculture was the main form of woodland management which was commonly practiced during the Neolithic and Bronze Age (Buckley and Mills 2015). The composition of the charcoal assemblages is most likely to reflect the local forest composition of the time period; with oak and hazel being the most common wood species found in archaeological charcoal assemblages of the Neolithic through to Iron Age (Huntley 2010). The recovery of small numbers of charcoal fragments of other tree species, such as field maple (*Acer campestre*) and English ash (*Fraxinus excelsior*) from pit fills (4607) and (4740) indicate opportunistic gathering of wood from trees that were most accessible.

11.4.18 The hazel charcoal fragments from pit fills (4607), (4625), (4691), (4694), (4737), (4739) and (4740), and charred barley and oat grains from pit fills (4549), (4607), (4625), (4694) and possible well fill (4715) represent ideal material for radiocarbon dating. The charred cereal grains and hazel charcoal provide the best dating samples, due to the limited in-built radiocarbon ages. It is recommended that radiocarbon dating should be focused on the charred oat grains from the well fill (4715), the single charred hazelnut shell from ditch fill (4621) and the hazel charcoal and charred barley grains from pit fills (4737) and (4739), as these represent the main features associated with the nearby post-built rectangular structure.

12. RADIOCARBON DATING

12.1 A total of 18 radiocarbon dates have been obtained from archaeological samples from Lochinver Quarry. These are summarised in Table 7 below.

12.2 A charred barley grain from the fill of a pit F4549 in Post-built-building 1 had a radiocarbon age of 4930±20 BP which most likely places the feature within the early Neolithic period.

12.3 Cremation 2 was contained within an inverted, cordoned, ceramic vessel within a small pit located in close proximity to two further urned cremations. A sample of bone from Cremation 2 produced a radiocarbon age of 3320 ±34 BP.

12.4 The fill of pit (104) produced a piece of oak roundwood charcoal that had a radiocarbon age of 3260 ±30 BP which places it in the Middle Bronze Age. The pit was excavated within Trench 1 which was located towards the southern part of Phase B during an evaluation of the site at Lochinver quarry in 2012 (Scott *et. al* 2012). The pit produced three small sherds of prehistoric ceramic.

12.4 A charred cereal grain obtained from within the fill of the palisade construction slot (1097) had a radiocarbon age of 3257 ±34 BP.

12.5 A charred emmer wheat grain from a pit within Roundhouse 2 had a radiocarbon age of 3215 ±29 while a posthole within the roundhouse had a radiocarbon age of 3191 ±27.

12.6 Fill (1079) was the basal fill of a pit located within Roundhouse 2 within the palisaded enclosure F1097. A piece of hazel charcoal obtained from this context (1079) produced a radiocarbon age of 3155 ±34 BP.

12.7 A charred barley grain from fill (4694) had a radiocarbon age of 3092±24 BP which places the pit, and most likely the other associated features of Roundhouse 5, within the Middle Bronze Age.

12.8 Large, sub-rectangular pit F1215 was located within the domestic waste area discovered in Phase C. A charred barley grain from fill (1215) had a radiocarbon age of 3077 ±21 BP which places the pit, and therefore most likely the other features within the domestic waste area, within the Middle Bronze Age.

12.9 A charred barley grain from the fill of posthole F1259 in Roundhouse 4 had a radiocarbon age of 2909 ±24 which places the posthole, and therefore most likely the roundhouse, within the Middle Bronze Age.

12.10 A charred barley grain from posthole F1262 fill (1263) had a radiocarbon age of 2890 ±24 which is Middle Bronze Age and contemporary with the other date obtained from the roundhouse, posthole F1259, discussed above.

12.11 The fill of a posthole within Roundhouse 3, (1178), produced a charred emmer wheat grain which had a radiocarbon age of 2851 ±29. A pit located in close proximity to Roundhouse 3 produced a charred emmer wheat grain which had a radiocarbon age of 2806 ± 29.

12.12 A piece of birch charcoal obtained from pit F020, which also produced four, dumbbell-shaped orange clay objects thought to be briquetage stands produced a radiocarbon age of 2461 ±30 BP.

12.13 A charred barley grain from the fill of pit F4740 in Post-built-building 2 had a radiocarbon age of 2135±24 BP which dates the feature within the Iron Age.

12.14 A charred barley grain from the fill of palisaded enclosure F1209 had a radiocarbon age of 873 ±24 which most likely places the feature within the medieval period.

12.15 A charred wheat grain was recovered from the fill of pit F046 together with the remains of a Late Bronze Age style Flat Rimmed Ware pottery vessel and a fragment of punched bark. The wheat grain produced a radiocarbon age of 491 ± 30BP and is considered to be intrusive.

12.16 A charred barley grain from Hearth 1 (048) produced a radiocarbon age of 113 ±30 BP. This sample is also considered to be intrusive.

Laboratory no.	Feature and context description	Sample	Radiocarbon Age (BP)	δ13C (0/00)	Calibrated date range (68.2% confidence)	Calibrated date range (95.4% confidence)
Neolithic						
SUERC-87239 (GU51526)	Pit from post-built roundhouse (4549)	Charred barley grain	4930±20	-26.5	3709-3662 cal BC	3764-3653 cal BC
Early - Middle Bronze Age						
SUERC-69268 (GU41853)	Cremation 2 (1143)	Cremated human bone	3320 ±34	-25.6	1639-1533 cal BC	1686-1512 cal BC
SUERC-69267 (GU41852)	Palisaded enclosure construction slot (1097)	Charred cereal grain	3257 ±34	-24.2	1608-1499 cal BC	1617-1450 cal BC
SUERC-62308 (GU38364)	Pit within Evaluation Trench 1 (104), located 135m to the south-east of the palisaded settlement	Oak roundwood charcoal	3260 ±30	-24	1607-1500 cal BC	1616-1454 cal BC
SUERC-74095 (GU44490)	Internal pit within RH2 (1172)	Charred emmer wheat grain	3215 ±29	-23.1	1506-1446 cal BC	1599-1421 cal BC
SUERC-74094 (GU44489)	Post hole within RH2 (1155)	Charred emmer wheat grain	3191 ±27	-24.6	1497-1436 cal BC	1506-1416 cal BC
SUERC-69266 (GU41851)	Pit forming part of RH1 (1079) within the palisaded settlement	Hazel charcoal	3155 ±34	-25.2	1495-1403 cal BC	1503-1310 cal BC
SUERC-87240 (GU51527)	Pit from post-built roundhouse (4694)	Charred barley grain	3092±24	-24.4	1410-1304 cal BC	1420-1286 cal BC
SUERC-80671 (GU48200)	Large sub-rectangular feature within domestic waste area (1215)	Charred barley grain	3077 ±21	-23.8	1396-1299 cal BC	1411-1280 cal BC

SUERC-80672 (GU48201)	Posthole within Roundhouse 4 (1259)	Charred barley grain	2909 ±24	-25.0	1154-1046 cal BC	1196-1013 cal BC
SUERC-80677 (GU48203)	Posthole within Roundhouse 4 (1263)	Charred barley grain	2890 ±24	-23.5	1112-1029 cal BC	1192-999 cal BC
Late Bronze Age						
SUERC-74096 (GU44491)	Post hole within RH3 (1178)	Charred emmer wheat grain	2851 ±29	-22.9	1052-942 cal BC	1111-928 cal BC
SUERC-74097 (GU44492)	Pit adjacent to RH3 (1191)	Charred emmer wheat grain	2806 ±29	-27	997-923 cal BC	1046-895 cal BC
Iron Age						
SUERC-62309 (GU38365)	Pit that produced clay pedestal objects (020)	Birch charcoal	2462 ±30	-26.5	751-510 cal BC	760-429 cal BC
SUERC-87244 (GU51528)	Pit from post-built rectangular building (4740)	Charred barley grain	2135±24	-22.2	203-113 cal BC	350-59 cal BC
Medieval						
SUERC-80673 (GU48202	Palisaded enclosure construction slot (1209)	Charred barley grain	873 ±24	-24.0	1157-1213 cal AD	1047-1223 cal AD
Post-medieval (intrusive samples)						
SUERC-62310 (GU38366)	Pit that produced pottery and bark (046)	Charred cereal grain	491 ±30	-22.3	1416-1440 cal AD	1403-1450 cal AD
SUERC-62307 (GU38363)	Hearth 1 (048)	Charred cereal grain	113 ±30	-24	1691-1925 cal AD	1680-1939 cal AD

Table 24. Radiocarbon determinations from Lochinver Quarry.

13. Overall Discussion

13.1 Lochinver Quarry has yielded evidence for early Neolithic settlement, a mid-2nd millennium cal BC enclosed (palisade and Roundhouse 1) and unenclosed settlement (Roundhouse 2) with associated cremation burials, and a domestic waste disposal area together with further Middle and Late Bronze Age unenclosed settlements (Roundhouses 3, 4, and 5). The site has also produced important evidence for Early Iron Age activity which likely includes evidence for early iron working and salt production as well as a middle Iron Age post-built rectangular building.

13.2 The Neolithic roundhouse/post-built-building is a rare example of a domestic structure within this region of Early Neolithic Britain. Nearby Early Neolithic cropmark activity has been identified at Muirton 10.6km north-west of Lochinver Quarry including another possible timber hall and long barrow but so far no excavation work in the area has been recorded (CANMORE 107638). A relatively local, well-known, well-studied example of an Early Neolithic post-built structure is the timber hall at Balbridie, Aberdeenshire situated 85.5km south of Elgin (Fairweather and Ralston 1993). This and other examples at Crathes and Claish Farm, Stirling have been identified as potential high-status buildings and all are significantly larger than the post-built building identified here. These post-built structures

have produced a contemporary range of radiocarbon dates which were broadly contemporary to the one obtained from the example excavated at Lochinver Quarry but appear to be morphologically distinct in terms of structure and size. More pertinent examples of similar structures might be identified further afield, evidence of a post-built Neolithic roundhouses was identified at Thirlings which produced Carinated Bowl ceramics and a radiocarbon date of 3640-2890 cal BC (HAR-6659) (Miket *et al* 2008). This post-dates the example at Lochinver Quarry but an example of an Early Neolithic rectangular post-built building was excavated in 2018 by Archaeological Research Services Ltd at Cheviot Quarry (Lotherington 2018). This structure was produced contemporary early 4th millennium BC radiocarbon dates to the post-built structure/roundhouse at Lochinver Quarry and there are other contemporary Northumbrian examples from Bolam lake (Waddington and Davies 2002) and Whitton Park (Waddington 2005).

13.3 The three Bronze Age urned cremations excavated at Lochinver share similarities with an unenclosed Bronze Age cremation cemetery that was excavated near Maud in Aberdeenshire, approximately 75km to the east of Lochinver (Johnson and Cameron 2012). At this Aberdeenshire site a total of 29 pits containing human bone were discovered, 11 of which were associated with Collared or Cordoned Urns, nine of them inverted. The pits produced radiocarbon dates ranging from 2040 to 1500 cal BC, placing them across the span of the Early Bronze Age period and therefore the latest components of it overlap with the Lochinver cremations. While none of the Lochinver cremations produced grave goods, the green staining that was seen on some fragments of the cremated bone hint at copper alloy objects having been placed on the individuals during their burning, but they had not survived due to the heat and poor preservation and as a result of the cremation gathering process after firing. Two Bronze Age cremation cists which were excavated as they were eroding from a cliff face on the Isle of Arran also showed signs of green staining (Arabaolaza 2014). In this case it was suggested that the green staining was caused by a copper or copper alloy object being on the body during cremation and then being removed before interment, or the objects being included with the cremated material but not surviving due to poor preservation conditions. If this is the case it is probable that the green staining on the cremated bone from Lochinver is also representative of the presence of such items that either had not survived or were removed before interment. Each of the cremations exhibited green stains on fragments of the skull which would indicate that the copper objects were placed on or near the head before cremation. Perhaps they may have been decorative bands for the head or hair or other forms of jewellery, tokens of status or adornment.

13.4 The Middle Bronze Age palisaded settlement shares similarities with an oval enclosure excavated at Balloan Park, Inverness (Wordsworth 1991 and 1999) approximately 53km to the west of Lochinver. The Balloan enclosure measured *c*.28-30m in diameter and had a stone-filled socket up to 0.6m wide and 0.4m deep from the start of the archaeological horizon at the time of excavation. No postholes were identified within the ditch. Although the Balloan enclosure itself was not dated, traces of an adjacent settlement were discovered and a limited excavation was carried out which revealed a sub-rectangular building. Radiocarbon dating of the settlement features produced two dates of *c*.800-385 cal BC and *c*.60 cal BC-AD 240 (GU-3174 and GU-3175) which suggest that this site was occupied in the Early – Middle Iron Age, more than half a millennium later than the

Lochinver settlement. However, it should be cautioned that the limited excavation did not prove that a relationship existed between the settlement and the enclosure at Balloan Park.

13.5 The five Bronze Age roundhouses with their associated internal and external pits have been radiocarbon dated and can be seen to have been in use over perhaps a *c*.500 span, based on the lower and upper ends of the radiocarbon range for each house at 95.4% probability. The form of these roundhouses, with a ring of similar-sized postholes and a porch structure on the south-eastern side, is very typical of northern British Bronze Age house forms. The outer ring of postholes identified within Roundhouse 2 no doubt indicates the true diameter of the building's wall with the more complete inner ring of posts defining the diameter of the internal ring of supporting timbers for the roof. Roundhouse 3 had a smaller diameter of 5.9m than Roundhouses 2 and 5 which had an average diameter of 8.3m. This could indicate a different sized residential groups, varying domestic preferences or possibly a different use associated with the different structures as there is no trend of increasing or decreasing size or number of uprights in the structures over time. The charcoal-rich fills of the postholes of all the roundhouses suggests that the wooden posts had been charred, probably to assist with preserving the timbers where they came into contact with the acidic sands and gravels.

13.6 It is probable that the palisaded settlement, the cremation cemetery, the domestic waste area, Roundhouse 2 and the isolated pit found during the evaluation (F104) are associated with each other and form part of a mid-2nd millennium cal BC Bronze Age farming settlement, with the dead buried close to the settlement. The highly truncated remains of Roundhouse 1 with its central hearth area and probable porch/entrance passage is typical of Bronze Age roundhouses which usually had a south-east facing entrance aligned to the rising sun. The remaining postholes would have supported the roof plate, on which the roof rested, while the outer wattle and daub walls would have created an overall space of around 8-10m in diameter. As so few features of any depth survived in this part of the site it is not surprising that little occupation debris has survived in the form of animal bone or domestic pottery, for example.

13.7 The dates for all of the mid-2nd millennium cal BC Bronze Age activity overlap and therefore are considered most likely to represent a phase of contemporary activity with the possibility that one settlement followed on from the other. A pit (1079) within the palisaded settlement produced a date of *c*.1503-1310 cal BC (95.4% probability) although it is likely to fall within the range of *c*.1495-1403 cal BC (68.2% probability) (SUERC-69266 (GU41851)) which is statistically later than the dates for both Cremation 2 and the construction of the palisade but roughly contemporary with a posthole from within Roundhouse 2 which produced a date of 1506-1416 cal BC (95.4% probability), although it is likely to fall within the range of 1497-1436 cal BC (68.2% probability) (SUERC-74094 (GU44489)). These two features could represent a distinct phase of repair or remodelling works that were carried out at the same time on the palisaded enclosure and Roundhouse 2. While the palisade slot was almost certainly built earlier than the pit found within it, it is probable that the palisaded enclosure was still extant and in use when the pit was dug. Pit F104 excavated during the evaluation phase of the site produced a date of *c*.1616-1454 cal BC (95.4% probability), although it is likely to fall within the range *c*.1607-1500 cal BC (68.2% probability) (SUERC-62308 (GU38364)), which means that it is broadly contemporary with Cremation 2 and the palisaded settlement, although it appears to pre-date the later pit within the palisaded settlement. The overlapping of dates in the centuries either side of

1500 cal BC suggest that the site may have been in use for several generations across this period.

13.8 The isolated pit features are more illuminating: the first contained four fired clay objects, probably associated with salt-working (Alison Sheridan *pers. comm.*); the second contained fragments of a Flat-Rimmed Ware pottery vessel of 2nd - 1st millennium BC date in a fire pit, laid on a piece of worked bark that had holes punched in it. The excavation also uncovered a row of three small iron smelting furnaces of probable Iron Age date.

13.9 The four fired clay 'pedestals' show clear similarities to other examples from Iron Age sites of varying dates, such as those excavated at Blagdon Park 2 in Northumberland (Croom and Hodgson 2013, 145 and 149) and Street House in Cleveland (Sherlock and Vyner 2013). Street House in particular produced fragments of clay supports which were interpreted as being used to support evaporation pans into which brine would be poured. The supports would allow hot air to rise from an oven located beneath an evaporation pan and reduce the briny water into salt crystal. The clay supports recovered at Street House had a similar, if cruder, form to the pedestals recovered from pit (020) at Lochinver. Additionally, a more recent study in Kent found saltworking containers, supports and structural material on a site 50 m above sea level and 3–4 km distant from seawater (Sherlock and Vyner 2013). Lochinver is located at 30.29m aOD and at a distance of 9.74km from the coast and whilst no ovens or associated evaporation pan material has been identified from Lochinver, the clay pedestals may represent further evidence for salt-working occurring at inland locations in Britain. These clay pedestals, taken alongside the iron smelting furnaces, provide interesting evidence for different craft industries potentially taking place alongside one another during the Early Iron Age. A radiocarbon date obtained from context (020) places the pit and therefore the clay pedestals in the Early Iron Age.

13.10 The iron smelting furnaces/hearths contained slag fragments that have been assessed as being of Iron Age character. If these remains are shown to date to the Early Iron Age (i.e. pre C14 plateau *c*.600BC), then they would be of considerable importance and will contribute to the understanding of early iron technology in Britain, and specifically in Scotland. The lack of hammer scale associated with the smelting furnaces indicates that smithing was not undertaken in the immediate vicinity of the smelting, which may suggest that these furnaces stood on the outskirts of a settlement, rather than within it. This may be corroborated by evidence from aerial photography transcription which identified the cropmarks of several possible Iron Age roundhouses to the north of Phase A, within Phases E and D of the quarry extension (see Figure 2). These phases have yet to be investigated archaeologically.

13.11 The two kidney-shaped pit features and one arcing gully found to be associated with pits F084 and F082 have been interpreted as broadly contemporaneous due to the similarity of the features in both form and fill composition. The potential post-pipes identified in pits F096 and F098, coupled with the narrow cut and the near vertical sides of F078 might suggest that the features formed foundation gullies into which timber uprights were set.

13.12 The excavations at Lochinver Quarry have also revealed an Iron Age post-built structure and associated well, as well as two isolated pit features containing probable Iron Age artefacts. The post-built structure does not appear to relate to any other features identified so far on the site as it is situated c. 300m north and post-dates the pits described

above by almost four hundred years. The rectangular form of the structure is unusual as roundhouses are much more common in north-eastern Scotland (Cunliffe 2005). Examples of Iron Age rectangular buildings were identified in East Lothian during excavations associated with the A1. The Phase 2 settlement at Phantassie Farm contained a subrectangular building with stone foundations supporting a timber or turf superstructure that likely dated to between the 1st century BC and the 1st century AD (Lelong 2008), Another example of post-built rectangular buildings were identified at Dryburn Bridge, a 1st century BC palisaded settlement with successive phases of occupation that also contained roundhouses in association continuing into the Roman Iron Age (. The identification of these buildings in association with Iron Age roundhouses could mean that this Iron Age post-built building could be related to a wider settlement pending any investigation of Phases D and E as discussed above.

13.13 A total of 72 isolated, undated pits were excavated across the site. Forty one of these pits contained a large volume of tightly packed sub-angular and rounded medium-sized cobbles within their fills. Some of these pits were of considerable size and depth. The pits have an unknown function but may represent localised stone clearance for agricultural activities, such as ploughing, but this is probably unlikely given the labour required to dig deep pits to place the stones in and stone which are unlikely to have been present in the soil. An alternative interpretation could be that the stone filled pits occupied the role of waste pits with the large stones deposited onto waste deposits to dissuade animal scavenging. However, there was limited material evidence to support this interpretation as little potential domestic waste (e.g. moderate to high quantities of animal bone, pottery or charcoal) was recovered from any of the stone-filled pits. The only finds to be produced by these pits were a small amount of animal bone and a corroded iron object. However, pit F092 contained a dark silty deposit (095) with a moderate clay content which may yet give some clue as to their true purpose. Palaeoenvironmental assessment of deposits from the smaller stone-filled pits has revealed modern rootlets, modern seeds and scarce, tiny charcoal fragments. Further work should succeed in dating one or more of these pits which will also help in understanding their original function. At the moment, however, they remain a puzzle.

Outstanding questions

13.14 To-date, the excavations have raised a number of pertinent questions that further excavations will endeavour to answer. For example, the function of the stone-filled pits remains unknown and the features remain undated. While there are many possible theories as to what their purpose could have been, there are no comparable examples and, without secure dating evidence, it is difficult to say why they were created and what they may have been used for. Excavation of these pits in the future will attempt to recover dating evidence in the form of charred organic remains that can then be radiocarbon dated.

13.15 Another important question that can be answered by one or more radiocarbon dates is whether the ironworking furnaces date to the Early Iron Age. There is charred material that can be dated and the acquisition of a C14 date on a suitable sample of associated charred material remains a priority. Another related question is the relationship between the Iron Age post-built structure at the top of the hill and those hearth features identified further down the hill. Furthermore the question remains if, and what, the broader settlement pattern might be associated with the post-built structure.

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APPENDIX I - FIGURES

Site Name: Lochinver Quarry
Date: August 2019
Drawn by: PH and DGC
Scale: 1:1250 @ A3

Figure 2. Plan of Phase A with feature distribution

Key:

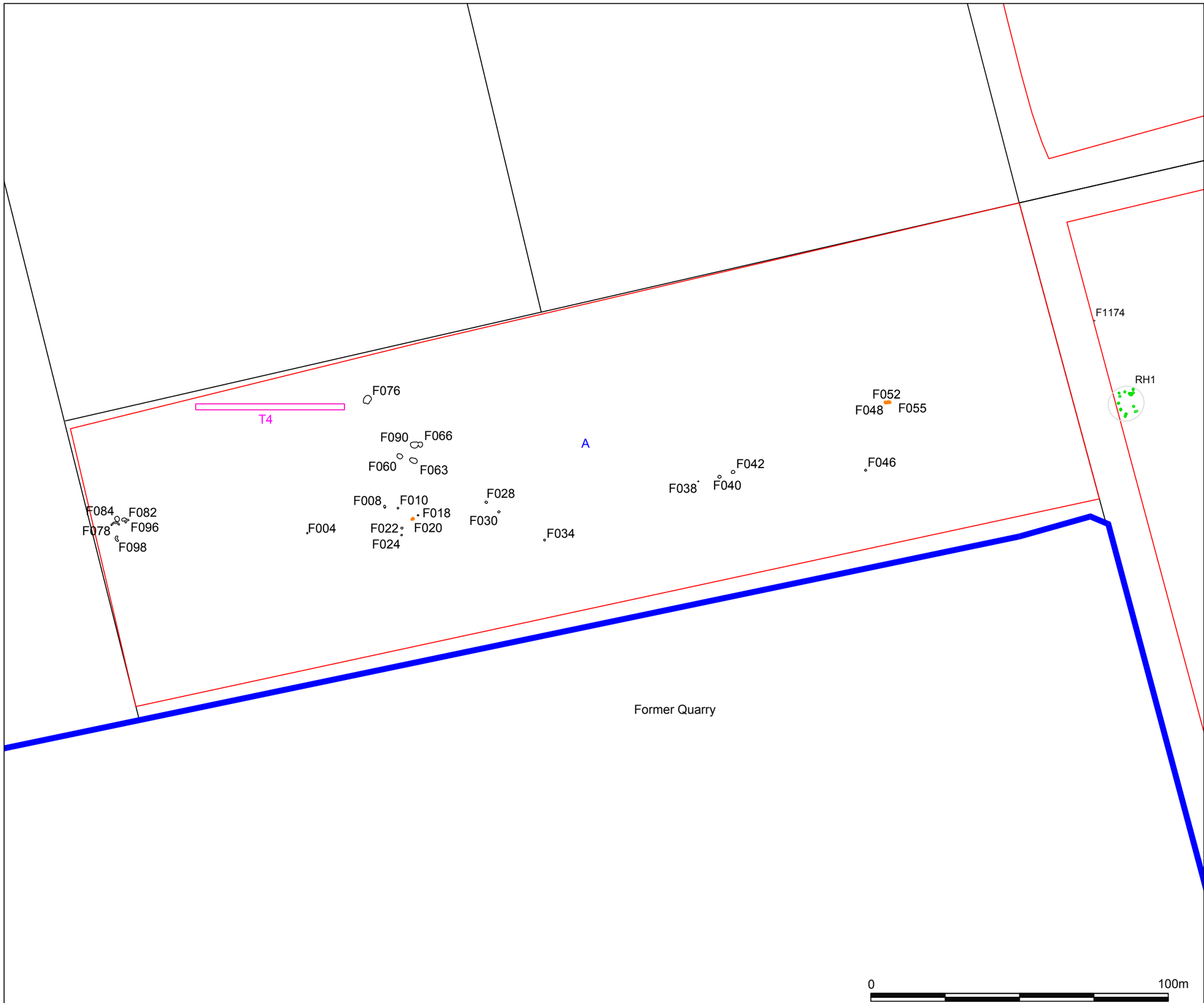
A Phase

Evaluation trench

Strip, map and sample area

Archaeological feature

Iron Age feature



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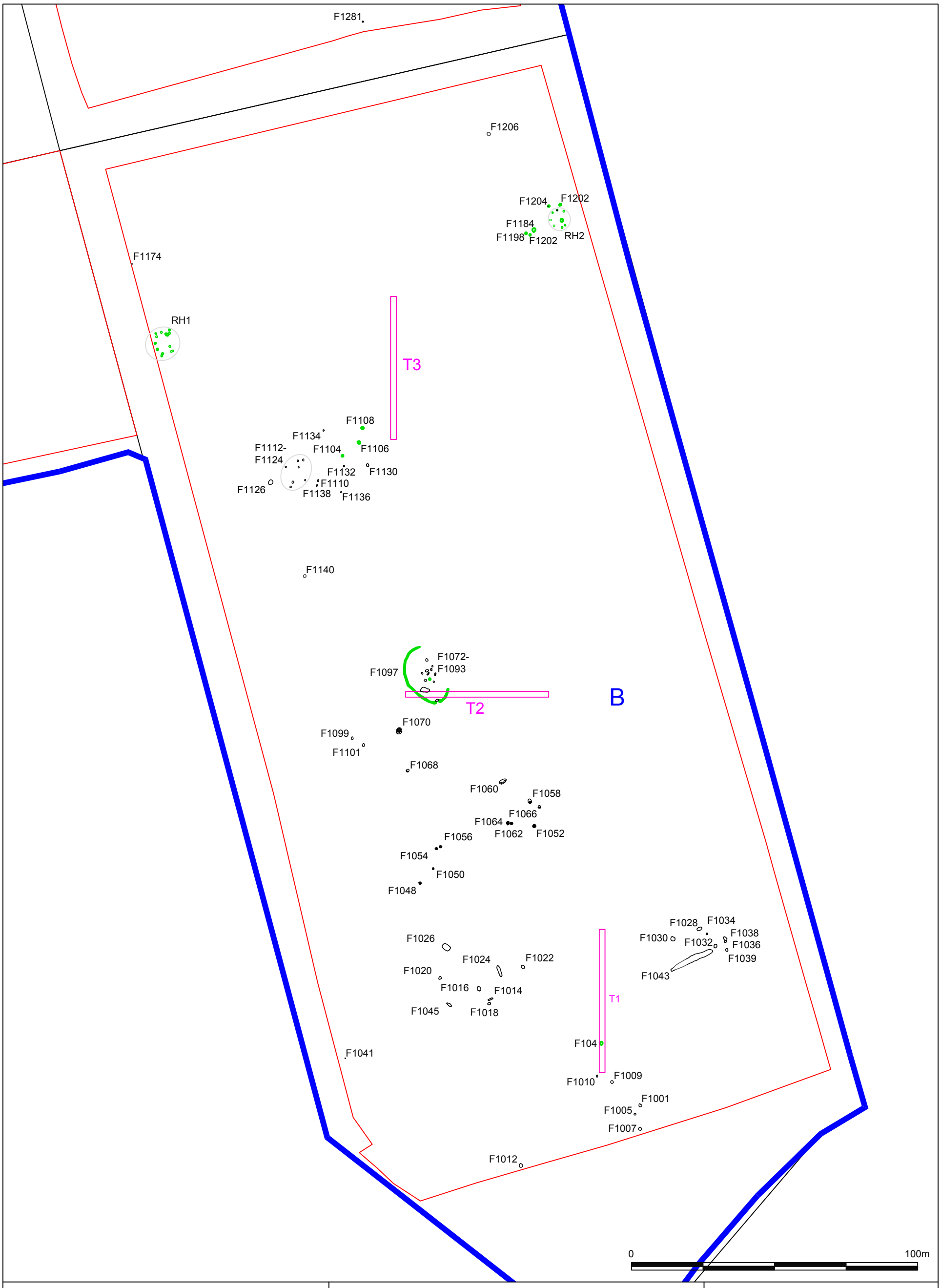

Site Name: Lochinver Quarry
Date: August 2019
Drawn by: PH and DGC
Scale: 1:1250 at A3

Figure 3. Plan of Phase B showing feature distribution.

Key:

- B Phase
- Evaluation trench
- Strip, map and sample area
- Archaeological feature
- Bronze Age features

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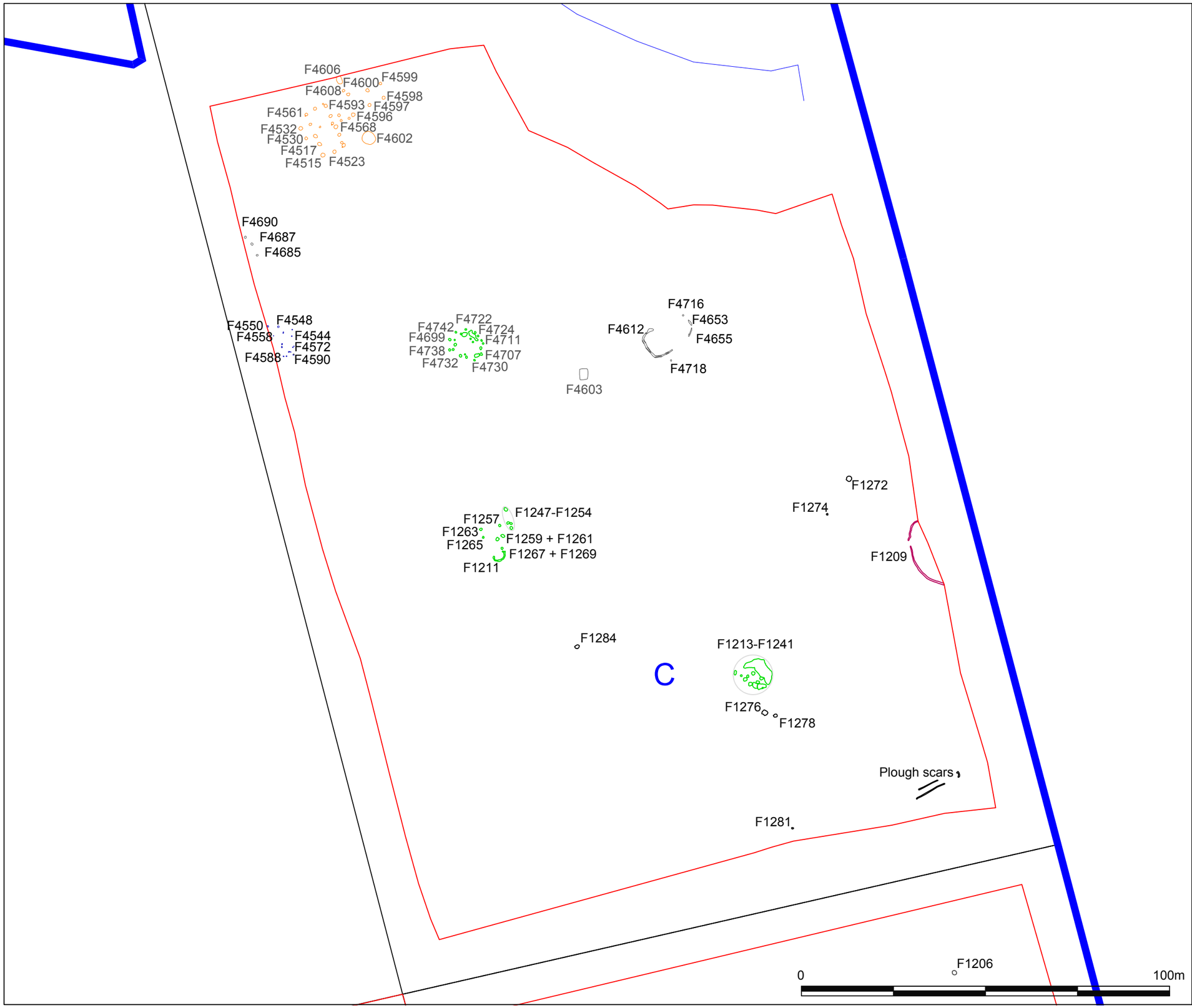

Site Name: Lochinver Quarry
Date: August 2019
Drawn by: PH and DGC
Scale: 1:1000 at A3

Figure 4. Plan of Phase C with feature distribution

Key:

- C Phase
- Evaluation trench
- Strip, map and sample area
- Archaeological feature
- Neolithic feature
- Bronze Age feature
- Iron Age feature
- Medieval feature

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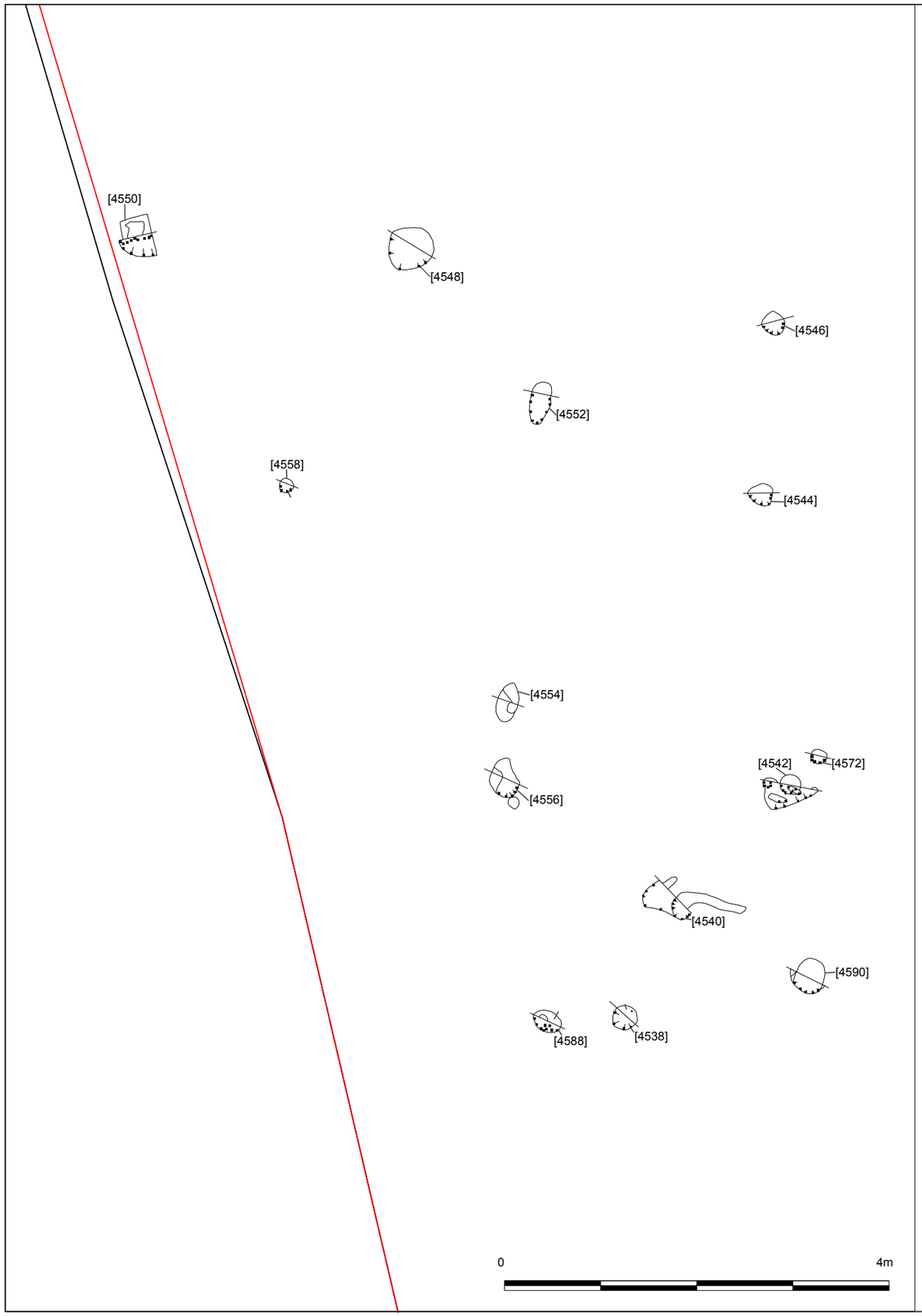
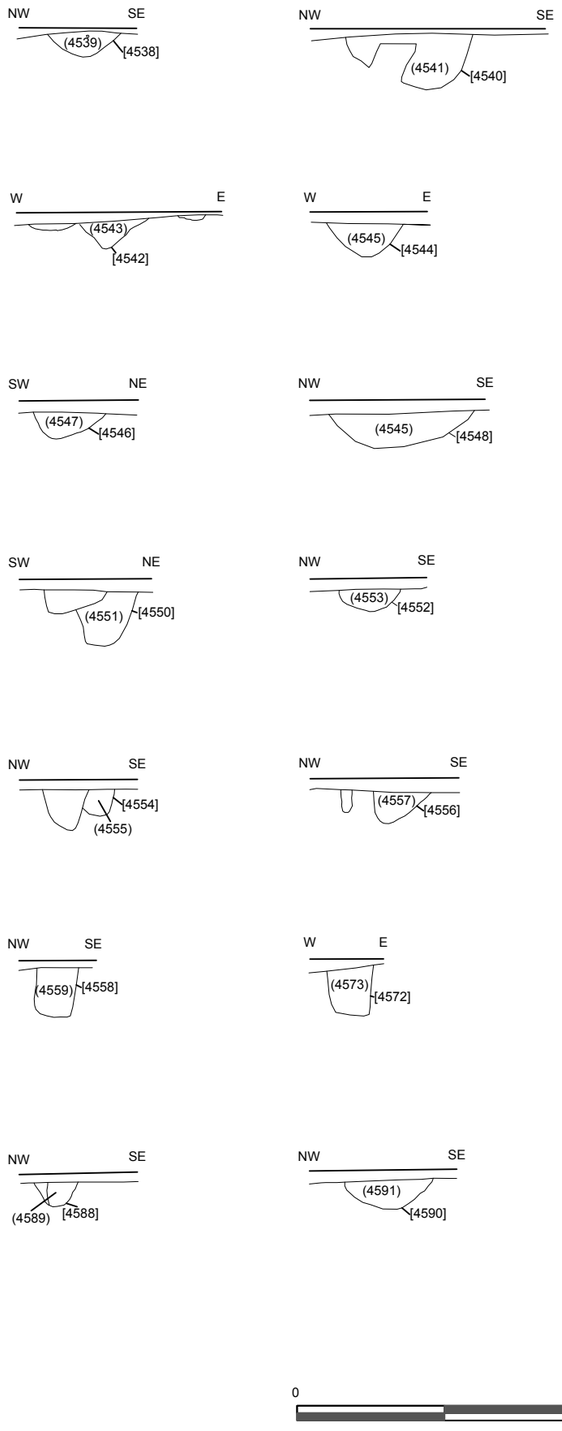
Figure 5. North facing overview of structure (scale = 0.5m graduations).

Figure 6. South facing section of posthole (F4554) (scale = 0.1m graduations).

Figure 7. South facing section of posthole (F4548) (scale = 0.1m graduations).





Site Name: Lochinver Quarry
Date: August 2019
Drawn by: MG
Scale: Plan at 1:50
Sections at 1:20 at A3

Figure 8. Plan and sections of Neolithic longhouse.

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Figure 9. Cremation 1 as it appeared before excavation (scale = 0.01m graduations).

Figure 10. Cremation 2 as it appeared before excavation (scale = 0.01m graduations).

Figure 11. Cremation 3 as it appeared before excavation (scale = 0.01m graduations).

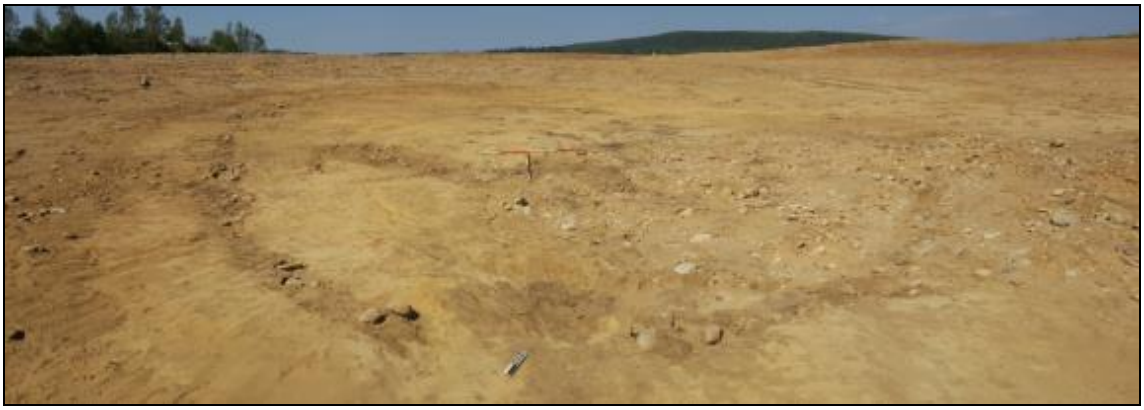

Figure 12. The highly truncated palisaded enclosure, looking north-north-west (scale = 0.5m graduations).

Figure 13. One of the highly truncated palisade slot terminals (scale = 0.5m graduations).

Figure 14. Pit F1078 which was located within the palisaded enclosure and produced a sherd of Bronze Age pottery (scale = 1cm graduations).

A photograph of the palisade enclosure with internal features, looking north-west. Scale = 0.5m graduations.

A sherd of Bronze Age pottery recovered from the lower fill of pit F1078.

Palisade slot grades out due to truncation

F1097

F1097
1617-1450 cal BC
95.4% probability

F1117

F1091

F1087

F1089

Heat-affected sand

(1103)

F1085

(1103)

F1083

(1103)

F1078
1503-1310 cal BC
95.4% probability

F1081

F1074

F1074

Palisade slot grades out due to truncation

F1097

F1072

0 4m

S N
(1072)
[1073]
Backfill from previous excavation

W S
(1074)
[1075]

W E
(1076)
[1077]

W E
(1078)
(1079)
[1080]

W E
(1081)
[1082]

W E
(1083)
[1084]

W E
(1085)
[1086]

W E
(1087)
[1088]

W E
(1089)
[1090]

W E
(1091)
[1092]
Charcoal

SW NE
(1093)
(1094)
[1096]
[1095]

N S
[1098]
(1097)

S N
[1098]
(1097)

W E
(1097)
[1098]

SSW NNE
[1098]
(1097)

0 2m

Site Name: Lochinver Quarry
Date: August 2019
Drawn by: PH
Scale: Plan at 1:75
Sections at 1:50 at A3

Figure 15. Palisaded enclosure F1073 with internal features including Roundhouse 1.

Key:

Stones

Area of heat-affected sand

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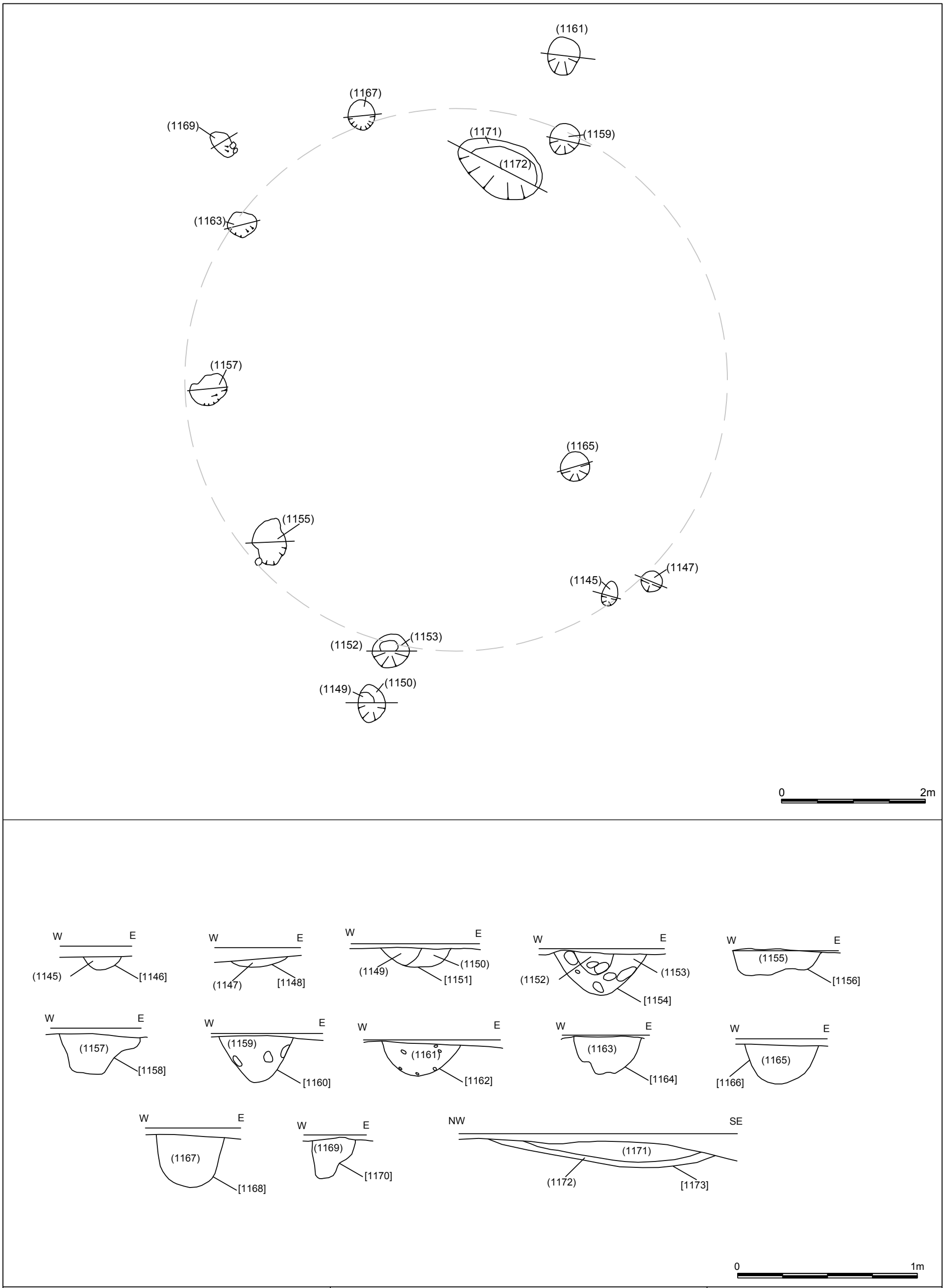
Figure 16. Roundhouse 2 prior to excavation, looking north-west (scale = 0.5m graduations).

Figure 17. Posthole F1152 from Roundhouse 2 showing the base of the postpipe (scale = 1cm graduations).

Figure 18. South facing section of outer posthole (F1161) (scale = 0.01m graduations).

Figure 19. South-west facing section of hearth pit (F1171) (scale = 0.5m graduations).



Site Name: Lochinver Quarry
Date: August 2019
Drawn by: PH
Scale: Plan at 1:75
Sections at 1:20 at A3

Figure 20. Plans and sections of Roundhouse 2.

Key:

Projected arc of postholes

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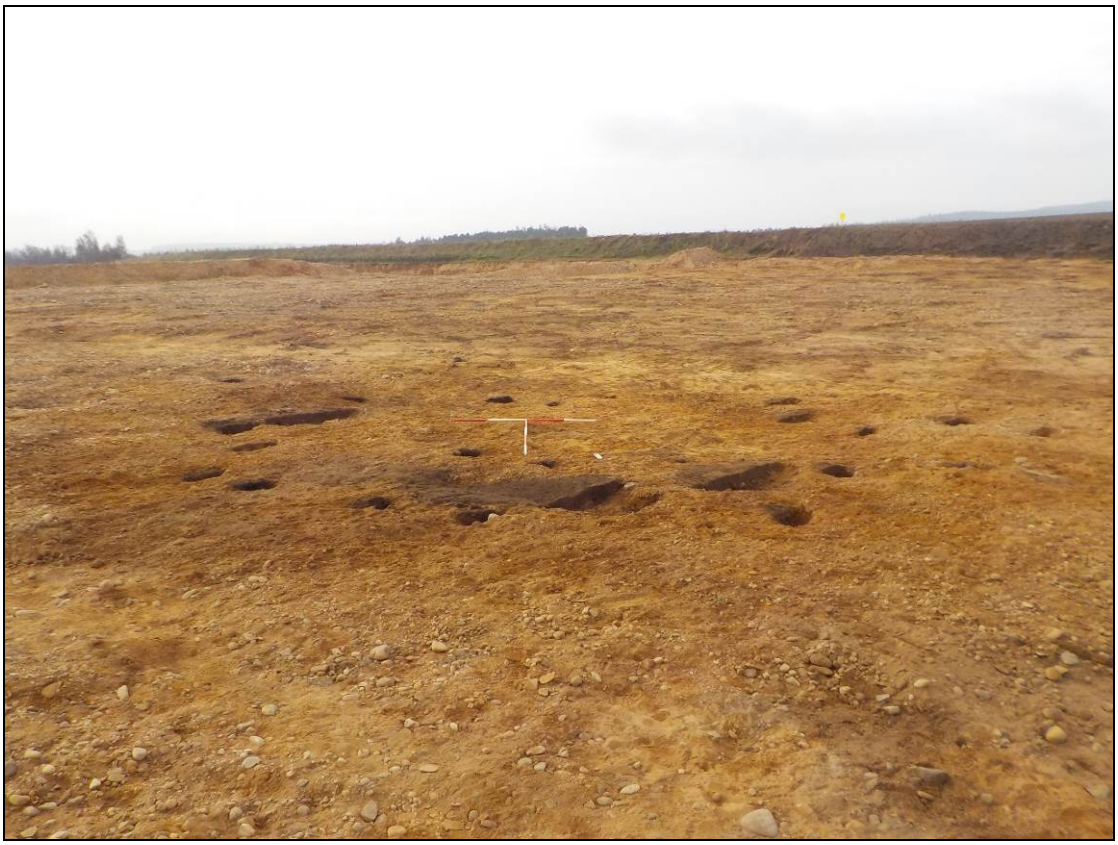
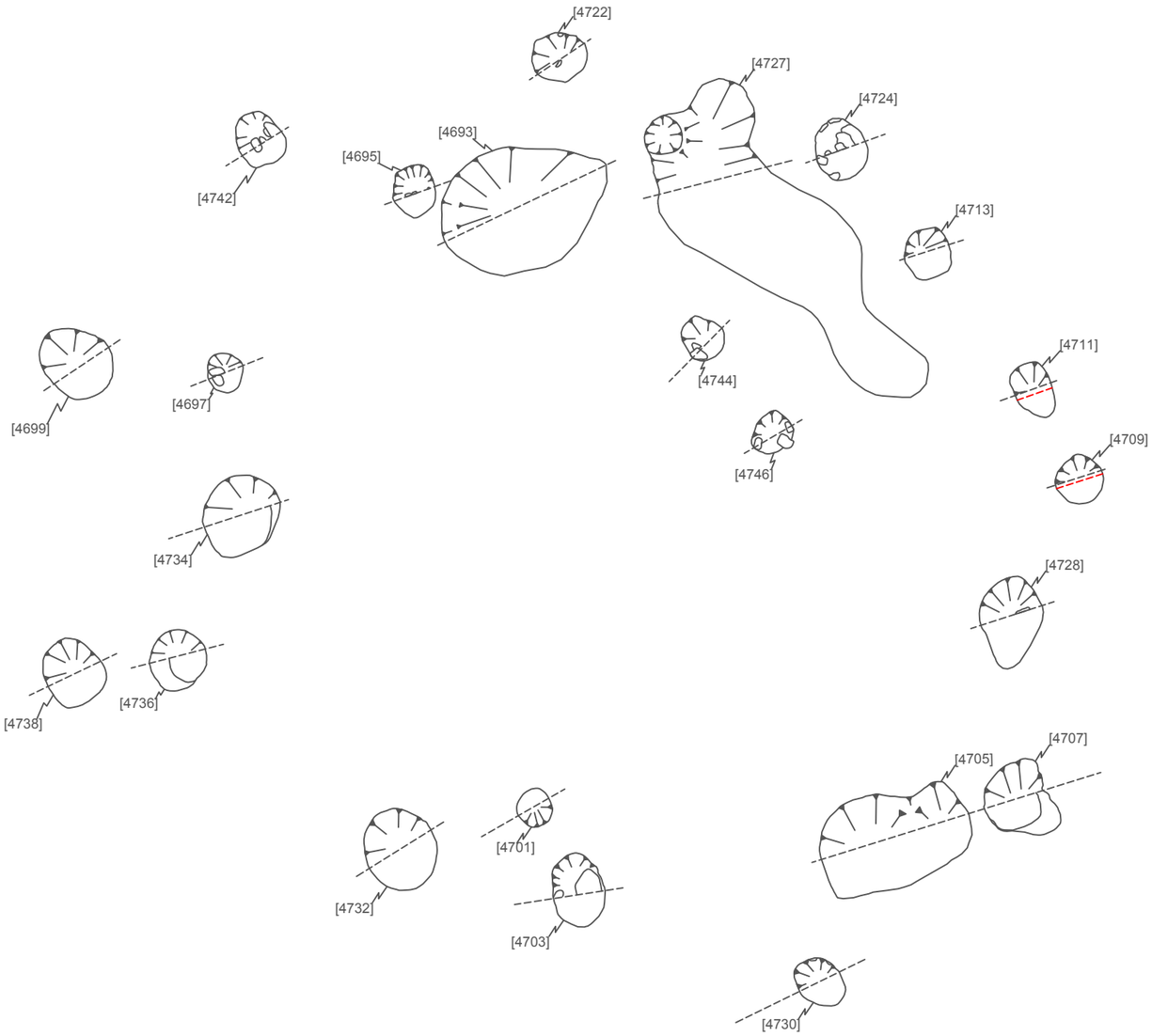


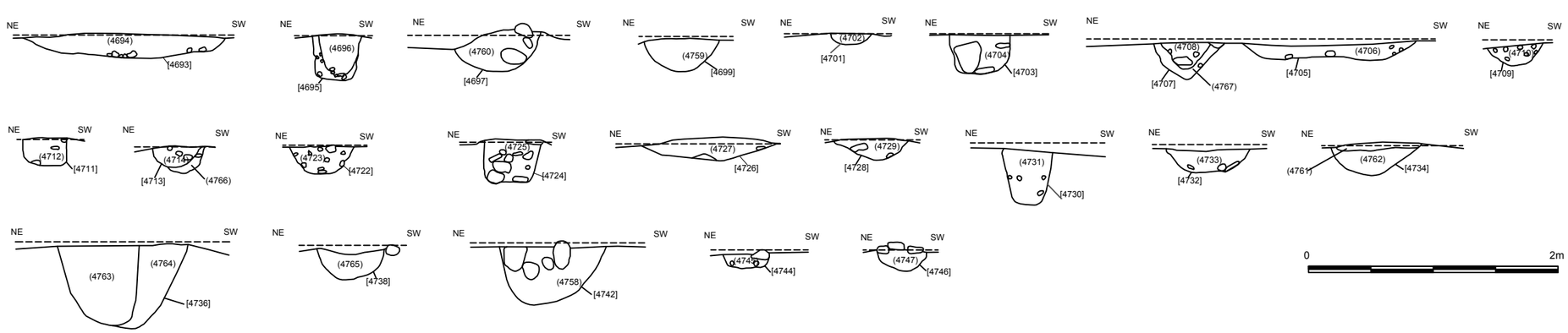
Figure 21. Post-excavation overview of Roundhouse 5 (scale = 0.5m graduations).

Figure 22. North-west facing section of posthole F4713 (scale = 0.05m graduations).

Figure 23. North-west facing section of posthole F4707 (scale = 0.05m graduations).

Figure 24. North-west facing section of pit F4705 (scale = 0.5m graduations).





Site Name: Lochinver Quarry
Date: August 2019
Drawn by: MG
Scale: Plan at 1:50
Sections at 1:40 at A3

Figure 25. Plans and sections of Roundhouse 5.

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Figure 26. Overview of domestic waste pit cluster (scale = 0.5m graduations).

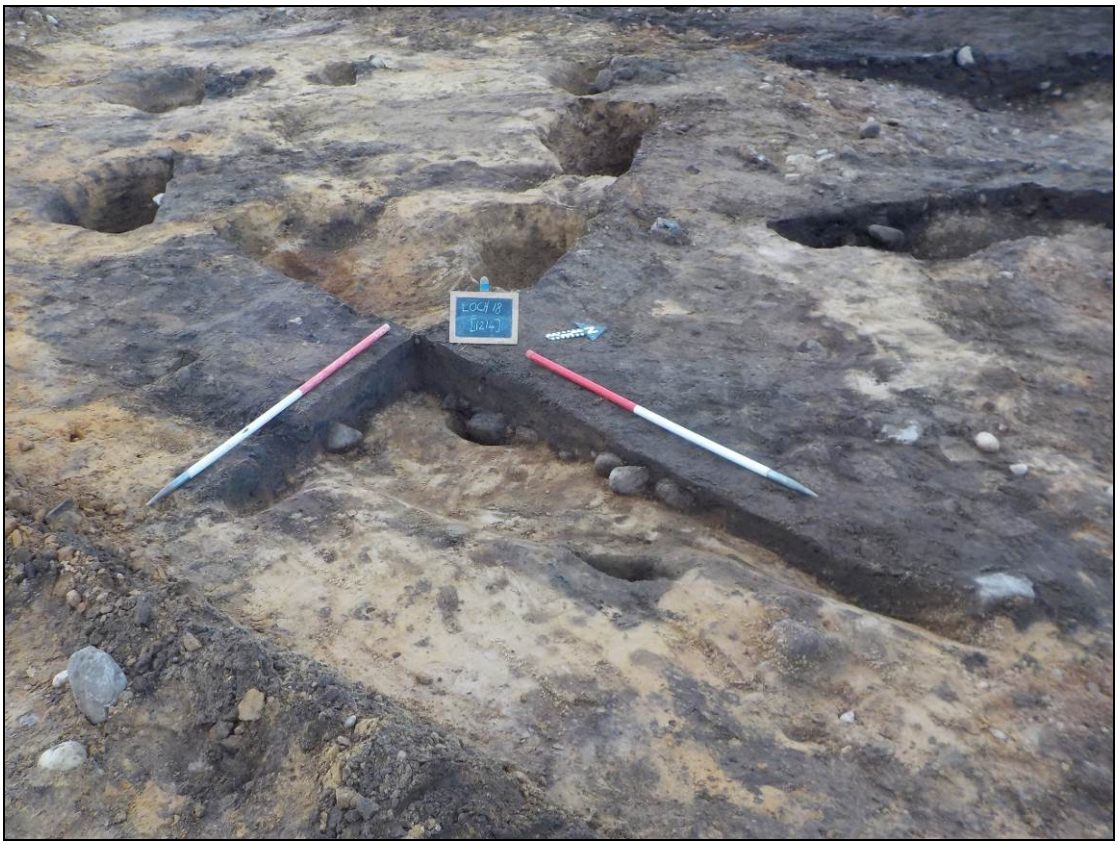
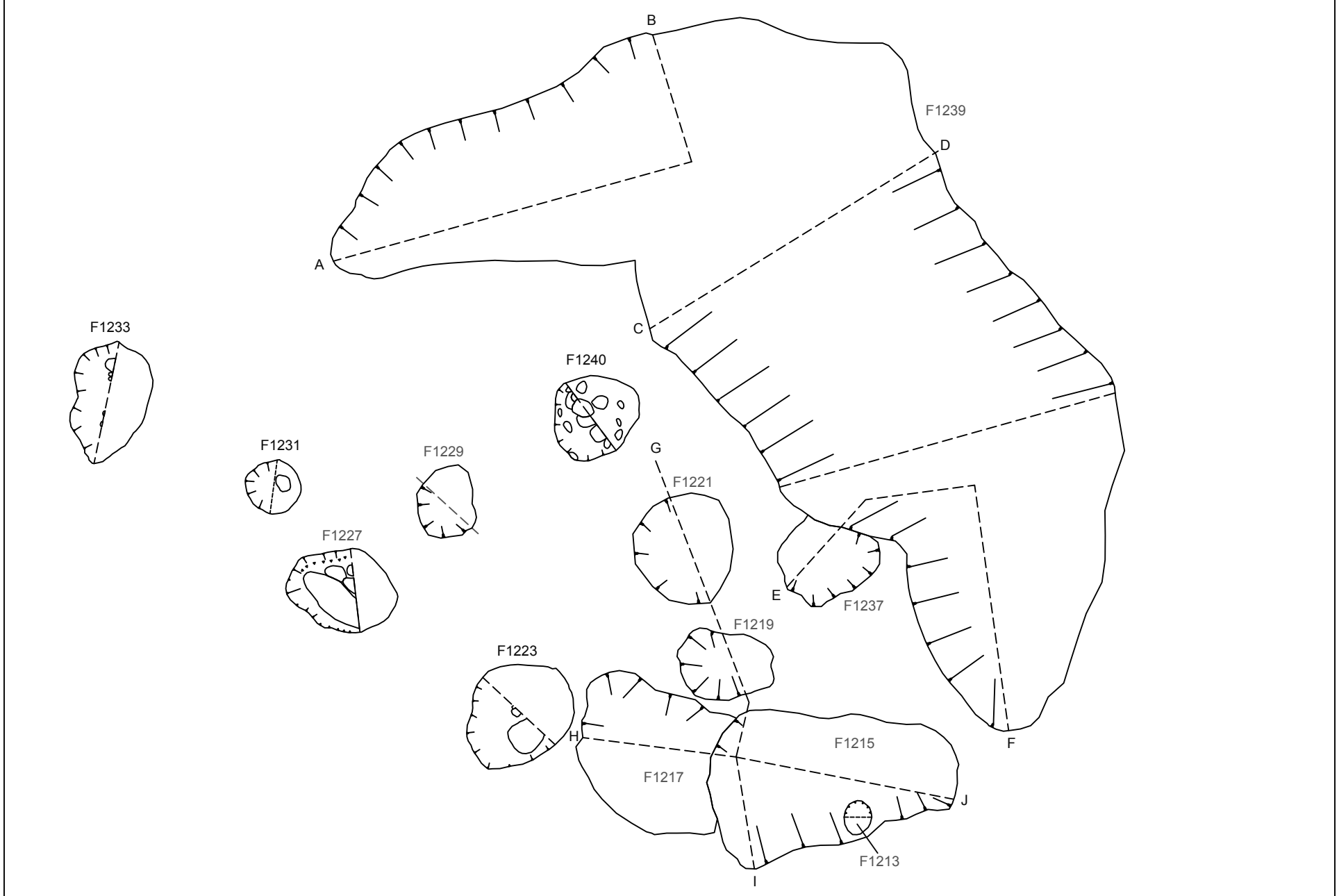
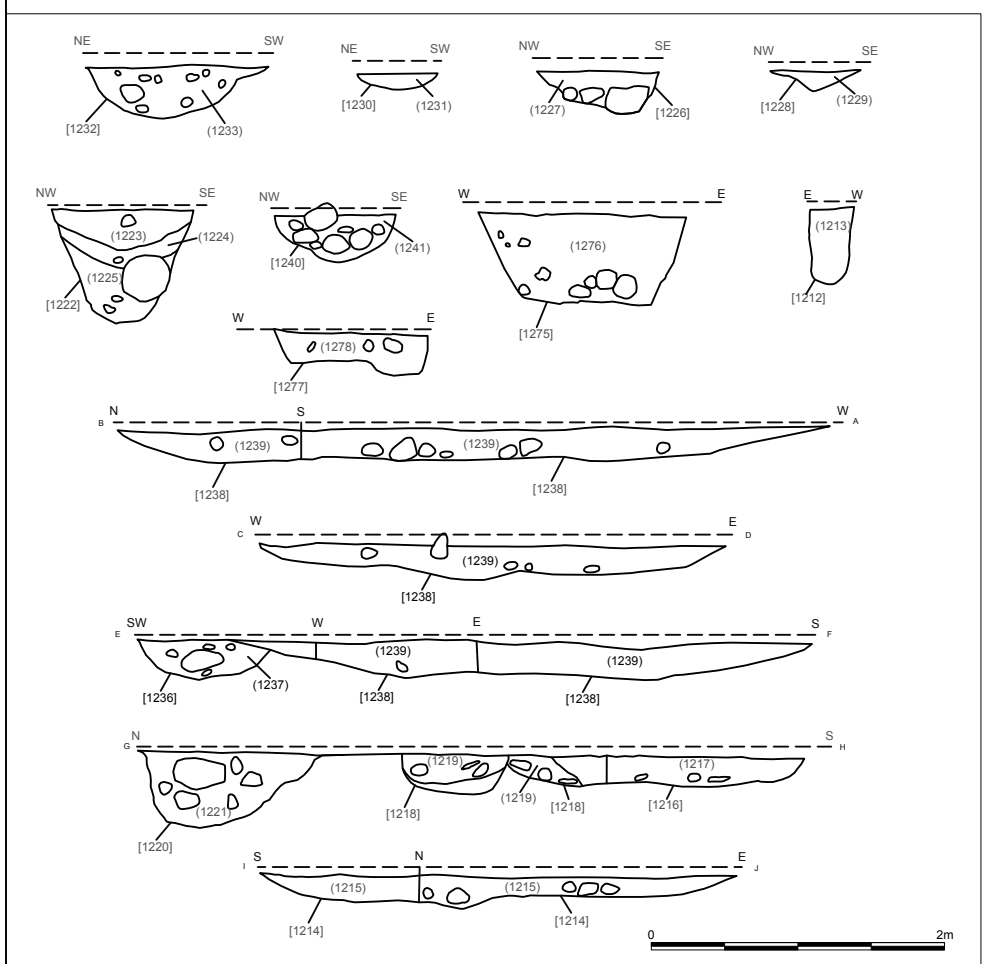
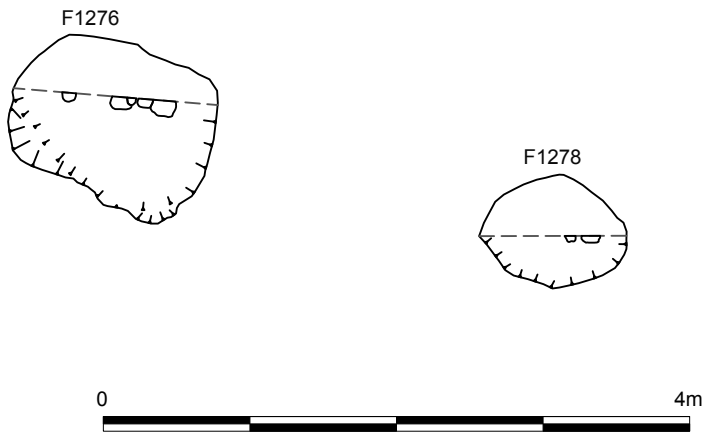


Figure 27. Overview of sections through pits F1215 and F1217 (scale = 0.5m graduations).







Site Name: Lochinver Quarry
Date: August 2019
Drawn by: PH
Scale: 1:50 @ A3

Figure 28. Plans and sections of domestic waste area.

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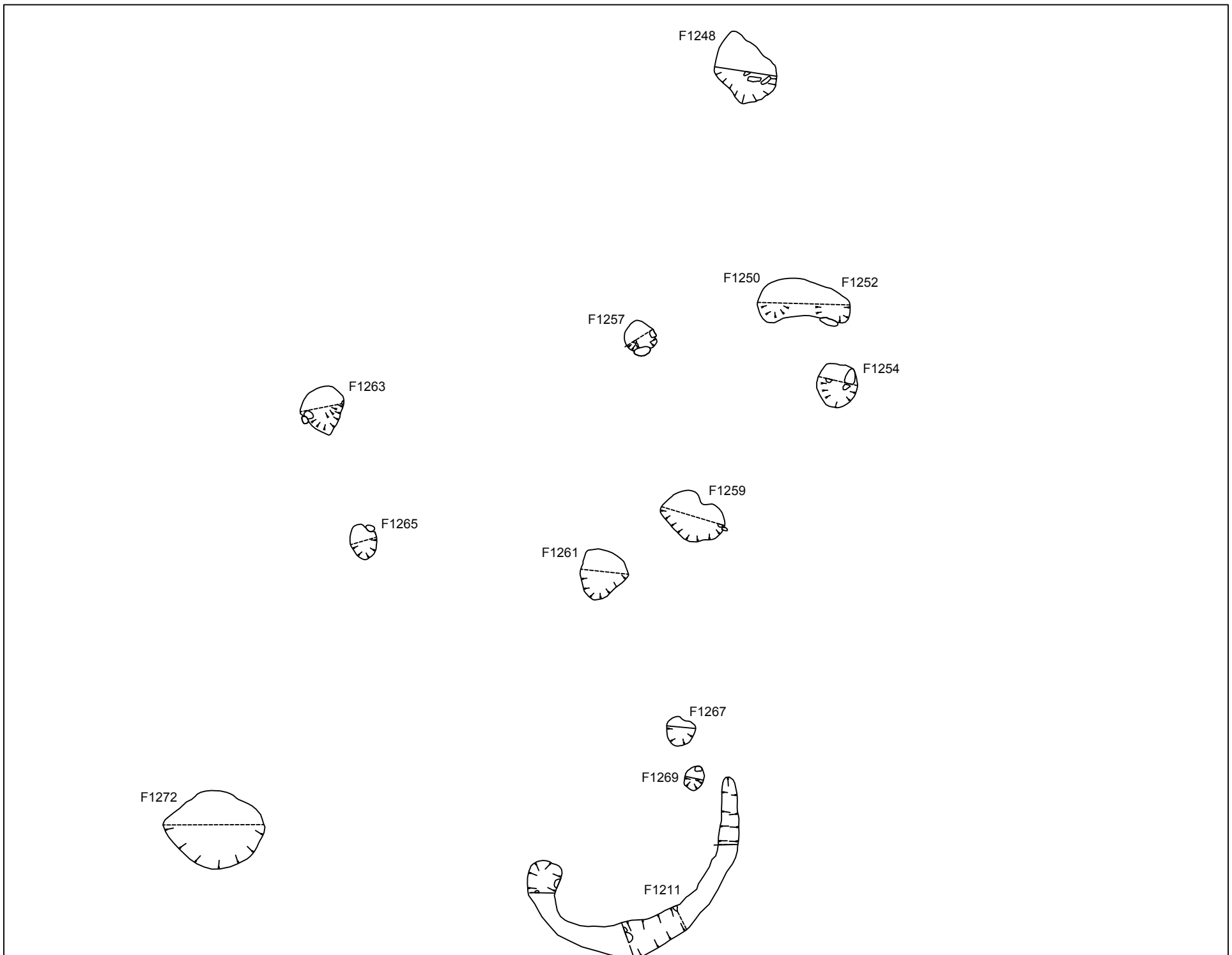
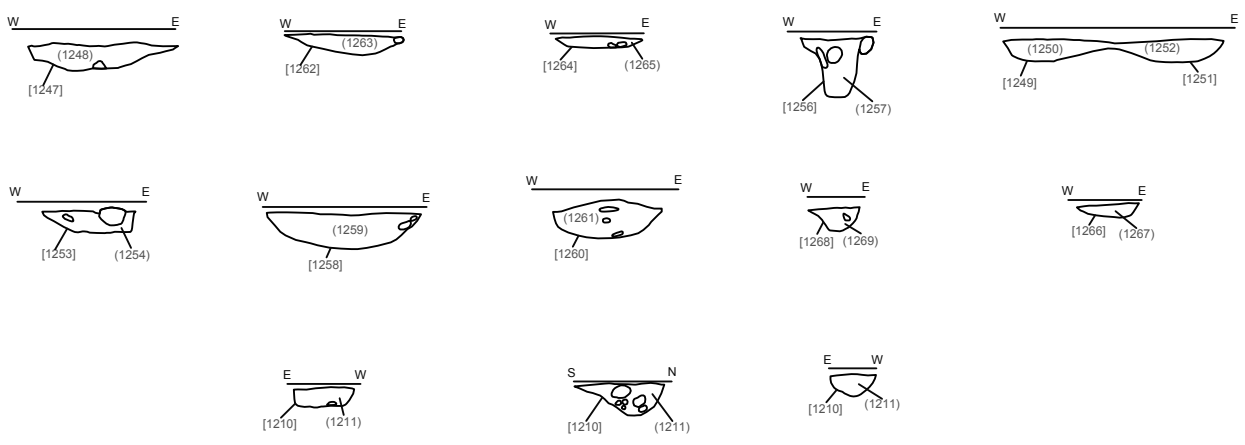
Figure 29. Overview of Roundhouse 4 (scale = 0.5m graduations).





Site Name: Lochinver Quarry
Date: August 2019
Drawn by: PH
Scale: Plan at 1:75
Sections at 1:50 at A3

Figure 30. Plans and sections associated with Roundhouse 4.

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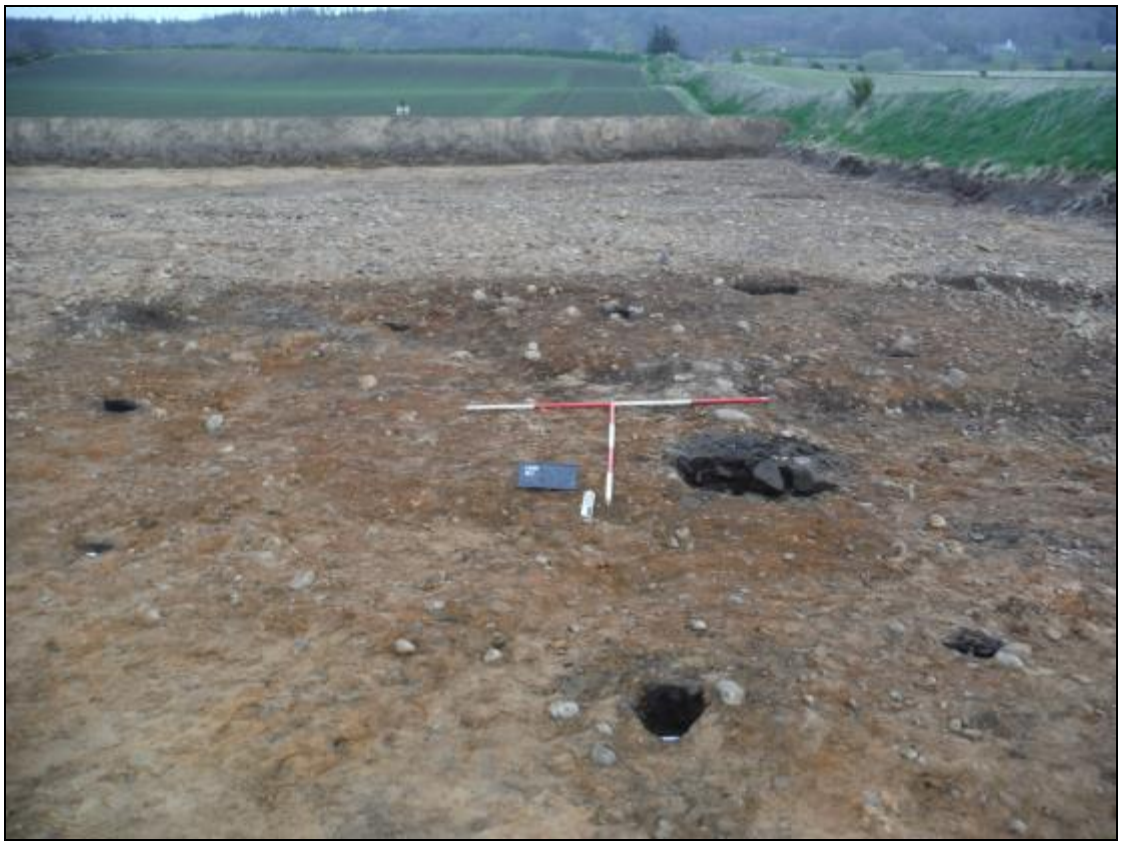
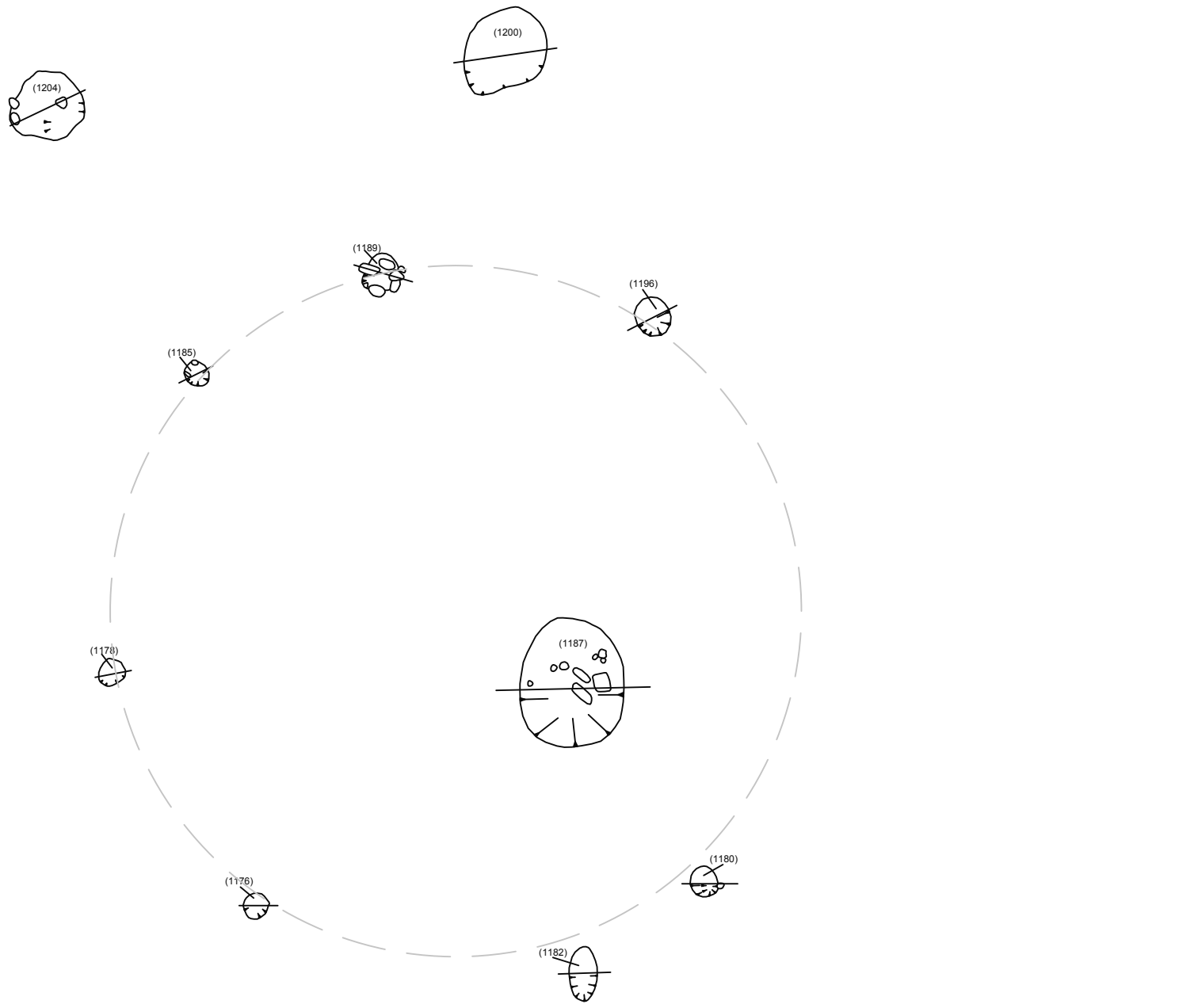
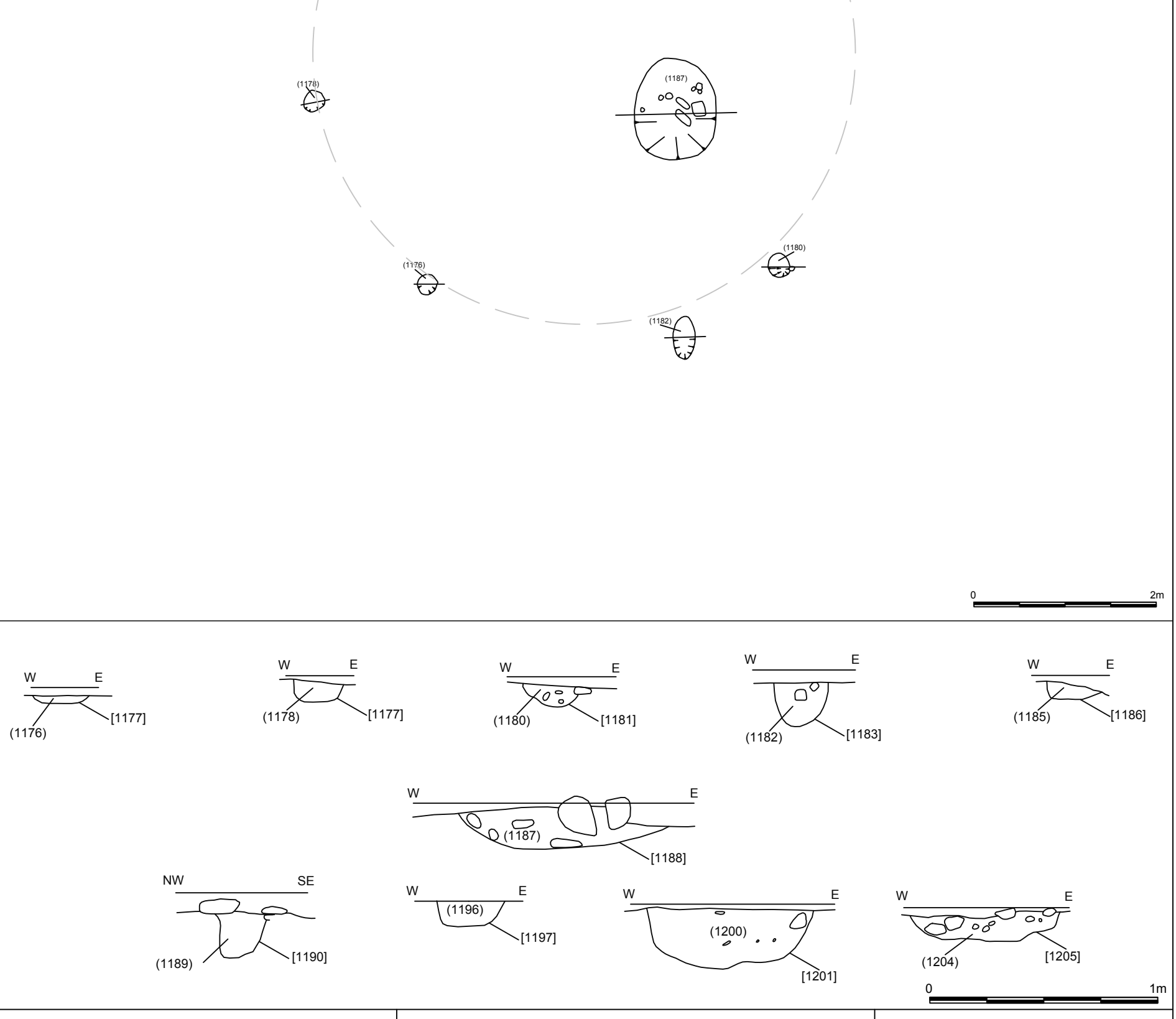


Figure 31. Roundhouse 3, post-excavation, looking north (scale = 0.5m graduations).

Figure 32. Posthole F1189 with stone packing (scale = 1cm graduations).





Site Name: Lochinver Quarry
Date: August 2019
Drawn by: PH
Scale: Plan at 1:50
Sections at 1:20 at A3

Figure 20. Plans and sections of Roundhouse 3.

Key:

Projected arc of postholes

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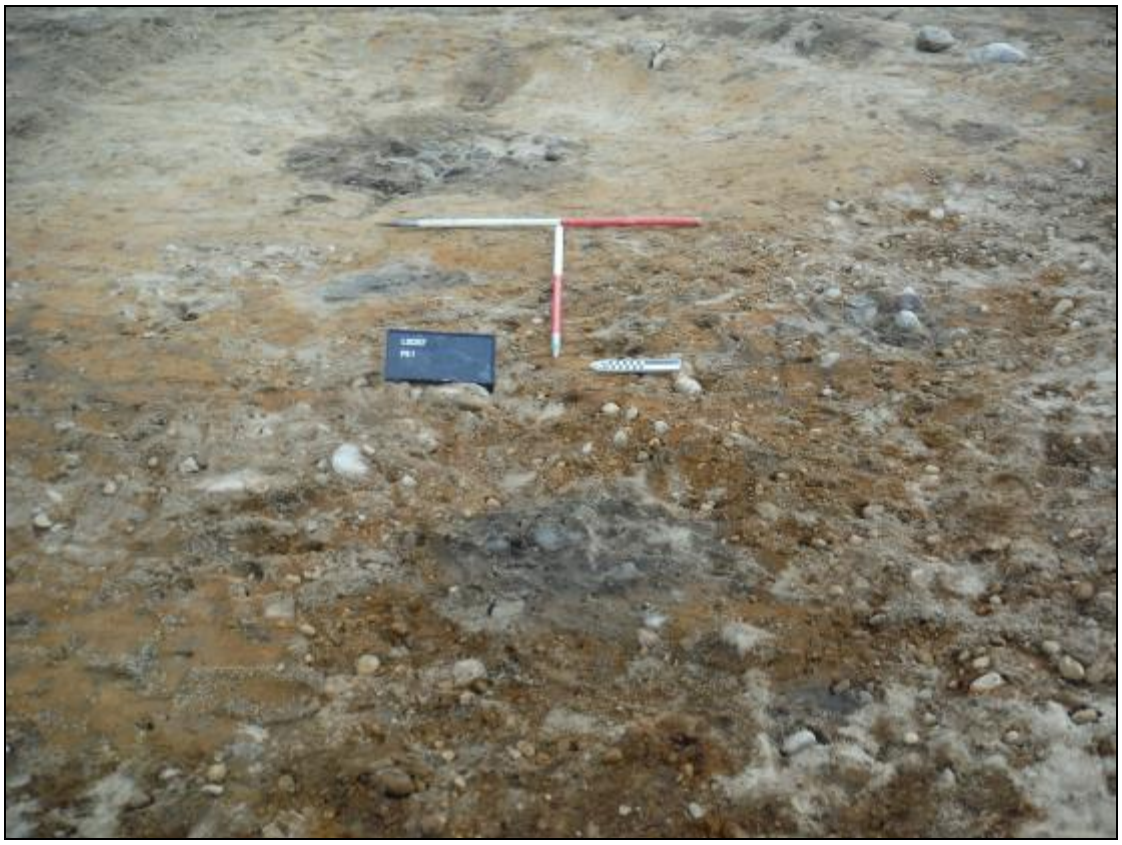
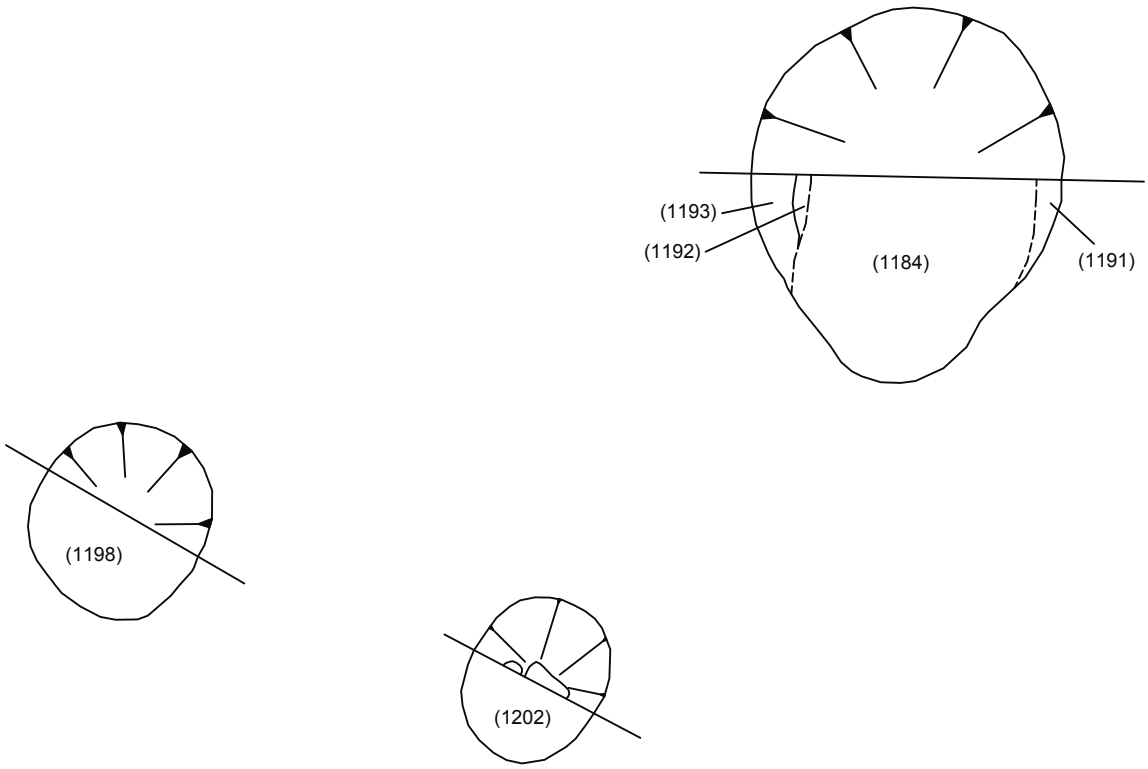
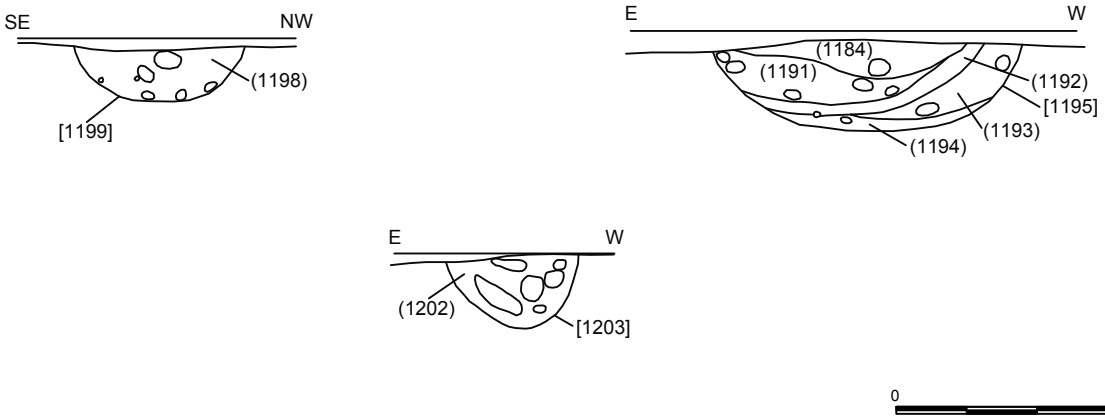


Figure 34. Pit cluster, pre-excavation (scale = 0.5m graduations).

Figure 35. North facing section of pit F1184 (scale = 0.5m graduations).





Site Name: Lochinver Quarry
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Scale: 1:25 at A4

Figure 36. Plans and sections of pit cluster.

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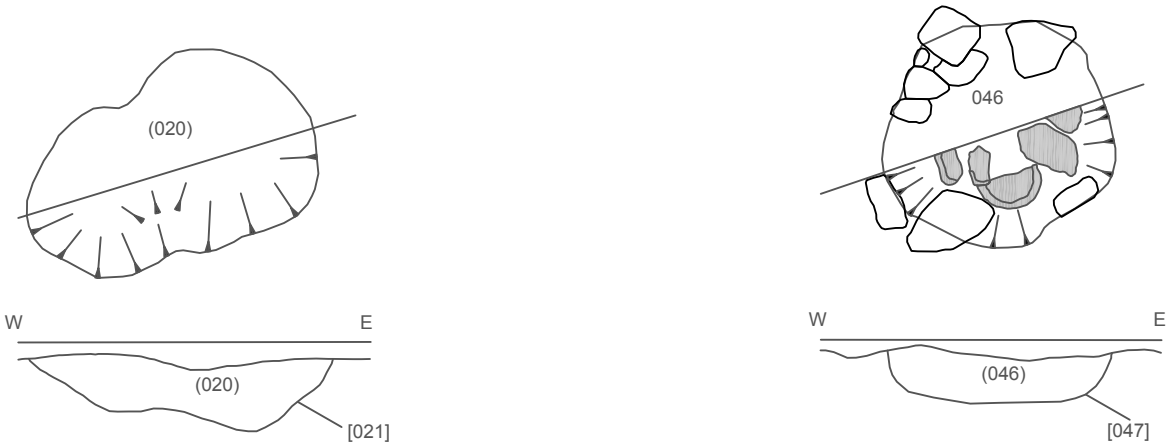
Figure 37. Pit feature F020 facing north (scale = 0.5m graduations).

Figure 38. Pit feature F046 facing north (scale = 0.5m graduations).



Site Name: Lochinver Quarry
Date: August 2019
Drawn by: PH
Scale: 1:25 at A4

Figure 39. Plans and sections of pits F020 and F046.

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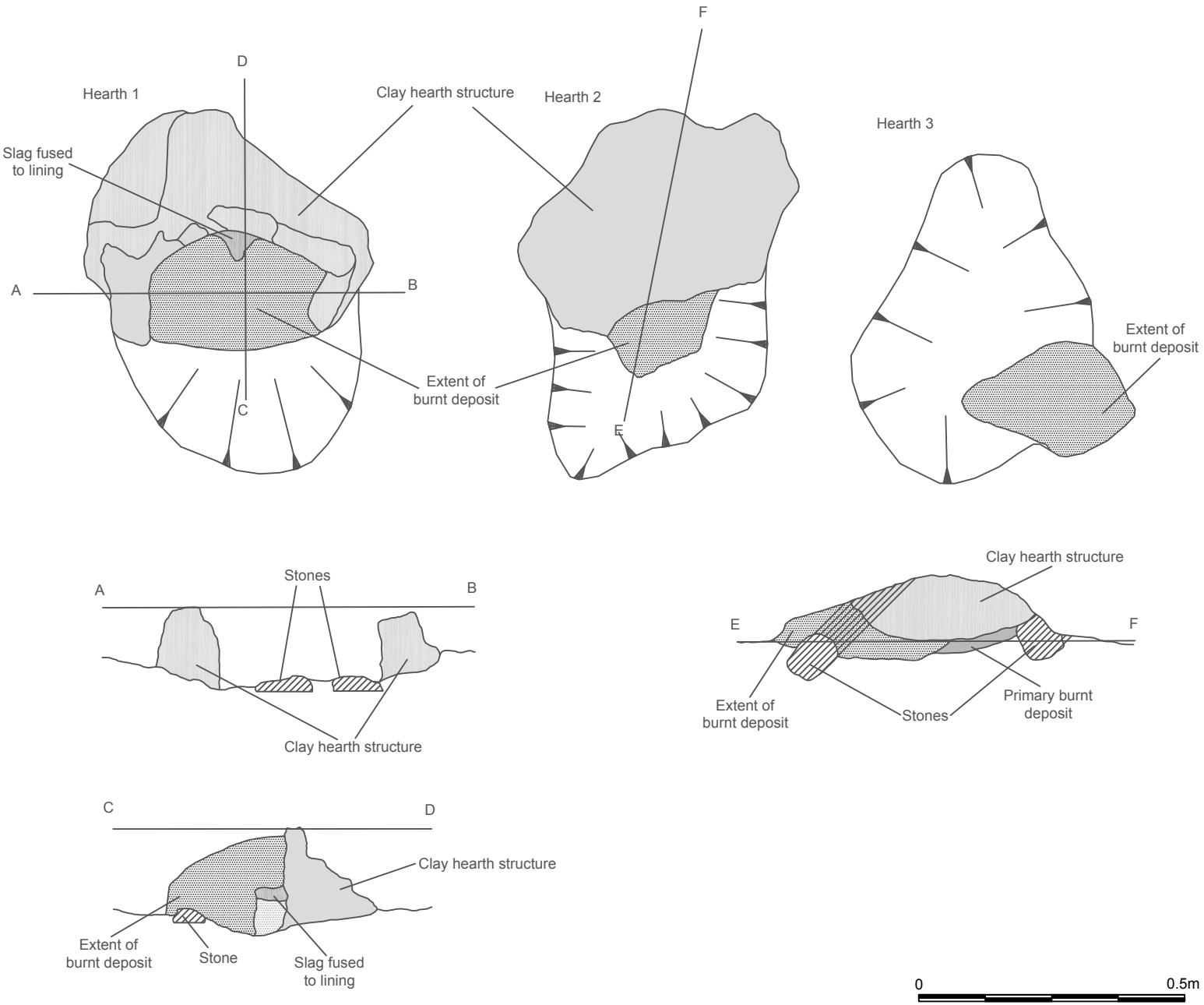
Figure 40. Hearths 1, 2 and 3 (scale = 0.5m graduations).

Figure 41. Hearth 1 (scale = 0.5m graduations).



Site Name: Lochinver Quarry
Date: August 2019
Drawn by: PH
Scale: 1:10 at A4

Figure 42. Plans and sections of hearth features F048, F052 and F055.

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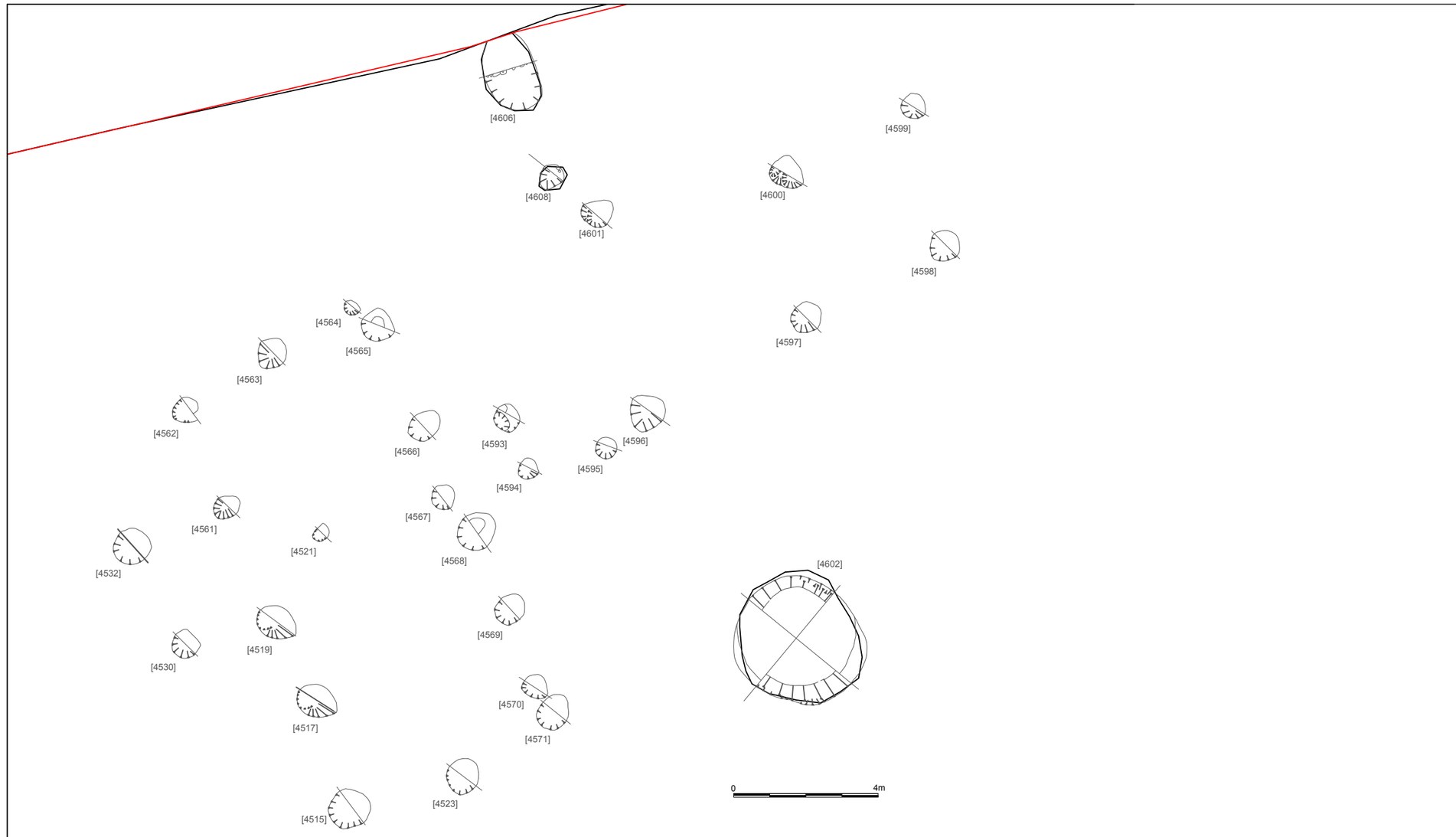
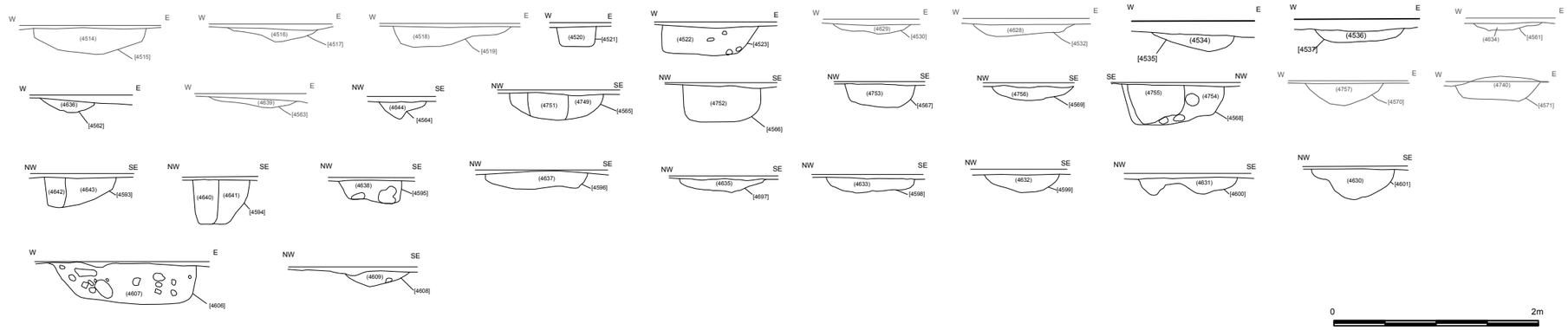
Figure 43. Oblique overview of Post-built-building 2, view facing north-east (scale = 0.5m graduations).

Figure 44. Oblique overview of Post-built-building 2, view facing east (scale = 0.5m graduations).





Site Name: Lochinver Quarry
Date: August 2019
Drawn by: MG
Scale: Plan at 1:125
Sections at 1:50 at A3

Figure 45. Plans and sections of Longhouse 2.

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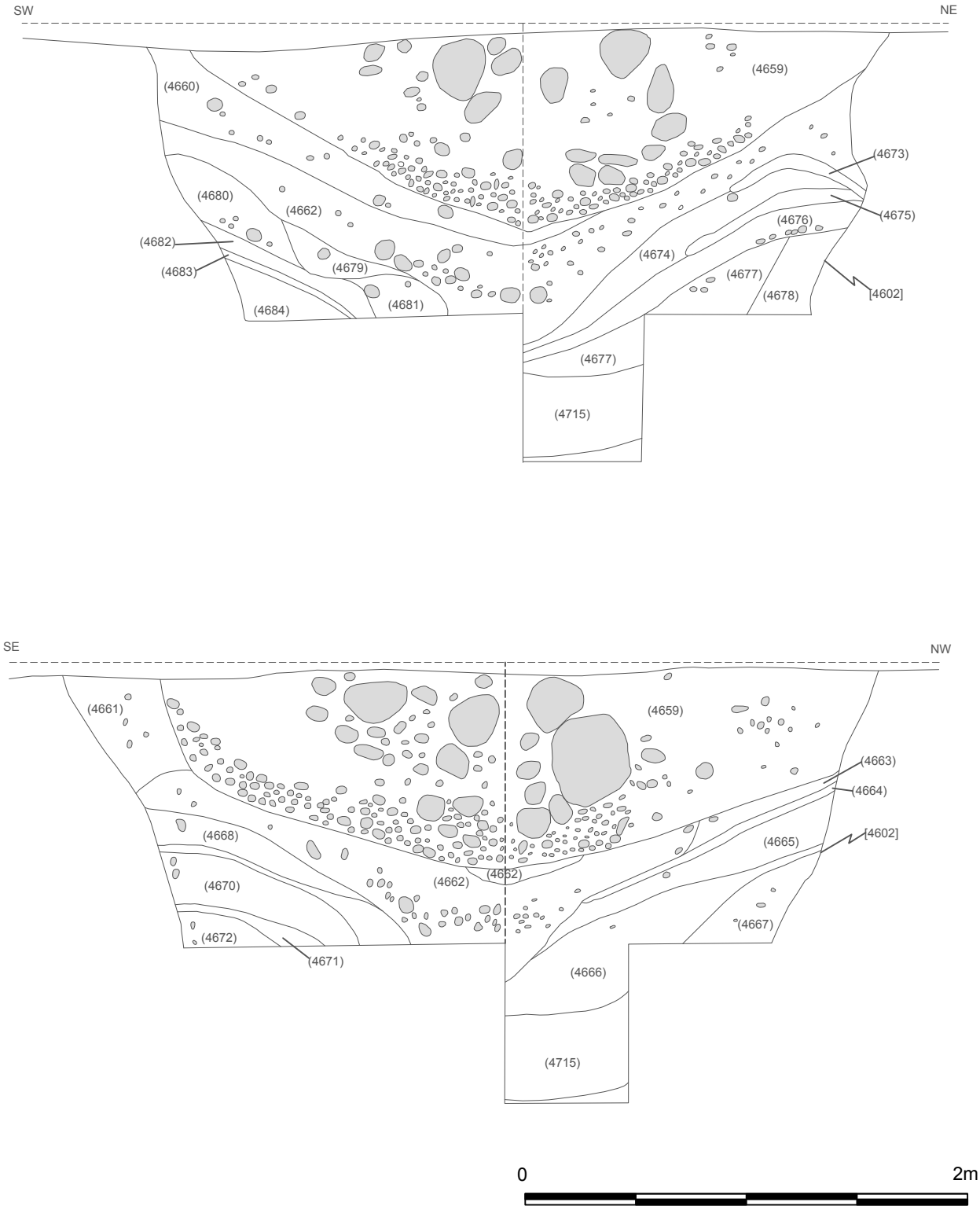
Figure 46. South-east facing section of pit F4506 (scale = 0.5m graduations).

Figure 47. Overview of pit F4602 (scale=0.5m graduations).

Figure 48. North-west facing section through pit F4602 (scale = 0.5m graduations).

Figure 49. North-north-east facing section of pit F4602 (scale = 0.5m graduations).



Site Name: Lochinver Quarry
Date: August 2019
Drawn by: MG
Scale:1:50 at A3

Figure 50. Sections through pit F4602.

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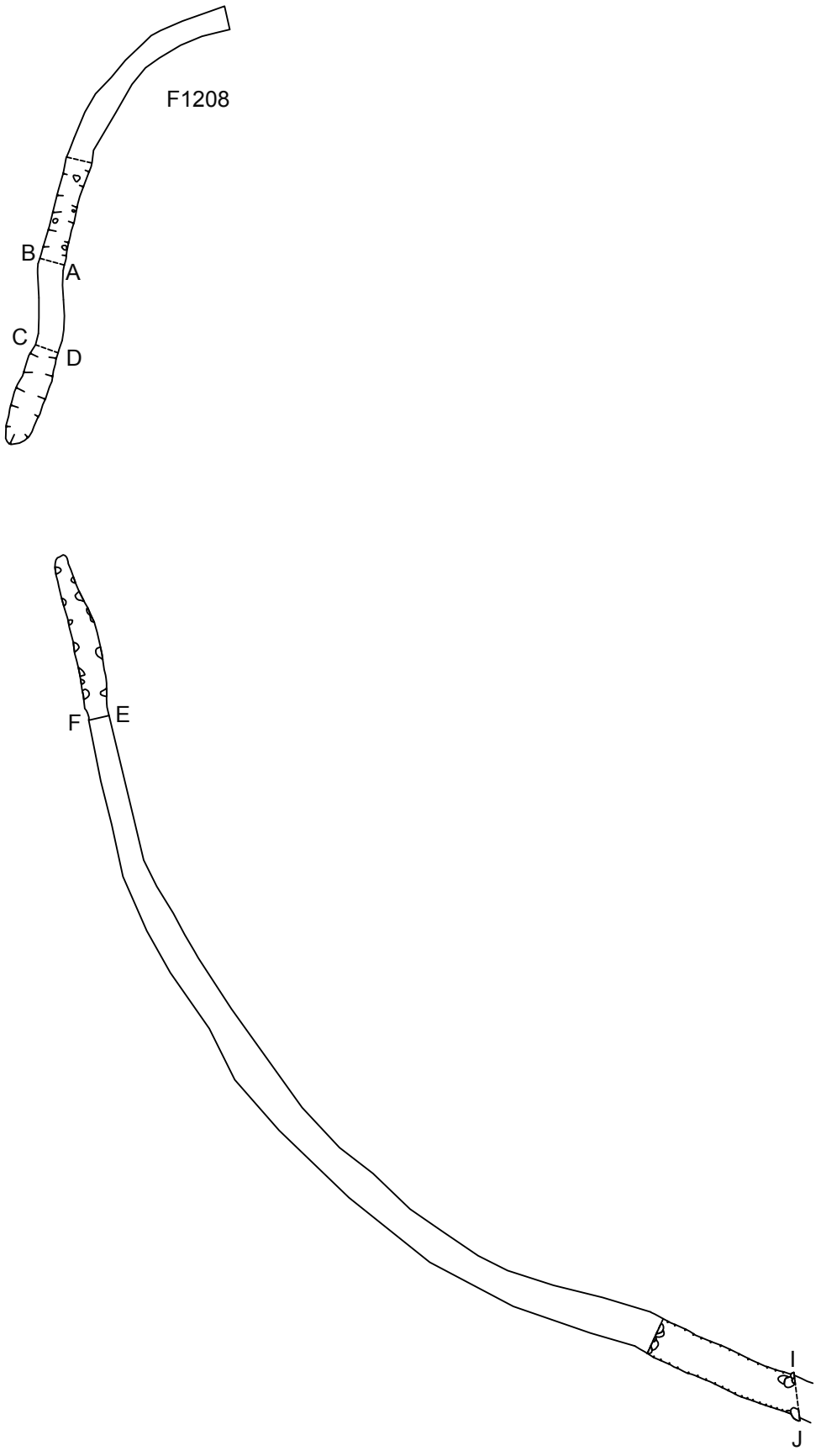
Figure 51. Palisaded enclosure F1209, looking north (scale = 0.5m graduations).



Site Name: Lochinver Quarry
Date: August 2019
Drawn by: PH
Scale: Plan at 1:75
Sections at 1:20 at A3

Figure 52. Plans and sections of palisaded enclosure F1209.

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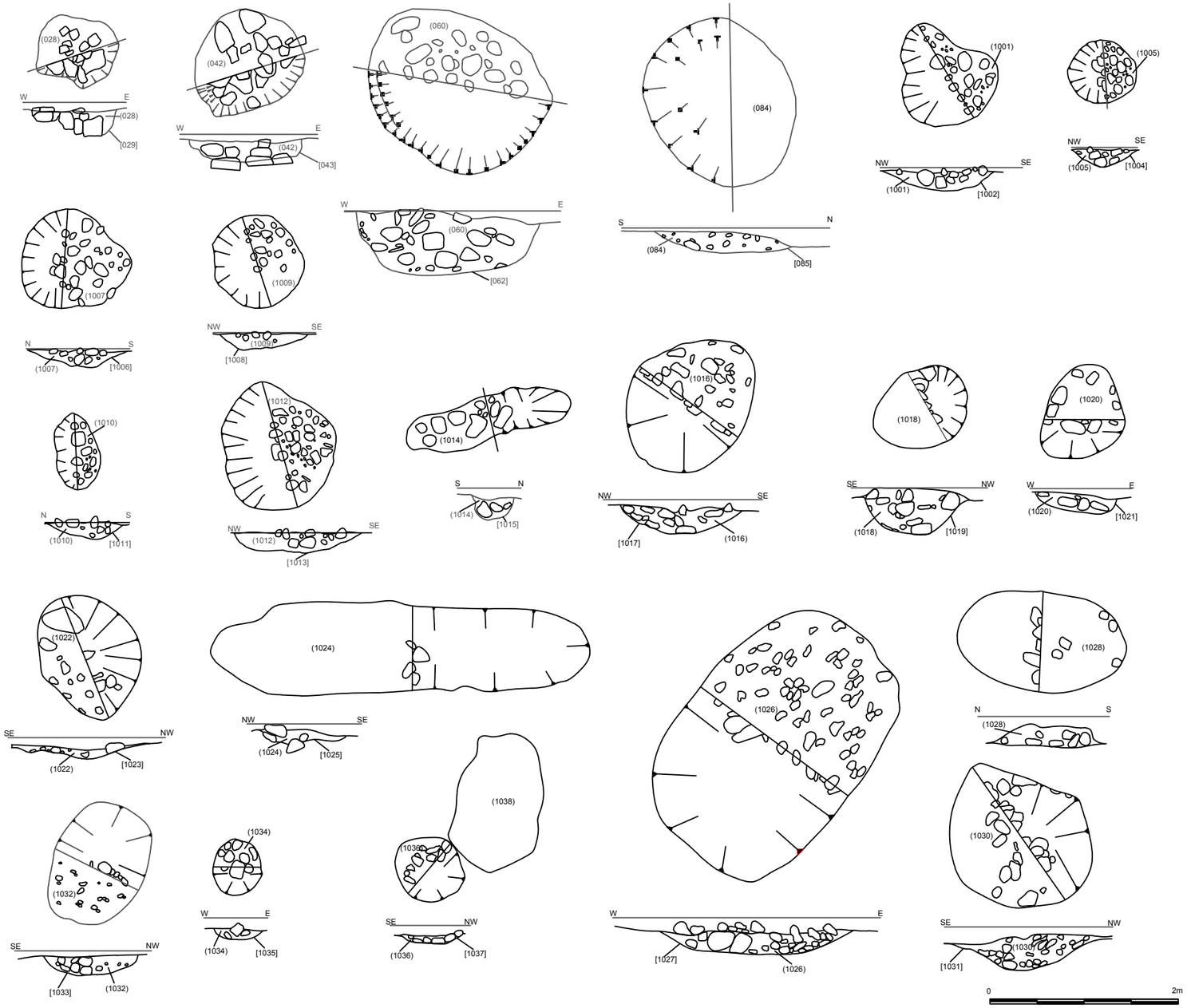

Site Name: Lochinver Quarry
Date: August 2019
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Scale: 1:50 at A3

Figure 53. Plans and sections of stone-filled pits (Part 1).

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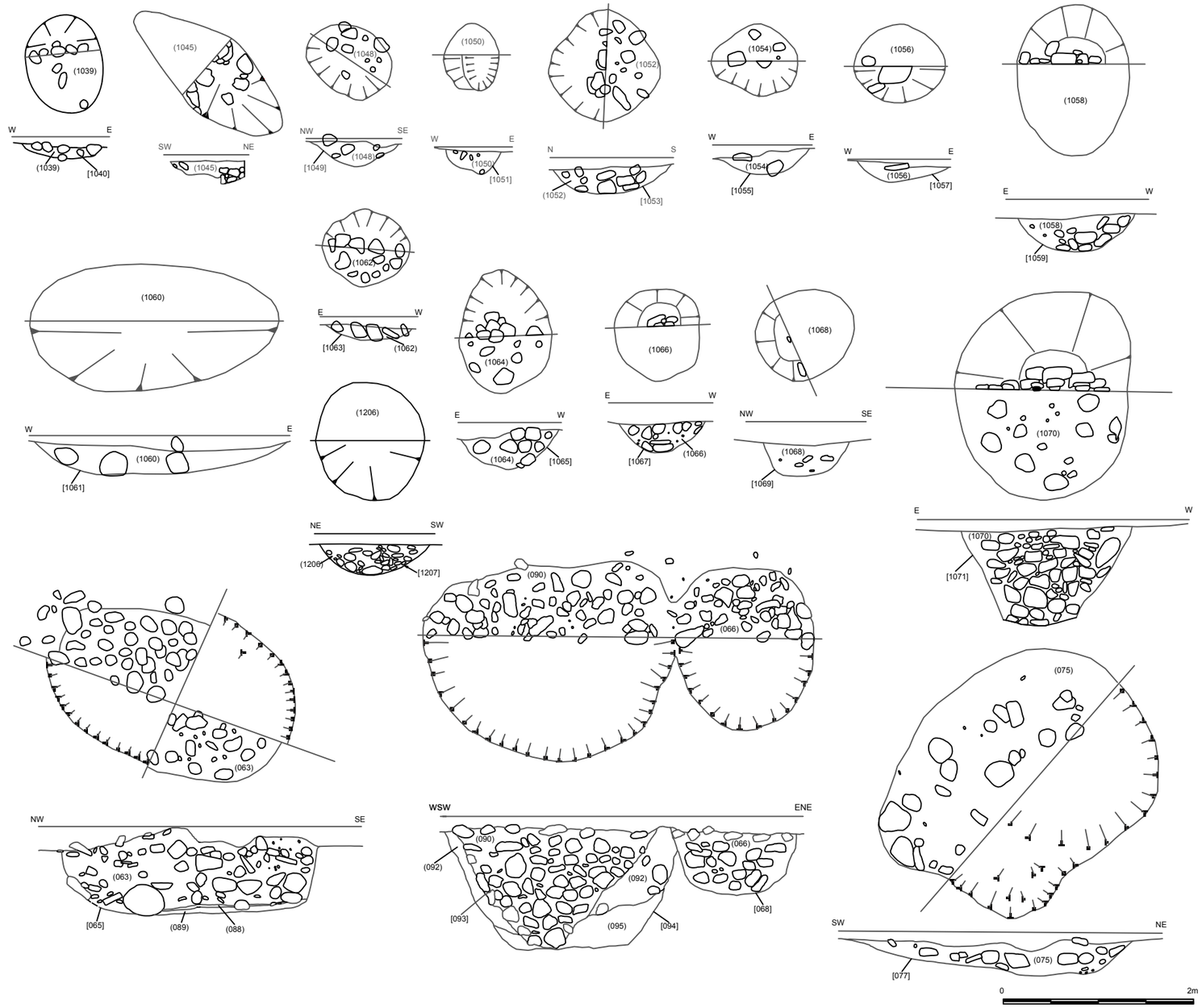

Figure 54. Plans and sections of stone-filled pits (Part 2).

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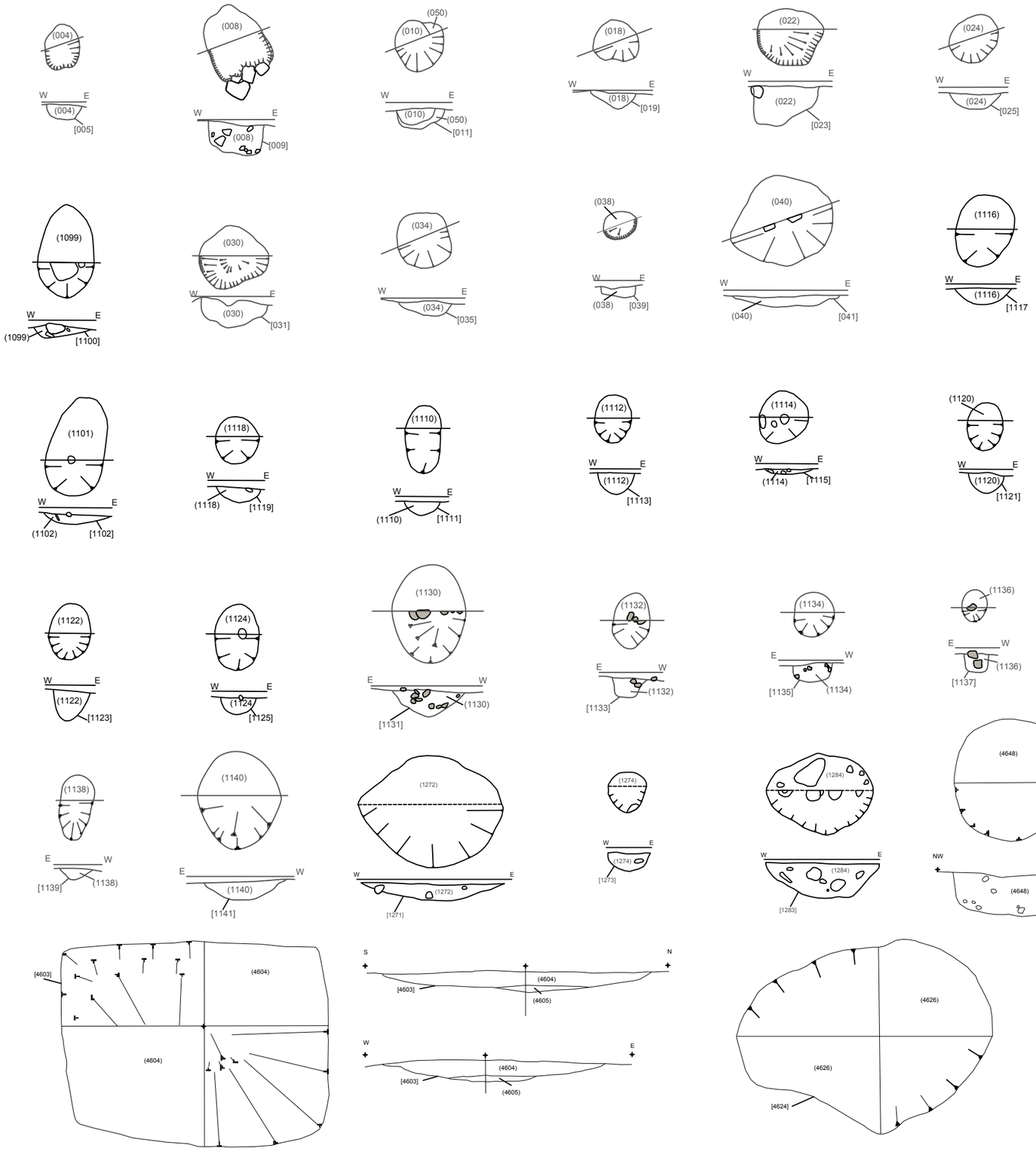
Figure 55. Pit F063 looking south-west (scale = 0.5m graduations).

Figure 56. Pit F1070 looking south (scale = 0.5m graduations).

Figure 57. F1045, a deposit of heat-affected sand, looking north-north-west (scale = 0.5m graduations).



Site Name: Lochinver Quarry
Date: August 2019
Drawn by: PH
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Figure 58. Plans and sections of pits without stony fill.

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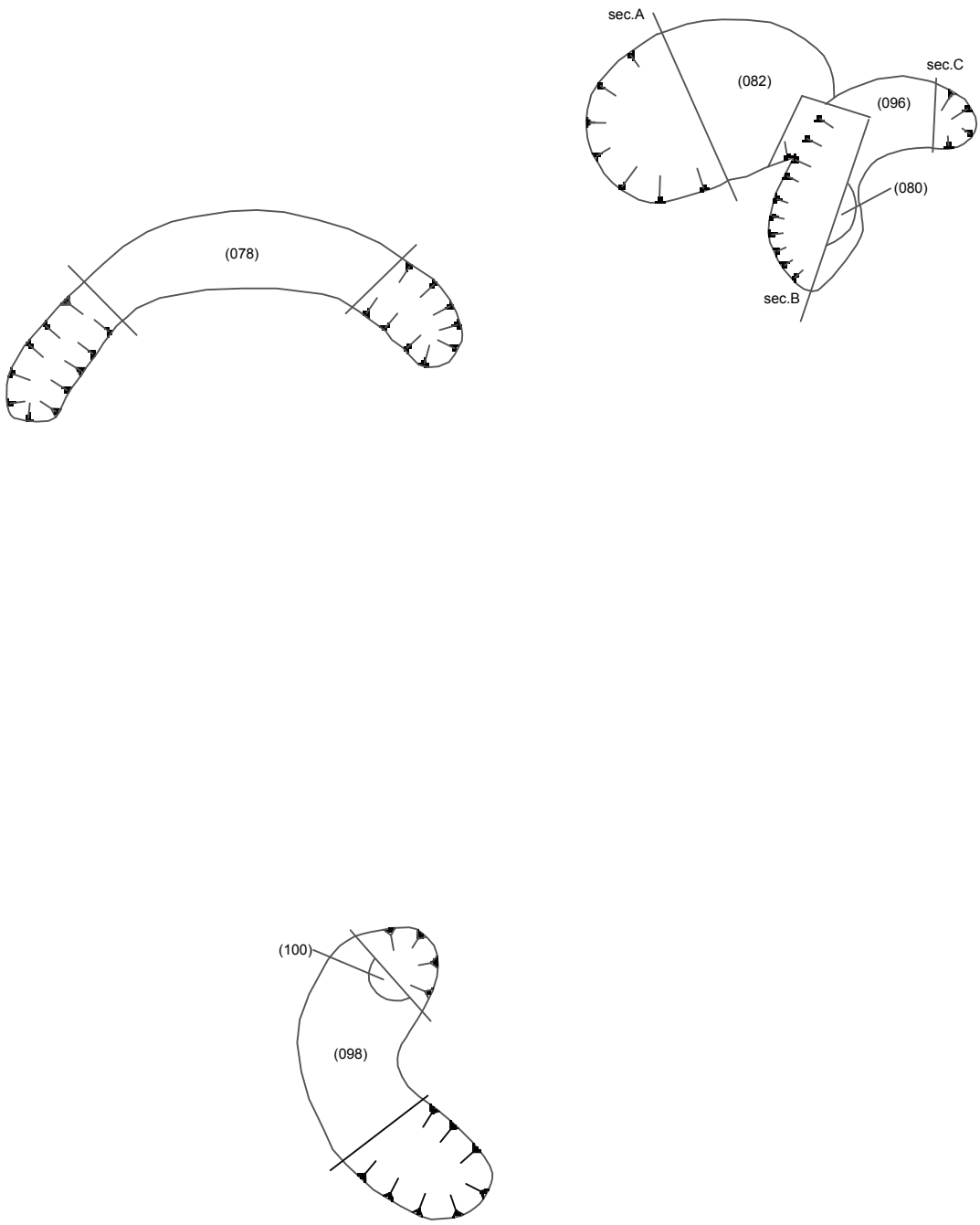
Figure 59. Pit F1126, a possible post or stone setting (scale = 0.5m graduations).



Site Name: Lochinver Quarry
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Figure 60. Plans and sections of kidney-shaped pit features and associated arcing gully.

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Figure 61. South-west facing section through pit F082 with kidney-shaped pit F096 visible in the background (scale = 0.5m graduations).

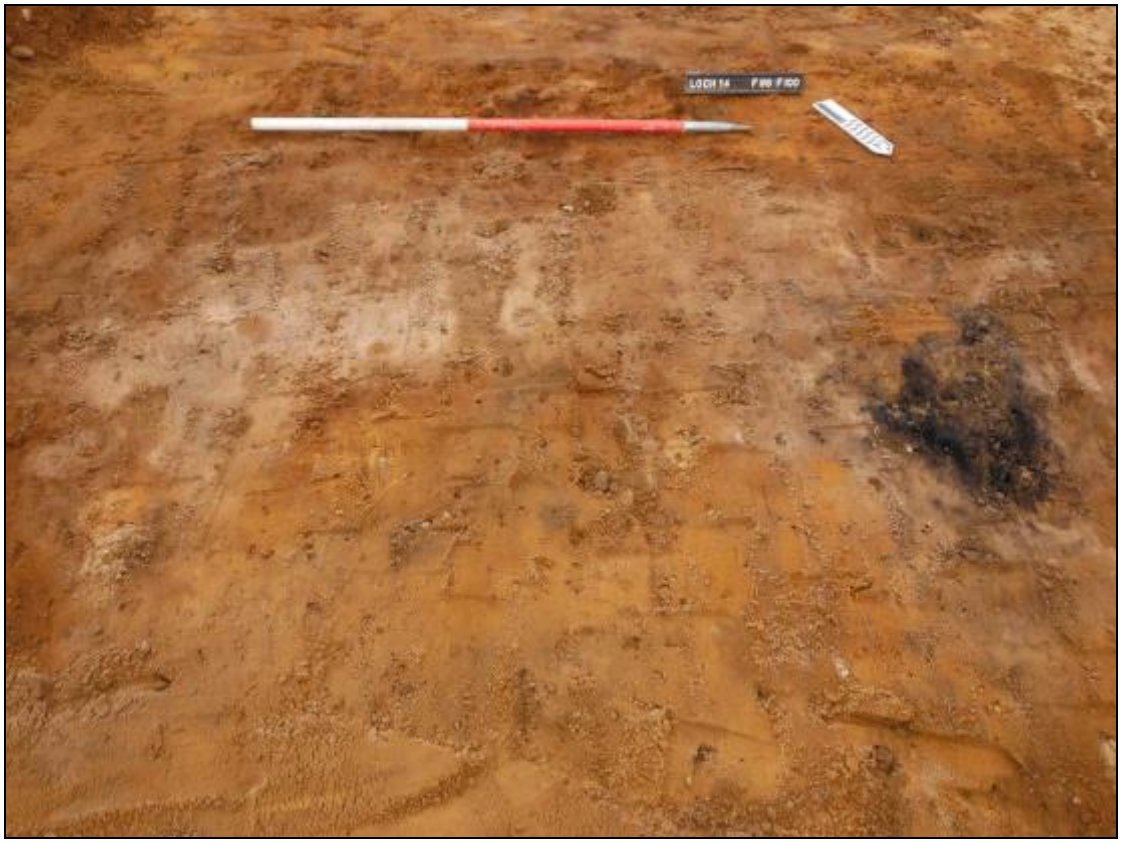


Figure 62. Pre-excavation photograph of kidney-shaped pit F098 and post-pipe F100 (scale = 0.5m graduations).

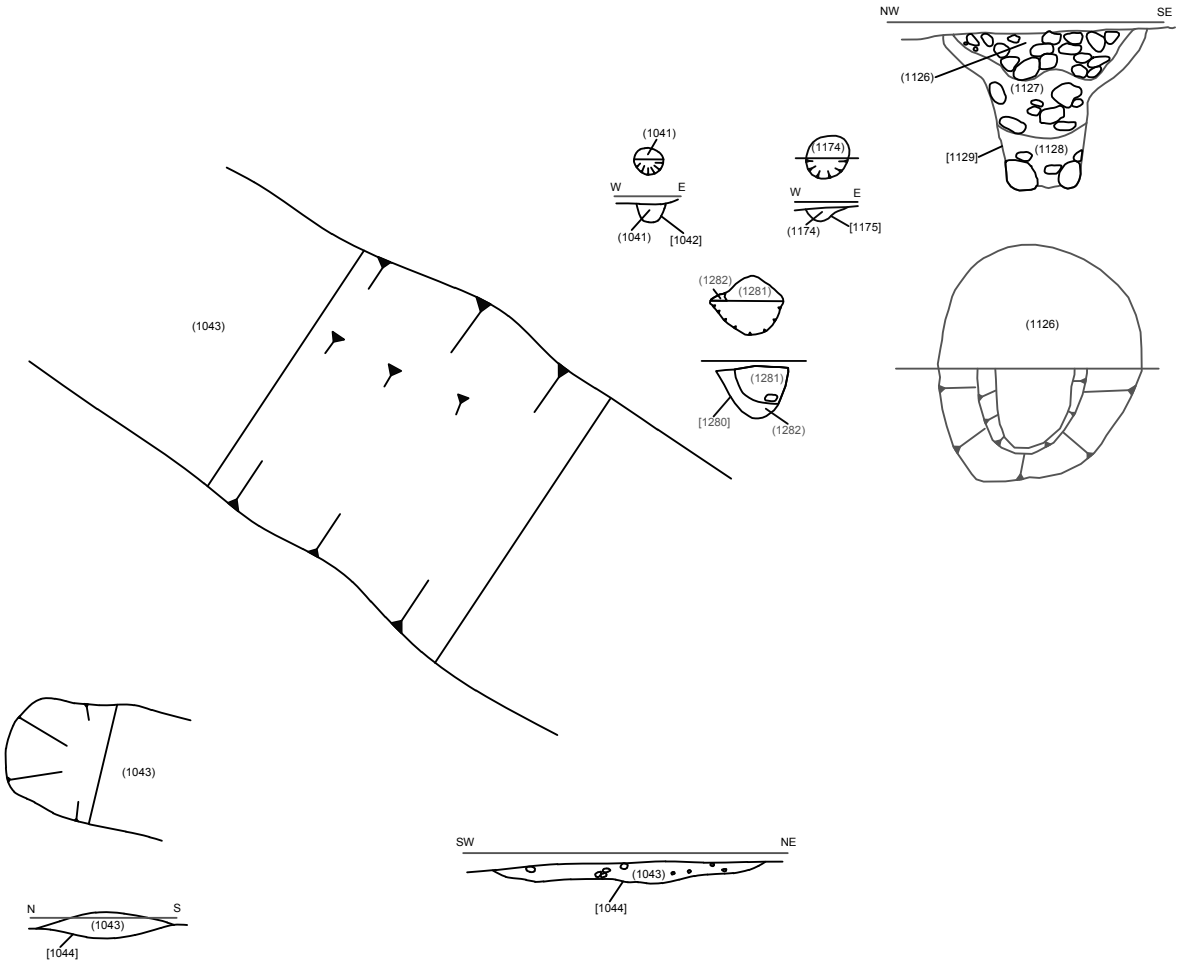
Figure 63. North-east facing section through kidney-shaped pit terminus F098 and potential post-pipe F100 (scale = 0.5m graduations).

Figure 64. Arcing gully feature F078, looking north-west (scale = 0.5m graduations).

Figure 65. Kidney-shaped pit feature F078, looking north-east (scale = 0.5m graduations).

Figure 66. Posthole F1041, looking north (scale = 0.5m graduations).

Figure 67. Linear ditch F1043 looking north-west (scale = 0.5m graduations).



Site Name: Lochinver Quarry
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Scale: 1:50 at A4

Figure 68. Plans and sections of ditch F1043 and postholes F1041, F1128, F1174, F1281.

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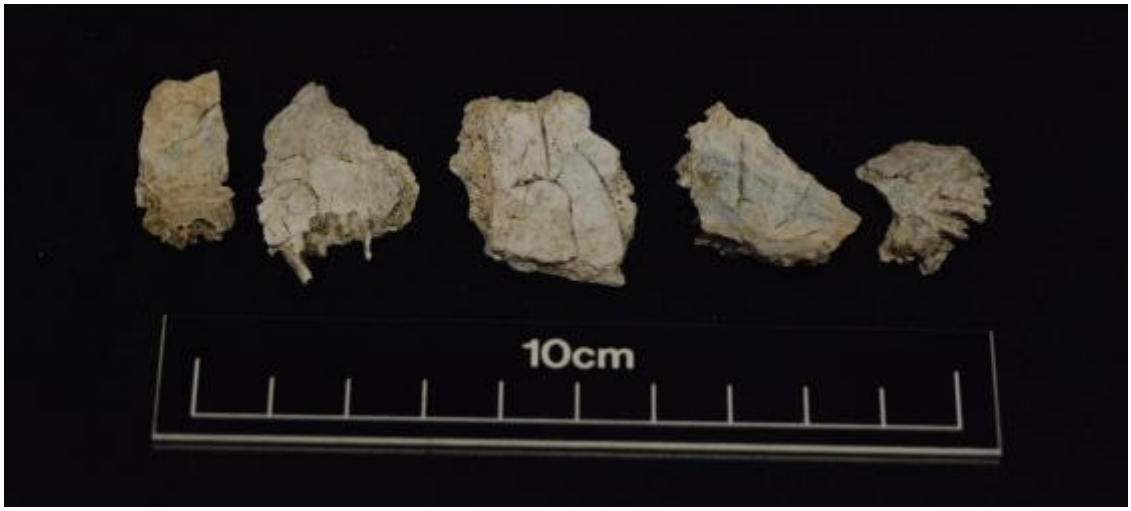

Figure 69. Bone from Cremation 1 showing green staining.

Figure 70. Tap slag from context 048 showing charcoal impression (scale = 7cm).

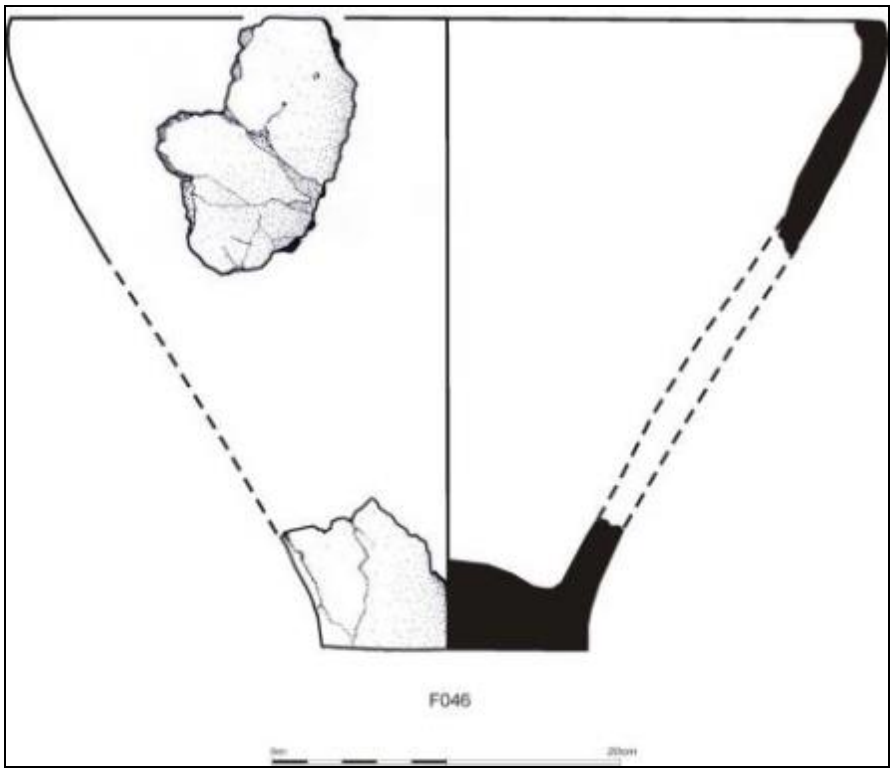

Figure 71. Illustration of pottery vessel from F046 (scale = 20cm).

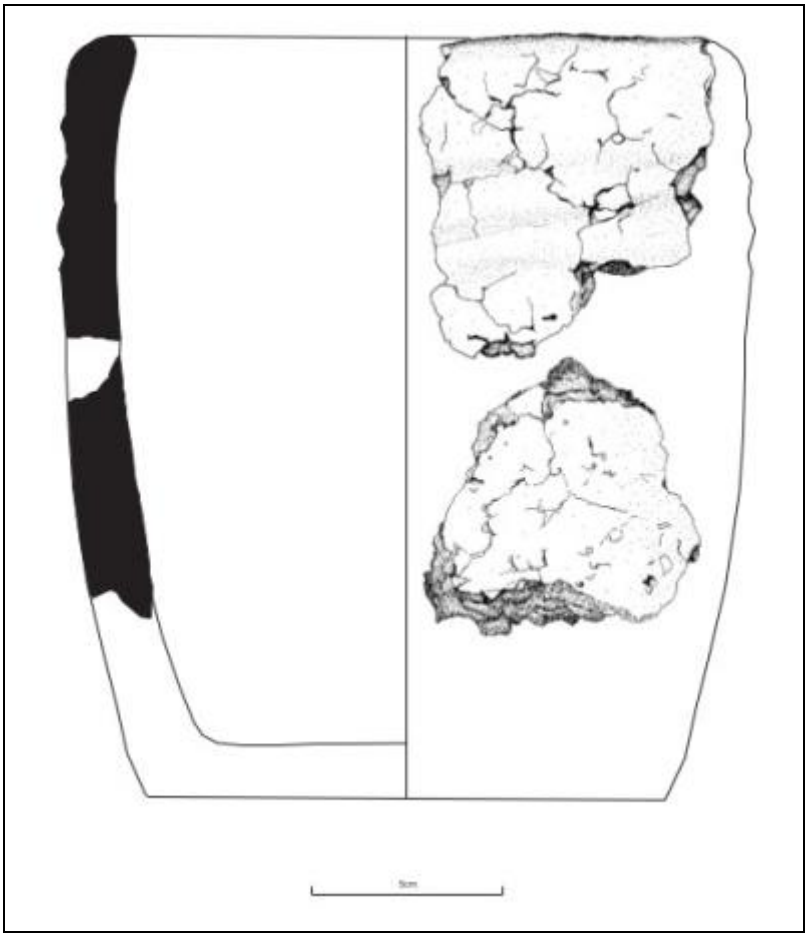

Figure 72. Illustration of Urn 2 (scale = 5cm).

Figure 73. Rim and neck sherds from Urn 1 (scale = 10 mm graduations). The conjoined rim sherds in the top left indicate the plain and upright nature of the neck and rim.

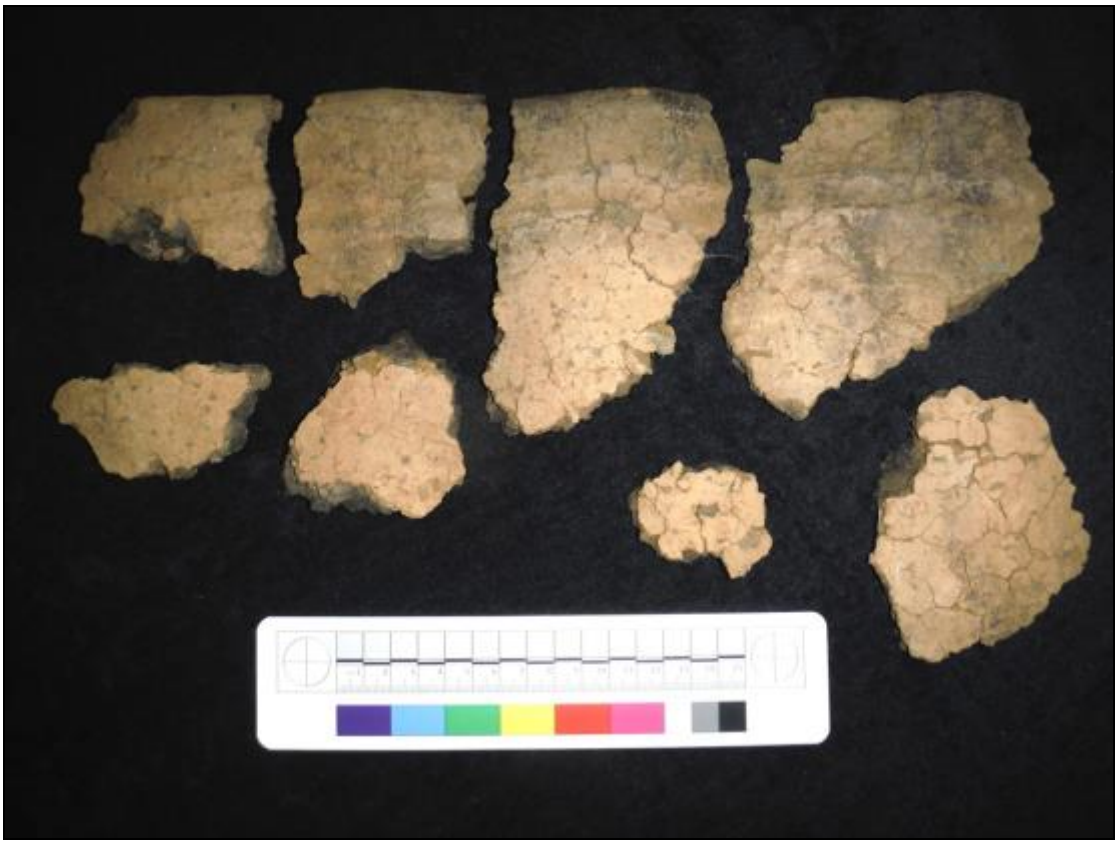

Figure 74. Rim and neck sherds from Urn 2 with the two subtle parallel cordons visible on the top row of sherds (scale = 10 mm graduations).

Figure 75. Rim and neck sherds from Urn 3 indicating an upright neck and rim of an otherwise plain vessel (scale = 10 mm graduations).

Figure 76. Body sherds (find no. 11) from a coarseware vessel (scale = 1cm graduations).

Figure 77. Rim sherd (find no. 14) from a Flat Rimmed Ware vessel with rim at the top (scale = 1cm graduations).

Figure 78. Body sherds (find no. 13) from a well-made coarseware vessel with mica on its external surface giving a sparkling effect (scale = 1cm graduations).

Figure 79. Four fired clay objects recovered from the fill of pit feature F020 (scale = 1cm graduations).

Figure 80. Preserved bark fragments from context (046) (scale = 1cm graduations).

Figure 81. Hordeum vulgare grains showing the characteristic 'twisted' form of the grain. Magnification at x40, squares in the background represent 1mm size.

APPENDIX II - REGISTERS

Context Register

CONTEXT NO.	DESCRIPTION
1	Topsoil
2	Sand and gravel
3	VOID
4	Fill of small pit
5	Cut of small pit F004
6	VOID
7	VOID
8	Fill of medium pit
9	Cut of medium pit F008
10	Fill of small circular pit
11	Cut of small circular pit F010
12	VOID
13	VOID
14	VOID
15	VOID
16	VOID
17	VOID
18	Fill of small circular pit
19	Cut of small circular pit F018
20	Fill of pit
21	Cut of pit F020
22	Fill of small pit
23	Cut of small pit F022
24	Fill of small pit
25	Cut of small pit F024
26	VOID
27	VOID
28	Fill of stony pit
29	Cut of stony pit F028
30	Fill of stony pit
31	Cut of stony pit F030
32	VOID
33	VOID
34	Fill of small pit
35	Cut of small pit F034
36	VOID
37	VOID
38	Fill of small pit
39	Cut of small pit F038
40	Fill of large pit
41	Cut of large pit F040
42	Fill of large stony pit
43	Cut of large stony pit F042
44	VOID
45	VOID
46	Fill of pit
47	Cut of pit F046
48	Black fill of hearth 1 F048
49	Shallow cut of hearth 1 F048

50	Primary fill of F010
51	Clay structure of hearth 1
52	Black fill of hearth 2 F052
53	Clay structure of hearth 2
54	Shallow cut of F052
55	Black deposit. Possible ghost of hearth 3 F055
56	Shallow cut of F055
57	Primary fill of F052
58	VOID
59	VOID
60	Stony fill of pit F060
61	VOID
62	Cut of Pit F060
63	Stony fill of pit F063
64	VOID
65	Cut of Pit F063
66	Stony fill of pit F066
67	VOID
68	Cut of pit F066
69	VOID
70	VOID
71	VOID
72	VOID
73	VOID
74	VOID
75	Silty fill of pit F075
76	VOID
77	Cut of pit F075
78	Silty fill of arcing gully F078
79	Cut of arcing gully F078
80	Fill of postpipe F080
81	VOID
82	Fill of pit F082
83	Cut of pit F082
84	Fill of pit F084
85	Cut of pit F084
86	VOID
87	VOID
88	Dark silty deposit near base of pit F063
89	Re-deposited natural at the base of pit F063
90	Stony silt deposit in pit F093
91	VOID
92	Upper silt deposit in pit F092
93	Cut of pit F090
94	Cut of pit F092
95	Primary fill of pit F092
96	Fill of kidney-shaped pit F096
97	Cut of kidney-shaped pit F096
98	Fill of kidney-shaped pit F099
99	Cut of kidney-shaped pit F098

100	Silty postpipe deposit F100
1001	Secondary fill
1002	Cut of pit F1001
1003	Natural, same as (002)
1004	Cut of pit F1005
1005	Secondary fill
1006	Cut of pit F1007
1007	Secondary fill
1008	Cut of pit F1009
1009	Secondary fill
1010	Secondary fill
1011	Cut of pit F1010
1012	Secondary fill
1013	Cut of pit F1012
1014	Fill of pit
1015	Cut of F1014
1016	Fill of oval stone-filled pit
1017	Cut of F1016
1018	Fill of circular stone-filled pit
1019	Cut of F1018
1020	Fill of circular stone-filled pit
1021	Cut of F1020
1022	Fill of shallow oval pit
1023	Cut of F1022
1024	Fill of elongated feature
1025	Cut of F1024
1026	Fill of large circular pit
1027	Cut of F1026
1028	Fill of stone-filled pit
1029	Cut of F1028
1030	Fill of stone-filled pit
1031	Cut of F1030
1032	Fill of circular pit
1033	Cut of F1032
1034	Fill of small stone-filled pit
1035	Cut of F1034
1036	Fill of circular shallow stone-filled pit
1037	Cut of F1036
1038	Red staining adjacent to F1036
1039	Fill of small stone-filled pit
1040	Cut of F1039
1041	Fill of posthole
1042	Cut of F1041
1043	Fill of shallow linear ditch
1044	Cut of F1043
1045	Stony deposit
1046	VOID
1047	Cut of F1046
1048	Fill of pit

1049	Cut of F1048
1050	Fill of pit
1051	Cut of F1050
1052	Fill of pit
1053	Cut of F1052
1054	Fill of pit
1055	Cut of F1054
1056	Fill of pit
1057	Cut of F1054
1058	Fill of pit
1059	Cut of F1058
1060	Fill of pit
1061	Cut of F1060
1062	Fill of pit
1063	Cut of F1062
1064	Fill of pit
1065	Cut of F1064
1066	Fill of pit
1067	Cut of F1066
1068	Fill of pit
1069	Cut of F1068
1070	Fill of pit
1071	Cut of F1070
1072	Fill of pit at entrance to enclosure
1073	Cut of F1073
1074	Fill of large pit within enclosure
1075	Cut of F1074
1076	Dark fill of pit within enclosure
1077	Cut of F1076
1078	Upper fill of pit within enclosure
1079	Primary fill of F1078
1080	Cut of F1078
1081	Fill of possible tree throw
1082	Cut of F1081
1083	Fill of pit within enclosure
1084	Cut of F1083
1085	Fill of pit within enclosure
1086	Cut of F1085
1087	Fill of pit within enclosure
1088	Cut of F1087
1089	Fill of pit within enclosure
1090	Cut of F1089
1091	Fill of small pit within enclosure
1092	Cut of F1091
1093	Fill of pit within enclosure
1094	Secondary darker layer within F1093
1095	Primary fill of F1093
1096	Cut of F1093
1097	Fill of palisade slot

1098	Cut of palisade slot F1097
1099	Fill of pit
1100	Cut of F1099
1101	Fill of pit
1102	Cut of F1101
1103	Area of orange heat-affected sand
1104	Fill of cremation 1 pit
1105	Cut of F1104
1106	Fill of cremation 2 pit
1107	Cut of F1106
1108	Fill of cremation 3 pit
1109	Cut of F1108
1110	Fill of pit
1111	Cut of F1110
1112	Fill of pit
1113	Cut of F1112
1114	Fill of pit
1115	Cut of F1114
1116	Fill of pit
1117	Cut of F1116
1118	Fill of pit
1119	Cut of F1118
1120	Fill of pit
1121	Cut of F1120
1122	Fill of pit
1123	Cut of F1122
1124	Fill of pit
1125	Cut of F1124
1126	Fill of pit
1127	Secondary fill of pit F1126
1128	Primary fill of pit F1126
1129	Cut of F1126
1130	Fill of pit
1131	Cut of F1130
1132	Fill of pit
1133	Cut of F1132
1134	Fill of pit
1135	Cut of F1134
1136	Fill of pit
1137	Cut of F1136
1138	Fill of pit
1139	Cut of F1138
1140	Fill of pit
1141	Cut of F1140
1142	Cremation 1 material
1143	Cremation 2 material
1144	Cremation 3 material
1145	Fill of small posthole within RH1
1146	Cut of F1145

1147	Fill of post pad within RH1
1148	Cut of F1147
1149	Upper fill of posthole within RH1
1150	Primary fill of posthole within RH1
1151	Cut of F1149
1152	Fill of postpipe within posthole within RH1
1153	Primary fill of posthole within RH1
1154	Cut of F1152
1155	Fill of posthole within RH1
1156	Cut of F1155
1157	Fill of posthole within RH1
1158	Cut of F1157
1159	Fill of posthole within RH1
1160	Cut of F1159
1161	Fill of posthole within RH1
1162	Cut of F1161
1163	Fill of posthole within RH1
1164	Cut of F1163
1165	Fill of posthole within RH1
1166	Cut of F1165
1167	Fill of posthole within RH1
1168	Cut of F1167
1169	Fill of posthole within RH1
1170	Cut of F1169
1171	Upper fill of pit within RH1
1172	Primary fill of pit within RH1
1173	Cut of pit F1171
1174	Fill of isolated posthole
1175	Cut of F1174
1176	Fill of posthole within RH2
1177	Cut of F1176
1178	Fill of posthole within RH2
1179	Cut of F1178
1180	Fill of posthole within RH2
1181	Cut of F1180
1182	Fill of posthole within RH2
1183	Cut of F1182
1184	Fill of stone-filled pit within pit cluster
1185	Fill of posthole within RH2
1186	Cut of F1185
1187	Fill of large pit within RH2
1188	Cut of F1187
1189	Fill of posthole within RH2
1190	Cut of F1189
1191	Sandy fill within pit F1184
1192	Charcoal fill of pit F1184
1193	Sandy fill within pit F1184
1194	Charcoal fill of pit F1184
1195	Cut of pit F1184

1196	Fill of posthole within RH2
1197	Cut of F1196
1198	Fill of pit
1199	Cut of F1198
1200	Fill of pit adjacent to RH2
1201	Cut of F1200
1202	Fill of pit within pit cluster
1203	Cut of F1202
1204	Fill of pit adjacent to RH2
1205	Cut of F1204
1206	Fill of pit
1207	Cut of F1206
4505	Topsoil
4506	Subsoil
4507	Natural
4508	Void
4509	Void
4510	Group Number Post built animal enclosure
4511	Group Number Post built animal enclosure
4512	Group Number Post built roundhouse
4513	Group Number ring ditch
4514	Fill of Post Pit within Group 4560
4515	Cut of F4514
4516	Fill of Post Pit within Group 4560
4517	Cut of F4516
4518	Fill of Post Pit within Group 4560
4519	Cut of F4518
4520	Fill of Post Pit within Group 4560
4521	Cut of F4520
4522	Fill of Post Pit within Group 4560
4523	Cut of F4522
4524	Fill pit in Group 4510
4525	Cut of F4524
4526	Fill of Posthole within Group 4510
4527	Cut of F4526
4528	Fill of Posthole within Group 4510
4529	Cut of F4528
4530	Cut of F4531
4531	Fill of Post Pit within Group 4560
4532	Cut of F4533
4533	Fill of Post Pit within Group 4560
4534	Fill of Posthole within Group 4510
4535	Cut of F4534
4536	Fill of Posthole within Group 4510
4537	Cut of F4536
4538	Cut of F4538
4539	Fill of Stake hole in Group 4511
4540	Cut of F4541
4541	Fill of Stake hole in Group 4511

4542	Cut of F4543
4543	Fill of Stake hole in Group 4511
4544	Cut of F4545
4545	Fill of Stake hole in group 4511
4546	Cut of F4547
4547	Fill of Stake hole in Group 4511
4548	Cut of F4549
4549	Fill of Posthole in Group 4511
4550	Cut of F4551
4551	Fill of Posthole in Group 4511
4552	Cut of F4553
4553	Fill of Posthole in Group 4511
4554	Cut of F4555
4555	Fill of Posthole in Group 4511
4556	Cut of F4557
4557	Fill of Stake hole in Group 4511
4558	Cut of F4559
4559	Fill of Stake hole in Group 4511
4560	Group Number Timber built rectangular building
4561	Cut of F4634
4562	Cut of F4636
4563	Cut of F4639
4564	Cut of F4640
4565	Cut of F4751
4566	Cut of F4752
4567	Cut of F4753
4568	Cut of F4755
4569	Cut of F4756
4570	Cut of F4757
4571	Cut of F4740
4572	Cut of F4573
4573	Fill of Stake hole in Group 4511
4574	Cut of F4575
4575	Fill of Posthole in Group 4511
4576	Cut of F4576
4577	Fill of Posthole in Group 4511
4578	Cut of F4579
4579	Fill of Pit within Group 4510
4580	Cut of F4581
4581	Fill of Posthole in Group 4510
4582	Cut of F4583
4583	Fill of Posthole in Group 4510
4584	Cut of F4585
4585	Fill of Posthole in Group 4510
4586	Cut of F4587
4587	Fill of Posthole in Group 4510
4588	Cut of F4589
4589	Fill of Posthole in Group 4511
4590	Cut of F4589

4591	Fill of Posthole in Group 4511
4592	Group Number for Timber post built building
4593	Cut of F4748
4594	Cut of F4768
4595	Cut of F4638
4596	Cut of F4637
4597	Cut of F4635
4598	Cut of F4633
4599	Cut of F4632
4600	Cut of F4631
4601	Cut of F4630
4602	Cut of F4659
4603	Cut of F4604
4604	Upper Fill of Pit
4605	Lower fill of Pit
4606	Cut of F4607
4607	Fill of Large IA Pit
4608	Cut of F4609
4609	Fill of Pit
4610	Cut of F4611
4611	Fill of Pit
4612	Cut of F4613
4613	Fill of terminus in Group 4513
4614	Cut of F4615
4615	Fill of ditch in Group 4513
4616	Cut of F4617
4617	Fill of ditch in Group 4513
4618	Cut of F4619
4619	Fill of ditch in Group 4513
4620	Cut of F4621
4621	Fill of ditch in Group 4513
4622	Cut of F4623
4623	Fill of ditch in Group 4513
4624	Cut of F4625
4625	Upper fill of Pit
4626	Lower fill of Pit
4627	Void
4628	Fill of Post pit with in Group 4560
4629	Fill of Post pit with in Group 4560
4630	Fill of Post pit with in Group 4592
4631	Fill of Post pit with in Group 4592
4632	Fill of Post pit with in Group 4592
4633	Fill of Post pit with in Group 4592
4634	Fill of Post Pit with in Group 4560
4635	Fill of Post pit with in Group 4592
4636	Fill of Post pit with in Group 4560
4637	Fill of Post pit with in Group 4592
4638	Fill of Post pit with in Group 4592
4639	Fill of Post pit with in Group 4560

4640	Post pipe within F4641
4641	Fill of Post pit in Group 4592
4642	Post pipe within F4643
4643	Fill of Post Pit in Group 4592
4644	Fill of Post pit with in Group 4560
4645	Cut of F4646
4646	Fill of ditch in Group 4513
4647	Cut of F4648
4648	Fill of Pit
4649	Cut of F4650
4650	Fill of rectangular pit
4651	Cut of F4652
4652	Fill of ditch in Group 4513
4653	Cut of F4654
4654	Fill of ditch in Group 4513
4655	Cut of F4656
4656	Fill of ditch in Group 4513
4657	Cut of F4658
4658	Fill of ditch in Group 4513
4659	Primary Fill of large pit/waterhole
4660	Secondary Fill of large pit/waterhole
4661	Secondary Fill of large pit/waterhole
4662	Secondary Fill of large pit/waterhole
4663	Secondary Fill of large pit/waterhole
4664	Secondary Fill of large pit/waterhole
4665	Secondary Fill of large pit/waterhole
4666	Secondary Fill of large pit/waterhole
4667	Secondary Fill of large pit/waterhole
4668	Secondary Fill of large pit/waterhole
4669	Secondary Fill of large pit/waterhole
4670	Secondary Fill of large pit/waterhole
4671	Secondary Fill of large pit/waterhole
4672	Secondary Fill of large pit/waterhole
4673	Secondary Fill of large pit/waterhole
4674	Secondary Fill of large pit/waterhole
4675	Secondary Fill of large pit/waterhole
4676	Secondary Fill of large pit/waterhole
4677	Secondary Fill of large pit/waterhole
4678	Secondary Fill of large pit/waterhole
4679	Secondary Fill of large pit/waterhole
4680	Secondary Fill of large pit/waterhole
4681	Secondary Fill of large pit/waterhole
4682	Secondary Fill of large pit/waterhole
4683	Secondary Fill of large pit/waterhole
4684	Secondary Fill of large pit/waterhole
4685	Cut of F4686
4686	Fill of Posthole in Group 4692
4687	Cut of F4688
4688	Fill of Posthole in Group 4692

4689	Post pipe in F4688
4690	Cut of F4691
4691	Fill of Posthole in group 4692
4692	Group of three postholes
4693	Cut of F4694
4694	Fill of Pit in Group 4512
4695	Cut of F4696
4696	Fill of Posthole in Group 4512
4697	Cut of F4698
4698	Fill of Posthole in Group 4512
4699	Cut of F4700
4700	Fill of Pit in Group 4512
4701	Cut of F4702
4702	Fill of Posthole in Group 4512
4703	Cut of F4704
4704	Fill of Posthole in Group 4512
4705	Cut of F4706
4706	Fill of Pit in Group 4512
4707	Cut of F4708
4708	Fill of Posthole in Group 4512
4709	Cut of F4710
4710	Fill of Posthole in Group 4512
4711	Cut of F4712
4712	Fill of Posthole in Group 4512
4713	Cut of F4714
4714	Fill of Posthole in Group 4512
4715	Secondary fill of F4659 in Group 4512
4716	Cut of F4717
4717	Fill of Post hole in Group 4513
4718	Cut of F4719
4719	Fill of individual posthole
4720	Cut of F4721
4721	Fill of Pit
4722	Cut of F4723
4723	Fill of Posthole in Group 4512
4724	Cut of F4725
4725	Fill of Posthole in Group 4512
4726	Cut of F4727
4727	Fill of Pit in Group 4512
4728	Cut of F4729
4729	Fill of Posthole in Group 4512
4730	Cut of F4731
4731	Fill of Posthole in Group 4512
4732	Cut of F4733
4733	Fill of Posthole in Group 4512
4734	Cut of F4735
4735	Primary Fill of Posthole in Group 4512
4736	Cut of F4737
4737	Primary Fill of Posthole in Group 4512

4738	Cut of F4739
4739	Primary Fill of Posthole in Group 4512
4740	Fill of post Pit in Group 4560
4741	Fill of Post Pit in Group 4560
4742	Cut of F4743
4743	Fill of Posthole in Group 4512
4744	Cut of F4745
4745	Fill of Posthole in group 4512
4746	Cut of F4747
4747	Fill of Posthole in Group 4512
4748	Fill of Post Pit in Group 4592
4749	Fill of Post Pit in Group 4560
4750	Fill of Posthole in Group 4512
4751	Fill of Post Pit in Group 4560
4752	Fill of Post Pit in Group 4560
4753	Fill of Post Pit in Group 4560
4754	Packing within Post pit in Group 4560
4755	Post Pipe within Post pit in Group 4560
4756	Fill of Post pit in Group 4560
4757	Fill of Post pit in Group 4560
4758	Void
4759	Fill of Posthole in Group 4512
4760	Fill of Posthole in Group 4512
4761	Secondary Fill of Posthole F4734 in Group 4512
4762	Secondary Fill of Posthole F4734 in Group 4512
4763	Secondary Fill of Posthole F4736 in Group 4512
4764	Secondary Fill of Posthole F4736 in Group 4512
4765	Secondary Fill of Posthole F4739 in Group 4512
4766	Secondary Fill of Posthole F4739 in Group 4512
4767	Fill of Posthole F4708 in Group 4512
4768	Fill of Post pit in Group 4592

Table 25. Context Register.

Environmental Sample Register

Sample number	Context Number	Description
1	020	Irregular pit containing unknown clay objects
2	046	Small rounded pit containing large pot. Some evidence of reddened sand around edges suggesting in-situ burning. Possible fire pit?
3	048	Fine dark black silty deposit with slag and charred wood accumulated within and against the clay structure of hearth 1 (048), (051)
4	051	A red/black fired clay structure of hearth 1, within the mouth of the base facing SE. Soot adhering to the mouth of the hearth. Slag present.
5	052	A fine grey silt fill accumulated within the mouth of collapsed hearth 2 over an earlier primary burnt fill (057). Accumulation during use/prior to collapse.
6	053	Orange/grey heat affected clay existing as a domed deposit sealing two different fills beneath. Most likely represents collapsed roof of metalworking hearth 2, although little evidence of actual use.
7	055	Deposit of black silt, possibly representing position of further metalworking hearth 3
8	057	A thin lens of very black silt accumulated against the rear of hearth 2, possibly indicating some use or sealing/baking of this hardly used hearth. Some use of hearth or fire to harden structure?
9	060	Grey/brown sandy-silt fill in stony pit F060
10	063	Grey/brown sandy-silt fill in stony pit F063
11	066	Grey/brown sandy-silt fill in stony pit F066
12	080	Charcoal rich deposit from postpipe F080
13	088	Narrow band of dark silt, containing occ. Charcoal inclusions, potentially represents a dis-use layer.
14	090	Grey/brown sandy-silt fill in stony pit cut F090
15	095	Dark silty, basal fill of stony pit F095
16	100	Charcoal rich deposit from postpipe F100
17	1001	Dark grey/brown sandy silt from pit F1001
18	1005	Dark grey/brown sandy silt fill from pit F1005
19	1007	Dark grey/brown sandy silt fill from pit F1007
20	1010	Dark grey/brown sandy silt fill from pit F1010
21	1012	Dark grey/brown sandy silt fill from pit F1012
22	1016	Mid brown sand fill of pit F1016
23	1020	Orange/brown fill of pit F1020
24	1038	Patch of red, heat-affected sand
25	1039	Orange/brown fill of pit F1039
26	1079	Fill of pit within palisade enclosure
27	1097	Fill of palisade enclosure ditch
28	1142	Cremation 1
29	1143	Cremation 2
30	1143	Cremation 2 sample
31	1144	Cremation 3
32	1149	Upper fill of posthole within RH1
33	1152	Fill of postpipe within posthole within RH1
34	1153	Primary fill of posthole within RH1
35	1145	Fill of small posthole within RH1
36	1147	Fill of post pad within RH1
37	1165	Fill of posthole within RH1
38	1167	Fill of posthole within RH1
39	1159	Fill of posthole within RH1
40	1161	Fill of posthole within RH1
41	1155	Fill of posthole within RH1

42	1157	Fill of posthole within RH1
43	1163	Fill of posthole within RH1
44	1172	Primary fill of pit within RH1
45	1150	Primary fill of posthole within RH1
46	1176	Fill of posthole within RH2
47	1178	Fill of posthole within RH2
48	1171	Upper fill of pit within RH1
49	1180	Fill of posthole within RH2
50	1182	Fill of posthole within RH2
51	1185	Fill of posthole within RH2
52	1187	Fill of large pit within RH2
53	1189	Fill of posthole within RH2
54	1196	Fill of posthole within RH2
55	1184	Fill of stone-filled pit within pit cluster
56	1191	Sandy fill within pit F1184
57	1193	Sandy fill within pit F1184
58	1194	Charcoal fill of pit F1184
59	1206	Fill of pit
60	1200	Fill of pit adjacent to RH2
61	1204	Fill of pit adjacent to RH2
62	4646	Spot sample from the Fill of Ring Ditch (Group 4513)
63	4646	Spot sample from the Fill of Ring Ditch (Group 4513)
64	4648	Bulk sample from Pit
65	4656	Spot sample from post built roundhouse
66	4607	Spot sample from Post built roundhouse
67	4541	Spot sample from Post built roundhouse
68	4554	Spot sample from Post built roundhouse
69	4556	Spot sample from Post built roundhouse
70	4607	Bulk sample from large pit
71	4740	Bulk sample from Post Built rectangular building Group 4560
72	4741	Bulk sample from Post pit within Rectangular Post built Building (Group 4560)
73	4715	Bulk sample from Possible water hole
74	4637	Bulk sample from Post pit within Rectangular Post built Building (Group 4592)
75	4691	Bulk sample from Posthole within Roundhouse (Group 4692)
76	4686	Bulk sample from Posthole within Roundhouse (Group 4692)
77	4648	Bulk sample from Posthole within Roundhouse (Group 4692)
78	4525	Bulk Sample from Pit
79	4621	Bulk sample from Ring Ditch (Group 4513)
80	4619	Bulk sample from Ring Ditch (Group 4513)
81	4604	Sample from Pit
82	4745	Sample from Posthole within Post Built Roundhouse (Group 4512)
83	4694	Sample of Pit within Group 4512
84	4549	Bulk sample of Posthole within Post Built Roundhouse (Group 4511)
85	4545	Bulk sample of Posthole within Post Built Roundhouse (Group 4511)
86	4547	Bulk sample of Posthole within Post Built Roundhouse (Group 4511)
87	4731	Sample from Posthole within Post Built Roundhouse (Group 4512)
88	4536	Bulk sample of Posthole within Post Built Roundhouse (Group 4510)
89	4575	Bulk sample of Posthole within Post Built Roundhouse (Group 4510)
90	4737	Bulk sample from Posthole within Post Built Roundhouse (Group 4512)
91	4739	Bulk sample from Posthole within Post Built Roundhouse (Group 4512)
92	4666	Bulk sample from Possible water hole.

Table 26. Environmental Sample Register

APPENDIX III - PALAEOENVIRONMENTAL INVENTORY

Context		020	046	048	055	057
Material available for radiocarbon dating		yes	yes	yes	(yes)	yes
Volume of flot (ml)		50	70	200	15	20
Flot matrix						
Bark	indet frags	-	+++	+	-	-
Charcoal		++	++	+++	++	++
Roots (modern)		++	++	+	+	-
Uncharred seeds		+	++	+	-	-
Charred remains (total count)						
(c) cf. *Hordeum* sp var. *nudum* (Naked Barley)	grain	-	-	1	-	-
(c) *Hordeum* sp (Barley species)	grain	-	3	-	-	-
(c) *Triticum* sp (Wheat species)	grain	-	1	-	-	-
(r) *Plantago lanceolata* (Ribwort Plantain)	seed	-	-	-	-	1

Table 27. Data from 2013 palaeoenvironmental assessment
[c-cultivated; r-ruderal. (+): trace; +: rare; ++: occasional; +++: common; ++++: abundant
(yes) there may be insufficient weight of carbon available for radiocarbon dating]

Context information	Single Entity 1	Weight	Single Entity 2	Weight	Single Entity 3	Weight	Notes
(020) flot	Birch charcoal	154mg	Birch charcoal	30mg	Oak charcoal	111mg	-
F046	Bark	25mg	-	-	-	-	Indeterminate
(046) flot	Wheat grain (charred)	7mg	Hazel charcoal	49mg	Oak charcoal	31mg	Hazel branchwood with bark attached and oak stemwood noted. Also 3 small barley grains.
F048	Oak charcoal	32mg	Oak charcoal	26mg	-	-	All charcoal is small fragments of oak.
(048) flot	Birch charcoal	735mg	Alder charcoal	269mg	Bark	126mg	Bark is indeterminate. A grain of cf. naked barley (wrinkled pattern) is present (too small for dating). Oak and alder stemwood and birch
(055) flot	Alder charcoal	22mg	Alder charcoal	19mg	Oak charcoal	83mg	Oak timber noted (tyloses present)
(057) flot	Alder charcoal	42mg	Alder charcoal	25mg	Oak charcoal	56mg	Alder and oak stemwood. Oak comprising radial cracks, low level of vitrification and small latewood growth. Charred ribwort plantain
(057) primary fill hearth 2	Oak charcoal	2.607g	-	-	-	-	Large fragment comprising approximately 30 evenly spaced growth rings (sapwood with few tyloses).
(057) primary fill hearth 2	Oak charcoal	777mg	-	-	-	-	Fragment comprising approximately 15 growth rings (sapwood with low level of vitirification)

Table 28. Material available for radiocarbon dating from the 2013 palaeoenvironmental assessment.

Sample	Context	Sample Size (litres)	Date	Volume (ml)	Charcoal	Weed/ wild seed	Notes	C14
1	95	5	IA?	40	++++	+	Frequent charcoal, mostly highly fragmented, although some large examples (1-2cm) – representative selection assessed and all suggest oak (*Quercus* sp.) with the exception of one non-oak, diffuse porous fragment, possibly alder (*Alnus* sp.0. Occasional very small round wood, too small for identification purposes. Some bark present, some of which appears not thoroughly charred. One small round indeterminate weed/wild seed, very poorly preserved with no identifying morphological characteristics preserved. Frequent white slag/black clinker type material. Occasional fungal spores.	No
2	90	20	IA?	4	++++		Frequent charcoal, mostly small fragments <4mm, although some larger examples present. Representative fragments assessment were all suggestive of oak (Quercus sp.). Some very young round wood, most too small for identification but 2 fragments tentatively identified as oak (*Quercus* sp.). No other CPR present.	Yes (*Quercus* sp. round wood)
3	66	20	IA?	0.5	++		Several very small fragments of charcoal, all <4mm, hence unidentifiable. No round wood present. Occasional small white spherical examples of slag/industrial waste	No
4	63	30	IA?	0.5	+++	+	Several very small fragments of charcoal, all <4mm, hence unidentifiable. No round wood present. One further example of CPR noted, incomplete seed with highly fragmented and poorly preserved outer coat – cf. dock/sorrel (*Rumex* sp.) or sedge (*Carex* sp.), but further ID not possible due to poorly preserved state. Occasional small white spherical and black irregular examples of slag/industrial waste	No
5	60	30	IA?	<0.5	+		Two very small fragments of charcoal, too small for identification purposes. No round wood. No other CPR present. Two small examples of clinker/industrial waste	No
6	80	2	IA?	40	+++++		Abundant charcoal, some large fragments (1-2cm). Representative selection assessed all suggest oak (*Quercus* sp.). Modern seeds including goosefoot/ fat hen (*Chenopidium* sp.)/orache (*Atriplex* sp.), and fungal spores.	No
7	100	1	IA?	40	+++++		Abundant charcoal, some large fragments (~1cm). Representative selection assessed all suggest oak (Quercus sp.). Occasional fungal spores.	No
8	88	2	IA?	<0.5	+++		Several very small fragments of charcoal, all <4mm, hence unidentifiable. No round wood present. No other CPR present.	No

Table 29. Data from 2014 palaeoenvironmental assessment. + = 1-10 items ++ = 11-25 items +++ = 26-50 items ++++ = >50 items

Context No.	Feature	Flot Description	Charred Plant Remains	Radiocarbon Dating
1001	1001	Several large charcoal fragments and a small amount of modern rootlets.	3 fragments *Betula* sp. (birch) charcoal 3 fragments *Corylus* sp. (hazel) charcoal	Yes
1005	F1005	Small charcoal fragments and modern rootlets, one large charcoal fragment	2 *Triticum* sp. (wheat) cereal grains 2 fragments *Populus* sp./*Salix* sp. (Aspen/Willow) charcoal	Yes
1007	F1007	Small charcoal fragments and modern rootlets	1 fragment *Quercus* sp. (oak) charcoal 1 *Polygonatum* sp. (Solomon's seal) seed	No
1010	F1010	Small charcoal fragments and modern rootlets	1 partial, indeterminate cereal grain	No
1012	F1012	Small charcoal fragments and modern rootlets	1 Brassicaceae seed	No
1016		Several large charcoal fragments and many small fragments. Modern roots, grass stems and frequent modern seeds.	26 charcoal fragments (10 identified) 4 fragments *Betula* sp. (birch) charcoal 4 fragments *Quercus* sp. (oak) charcoal 1 fragment Maloideae (apple/hawthorn family) charcoal 1 fragment *Ulmus* sp. (elm) charcoal 4 Brassicaceae seeds 1 *Plantago* sp. (plantain) seed 1 *Vicia* sp. (vetch) seed 1 culm node	Yes
1020		Small charcoal fragments and modern rootlets	2 fragments *Quercus* sp, (oak) charcoal 1 fragment *Betula* sp. (birch) charcoal 2 indeterminate charcoal fragments 1 Brassicaceae seed 1 *Galium* sp. (cleavers) seed	Yes
1038		Modern rootlets and sand with scarce tiny charcoal fragments	1 highly vitrified, indeterminate macrofossil	No
1039		Small charcoal fragments and modern rootlets	2 fragments *Populus* sp./*Salix* sp. (Aspen/Willow) charcoal 2 fragments *Quercus* sp. (oak) charcoal 1 fragment *Fagus* sp. (beech) charcoal 1 fragment of charred roundwood, possibly *Prunus* sp. (cherry/blackthorn) 3 indeterminate charcoal fragments 3 Brassicaceae seeds	Yes

1079	Pit	Many small (<2mm) charcoal fragments, small amount of modern seeds and rootlets	1 wild grass seed. *Eriophorum*, possibly *Eriophorum* latifolium 1 wild Hordeum seed, probably Hordeum secalinum 8 total charcoal fragments >2mm 4 Quercus fragments 2 Corylus fragments 1 fragment Corylus roundwood (<15 rings) 1 indeterminate roundwood fragment	Yes
1097	Enclosure Ditch	Many small (<2mm) charcoal fragments, small amount of modern seeds and rootlets	2 naked barley grains 3 barley grains 4 indeterminate cereal grains 1 *Fumaria* sp. seed 14 total charcoal fragments >2mm 2 Quercus fragments 6 Corylus fragments 1 Corylus twig wood (roughly 20 rings) 1 Populus/Salix fragment	Yes
1142	Cremation 1	Many small (<2mm) charcoal fragments, little modern material	No botanical macros 18 total charcoal fragments >2mm 10 Quercus fragments	No
1143	Cremation 2	Many small (<2mm) charcoal fragments, little modern material	No botanical macros 15 total charcoal fragments >2mm 10 Quercus fragments	No

1144	Cremation 3	Many small (<2mm) charcoal fragments, little modern material	No botanical macros 12 total charcoal fragments >2mm 10 Quercus fragments	No

Table 30. Data from 2015 and 2016 palaeoenvironmental assessment.

Context No.	**1145**	**1147**	**1149**	**1150**	**1152**	**1153**	**1155**	**1155**	**1157**	**1157**	**1159**	**1159**	**1161**	**1163**	**1163**	**1165**	**1167**	**1171**	**1172**	**1172**
Description	P.H.	P.H.	P.H.	P.H.	Post Pipe	P.H.	P.H.	P.H.	P.H.	P.H.	P.H.	Post	P.H.	P.H.	P.H.	P.H.	P.H.	Pit	Pit	Charred Mat.
Notes					B.F.		T/B	B.F.	T/B & Lead				B.F.	T/B				T/B	T/B	T/B
Charcoal	*	*	**	***	****	**	*****	****	*****	**	*****	*****	*****	*****	**		*****	*****	*****	*****
Sambucus nigra							2	4	7		1			8			5		3	3
Corylus avellana							16	1	6	5	5			8	6	5	6	11	12	8
Quercus sp.	2		3	4		9			4		14	>20		4		2	6	9	5	6
Tilia x europaea																	3			
Crataegus monogyna							1		3											3
Rhamnus cathartica							1													
Unidentified twig							<20		<20					<20		1	<20	2	3	
Wild seeds																				
Sambucus nigra																	1		1	
Persicaria cf. bistorta																			4	
Chenopodium sp.							7		8								4		5	
Cereals																				
Indet. cereal culm internodule														1					1	
Triticum (emmer)							2		2					4		2	14 (1 malt)	2	1	
Hordeum sp. (hulled)							5		1					2		2	13(1 malt)			
Indet. cereal rachis							1							2				2		
Indet cereal grain							5		5								7		1	

Table 31. Roundhouse 2 palaeocological residues. Notes: B.F.- Badly fragmented, T/B-Twigs/branches. Description: P.H.- Posthole. Charcoal quantities: *=0-5, **=6-10, ***=11-15, ****=16-20, *****=>20 fragments. Yellow highlighting indicates radiocarbon dateable charcoal.

Sample No.	46	47	49	50	51	52	53	54
Context No.	1176	1178	1180	1182	1185	1187	1189	1196
Notes	B.F.			B.F.			T/B	B.F.
Charcoal								
Quantity	*	*****	**	*****	**	*****	*****	*****
Sambucus nigra		3					3	
Corylus avellana L.		12	1	2			13	1
Quercus sp.	1	5		10		>20	4	
Crataegus monogyna			2					
Unidentified twig							<20	
Wild seeds								
Sambucus nigra							1	
Chenopodium sp.							1	
Cereals								
Triticum (emmer)		8 (3 malt)					1	
Hordeum sp. (hulled)		16 (3 malt)					1	
Indet cereal grain		8						

Table 32. Roundhouse 3 palaeoecological residues. Notes: B.F.- Badly fragmented, T/B-Twigs/branches. Description: P.H.- Posthole. Charcoal quantities: *=0-5, **=6-10, ***=11-15, ****=16-20, *****=>20 fragments. Yellow highlighting indicates radiocarbon dateable charcoal.

Sample No.	55	56	68	57	58	60	61	59
Context No.	1184	1191	1192	1193	1194	1200	1204	1206
Description	Pit	Sandy fill of F1184	Charcoal fill of F1184	Sandy fill of F1184	Charcoal fill of F1184	Pit	Pit	Pit
Location	Pit Cluster	Pit Cluster	Pit Cluster	Pit Cluster	Pit Cluster	Adjacent RH2	Adjacent RH2	
Notes	B.F.	B.F.		B.F.				
Charcoal								
Quantity	*****	*****	*****	*****	*****	*****	***	*****
Sambucus nigra								1
Corylus avellana L.	1	3			1	1	14	15
Quercus sp.	3	1	<20	7	18	8	6	4
Crataegus monogyna	3	4			1			
Rhamnus cathartica	1							

Table 33. Summary of palaeoecological residues from features beyond the roundhouses. Notes: B.F.- Badly fragmented, T/B-Twigs/branches. Description: P.H.- Posthole. Charcoal quantities: *=0-5, **=6-10, ***=11-15, ****=16-20, *****=>20 fragments. Yellow highlighting indicates radiocarbon dateable charcoal.

Sample No.	7	6	3	5	4	2	1	8	15	10	11	25
Context No.	1215	1217	1221	1224	1227	1231	1233	1239	1254	1276	1278	1284
Description	Large sub-rectangular feature in waste area	Irregularly shaped waste pit	Large waste pit	Large waste pit	Small waste pit	Shallow pit	Waste Pit	Largest waste pit	Waste pit	Waste pit, SE of pit cluster	Waste pit, SE of pit cluster	Large waste pit-similar fill to waste pit cluster
Quantity	30.36g	21.53g	19.96g	169.95g	96.39g	5.23g	161.60g	37.69g	30.86g	24.63g	91.47g	62.27g
Charcoal												
>4mm	++++	++++	+++	+++++	+++++	+++	+++++	++++	++++	++++	++++	+++++
<4mm	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++	+++++
Hazel (Corylus avellana)	5	5	2	5	5	5	5	5	5	5	5	
Oak (Quercus sp.)			3									5
Plant Macrofossils												
Wild Plants												
Spurge sp. 1(Euphorbia sp.)				1					2			
Spurge sp. 2 (Euphorbia sp.)	2				1		1		1			
Parsley piert (Alchemilla arvensis)					1				1	1		
Wild buckwheat (Fallopia convulvus)	1	1		1	2		2				1	
Sorrell/Dock (Rumex sp.)	1	1								1		
Mustard family (Brassica sp.)	7	2		2	4					2		
Lady's bedstraw (Gallium verum)												1
Common nipplewort (Lapsana communis)	1											
Violet (Viola sp.)				1							1	
Poaceae tuber				1								
Vetch sp. (Vicus sp.)									3		1	
Edible Plants												
Crab Apple (Malus sylvestris)									1			
cf. Hawthorn stone (Crataegus monogyna L.)					1						1	
cf. fruit stone									1			

Sample No.	7	6	3	5	4	2	1	8	15	10	11	25
Context No.	1215	1217	1221	1224	1227	1231	1233	1239	1254	1276	1278	1284
Description	Large sub-rectangular feature in waste area	Irregularly shaped waste pit	Large waste pit	Large waste pit	Small waste pit	Shallow pit	Waste Pit	Largest waste pit	Waste pit	Waste pit, SE of pit cluster	Waste pit, SE of pit cluster	Large waste pit-similar fill to waste pit cluster
Quantity	30.36g	21.53g	19.96g	169.95g	96.39g	5.23g	161.60g	37.69g	30.86g	24.63g	91.47g	62.27g
Nut Shell												
Hazelnut (Corylus avellana L.)			1	6	3	1	1					

Table 34. Palaeoenvironmental residues recovered from the central waste pit area. Charred remains quantity: + 0-5, ++ 6-10, +++11-20, ++++ 21-50, +++++ >50 fragments.

Sample No.	18	14	17	18	18	20	21	22	12	16	12
Context No.	1248	1250	1257	1259	1261	1263	1265	1267	1269	1211	1209
Description	RH3 PH	RH3 PH	RH3 PH	RH3 PH	RH3 PH	RH4 PH	RH3 PH	PH adjacent circular enclosure	Pit adjacent circular enclosure	Enclosure near roundhouse	Palisade
Quantity	38.21g	11.28g	23.14g	49.49g	32.18g	37.50g	13.48g	1.38g	0.54g	5.26g	27.94g
Charcoal											
>4mm	++++	+++	+++	++++	++++	++++	+++	++	+	+++	++++
<4mm	+++++	+++++	+++++	+++++	+++++	+++++	+++++	++++	+++	+++++	+++++
Hazel (Corylus avellana L.)	5	5		5	5	5	5	3	5		5
Oak (Quercus sp.)			5					2			
Scots Pine (Pinus sylvestris L.)										5	
Plant Macrofossils											
Wild Plants											
Spurge sp. 2 (Euphorbia sp.)	1										
Wild buckwheat (Fallopia convulvus)	2	1	1								
Sorrell/Dock (Rumex sp.)				1	1			2			1
Mustard family (Brassica sp.)		1			2						4
Vetch sp. (Vicus sp.)						3					
Edible Plants											
Pea (Pisum sativum)						2					
Elderberry seed (Sambucus nigra L.)				1		1					
Crab Apple (Malus sylvestris)				1		1					
Blackberry (Rubus fruticosis)						1					
Nut Shell											
Hazelnut (Corylus avellana L.)			1			1					
Cereals											
Hulled barley (Hordeum sp.)		15		11	2	801			1		2
cf. barley (Hordeum sp.) culm						2					
cf. barley (Hordeum sp.) rachis						2					
cf. Emmer wheat (Triticum dicoccum)							1				

Indet. cereal grain		8									

Table 35. Palaeoenvironmental residues recovered from Roundhouse 3 (RH3) features, as well as the palisade ditch. Charred remains quantity: + 0-5, ++ 6-10, +++11-20, ++++ 21-50, +++++ >50 fragments

Sample No.	**27**	**24**	**23**	**25**	**20**	**9**	**19**	**18**
Context No.	4536	4545	4549	4557	4604	4607	4619	4621
Description	pit fill	pit fill	pit fill	pit fill	pit fill	pit fill	ditch fill	ditch fill
Composition of the flots	10% rootlets	20% rootlets	5% rootlets	10% rootlets, uncharred *Euphorbia helioscopia* seeds	small burnt bone fragments, 5% rootlets	5% rootlets, uncharred *Chenopodium* seeds	40% rootlets	40% rootlets
Sample Volume	10l	10l	10l	10l	40l	40l	20l	20l
Flot Weight	1.44g	1.58g	1.68g	11.5g	31.43g	51.99g	3.05g	3.27g
Charcoal								
Hazel (*Corylus avellana*)	1			1	1	7		
Oak (*Quercus* sp.)		1		9	9			1
Field Maple (*Acer campestre*)						1		
Stony fruits (Maloideae)						1		
Charred plant macrofossils								
Cereals								
Barley (*Hordeum vulgare*)		2	27			17		
Oat (*Avena fatua*)						1		
Oat (*Avena sp.*)						3		
Indeterminate cereal grains	2		23	3		9		
Wild seeds								
Lady's Mantle (*Alchemilla sp.*)						1		
Dock (*Rumex* sp.)						3		
Goosefoot (*Chenopodium* sp.)			2			8		
Indeterminate		1			2	2		

Table 36. Recovered palaeoenvironmental remains and uncharred organic materials.

Sample No.	**17**	**13**	**16**	**31**	**15**	**14**	**22**	**12**
Context No.	4625	4637	4648	4666	4686	4691	4694	4715
Description	second fill of pit	post pit	pit fill	possible well	pit fill	pit fill	pit fill	possible well
Composition of the flots	5% rootlets, uncharred *Chenopodium* seeds	10% rootlets, uncharred *Chenopodium* seeds	uncharred *Chenopodium* and *Euphorbia helioscopia* seeds, less than 5% rootlets	5% rootlets, uncharred *Chenopodium* seeds	10% rootlets, uncharred *Chenopodium* seeds	20% rootlets	10% rootlets, uncharred *Chenopodium* seeds	10% rootlets, uncharred *Chenopodium* seeds
Sample Volume	20l	40l	40l	20l	20l	20l	20l	20l
Flot Weight	62.97g	22.72g	51.36g	2.73g	6.82	8.05g	13g	2.96g
Charred plant macrofossils								
Cereals								
Barley (*Hordeum vulgare*)	1169	6		2	1	1	15	
Naked barley (*Hordeum sp.*)								1
cf. Barley/Oat (*Hordeum vulgare/Avena* sp.)		1				1		
Oat (*Avena sp.*)		3		2	1			4
Indeterminate cereal grains	288	3			3	3	14	1

Table 37. Recovered charred cereal grains.

Sample No.	**17**	**13**	**16**	**31**	**15**	**14**	**22**	**12**
Context No.	4625	4637	4648	4666	4686	4691	4694	4715
Description	second fill of pit	post pit	pit fill	possible well	pit fill	pit fill	pit fill	possible well
Composition of the flots	5% rootlets, uncharred *Chenopodium* seeds	10% rootlets, uncharred *Chenopodium* seeds	uncharred *Chenopodium* and *Euphorbia helioscopia* seeds, less than 5% rootlets	5% rootlets, uncharred *Chenopodium* seeds	10% rootlets, uncharred *Chenopodium* seeds	20% rootlets	10% rootlets, uncharred *Chenopodium* seeds	10% rootlets, uncharred *Chenopodium* seeds
Sample Volume	20l	40l	40l	20l	20l	20l	20l	20l
Flot Weight	62.97g	22.72g	51.36g	2.73g	6.82	8.05g	13g	2.96g
Charred plant macrofossils								
Wild seeds								
cf. Hawksbeard (*Crepis* sp.)	1	2						
Forget-me-not (*Myosotis* sp.)	5							
Lady's Mantle (*Alchemilla sp.*)	21							
Sedge *(Carex* sp.)	1							
Dock (*Rumex* sp.)	18						1	
Wild radish (*Raphanus raphanistrum*)	16							
Pale persicaria (*Persicaria lapathifolia*)	6							
Goosefoot (*Chenopodium* sp.)	260	8					5	
Indeterminate	11				1		3	
Charcoal								
Hazel (*Corylus avellana*)	5					5	5	
Oak (*Quercus* sp.)	4					5	1	
Elder (*Sambucus nigra*)	1							

Table 38. Recovered wild seeds and charcoal fragments.

Sample No.	**26**	**29**	**30**	**10**	**11**	**21**	**28**
Context No.	4731	4737	4739	4740	4741	4745	4575
Description	pit fill	pit fill	pit fill	pit fill	pit fill	posthole	pit fill
Composition of the flots	40% rootlets	20% rootlets, uncharred *Chenopodium* seeds	5% rootlets, mainly small charcoal fragments	20% rootlets, uncharred *Chenopodium* seeds	20% rootlets	10% rootlets, small charcoal fragments	10% rootlets
Sample Volume	10l	10l	10l	40l	40l	10l	10l
Flot Weight	6.86g	5.75g	13.82g	28.62g	7.47g	1.08g	3.70g
Charcoal							
Hazel (*Corylus avellana*)	3	7	8	9	1	1	2
Oak (*Quercus* sp.)		1	2		2		
Stony fruits (Maloideae)	1						
English Ash (*Fraxinus excelsior*)	1			1			
Charred plant macrofossils							
Cereals							
Barley (*Hordeum vulgare*)	2	7		4	3		2
Indeterminate cereal grains	2	3		3			
Wild seeds							
Lady's Mantle (*Alchemilla sp.*)		1					
Dock (*Rumex* sp.)	1						
Goosefoot (*Chenopodium* sp.)	1			8			
Indeterminate	1						

Table 39. Recovered palaeoenvironmental remains and uncharred organic materials.

Context No.	4646	**Sample No.**	1	**Feature Desc.**	spot sample	**Sample Weight (g)**	0.2g	
Fragment No.	Fragment Size	Species	Ring Curvature	Vitrification	Radial Cracks	Tyloses	Fungal Hyphae	Narrow Rings
1	18mm	Hazel (*Corylus avellana*)	1					
Context No.	4656	**Sample No.**	4	**Feature Desc.**	spot sample	**Sample Weight (g)**	0.7g	
Fragment No.	Fragment Size	Species	Ring Curvature	Vitrification	Radial Cracks	Tyloses	Fungal Hyphae	Narrow Rings
1	10mm	Hazel (*Corylus avellana*)	1	y				
2	8mm	Hazel (*Corylus avellana*)	1					
3	12mm	Hazel (*Corylus avellana*)	0					y
Context No.	4607	**Sample No.**	5	**Feature Desc.**	spot sample	**Sample Weight (g)**	6.51g	
Fragment No.	Fragment Size	Species	Ring Curvature	Vitrification	Radial Cracks	Tyloses	Fungal Hyphae	Narrow Rings
1	8mm	Oak *(Quercus* sp.)	0					y
2	16mm	Oak *(Quercus* sp.)	0					y
3	20mm	Hazel (*Corylus avellana*)	2					y
4	10mm	Oak (*Quercus* sp.)	1					y
5	10mm	Hazel (*Corylus avellana*)	2					y

6	10mm	Stony fruits (Maloideae)	1					y
7	8mm	Hazel (*Corylus avellana*)	1					y
Context No.	4554	**Sample No.**	7	**Feature Desc.**	spot sample	**Sample Weight (g)**	34.2g	
Fragment No.	Fragment Size	Species	Ring Curvature	Vitrification	Radial Cracks	Tyloses	Fungal Hyphae	Narrow Rings
1	18mm	Oak *(Quercus* sp.)	0					y
2	16mm	Oak *(Quercus* sp.)	1					y
3	25mm	Oak *(Quercus* sp.)	1			y		y
4	10mm	Oak *(Quercus* sp.)	1					y
5	16mm	Oak *(Quercus* sp.)	1					y
6	10mm	Oak *(Quercus* sp.)	0					y
7	30mm	Oak *(Quercus* sp.)	0					y
8	8mm	Oak *(Quercus* sp.)	1					y
Context No.	4556	**Sample No.**	8	**Feature Desc.**	spot sample	**Sample Weight (g)**		
Fragment No.	Fragment Size	Species	Ring Curvature	Vitrification	Radial Cracks	Tyloses	Fungal Hyphae	Narrow Rings
1	8mm	Hazel (*Corylus avellana*)	2	y				y
2	8mm	Oak *(Quercus* sp.)	0					y
3	10mm	Oak *(Quercus* sp.)	0					y

Context No.	4607	**Sample No.**	9	**Feature Desc.**	pit fill	**Sample Weight (g)**	51.99g	
Fragment No.	Fragment Size	Species	Ring Curvature	Vitrification	Radial Cracks	Tyloses	Fungal Hyphae	Narrow Rings
1	9mm	Hazel (*Corylus avellana*)	1					y
2	8mm	Oak *(Quercus* sp.)		y				
3	8mm	Hazel (*Corylus avellana*)	1					y
4	6mm	Field Maple (*Acer campestre*)	1	y				
5	8mm	Hazel (*Corylus avellana*)	1					y
6	11mm	Hazel (*Corylus avellana*)	1	y				y
7	32mm	Hazel (*Corylus avellana*)	2	y				y
8	8mm	Hazel (*Corylus avellana*)	1	y				y
9	6mm	Stony fruits (Maloideae)	0					y
10	12mm	Hazel (*Corylus avellana*)	1					y
Context No.	4740	**Sample No.**	10	**Feature Desc.**	pit fill	**Sample Weight (g)**	28.62g	
Fragment No.	Fragment Size	Species	Ring Curvature	Vitrification	Radial Cracks	Tyloses	Fungal Hyphae	Narrow Rings
1	12mm	English Ash (*Fraxinus excelsior*)	0	y		y		

2	8mm	Hazel (*Corylus avellana*)	3					y
3	10mm	Hazel (*Corylus avellana*)	3					y
4	9mm	Hazel (*Corylus avellana*)	3					y
5	12mm	Hazel (*Corylus avellana*)	2					y
6	5mm	Hazel (*Corylus avellana*)	0					
7	6mm	Hazel (*Corylus avellana*)	1					y
8	5mm	Hazel (*Corylus avellana*)	0	y		y		y
9	4mm	Hazel (*Corylus avellana*)	2					y
10	8mm	Hazel (*Corylus avellana*)	1					
Context No.	4741	**Sample No.**	11	**Feature Desc.**	pit fill	**Sample Weight (g)**	7.47g	
Fragment No.	Fragment Size	Species	Ring Curvature	Vitrification	Radial Cracks	Tyloses	Fungal Hyphae	Narrow Rings
1	6mm	Oak *(Quercus* sp.)	1	y		y		
2	6mm	Oak *(Quercus* sp.)	1			y		
3	8mm	Hazel (*Corylus avellana*)	0	y				
Context No.	4691	**Sample No.**	14	**Feature Desc.**	pit fill	**Sample Weight (g)**	8.05g	
Fragment No.	Fragment Size	Species	Ring Curvature	Vitrification	Radial Cracks	Tyloses	Fungal Hyphae	Narrow Rings
1	16mm	Hazel (*Corylus avellana*)	0					

2	8mm	Hazel (*Corylus avellana*)	0	y				
3	6mm	Hazel (*Corylus avellana*)	1					y
4	10mm	Hazel (*Corylus avellana*)	1					y
5	7mm	Oak *(Quercus* sp.)	0					
6	8mm	Hazel (*Corylus avellana*)	2					y
7	5mm	Oak *(Quercus* sp.)	0					
8	6mm	Oak *(Quercus* sp.)	0					y
9	6mm	Oak *(Quercus* sp.)	0			y		
10	4mm	Oak *(Quercus* sp.)	0					
Context No.	4625	**Sample No.**	17	**Feature Desc.**	sample from second fill of pit	**Sample Weight (g)**	62.97g	
Fragment No.	Fragment Size	Species	Ring Curvature	Vitrification	Radial Cracks	Tyloses	Fungal Hyphae	Narrow Rings
1	8mm	Hazel (*Corylus avellana*)	3					y
2	12mm	Oak *(Quercus* sp.)	2		y			y
3	8mm	Hazel (*Corylus avellana*)	1					y
4	5mm	Oak *(Quercus* sp.)	1					y
5	10mm	Oak *(Quercus* sp.)	2					y
6	8mm	Hazel (*Corylus avellana*)	2					y
7	10mm	Black elder (*Sambucus nigra*)	2					y

8	12mm	Hazel (*Corylus avellana*)	4		y			y
9	6mm	Hazel (*Corylus avellana*)	2					y
10	15mm	Oak *(Quercus* sp.)	0			y		y
Context No.	4621	**Sample No.**	18	**Feature Desc.**	ring ditch	**Sample Weight (g)**	3.27g	
Fragment No.	Fragment Size	Species	Ring Curvature	Vitrification	Radial Cracks	Tyloses	Fungal Hyphae	Narrow Rings
1	8mm	Oak *(Quercus* sp.)	0					
Context No.	4604	**Sample No.**	20	**Feature Desc.**	pit fill	**Sample Weight (g)**	31.43g	
Fragment No.	Fragment Size	Species	Ring Curvature	Vitrification	Radial Cracks	Tyloses	Fungal Hyphae	Narrow Rings
1	14mm	Oak *(Quercus* sp.)	0			y		
2	8mm	Oak *(Quercus* sp.)	1					y
3	10mm	Oak *(Quercus* sp.)	0	y				
4	8mm	Oak *(Quercus* sp.)	1					
5	6mm	Oak *(Quercus* sp.)	0			y		y
6	6mm	Hazel (*Corylus avellana*)	2					
7	6mm	Oak *(Quercus* sp.)	1			y		
8	12mm	Oak *(Quercus* sp.)	1			y		y
9	8mm	Oak *(Quercus* sp.)	2					y
10	6mm	Oak *(Quercus* sp.)	1					y

Context No.	4745	**Sample No.**	21	**Feature Desc.**	posthole	**Sample Weight (g)**	1.08g	
Fragment No.	Fragment Size	Species	Ring Curvature	Vitrification	Radial Cracks	Tyloses	Fungal Hyphae	Narrow Rings
1	6mm	Hazel (*Corylus avellana*)	2					y
Context No.	4694	**Sample No.**	22	**Feature Desc.**	pit fill	**Sample Weight (g)**	13g	
Fragment No.	Fragment Size	Species	Ring Curvature	Vitrification	Radial Cracks	Tyloses	Fungal Hyphae	Narrow Rings
1	10mm	Hazel (*Corylus avellana*)	2					y
2	6mm	Oak *(Quercus* sp.)	0			y		
3	6mm	Hazel (*Corylus avellana*)	3					y
4	10mm	Hazel (*Corylus avellana*)	5					y
5	6mm	Hazel (*Corylus avellana*)	1					y
6	6mm	Hazel (*Corylus avellana*)	0					y
Context No.	4545	**Sample No.**	24	**Feature Desc.**	pit fill	**Sample Weight (g)**	1.58g	
Fragment No.	Fragment Size	Species	Ring Curvature	Vitrification	Radial Cracks	Tyloses	Fungal Hyphae	Narrow Rings
1	6mm	Oak *(Quercus* sp.)	1					y

Context No.	4557	**Sample No.**	25	**Feature Desc.**	pit fill	**Sample Weight (g)**	11.5g	
Fragment No.	Fragment Size	Species	Ring Curvature	Vitrification	Radial Cracks	Tyloses	Fungal Hyphae	Narrow Rings
1	20mm	Hazel (*Corylus avellana*)	0					
2	12mm	Oak *(Quercus* sp.)	0					
3	8mm	Oak *(Quercus* sp.)	0					
4	10mm	Oak *(Quercus* sp.)	0					
5	8mm	Oak *(Quercus* sp.)	0					
6	14mm	Oak *(Quercus* sp.)	0					
7	14mm	Oak *(Quercus* sp.)	0					
8	16mm	Oak *(Quercus* sp.)	0					
9	8mm	Oak *(Quercus* sp.)	0					
10	14mm	Oak *(Quercus* sp.)	0					
Context No.	4731	**Sample No.**	26	**Feature Desc.**	pit fill	**Sample Weight (g)**	6.86g	
Fragment No.	Fragment Size	Species	Ring Curvature	Vitrification	Radial Cracks	Tyloses	Fungal Hyphae	Narrow Rings
1	10mm	Hazel (*Corylus avellana*)	3					y
2	10mm	Stony fruits (Maloideae)	3					
3	8mm	Hazel (*Corylus avellana*)	2					y
4	6mm	Hazel (*Corylus avellana*)	1					y

5	8mm	English Ash (*Fraxinus excelsior*)	1					y
Context No.	4536	**Sample No.**	27	**Feature Desc.**	pit fill	**Sample Weight (g)**	1.44g	
Fragment No.	Fragment Size	Species	Ring Curvature	Vitrification	Radial Cracks	Tyloses	Fungal Hyphae	Narrow Rings
1	6mm	Hazel (*Corylus avellana*)	2					
Context No.	4575	**Sample No.**	28	**Feature Desc.**	pit fill	**Sample Weight (g)**	3.70g	
Fragment No.	Fragment Size	Species	Ring Curvature	Vitrification	Radial Cracks	Tyloses	Fungal Hyphae	Narrow Rings
1	10mm	Hazel (*Corylus avellana*)	0					y
2	6mm	Hazel (*Corylus avellana*)	0					
Context No.	4737	**Sample No.**	29	**Feature Desc.**	pit fill	**Sample Weight (g)**	5.75g	
Fragment No.	Fragment Size	Species	Ring Curvature	Vitrification	Radial Cracks	Tyloses	Fungal Hyphae	Narrow Rings
1	10mm	Hazel (*Corylus avellana*)	4					y
2	8mm	Hazel (*Corylus avellana*)	3					y
3	8mm	Oak *(Quercus* sp.)	1					y
4	10mm	Hazel (*Corylus avellana*)	0					y

5	8mm	Hazel (*Corylus avellana*)	4					y
6	6mm	Hazel (*Corylus avellana*)	3					y
7	8mm	Hazel (*Corylus avellana*)	1					y
8	6mm	Hazel (*Corylus avellana*)	1					y
Context No.	4739	**Sample No.**	30	**Feature Desc.**	pit fill	**Sample Weight (g)**	13.82g	
Fragment No.	Fragment Size	Species	Ring Curvature	Vitrification	Radial Cracks	Tyloses	Fungal Hyphae	Narrow Rings
1	32mm	Hazel (*Corylus avellana*)	4					y
2	12mm	Hazel (*Corylus avellana*)	5					y
3	14mm	Hazel (*Corylus avellana*)	5					y
4	10mm	Hazel (*Corylus avellana*)	1					y
5	10mm	Hazel (*Corylus avellana*)	2					y
6	12mm	Hazel (*Corylus avellana*)	5					y
7	8mm	Oak *(Quercus* sp.)	2					
8	8mm	Hazel (*Corylus avellana*)	1					y
9	8mm	Hazel (*Corylus avellana*)	2					y
10	10mm	Oak *(Quercus* sp.)	1			y		

Table 40. Description of identified charcoal fragments. Ring curvature is given on a scale between 1 (barely curved) to 5 (very highly curved). Tyloses, radial cracks and narrow rings are denoted by presence (indicated by y).

APPENDIX IV - OSTEOLOGICAL INVENTORY

Element/Group	Age	Sex	Comments
Parietal L	Suture open	-	including saggital sulcus, mastoid angle,
Parietal	-	-	parietal striae
Ossicle	Suture open	-	Unknown position
Thoracic vertebrae	-	-	Lamina with R inferior articular facet, 13 superior and inferior articular facets
Ribs	Tubercle unfused <18-20 years	-	Includes neck and shafts
Ulna L	-	-	Part of coronoid process and trochlear notch
Proximal phalanges – hand	Unfused proximal epiphyses <14(girls), 16(boys)	-	6 distal shafts
Intermediate phalanges – hand	Unfused proximal epiphyses <14(girls), 16(boys)	-	1 nearly complete, warping 5 proximal epiphyses
Distal phalanges – hand	Unfused proximal epiphyses <14(girls), 16(boys)	-	2 nearly complete phalanges including DP1 with unfused base
Distal 1st phalanx hand	-	-	Distal end and shaft
Ilium	-	-	1 fragment
Femur L	Appearance/size late juvenile/early adolescent (Schaefer et al 2009)	-	Medial condyle
Tibia R	Appearance/size late juvenile/early adolescent (Schaefer et al 2009)	-	Medial malleolus
Intermediate phalanges – foot	Unfused proximal epiphyses <14(girls), 16(boys)	-	2 , including 1 complete (prox. Epiphysis not present)
Distal phalanx – foot	Unfused proximal epiphyses <14(girls), 16(boys)	-	1 (prox. Epiphysis not present)
Sesamoid bone	-	-	? foot
Single root	-	-	2 permanent, including possible lower incisor
Double root	-	-	7 fragments, including 2 fragments of deciduous teeth
Roots	-	-	17 fragments

Table 41. Inventory and group weights of cremation burial/Context 1104.

Element/Group	Age	Sex	Comments
Ossicle	-	-	at lambda
Mandible R	-	-	1 fragment of ramus
Mandible	-	-	Condyle, 3 fragments of corpus
Temporal L	-	-	Petrous part
Frontal R	-	-	Supraorbital margin
Temporal R	-	-	Zygomatic process
Sphenoid	-	-	Fragments of alae
Skull	All sutures open	-	40 fragments
Teeth	All apices closed	-	18 fragments of roots

Cervical vert.	-	-	3 bodies, spinous process
Thoracic vert.	-	-	1 body, 2 lamina with spinous process
C1	-	-	R lamina
Lumbar vert.	-	-	3 laminae, 4 articular facets
Sacrum	Fusion of segments	-	1 body, auricular surface
Vertebrae	-	-	4 fragments of body, 5 articular facets, 4 laminae
Ribs	-	-	2 necks, 4 shafts
Clavicle L	Fused medial epiph. ≥ 21y	-	Medial end
Radius	-	-	Mid shaft
Scaphoid R	-	-	Nearly complete
Trapezoid R	-	-	Complete
Lunate	-	-	Fragment of artic. Facet
Pisiform	-	-	Fragment of Articular facet
MTC	Fused head	-	head
1ST MTC	-	-	Distal third
Proximal phalanx	Fused base	-	Proximal end
Intermediate Phalanges – hand	Fused bases	-	2 nearly complete, 2 bases
Distal phalanges – hand	Fused bases	-	2 (1 complete)
Ilium R	Crest fused	-	Fragments of acetabulum, iliac crest
Pubis R	-	-	Superior pubic ramus with acetabulum
Ischium	-	-	Tuberosity
Femur	-	-	Fragment of condyle
Tibia	-	-	Fragment of plateau
Fibula L	-	-	Distal fragments
Fibula	-	-	2 fragments, mid shaft, distal shaft
5th MTT R	-	-	Proximal half
1st MTT L	-	-	Complete
1st MTT R	-	-	Fragment of head
MTT	Fused head	-	2 proximal shafts, shaft, head
Phalanges	-	-	4 distal halves

Table 42. Inventory and group weights of cremation burial/Context 1106.

Element/Group	Age	Sex	Comments
Frontal	-	-	Frontal crest
Maxilla	-	-	Anterior alveoli
Mandible R	-	-	Fragment of body
Sphenoid	-	-	Hypophyseal fossa
Zygomatic R	-	-	Nearly complete
Parietal L	-	-	Saggital sulcus
Teeth	-	-	4 permanent single roots, 6 fragments of double/triple roots, fragments of roots
Axis	-	-	Posterior arch fragment
Cervical	-	-	3 fragments including articular facets

vertebrae			
Thoracic vertebrae	-	-	9 fragments including laminae with spinous process, superior and inferior articular facets, body
Ribs	-	-	6 shafts fragments
Scapula R			Glenoid fossa (0.7g), scapular spine
Scapula	-	-	Lateral border, scapular spine
Humerus	-	-	Distal shafts, mid shaft
Radius	-	-	Mid shaft, head fragment
Ilium	-	-	Including fragment of greater sciatic notch
Proximal phalanx – hand	-	-	Head
Intermediate phalanges – hand	-	-	1 shaft, 2 distal shafts with heads
Distal phalanx – hand	Fused proximal epiphysis: >14(f)/16(m)y	-	1 nearly complete
Talus	-	-	Fragments of head and trochlea
Phalanx – foot	-	-	Shaft
MTT/MTC	-	-	Fragment of a base

Table 43. Inventory and group weights of cremation burial/Context 1108.

APPENDIX V – RADIOCARBON DATING CERTIFICATES

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RADIOCARBON DATING CERTIFICATE

02 July 2019

Laboratory Code	SUERC-87239 (GU51526)
Submitter	Luke Parker Archaeological Research Services Ltd Angel House Portland Square Bakewell Derbyshire DE45 1HB
Site Reference	Lochinver Quarry (LOCH19)
Context Reference	Pit from post-built roundhouse (4549)
Sample Reference	LOCH19.1
Material	Charred cereal : Barley grain (Hordeum vulgare)
$\delta^{13}C$ relative to VPDB	-26.5 ‰
Radiocarbon Age BP	4930 ± 20

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD) and requires calibration to the calendar timescale. The error, expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

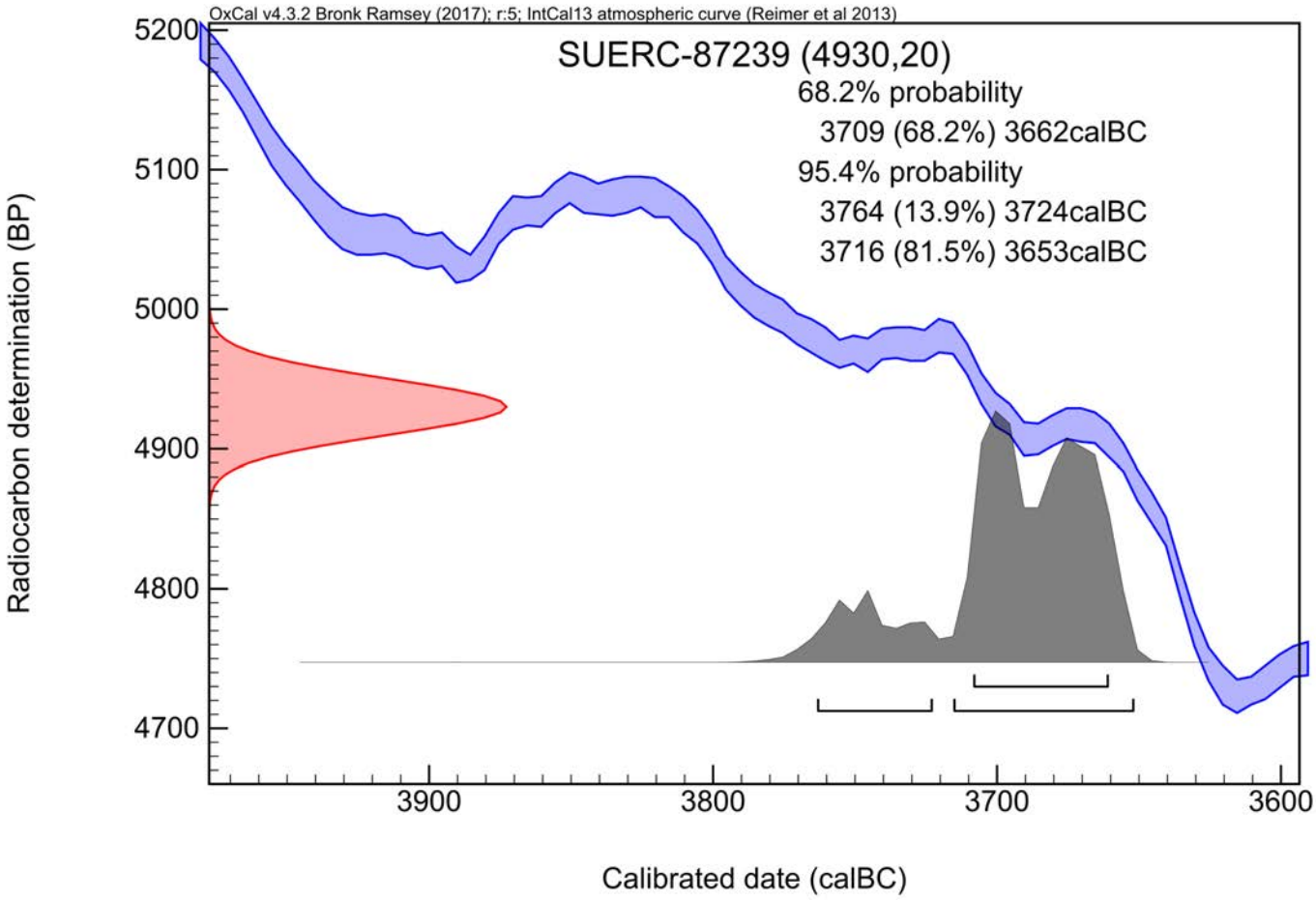
Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

Detailed descriptions of the methods employed by the SUERC Radiocarbon Laboratory can be found in Dunbar et al. (2016) *Radiocarbon 58(1) pp.9-23.*

For any queries relating to this certificate, the laboratory can be contacted at suerc-c14lab@glasgow.ac.uk.

Conventional age and calibration age ranges calculated by :

Checked and signed off by :



The radiocarbon age given overleaf is calibrated to the calendar timescale using the Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.*

The above date ranges have been calibrated using the IntCal13 atmospheric calibration curve†

Please contact the laboratory if you wish to discuss this further.

* Bronk Ramsey (2009) *Radiocarbon 51(1) pp.337-60*

† Reimer et al. (2013) *Radiocarbon 55(4) pp.1869-87*

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RADIOCARBON DATING CERTIFICATE

05 October 2016

Laboratory Code	SUERC-69268 (GU41853)
Submitter	Elise McLellan Archaeological Research Services Angel House Portland Square Bakewell, Derbyshire DE45 1HB
Site Reference	Loch Inver Quarry
Context Reference	Crem.2
Sample Reference	LOCH-7
Material	Cremated bone : Human
δ ^{13}C relative to VPDB	-25.6 ‰
Radiocarbon Age BP	3320 ± 34

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

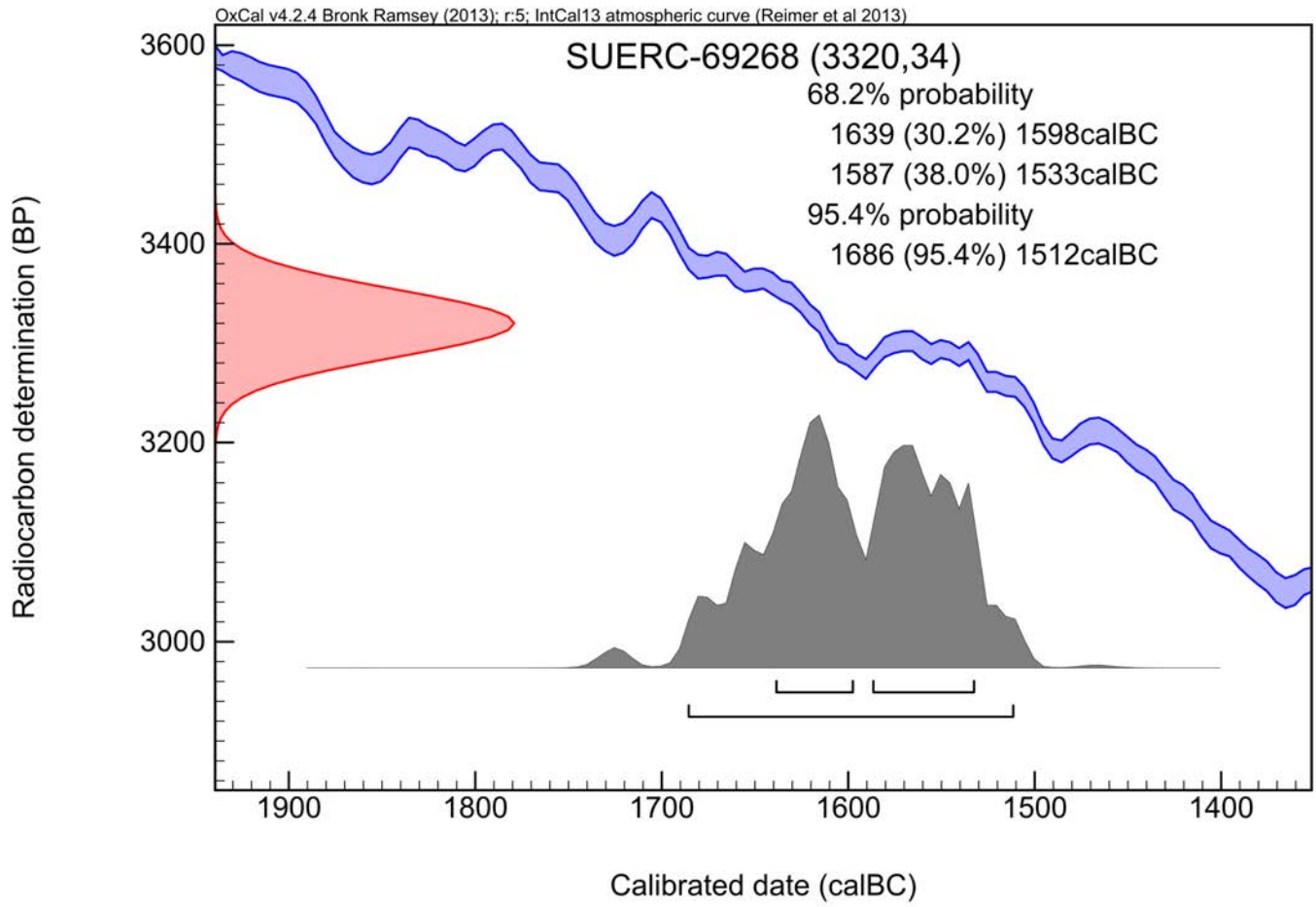
The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email Gordon.Cook@glasgow.ac.uk or telephone 01355 270136 direct line.

Conventional age and calibration age ranges calculated by :- Date :- 05/10/2016

Checked and signed off by :- E. Dunbar Date :- 05/10/2016

Calibration Plot



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RADIOCARBON DATING CERTIFICATE

16 September 2015

Laboratory Code	SUERC-62308 (GU38364)
Submitter	Elise McLellan Archaeological Research Services Angel House Portland Square Bakewell, Derbyshire DE45 1HB
Site Reference	Loch Inver Quarry
Context Reference	(104)
Sample Reference	LOCH-2
Material	Wood charcoal (roundwood) : Quercus sp.
$\delta^{13}C$ relative to VPDB	-24.0 ‰
Radiocarbon Age BP	3260 ± 30

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

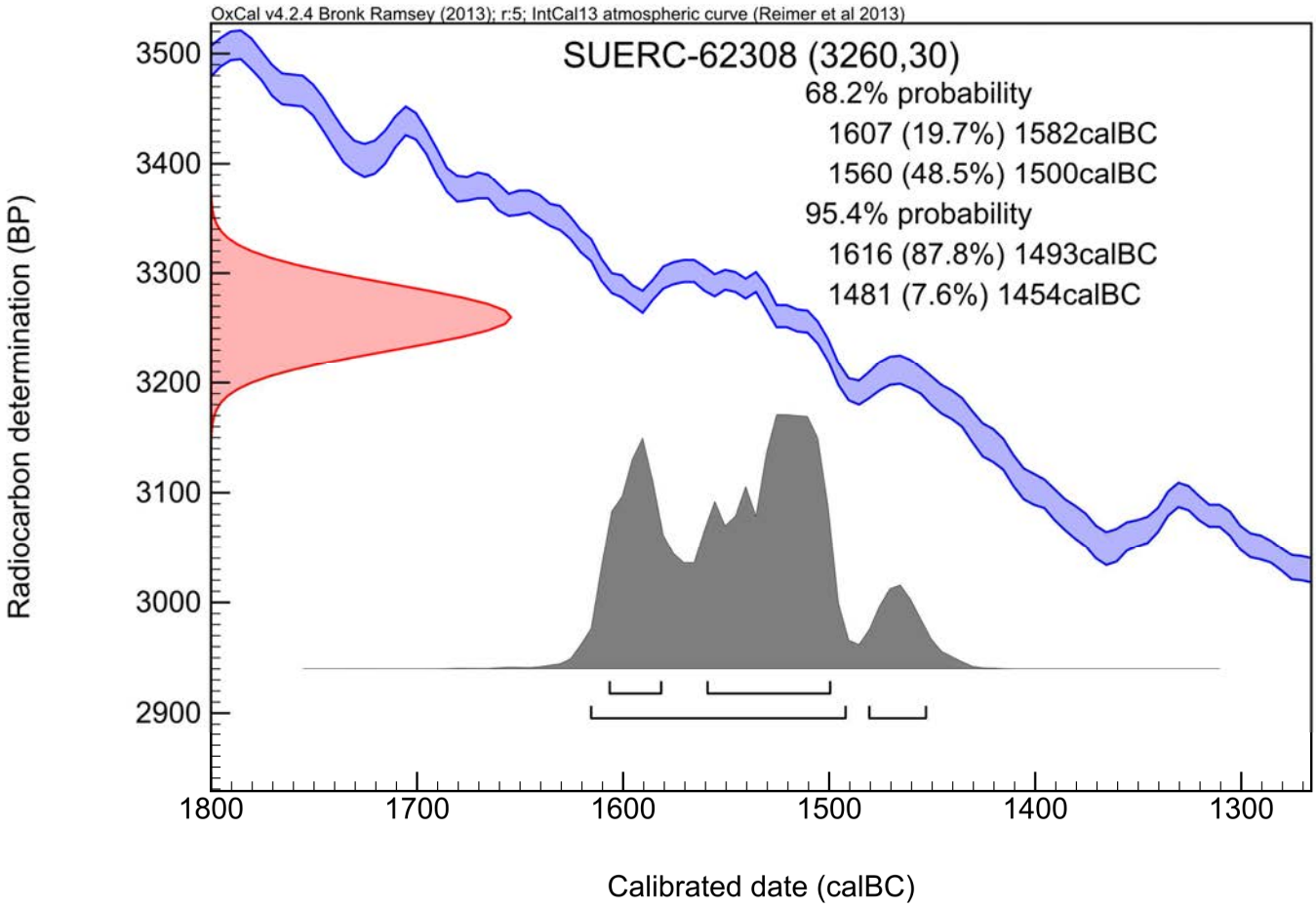
The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email Gordon.Cook@glasgow.ac.uk or telephone 01355 270136 direct line.

Conventional age and calibration age ranges calculated by :- E. Dunbar Date :- 16/09/2015

Checked and signed off by :- P. Naysmith Date :- 16/09/2015

Calibration Plot



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RADIOCARBON DATING CERTIFICATE

05 October 2016

Laboratory Code	SUERC-69267 (GU41852)
Submitter	Elise McLellan Archaeological Research Services Angel House Portland Square Bakewell, Derbyshire DE45 1HB
Site Reference	Loch Inver Quarry
Context Reference	(1097)
Sample Reference	LOCH-6
Material	Charred cereal grain : Hordeum vulgare
δ ^{13}C relative to VPDB	-24.2 ‰
Radiocarbon Age BP	3257 ± 34

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

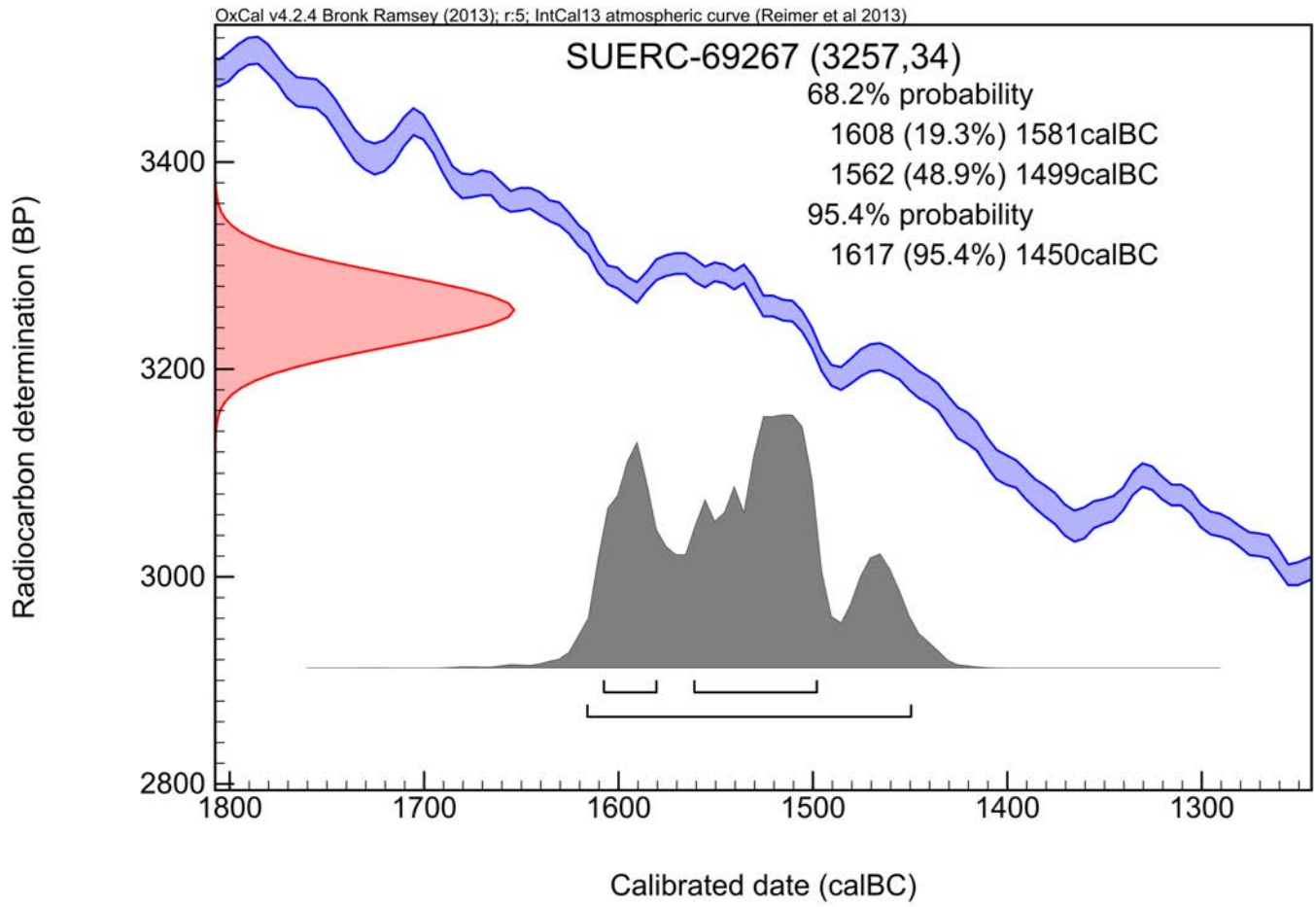
The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email Gordon.Cook@glasgow.ac.uk or telephone 01355 270136 direct line.

Conventional age and calibration age ranges calculated by :- Date :- 05/10/2016

Checked and signed off by :- E. Dunbar Date :- 05/10/2016

Calibration Plot



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RADIOCARBON DATING CERTIFICATE

20 July 2017

Laboratory Code	SUERC-74095 (GU44490)
Submitter	Luke Parker Archaeological Research Services Ltd Angel House Portland Square Bakewell Derbyshire DE45 1HB
Site Reference	Lochinver Quarry
Context Reference	Internal pit within roundhouse 1
Sample Reference	RH1/1172
Material	Charred cereal : Triticum spelta
δ ^{13}C relative to VPDB	-23.1 ‰
Radiocarbon Age BP	3215 ± 29

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

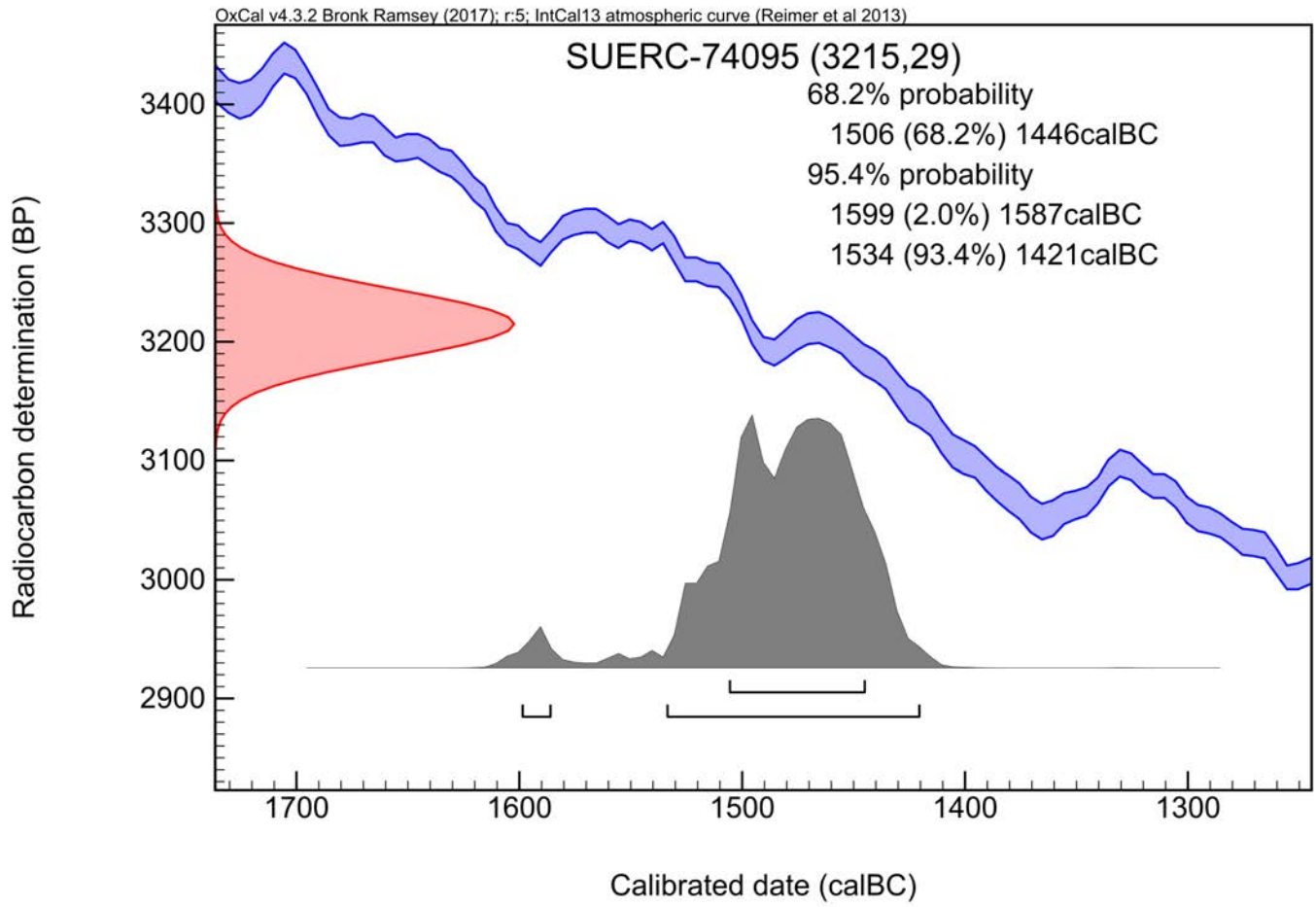
The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email Gordon.Cook@glasgow.ac.uk or telephone 01355 270136 direct line.

Conventional age and calibration age ranges calculated by :- Date :- 20/07/2017

Checked and signed off by :- E. Dunbar Date :- 20/07/2017

Calibration Plot



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RADIOCARBON DATING CERTIFICATE

20 July 2017

Laboratory Code	SUERC-74094 (GU44489)
Submitter	Luke Parker Archaeological Research Services Ltd Angel House Portland Square Bakewell Derbyshire DE45 1HB
Site Reference	Lochinver Quarry
Context Reference	Post hole forming roundhouse 1
Sample Reference	RH1/1155
Material	Charred cereal : Triticum spelta
δ ^{13}C relative to VPDB	-24.6 ‰
Radiocarbon Age BP	3191 ± 27

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

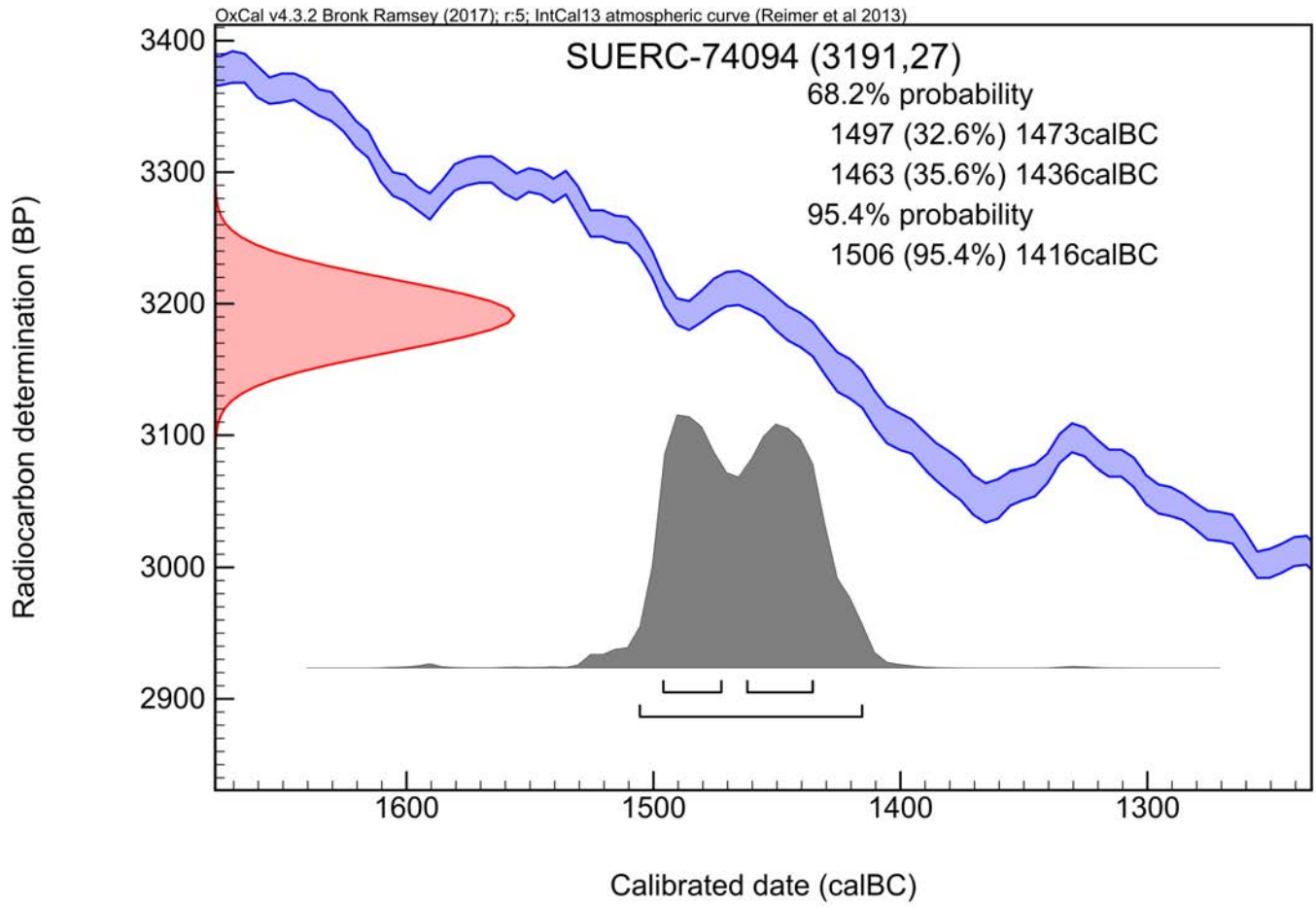
The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email Gordon.Cook@glasgow.ac.uk or telephone 01355 270136 direct line.

Conventional age and calibration age ranges calculated by :- B Tagg Date :- 20/07/2017

Checked and signed off by :- E. Dunbar Date :- 20/07/2017

Calibration Plot



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RADIOCARBON DATING CERTIFICATE

05 October 2016

Laboratory Code	SUERC-69266 (GU41851)
Submitter	Elise McLellan Archaeological Research Services Angel House Portland Square Bakewell, Derbyshire DE45 1HB
Site Reference	Loch Inver Quarry
Context Reference	(1079)
Sample Reference	LOCH-5
Material	Charcoal : Corylus sp.
δ ^{13}C relative to VPDB	-25.2 ‰
Radiocarbon Age BP	3155 ± 34

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

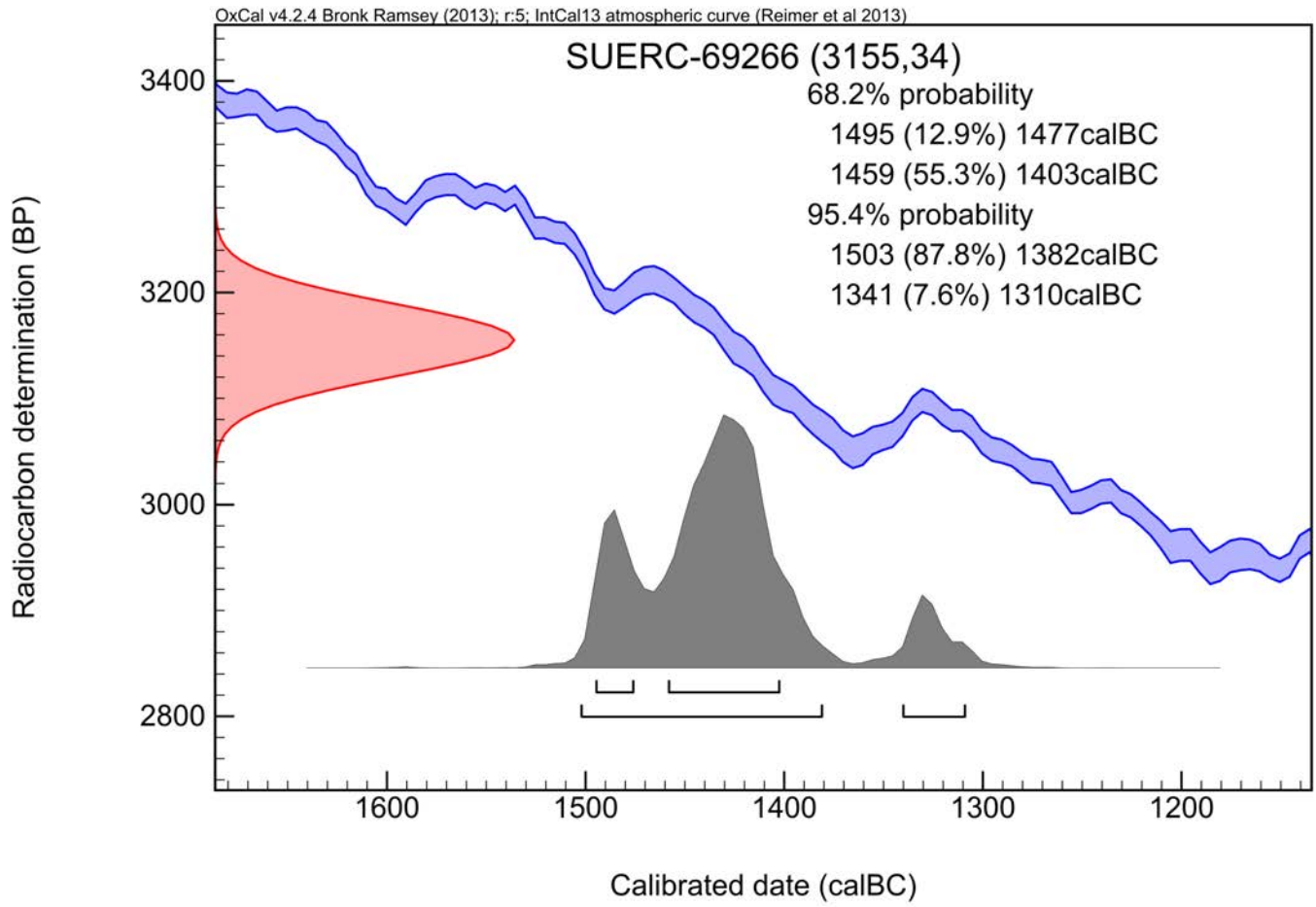
The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email Gordon.Cook@glasgow.ac.uk or telephone 01355 270136 direct line.

Conventional age and calibration age ranges calculated by :- Date :- 05/10/2016

Checked and signed off by :- E. Dunbar Date :- 05/10/2016

Calibration Plot



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RADIOCARBON DATING CERTIFICATE

26 July 2018

Laboratory Code	SUERC-80671 (GU48200)
Submitter	Luke Parker Archaeological Research Services Ltd Angel House Portland Square Bakewell Derbyshire DE45 1HB
Site Reference	LOCH'18
Context Reference	(1215) Large sub-rectangular feature
Sample Reference	LOCH'18.1
Material	Charred cereal : Hordeum sp.
$\delta^{13}C$ relative to VPDB	-23.8 ‰
Radiocarbon Age BP	3077 ± 21

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD) and requires calibration to the calendar timescale. The error, expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

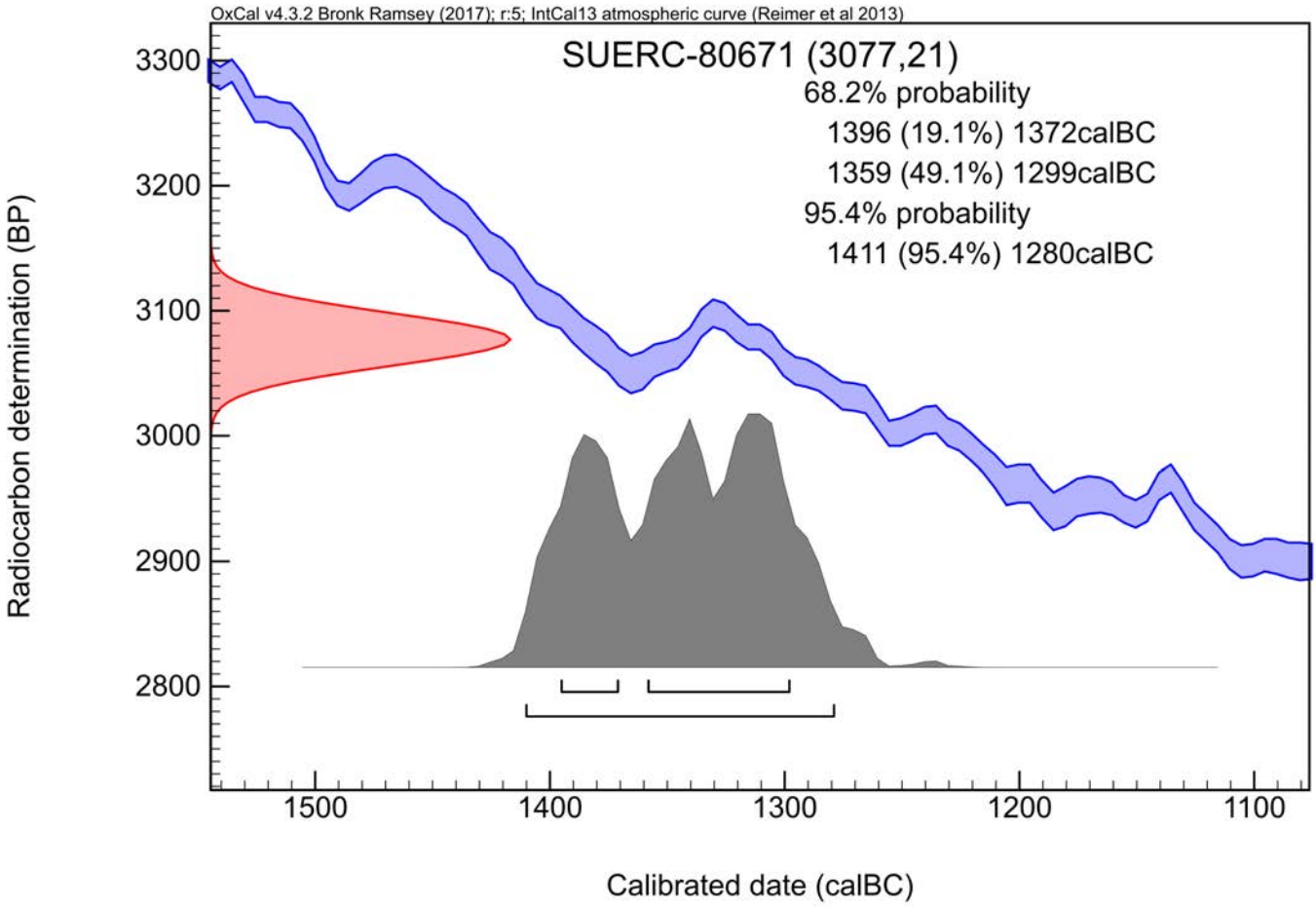
Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

Detailed descriptions of the methods employed by the SUERC Radiocarbon Laboratory can be found in Dunbar et al. (2016) *Radiocarbon 58(1) pp.9-23.*

For any queries relating to this certificate, the laboratory can be contacted at suerc-c14lab@glasgow.ac.uk.

Conventional age and calibration age ranges calculated by : E. Dunbar

Checked and signed off by : P. Nayont



The radiocarbon age given overleaf is calibrated to the calendar timescale using the Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.*

The above date ranges have been calibrated using the IntCal13 atmospheric calibration curve†

Please contact the laboratory if you wish to discuss this further.

* Bronk Ramsey (2009) *Radiocarbon 51(1) pp.337-60*

† Reimer et al. (2013) *Radiocarbon 55(4) pp.1869-87*

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RADIOCARBON DATING CERTIFICATE

02 July 2019

Laboratory Code	SUERC-87240 (GU51527)
Submitter	Luke Parker Archaeological Research Services Ltd Angel House Portland Square Bakewell Derbyshire DE45 1HB
Site Reference	Lochinver Quarry (LOCH19)
Context Reference	Pit from post-built roundhouse (4694)
Sample Reference	LOCH19.2
Material	Charred cereal : Barley grain (Hordeum vulgare)
$\delta^{13}C$ relative to VPDB	-24.4 ‰
Radiocarbon Age BP	3092 ± 24

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD) and requires calibration to the calendar timescale. The error, expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

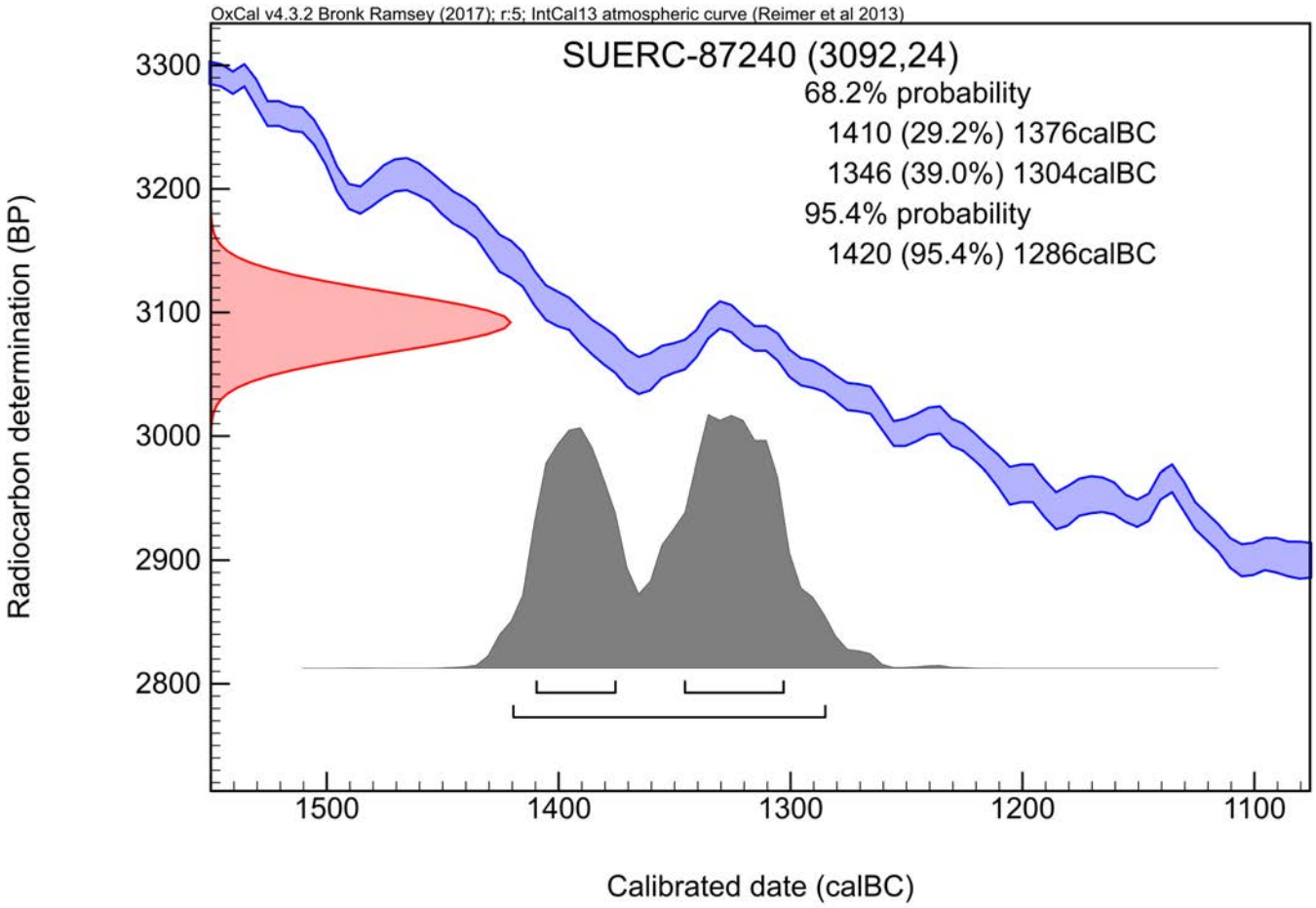
Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

Detailed descriptions of the methods employed by the SUERC Radiocarbon Laboratory can be found in Dunbar et al. (2016) *Radiocarbon 58(1) pp.9-23.*

For any queries relating to this certificate, the laboratory can be contacted at suerc-c14lab@glasgow.ac.uk.

Conventional age and calibration age ranges calculated by :

Checked and signed off by :



The radiocarbon age given overleaf is calibrated to the calendar timescale using the Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.*

The above date ranges have been calibrated using the IntCal13 atmospheric calibration curve†

Please contact the laboratory if you wish to discuss this further.

* Bronk Ramsey (2009) *Radiocarbon 51(1) pp.337-60*

† Reimer et al. (2013) *Radiocarbon 55(4) pp.1869-87*

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RADIOCARBON DATING CERTIFICATE

26 July 2018

Laboratory Code	SUERC-80677 (GU48203)
Submitter	Luke Parker Archaeological Research Services Ltd Angel House Portland Square Bakewell Derbyshire DE45 1HB
Site Reference	LOCH'18
Context Reference	(1263) Roundhouse posthole
Sample Reference	LOCH'18.4
Material	Charred cereal : Hordeum sp.
$\delta^{13}C$ relative to VPDB	-23.5 ‰
Radiocarbon Age BP	2890 ± 24

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD) and requires calibration to the calendar timescale. The error, expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

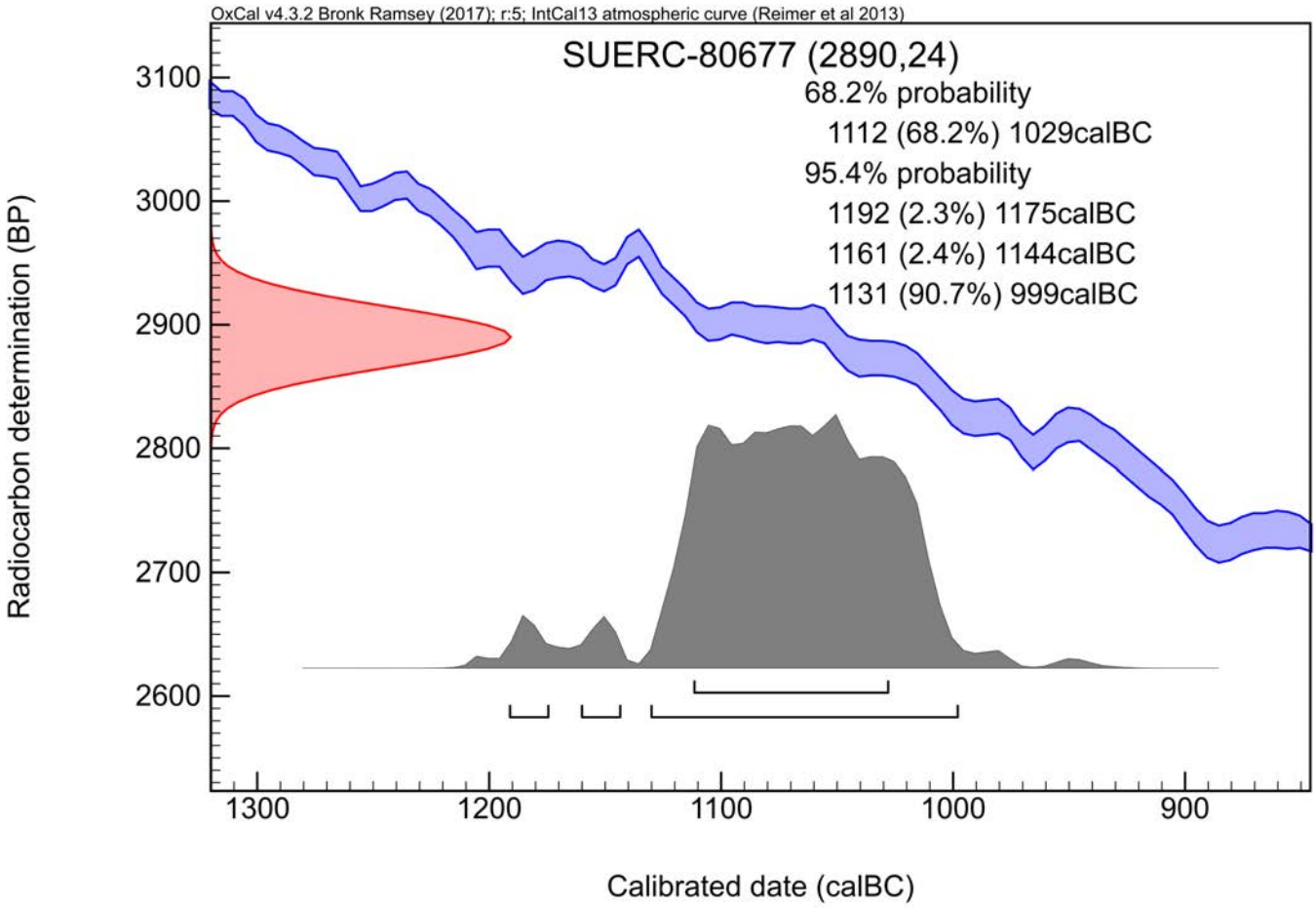
Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

Detailed descriptions of the methods employed by the SUERC Radiocarbon Laboratory can be found in Dunbar et al. (2016) *Radiocarbon 58(1) pp.9-23.*

For any queries relating to this certificate, the laboratory can be contacted at suerc-c14lab@glasgow.ac.uk.

Conventional age and calibration age ranges calculated by : E. Dunbar

Checked and signed off by : P. Nayont



The radiocarbon age given overleaf is calibrated to the calendar timescale using the Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.*

The above date ranges have been calibrated using the IntCal13 atmospheric calibration curve†

Please contact the laboratory if you wish to discuss this further.

* Bronk Ramsey (2009) *Radiocarbon 51(1) pp.337-60*

† Reimer et al. (2013) *Radiocarbon 55(4) pp.1869-87*

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RADIOCARBON DATING CERTIFICATE

20 July 2017

Laboratory Code	SUERC-74096 (GU44491)
Submitter	Luke Parker Archaeological Research Services Ltd Angel House Portland Square Bakewell Derbyshire DE45 1HB
Site Reference	Lochinver Quarry
Context Reference	Post hole forming roundhouse 2
Sample Reference	RH2/1178
Material	Charred cereal : Triticum spelta
δ ^{13}C relative to VPDB	-22.9 ‰
Radiocarbon Age BP	2851 ± 29

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

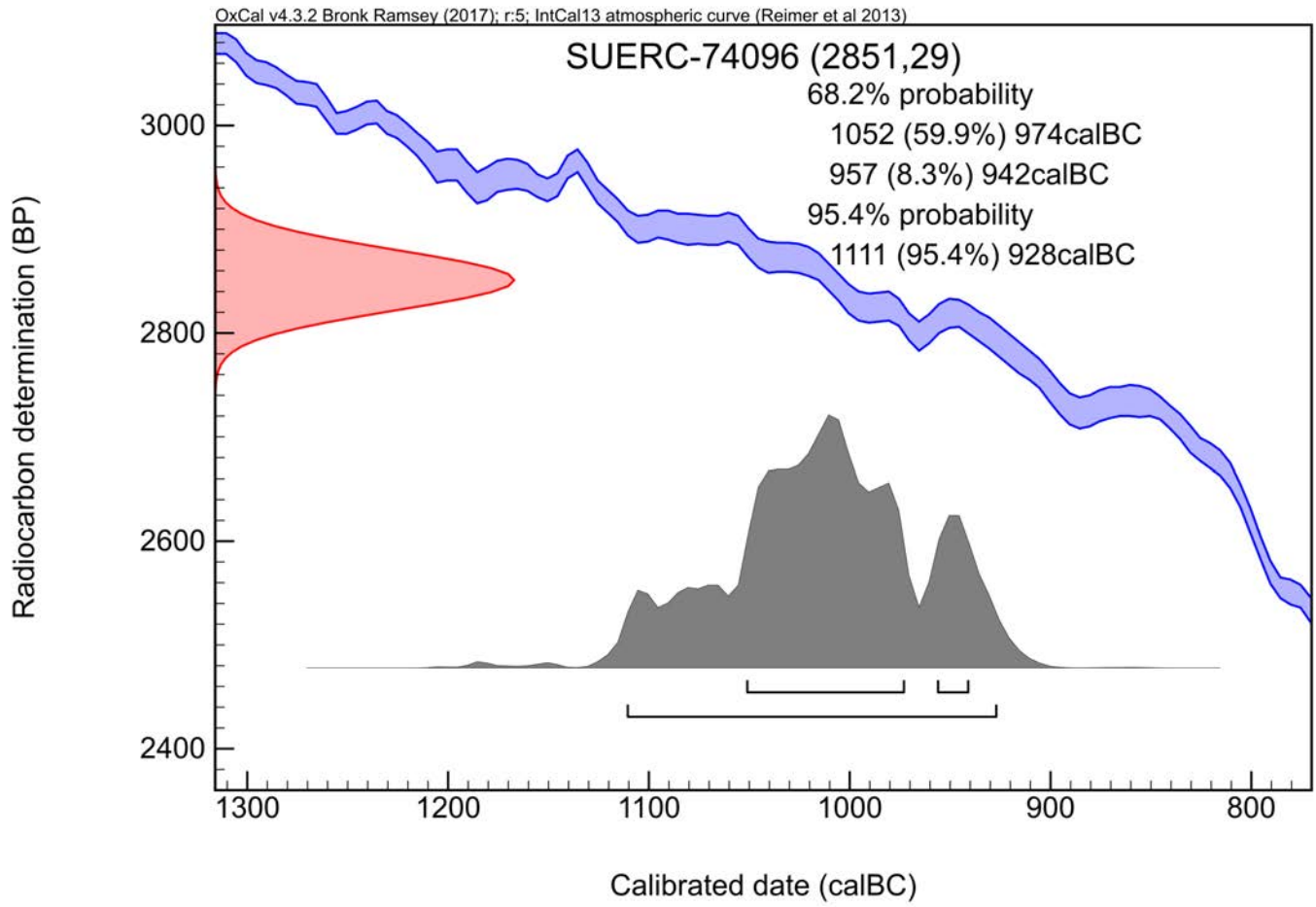
The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email Gordon.Cook@glasgow.ac.uk or telephone 01355 270136 direct line.

Conventional age and calibration age ranges calculated by :- B Tagg Date :- 20/07/2017

Checked and signed off by :- E. Dunbar Date :- 20/07/2017

Calibration Plot



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RADIOCARBON DATING CERTIFICATE

20 July 2017

Laboratory Code	SUERC-74097 (GU44492)
Submitter	Luke Parker Archaeological Research Services Ltd Angel House Portland Square Bakewell Derbyshire DE45 1HB
Site Reference	Lochinver Quarry
Context Reference	Pit adjacent to roundhouse 2
Sample Reference	F1184/1191
Material	Charcoal : Crataegus monogyma
$\delta^{13}C$ relative to VPDB	-27.0 ‰
Radiocarbon Age BP	2806 ± 29

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

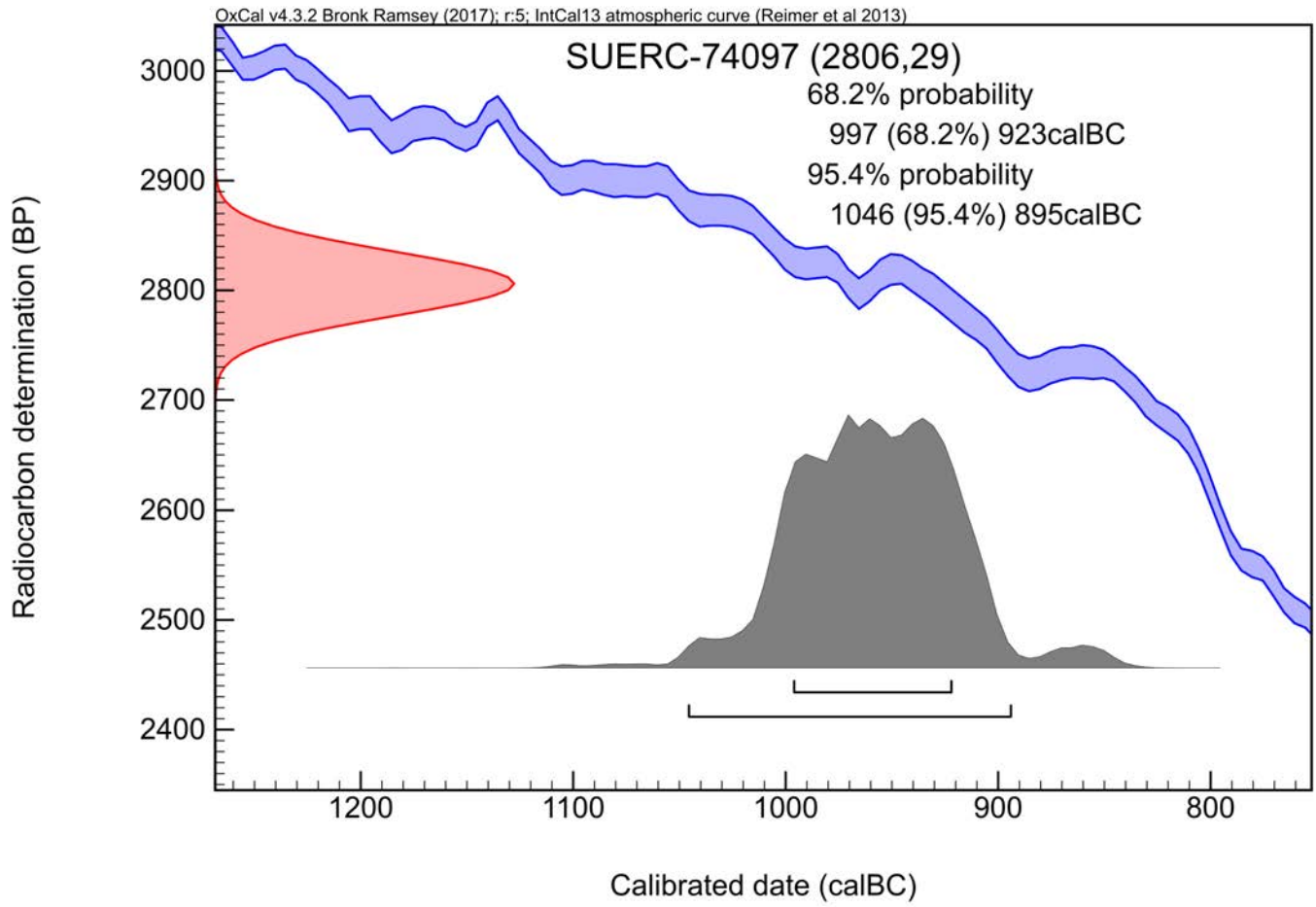
The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email Gordon.Cook@glasgow.ac.uk or telephone 01355 270136 direct line.

Conventional age and calibration age ranges calculated by :- B Tripney Date :- 20/07/2017

Checked and signed off by :- E. Dunbar Date :- 20/07/2017

Calibration Plot



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RADIOCARBON DATING CERTIFICATE

16 September 2015

Laboratory Code	SUERC-62309 (GU38365)
Submitter	Elise McLellan Archaeological Research Services Angel House Portland Square Bakewell, Derbyshire DE45 1HB
Site Reference	Loch Inver Quarry
Context Reference	(020)
Sample Reference	LOCH-3
Material	Wood charcoal (short-lived) : Betula sp.
$\delta^{13}C$ relative to VPDB	-26.5 ‰
Radiocarbon Age BP	2461 ± 30

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

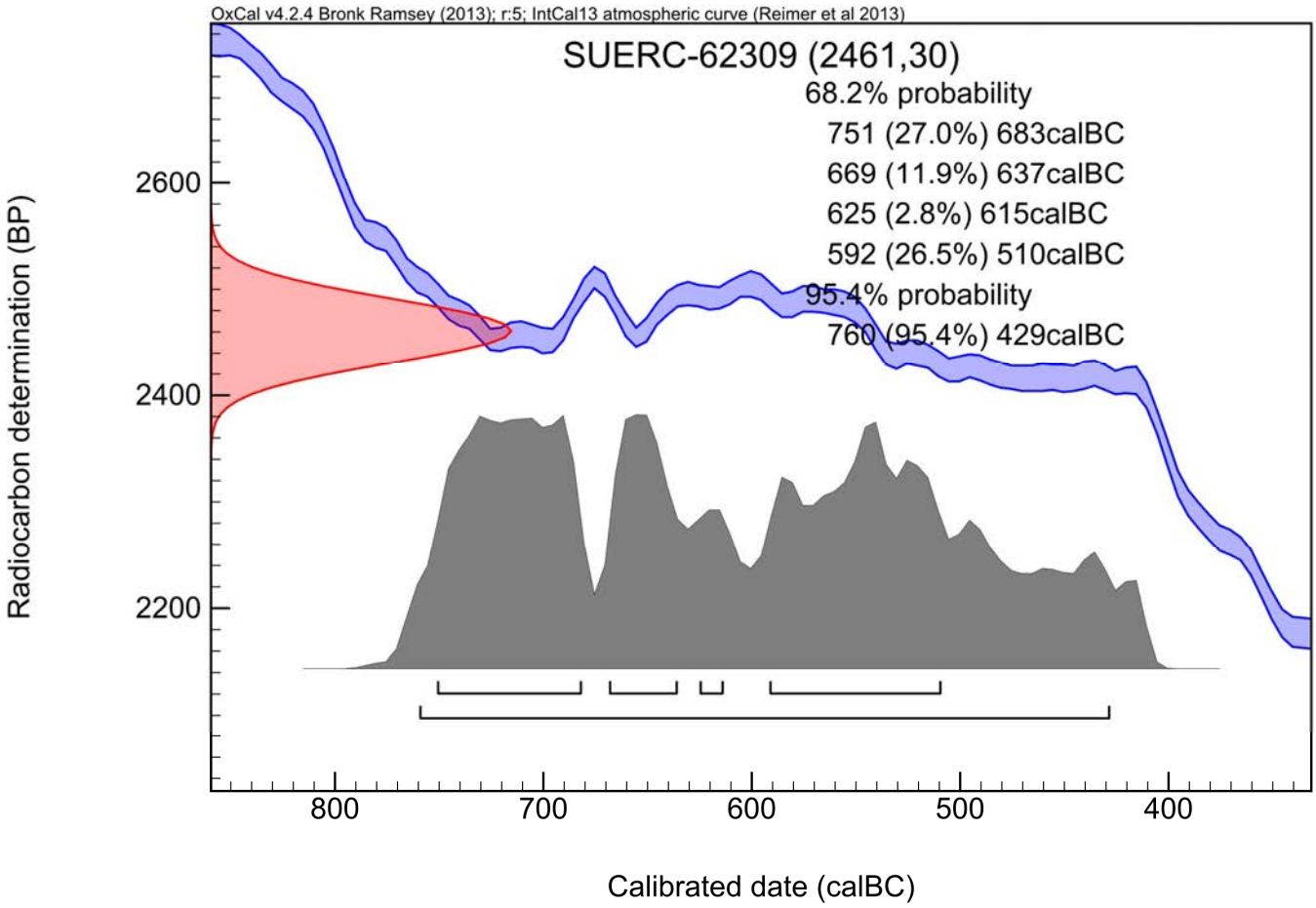
The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email Gordon.Cook@glasgow.ac.uk or telephone 01355 270136 direct line.

Conventional age and calibration age ranges calculated by :- E. Dunbar Date :- 16/09/2015

Checked and signed off by :- P. Nayont Date :- 16/09/2015

Calibration Plot



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RADIOCARBON DATING CERTIFICATE

02 July 2019

Laboratory Code	SUERC-87244 (GU51528)
Submitter	Luke Parker Archaeological Research Services Ltd Angel House Portland Square Bakewell Derbyshire DE45 1HB
Site Reference	Lochinver Quarry (LOCH19)
Context Reference	Pit from post-built rectangular building (4740)
Sample Reference	LOCH19.3
Material	Charred cereal : Barley grain (Hordeum vulgare)
$\delta^{13}C$ relative to VPDB	-22.2 ‰
Radiocarbon Age BP	2135 ± 24

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD) and requires calibration to the calendar timescale. The error, expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

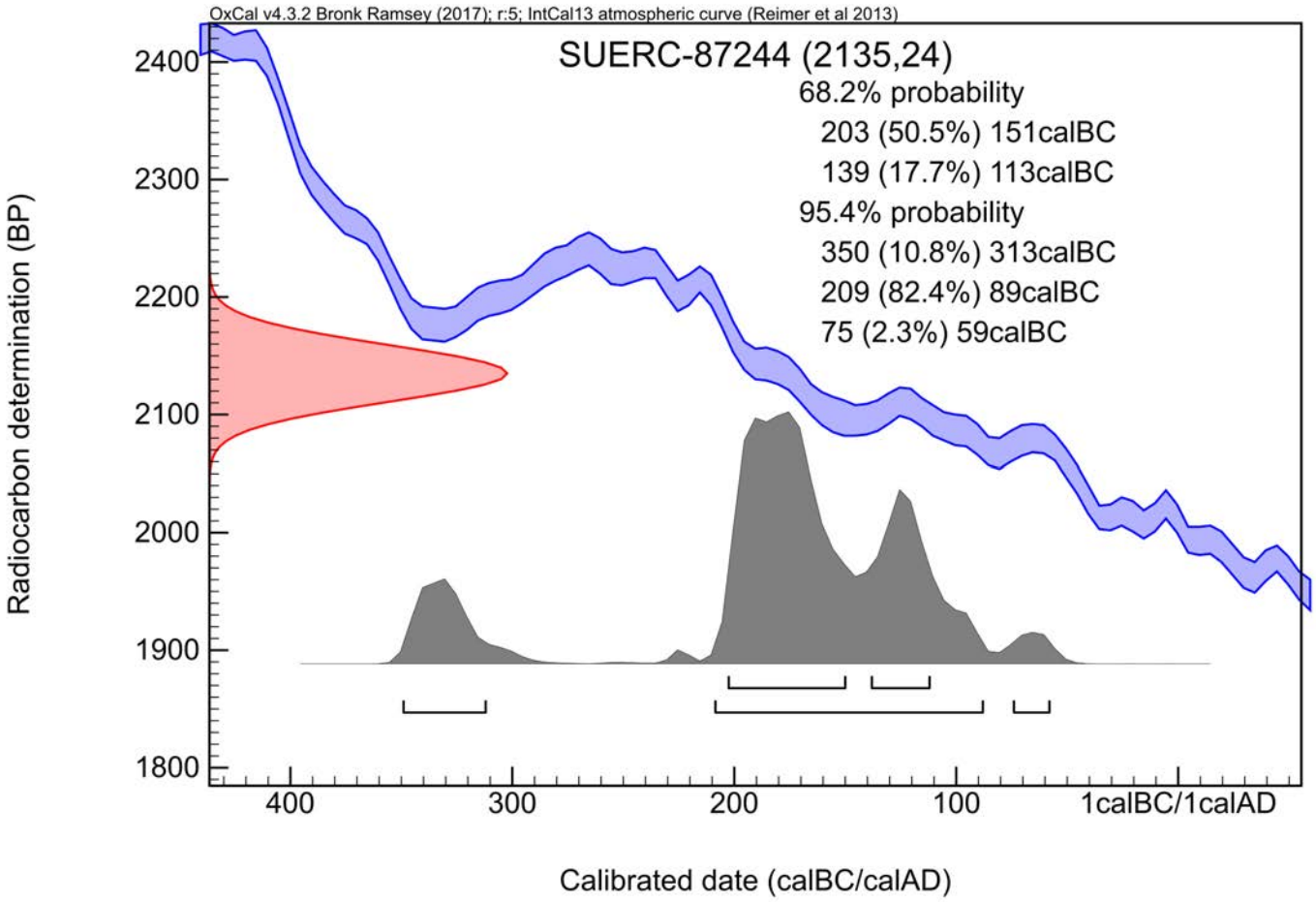
Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

Detailed descriptions of the methods employed by the SUERC Radiocarbon Laboratory can be found in Dunbar et al. (2016) *Radiocarbon 58(1) pp.9-23.*

For any queries relating to this certificate, the laboratory can be contacted at suerc-c14lab@glasgow.ac.uk.

Conventional age and calibration age ranges calculated by :

Checked and signed off by :



The radiocarbon age given overleaf is calibrated to the calendar timescale using the Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.*

The above date ranges have been calibrated using the IntCal13 atmospheric calibration curve†

Please contact the laboratory if you wish to discuss this further.

* Bronk Ramsey (2009) *Radiocarbon 51(1) pp.337-60*

† Reimer et al. (2013) *Radiocarbon 55(4) pp.1869-87*

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RADIOCARBON DATING CERTIFICATE

26 July 2018

Laboratory Code	SUERC-80672 (GU48201)
Submitter	Luke Parker Archaeological Research Services Ltd Angel House Portland Square Bakewell Derbyshire DE45 1HB
Site Reference	LOCH'18
Context Reference	(1259) Roundhouse posthole
Sample Reference	LOCH'18.2
Material	Charred cereal : Hordeum sp.
$\delta^{13}C$ relative to VPDB	-25.0 ‰ assumed
Radiocarbon Age BP	2909 ± 24

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD) and requires calibration to the calendar timescale. The error, expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

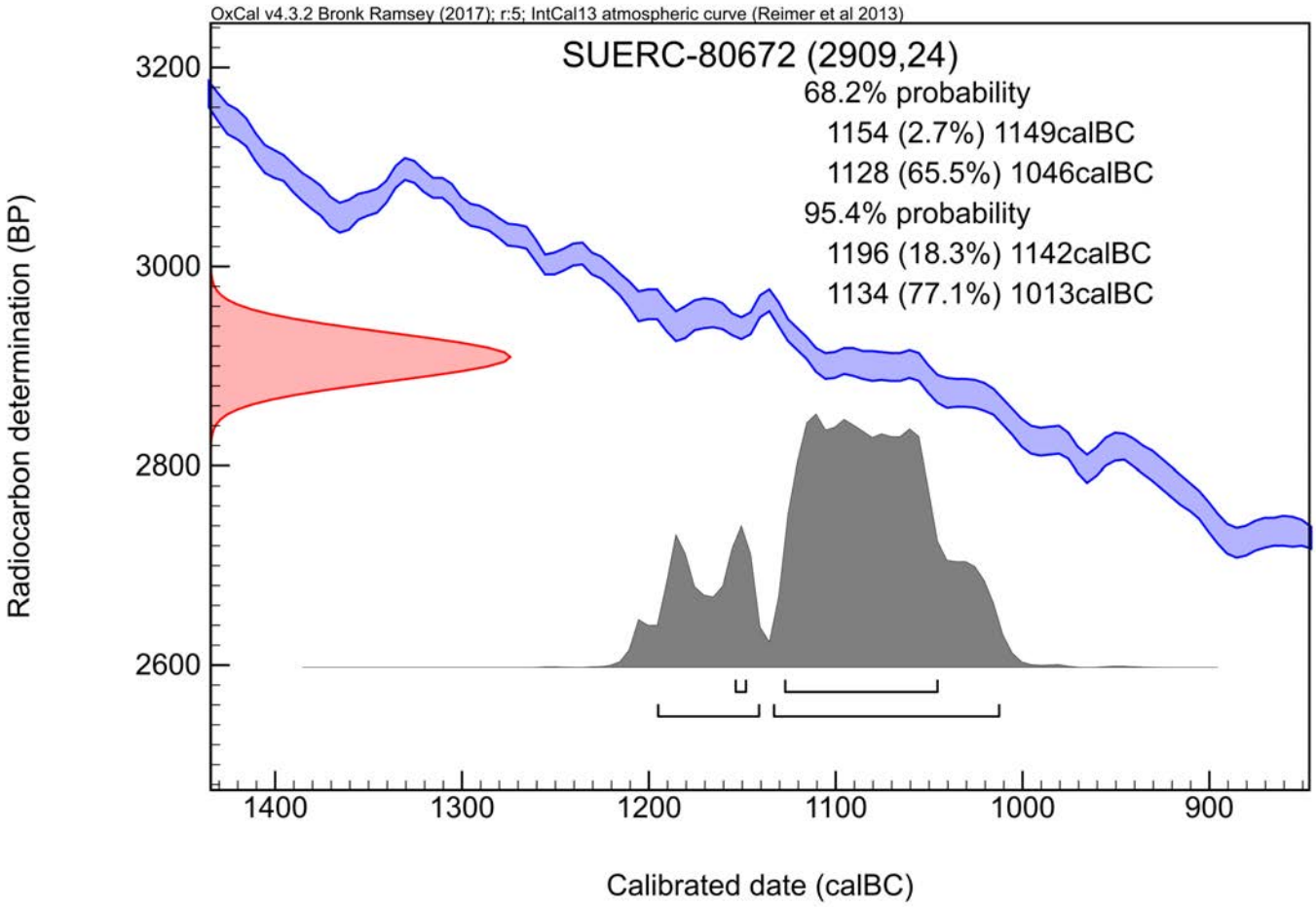
Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

Detailed descriptions of the methods employed by the SUERC Radiocarbon Laboratory can be found in Dunbar et al. (2016) *Radiocarbon 58(1) pp.9-23.*

For any queries relating to this certificate, the laboratory can be contacted at suerc-c14lab@glasgow.ac.uk.

Conventional age and calibration age ranges calculated by : E. Dunbar

Checked and signed off by : P. Nayont



The radiocarbon age given overleaf is calibrated to the calendar timescale using the Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.*

The above date ranges have been calibrated using the IntCal13 atmospheric calibration curve†

Please contact the laboratory if you wish to discuss this further.

* Bronk Ramsey (2009) *Radiocarbon 51(1) pp.337-60*

† Reimer et al. (2013) *Radiocarbon 55(4) pp.1869-87*

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RADIOCARBON DATING CERTIFICATE

26 July 2018

Laboratory Code	SUERC-80673 (GU48202)
Submitter	Luke Parker Archaeological Research Services Ltd Angel House Portland Square Bakewell Derbyshire DE45 1HB
Site Reference	LOCH'18
Context Reference	(1208) Palisade slot
Sample Reference	LOCH'18.3
Material	Charred cereal : Hordeum sp.
$\delta^{13}C$ relative to VPDB	-24.0 ‰
Radiocarbon Age BP	873 ± 24

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD) and requires calibration to the calendar timescale. The error, expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

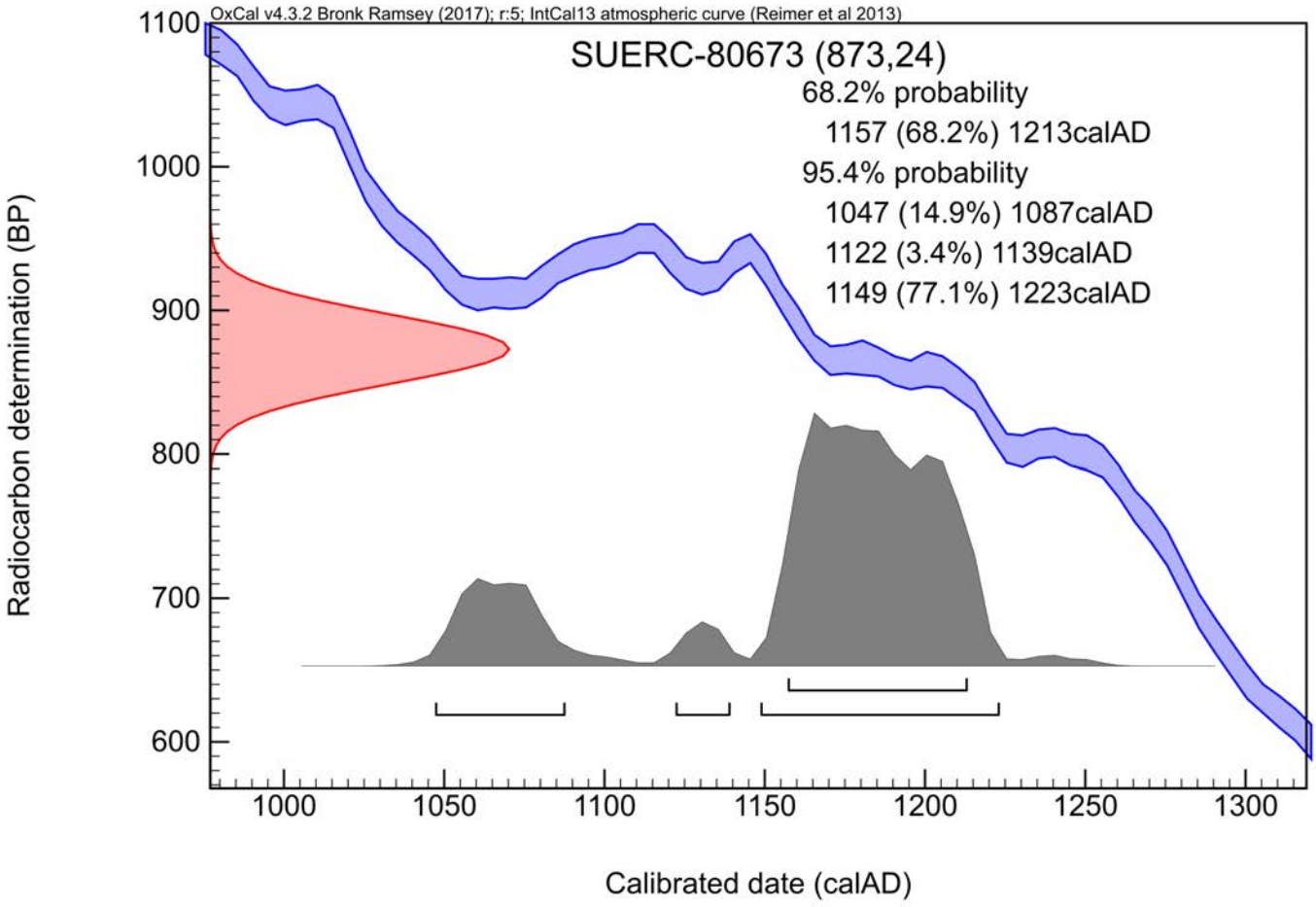
Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

Detailed descriptions of the methods employed by the SUERC Radiocarbon Laboratory can be found in Dunbar et al. (2016) *Radiocarbon 58(1) pp.9-23.*

For any queries relating to this certificate, the laboratory can be contacted at suerc-c14lab@glasgow.ac.uk.

Conventional age and calibration age ranges calculated by : E. Dunbar

Checked and signed off by : P. Nayont



The radiocarbon age given overleaf is calibrated to the calendar timescale using the Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.*

The above date ranges have been calibrated using the IntCal13 atmospheric calibration curve†

Please contact the laboratory if you wish to discuss this further.

* Bronk Ramsey (2009) *Radiocarbon 51(1) pp.337-60*
† Reimer et al. (2013) *Radiocarbon 55(4) pp.1869-87*

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RADIOCARBON DATING CERTIFICATE

16 September 2015

Laboratory Code	SUERC-62310 (GU38366)
Submitter	Elise McLellan Archaeological Research Services Angel House Portland Square Bakewell, Derbyshire DE45 1HB
Site Reference	Loch Inver Quarry
Context Reference	(046)
Sample Reference	LOCH-4
Material	Charred cereal grain : Triticum sp.
$\delta^{13}C$ relative to VPDB	-22.3 ‰
Radiocarbon Age BP	491 ± 30

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

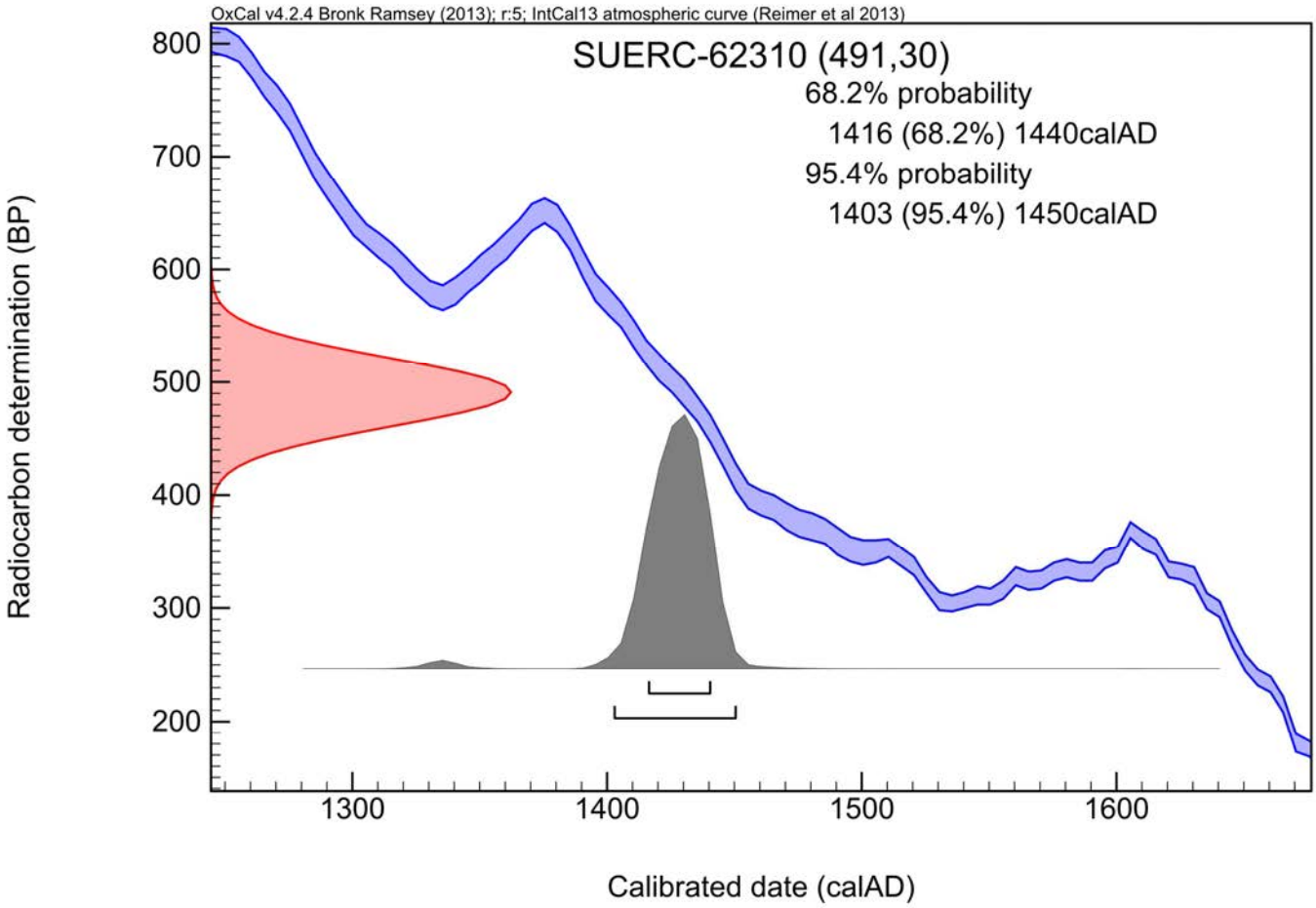
The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email Gordon.Cook@glasgow.ac.uk or telephone 01355 270136 direct line.

Conventional age and calibration age ranges calculated by :- E. Dunbar Date :- 16/09/2015

Checked and signed off by :- P. Nayont Date :- 16/09/2015

Calibration Plot



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RADIOCARBON DATING CERTIFICATE

16 September 2015

Laboratory Code	SUERC-62307 (GU38363)
Submitter	Elise McLellan Archaeological Research Services Angel House Portland Square Bakewell, Derbyshire DE45 1HB
Site Reference	Loch Inver Quarry
Context Reference	(048)
Sample Reference	LOCH-1
Material	Charred cereal grain : Hordeum sp.
$\delta^{13}C$ relative to VPDB	-24.0 ‰
Radiocarbon Age BP	113 ± 30

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

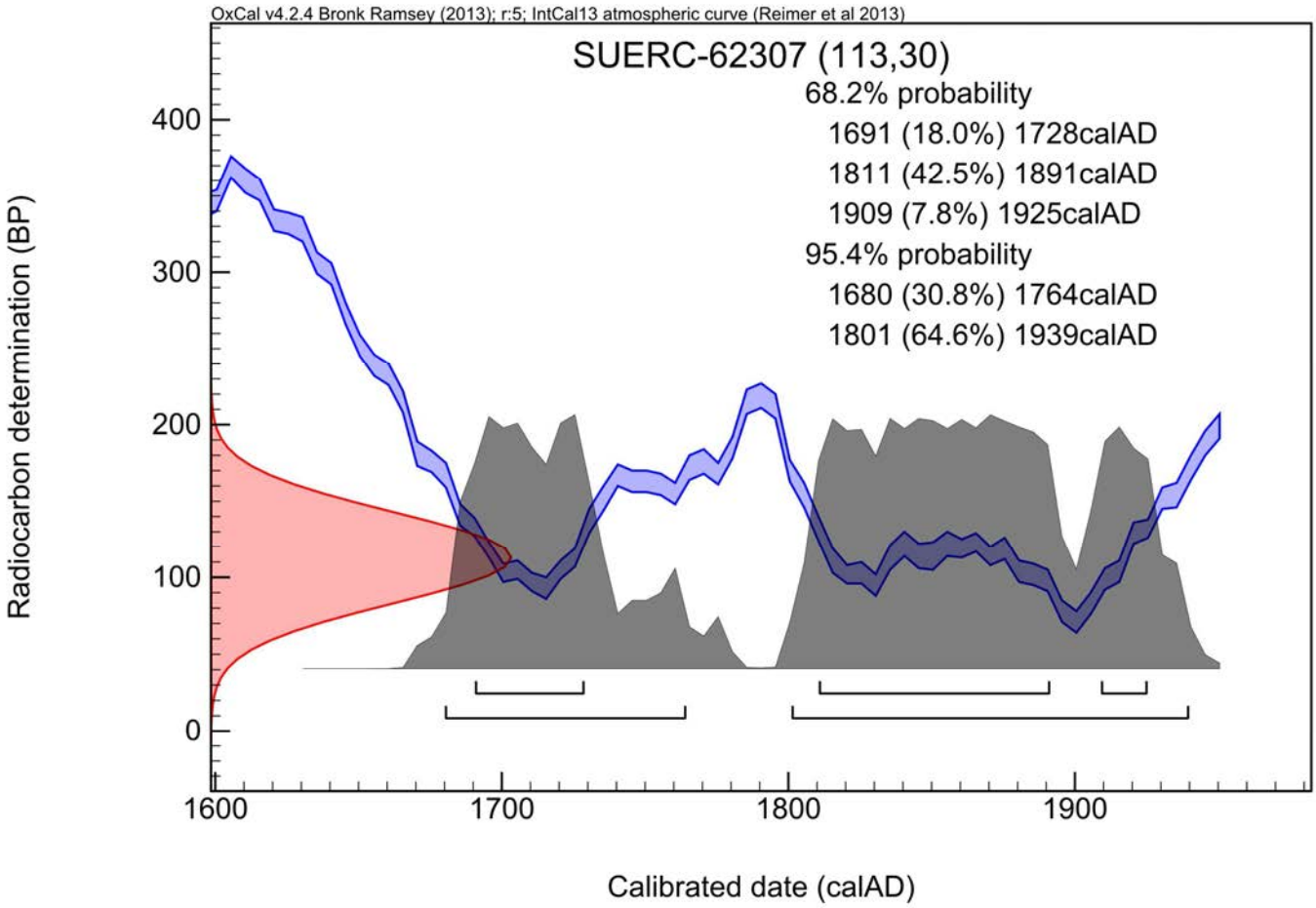
The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email Gordon.Cook@glasgow.ac.uk or telephone 01355 270136 direct line.

Conventional age and calibration age ranges calculated by :- E. Dunbar Date :- 16/09/2015

Checked and signed off by :- P. Nayont Date :- 16/09/2015

Calibration Plot



APPENDIX VI – OASIS FORM

OASIS DATA COLLECTION FORM: Scotland

Printable version

OASIS ID: archaeol5-157642

Project details

Project name	Archaeological Excavations at Lochinver Quarry, Elgin
Project dates	Start: 10-04-2013
Previous/future work	Yes / Yes
Any associated project reference codes	LOCH'15 - Sitecode
Any associated project reference codes	LOCH'16 - Sitecode
Any associated project reference codes	LOCH'17 - Sitecode
Any associated project reference codes	LOCH'13 - Sitecode
Any associated project reference codes	LOCH'14 - Sitecode
Any associated project reference codes	LOCH'18 - Sitecode
Any associated project reference codes	LOCH'19 - Sitecode
Type of project	Recording project
Site status	None
Current Land use	Cultivated Land 3 - Operations to a depth more than 0.25m
Monument type	FURNACE Iron Age
Monument type	SETTLEMENT Bronze Age
Monument type	CREMATION BURIAL Bronze Age
Monument type	POST BUILT STRUCTURE Neolithic
Monument type	POST BUILT STRUCTURE Iron Age
Monument type	PIT Uncertain
Monument type	POSTHOLE Uncertain
Significant Finds	FIRED-CLAY OBJECTS Uncertain
Significant Finds	POTTERY Prehistoric
Investigation type	"""Open-area excavation"""
Prompt	Planning condition

Project location

Country	Scotland

Site location	MORAY ELGIN Lochiver Quarry
Study area	12.5 Hectares
Site coordinates	NJ 18130 61250 57.633987910009 -3.371290793416 57 38 02 N 003 22 16 W Point

Project creators

Name of Organisation	Archaeological Research Services Ltd
Project brief originator	Aberdeenshire Archaeology Service
Project design originator	Archaeological Research Services Ltd
Project director/manager	Clive Waddington
Project supervisor	Philippa Hunter
Project supervisor	Chris Scott
Project supervisor	Gillian Eadie
Project supervisor	Rupert Lotherington
Type of sponsor/funding body	Developer

Project archives

Physical Contents	"Animal Bones","Ceramics","Environmental","Metal","Wood","Worked stone/lithics"
Digital Contents	"none"
Digital Media available	"Images raster / digital photography","Survey"
Paper Archive recipient	Aberdeenshire Archaeology Service
Paper Contents	"none"
Paper Media available	"Context sheet","Map","Matrices","Plan","Report","Section"

Project bibliography 1

Publication type	Grey literature (unpublished document/manuscript)
Title	Archaeological Excavations at Lochinver Quarry, Elgin, 2013-2019
Author(s)/Editor(s)	Cockcroft, D. Hunter, P. Potter, M. and Waddington, C
Other bibliographic details	2019/176
Date	2019
Issuer or publisher	Archaeological Research Services Ltd
Place of issue or publication	Hebburn
Description	PDF - Full colour, 230pp, A4 and A3

Entered by	David Cockcroft (david.cockcroft@archaeologicalresearchservices.com)
Entered on	5 September 2019

OASIS: