ARCHAEOLOGICAL SERVICES
DURHAM UNIVERSITY

on behalf of
Avant Homes

Land east of Salters Lane Longbenton Tyne and Wear

post-excavation analysis

report 5406
June 2021

Durham University

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1. Summary

The project

1.1 This report presents the results of a full analysis of an archaeological excavation conducted for a development on land west of Camperdown Industrial Estate, Tyne and Wear. The works comprised an excavation of an area covering *c.*0.4 ha. Following post-excavation assessment, radiocarbon dating and further palaeoenvironmental analysis was conducted. The results of the assessment and analysis have been incorporated into this full analysis report.

1.2 The works were commissioned by Avant Homes and conducted by Archaeological Services Durham University.

Results

1.3 One small pit or posthole in the centre of the later ring-ditch produced a Neolithic radiocarbon date. It is possible that at least some of the similar undated features in this area are of similar date.

1.4 A substantial ring-ditch was excavated on the site during the Early Bronze Age. This is thought to have originally surrounded a barrow mound, although the mound does not survive. There is considerable evidence that it survived as a significant landscape feature until the recent past.

1.5 Slightly later Bronze Age activity on the site is demonstrated by three groups of features: a cluster of short gullies and postholes in the centre of the ring-ditch, a rectangular enclosure attached to its outside edge and a penannular gully to the north-east. All produced radiocarbon dates around 300-400 years later than the ring-ditch.

1.6 The ring-ditch only infilled slowly and an Iron Age radiocarbon date was obtained from its middle fills. This was accompanied by a change in the nature of the fills, indicating a change in depositional environments. No Iron Age features were confirmed, although one undated ditch was potentially of this date.

1.7 A ring of postholes was cut into the inside edge of the ring-ditch in the medieval period; this was probably for a small fenced enclosure.

1.8 Medieval or post-medieval ridge and furrow, and post-medieval field boundary ditches crossed the site. These respected the location of the ring ditch; the field boundary ditches formed a box pattern around it. Post-medieval artefacts were recovered from the upper fills of the barrow ditch, indicating that the ditch and the possible mound accompanying it were still visible features in the landscape at this time.

2. Project background

Location (Figure 1)

2.1 The site is located on land west of Camperdown Industrial Estate, Tyne and Wear (NGR centre: NZ 2629 7193). It covers a total area of approximately 8ha; 0.4ha of this was selected for excavation. It is bounded to the north by a small stream, to the east by East Coast Main Line, to the south by the A1056 and to the west by the A189 (Salters Lane).

Development

2.2 Planning permission for 200 new homes has been granted on the site. The planning application reference number is 6/01889/FUL.

Objective

2.3 The objective of the scheme of works was to analyse the data produced from the excavation, so that a coherent narrative for the site could be produced.

Research Objectives

2.4 The regional research framework (Petts & Gerrard 2006) contains an agenda for archaeological research in the region. The scheme of works was designed to address agenda items:

Neolithic and Early Bronze Age
NBiii: Monumentality

Late Bronze Age and Iron Age
I1: Chronology
I2: Changing landscapes
I3: Settlement function
Iii: Settlement
Iiii: Landscapes

Specification

2.5 The works have been undertaken in accordance with an Updated Project Design produced by Archaeological Services.

Dates

2.6 The excavation was undertaken between 9th September and 22nd October 2019. A post-excavation assessment report was prepared for April 2020 (Archaeological Services 2020b). This report was prepared for May 2021.

Personnel

2.7 Fieldwork was conducted by Daniel Adamson, Jeffrey Lowrey, Ben Matus, Meghan McCarthy, Alice Naylor, Andy Platell and Laura Watson, and Jamie Armstrong and Matthew Claydon (supervisors). This report was prepared by Matthew Claydon and Andy Platell, with illustrations by David Graham and Janine Watson (microlith). Specialist reporting was conducted Dr Helen Drinkall (lithics), Jennifer Jones (other artefacts), and Dr Charlotte O'Brien (palaeoenvironmental). Sample processing was undertaken by Jonathan Goldberg-Booth, Jeffrey Lowrey, Ben Matus, Meghan McCarthy and Alice Naylor. The Project Manager was Daniel Still.

Archive/OASIS

2.8 The site code is **LSL19**, for **L**ongbenton **S**alter's **L**ane 20**19**. The archive is currently held by Archaeological Services Durham University and will be transferred to the Great North Museum in due course. The flots, plant macrofossils and charcoal will be retained at Archaeological Services Durham University. Archaeological Services Durham University is registered with the **O**nline **A**cces**S** to the **I**ndex of archaeological investigation**S** project (**OASIS**). The OASIS ID number for this project is **archaeol3-412980**.

3. Landuse, topography and geology

3.1 At the time of the excavation, the development area comprised a recently vacated agricultural field. Development had commenced in areas away from the archaeologically significant part of the site.

3.2 The excavation area was predominantly level with a mean elevation of approximately 62m OD.

3.3 The underlying bedrock geology of the area comprises Carboniferous mudstone, siltstone and sandstone of the Pennine Middle Coal Measures Formation, overlain by Devensian till (British Geological Survey 2021).

4. Previous archaeological works

4.1 A report detailing the archaeological and historical background of the investigation area was compiled as part of a desk-based assessment (McKelvey 2015).

4.2 A geophysical survey (Muncaster 2016) has been undertaken over the site, which identified previous ploughing regimes and former field boundaries.

4.3 A subsequent archaeological evaluation (Archaeological Services 2017) was carried out which identified a ditch, but no dateable artefacts were recovered.

4.4 The resulting excavation (Archaeological Services 2020b) revealed a large ring-ditch characteristic of a round barrow. These are burial mounds generally of Early Bronze Age date, although examples date from the later Neolithic through to the early medieval period. No burial was identified within the ring-ditch, and only traces of possible barrow material survived. A hazelnut shell fragment from the primary fill of the ring-ditch returned an Early Bronze Age radiocarbon date of 1870-1640 cal BC. Numerous small gully and posthole-like features were recorded across the barrow. Palaeoenvironmental material indicated that at least some of these features were of prehistoric or Romano-British date. Historic Ordnance Survey maps mark a triangulation station on the site of the barrow, suggesting an earthwork survived here until the mid-20th century.

4.5 Ditches and gullies were also identified which possibly related to prehistoric activity. Some of these features may have pre-dated the barrow.

4.6 A shallow ring-gully *c.*5m in diameter was identified to the north-east of the barrow. This was potentially a drainage gully for an Iron Age roundhouse.

4.7 Further ditches recorded on the site probably related to post-medieval field systems. Shallow pits of late post-medieval date were also recorded.

4.8 The artefactual assemblage was predominantly post-medieval and derived from the later features on the site, although two prehistoric flint tools were also recovered. Palaeoenvironmental analysis of samples from the features provided material suitable for a programme of radiocarbon dating.

5. The excavation

Introduction

5.1 Following further analysis of the data, a clearer understanding of the development of the site has been established. The area around the previously discovered ditch had been stripped of topsoil under strict archaeological supervision, using a mechanical excavator fitted with a toothless ditching bucket. Context data is summarised in Table 1.1. Trench plans are provided on Figures 3 and 7; sections can be found on Figures 4 to 6.

5.2 Natural subsoil, a yellow clay [11], was identified at a depth of *c*.0.3m. The previously discovered ditch was re-identified, although further excavation established that it was a post-medieval field boundary ditch of low archaeological significance (see paragraph 5.17 below). However, while stripping the area around this ditch, a far more significant, circular ditch was exposed; excavation work was therefore concentrated on this feature.

5.3 Remnant mound material was identified, but this is believed to derive from the destruction of the barrow mound. Beneath this were a series of cut features. Amongst these were multiple animal burrows, some of which were investigated as potential archaeological features but later discounted. Other cuts were undated at the time of the excavation; radiocarbon dates have been obtained for some of them, but others could not be dated.

Phase 1: Neolithic

5.4 The earliest features were located on a slight mound, later enclosed by the ring ditch. Near the eastern edge of the mound was a shallow posthole [F61: 0.35m in diameter, 0.06m deep]. It was filled with a dark silty clay [60] and provided a Neolithic radiocarbon date of 3770-3640 cal BC (SUERC-96294). Several other potentially similar postholes were present in the surrounding area which may be of the same date. To the west was posthole [F64: 0.5m by 0.4m, 0.1m deep], filled with a brown silty clay [63], to the north-west was posthole [F15=F86: 0.4m in diameter, 0.05m deep], filled with a dark silty clay [85] and near the centre of the ring-ditch was posthole [F232: 0.4m in diameter, 0.05m deep], filled with a black silty clay [231].

5.5 To the south-west of these postholes, but still within the area enclosed by the ring-ditch, was a series of more irregular features. These are undated and their relationship to other features in this area is uncertain. In the south-west quadrant of the ring-ditch was a short, irregular gully [F29: 3.3m long by 0.5m wide, 0.15m deep] filled with a dark black-brown silty clay [189]. This was significantly truncated by a modern geotechnical pit. To the west was an irregular pit [F80: 1.2m by 0.6m, 0.1m deep] filled with a black silty clay [79], and to the south was a similar feature [F209:

0.9m by 0.6m, 0.15m deep] also filled with a dark black-brown silty clay [208]. East of this, near the southern edge of the ring-ditch, was a short linear gully [F193=F195: 3.9m long by 0.3m wide, 0.05m deep] filled with a dark grey-brown silty clay [192=194].

Phase 2A: Early Bronze Age

Barrow (Photos 1 and 2)

5.6 The most significant feature encountered was a Bronze Age barrow. This comprised a ring ditch, and internal gullies and pits. The ring-ditch surrounded a low mound which proved to be a natural geological feature incorporated into the barrow (Figure 6; profile). Within the area enclosed by this ring-ditch was a shallow and intermittent deposit of mixed yellow clay and black clayey sandy silt [22: up to 0.1m deep]. This could not be defined into any discrete features, and after investigation, was also removed by machine. Indirect evidence from the excavation combined with analysis of the historic mapping (outlined below: see paragraph 9.7) suggests that a significant mound (around 3m high) was present inside the ring-ditch. This mound survived into the 20th century, when it was probably deliberately destroyed. This deposit was probably remnant material from the destruction of the mound.

5.7 The dominant feature on the site, and surrounding all the above features, was a substantial ring-ditch [F14=F32=F94=F100=F106=F173=F188: 28m in diameter, 2.5m wide, 0.5m deep]. Radiocarbon dates and artefacts from the ditch fills indicate that it remained open for a considerable time and only filled up slowly. The ditch had a primary fill of grey clay [31=93=97=99=104=159=187: 0.25m deep], containing hazelnut shells which returned Early Bronze Age radiocarbon dates of 1870-1640 cal BC (SUERC-92744), 1750-1540 cal BC (SUERC-96301), 1690-1510 cal BC (SUERC-96300), 1510-1400 cal BC (SUERC-96303) and 1500-1410 cal BC (SUERC-96917) and also an Iron Age date of 780-480 cal BC (SUERC-96299). The last date is thought to be intrusive, and may derive from the animal burrowing that was identified. On the east side, this was overlain by a mottled grey and orange clay [101: 0.15m deep], radiocarbon dated to 1500-1310 cal BC (SUERC-96302). On the west side, the primary fill was overlain by a black silty clay [103=186], which provided an Early Iron Age radiocarbon date of 750-400 cal BC (SUERC-92624). A smaller internal ditch was also identified on this side [F233: 0.5m wide, 0.5m deep]. This had a primary fill of mottled grey and yellow sandy clay [105]. Both ring-ditches had an upper fill of dark grey-brown clayey loam [30=95=102=113=158=174=185: 0.2m deep]. Fragments of glass and pottery within this later deposit indicate that it accumulated during the post-medieval period.

Phase 2B: Later Bronze Age

5.8 Three groups of features all produced Later Bronze Age radiocarbon dates, typically of around 1400-1200 cal BC. This is about 300-400 years later than the dates obtained from the bottom fills of the barrow ditch, indicating that they belong to a slightly later phase of activity.

Barrow, internal features (Photo 3)

5.9 An arrangement of short gullies was present in the north-east quadrant of the barrow. To the west, gully [F82=F88: 3.2m long by 0.4m wide, 0.1m deep] formed a rough L-shape with possible post settings [F70] and [F84] at each end. All three were filled with similar dark brown sandy silty clays [81=87; 69; 83]. Material from [69] provided a Later Bronze Age radiocarbon date of 1410-1220 cal BC (SUERC- 96295).

To the east was another arrangement of gullies that formed an almost mirror image, although in this case the two gully arms were not physically connected. The western segment [F40: 1m long by 0.4m wide, 0.1m deep] had a possible post setting at its northern end [F42: 0.25m in diameter, 0.2m deep]; both were filled with brown sandy clays [39; 41]. The eastern segment [F36=F44: 1.2m long by 0.4m wide, 0.1m deep] had a possible post setting at its eastern end [F38: 0.2m in diameter, 0.25m deep]; again both were filled with brown sandy clays [35=43; 37]. Material from [35] provided a comparable radiocarbon date of 1390-1130 cal BC (SUERC-96293). Between these two features were two parallel elongated pits [F197: 0.9m long by 0.5m wide, 0.15m deep] and [F199: 1m long by 0.4m wide, 0.15m deep], both filled with similar brown sandy silty clays [196; 198]. These are undated so it is not certain that they are related to the L-shaped gullies.

5.10 This whole group of features was probably cut through the centre of the barrow mound shortly after it had been constructed, when it was still close to its maximum original height. Historic Ordnance Survey maps mark a triangulation station with a height of 222ft (67.7m) OD on the site of the barrow. This is approximately 3m higher than the ground level prior to excavation (*c.*64.5m), and indicates the mound survived as a much more prominent feature into the modern period. This is further supported by the fact that the 19th-century field drains all conspicuously respected the barrow (see paragraph 5.19). This all indicates that the surviving internal features have been severely truncated and only their bases survive, making it difficult to visualise their original form or function. They may have been the base of a setting for a secondary burial, cut into the side of the original mound. The burial itself would have been removed by truncation.

Rectangular enclosure (Photo 4)

5.11 Immediately east of the barrow were two opposing L-shaped gullies positioned 9m apart, which in combination with the barrow ditch formed a small rectilinear enclosure. The southern gully [F26=F152=F165: 0.4m wide, 0.2m deep] was filled with a dark grey silty clay [150=151=164: 0.1m deep], material from which provided a radiocarbon date of 1420-1260 cal BC (SUERC-96305). This was overlain by a mixed yellow and grey clay loam [149=163: 0.2m deep]. The northern gully [F21=F133= F157: 0.4m wide, 0.15m deep] was filled with a grey-orange clayey silt [125=132= 156]. The southern gully was truncated at either end by later features, and the western end of the northern gully was overlain by the upper fills of the barrow ring-ditch. Its southern end terminated in a rounded butt-end, indicating an entrance on the eastern side. A parallel east/west gully [F27=F168=F175: 5.4m long by 0.4m wide, 0.1m deep], filled with a mottled yellow and grey sandy silty clay [169=176], was identified to the south of the enclosure, while a similar short length of gully [F20=F127=F128: 3m long by 0.5m wide, 0.05m deep], filled with a grey sandy clay [126=129], was present to the north. Although no dating evidence was obtained from either of these features, their locations in relation to the enclosure are highly suggestive, and they are interpreted as parts of an outer circuit of the enclosure boundary. The whole feature was possibly a mortuary enclosure.

Penannular ring-gully

5.12 To the north-east of the barrow was a penannular ring-gully [F216=F218=F220=F222 =F224=F225: 0.4m wide, 0.05m deep] filled with a grey-brown silty clay [217=219=221=223=226]. It enclosed an area of *c.*5m in diameter, leaving a 0.7m-wide entrance towards the south-east. Material from the gully returned a

radiocarbon date of 1510-1320 cal BC (SUERC-96309) and a tiny fragment of prehistoric pot was recovered from one of the samples, although this was too small to be more closely identified. The feature is possibly an eaves-drip drainage channel from a later prehistoric roundhouse, although the limited palaeoenvironmental evidence from its fills was more suggestive of monumental sites than domestic ones.

Phase 3: Iron Age

5.13 A curvilinear ditch cutting through the mortuary enclosure was potentially of this phase, although it is undated and is therefore described below (see 'unphased features', paragraph 5.21). Although no features could be proven to date from this phase, there was a significant change in the character of the barrow ditch fills half way through their sequence (Photo 5). A radiocarbon date of 750-400 cal BC (SUERC-92624) was obtained from a fill [103] immediately above this change, while a second Iron Age date was obtained from the primary fill (SUERC-96299), and is thought to be intrusive from this horizon (see paragraph 5.7). The change in fill characteristics indicates a change in depositional environments at this time, and this can be confirmed by the palaeoenvironmental evidence, which shows a change from a woodland margin towards a more open heathy grassland during this period (see section 7 below).

Phase 4: Medieval

5.14 A series of small, shallow indentations interpreted as postholes [F34; F59; F66; F68; F76; F78; F191; F230; Photo 6] were arranged concentrically around 2.5m in from the western and southern edges of the barrow ditch. Each was approximately 0.5m in diameter and filled with a dark silty clay [33; 58; 65; 67; 75; 77; 190; 229]. A similar feature [F228], also filled with a dark silty clay [227], was recorded 2.5m from the north edge of the barrow, and may be a continuation of this series. Material from posthole [F34] returned two late medieval radiocarbon dates of 1230-1390 cal AD (SUERC-96292) and 1440-1640 cal AD (SUERC-96291). Given their location around the edges of the barrow and their medieval date, they are interpreted as postholes for a small fenced enclosure and indicate that the barrow and its surrounding ditch were still recognisable features in the landscape at this time.

Phase 5: Post-medieval

5.15 The upper fill of the barrow ditch [30] contained post-medieval artefacts including glass and pottery and is therefore thought to date to this phase (see paragraph 5.7), indicating that the ditch and probable associated mound were still visible features of the landscape at this time.

5.16 Two north/south ditches crossed the eastern side of the site, both extending beyond the limits of the excavation area. Both are thought to be of post-medieval date. Although they were gradually converging towards the south, they did not intersect within the excavation area and their relationship to each other is unknown. The western ditch [F19=F201=F203=F213: 1.35m wide, 0.3m deep] had a wide U-shaped profile with a flat base. It was filled with an orange-brown silty sandy clay [207] overlain by a grey-brown silty clay loam [18=200=202=212]. The eastern ditch [F13=F57=F117=F120: 1m wide, 0.3m deep] had a similar profile. It was filled with a grey-brown clayey sandy silt [12=56=116=119] overlain in places by a mottled grey and yellow clay [55] or a brown loam [118]. It was radiocarbon dated to 1650-1800 cal AD (SUERC-96304).

5.17 These ditches were cut by a later one that entered the excavation area from the east, crossed it until just outside the north-east edge of the barrow ditch, then made a right-angled turn to the south, cutting the fills of the barrow ditch, but not the barrow itself (Photo 7), before terminating just outside its south-eastern edge. This was the ditch that had been identified during the evaluation, although stratigraphic relationships and artefacts recovered during the main excavation unambiguously dated it to the post-medieval period. The ditch [F17=F54=F90=F122=F131=F136 =F160= F170=F204=F215: 1.5m wide, 0.4m deep] was filled by a grey-brown silty clay loam [53=89=121=130=135=171=205=214], overlain in places by a mixed grey-brown and yellow silty clay loam [134=172=206]. Where it was cut through the eastern edge of the barrow ditch, it had a shallow recut [F112: 0.7m wide, 0.2m deep], filled with a mottled orange and brown clay [111]. A short length of subsidiary ditch [F92: 0.55m wide, 0.35m deep], filled with a dark brown silty clay [91], lay to the west. Slightly to the south, an irregular pit [F177: 1.7m by 1.4m, 0.15m deep] was present, filled with a grey-brown sandy silty clay [178]; this was cut by ditch [F17] but was cutting the western end of the southernmost mortuary enclosure ditch [F27]. This pit may have been formed by slumping of the waterlogged fills along the sides of the barrow ditch.

5.18 To the west of the terminal of ditch [F17] was a short section of east/west ditch [F108: 9.3m long by 1.2m wide, 0.2m deep], filled with a grey-brown silty clay loam [107], that again slightly truncated the barrow ditch. Further west again was another right-angled ditch [F181=F184: *c.*1m wide, 0.3m deep], filled with a grey-brown silty clay [180=183] overlain by a dark grey-brown silty clay [179=182]. Although these features are not physically connected to each other, stratigraphic relationships and their locations suggest they are associated, forming part of a post-medieval field system. This clearly respects the location of the barrow, forming a box pattern around it and draining its ditch. This is further evidence that the barrow still formed a visible landscape feature into the post-medieval period.

5.19 Several furrows [F143] were recorded across the site. These ran north/south and were typically 1m-2m wide by 0.1m deep and filled with a brown loam [142]. There was no evidence that they traversed the barrow, although one possible furrow [F115], filled with dark brown loam [114], clipped its eastern edge. Ceramic land drains crossed the site on a similar alignment. Again these did not cross the barrow but ended at its ring-ditch and began again on a slightly different alignment on the other side, providing further evidence that the barrow still formed a visible landscape feature until the very recent past.

Unphased

5.20 A number of features contained no dateable artefacts, produced no typologically distinctive palaeoenvironmental remains and were not spatially associated with other features. These features therefore remain undated and their relationship to other features can only be speculated on.

Curvilinear ditch (Photo 8)

5.21 East of the barrow was a curvilinear ditch [F23=F137=F146=F155=F162: 1.3m wide, 0.7m deep]. It had a primary fill of grey silty clay [138], overlain by a black silty clay [139], then a dark orange-brown sandy clay [140=145=154] and finally a brown sandy clay [141=144=153=161: 0.4m deep]. These fills were similar in character to those from the barrow ditch, with a markedly darker horizon in the middle of the

sequence, and hints of post-medieval material in the upper horizon. This suggests they are of broadly similar date, and record similar changes to the local depositional environment. However, the ditch truncated the southern segment of the possible mortuary enclosure ditch, so must post-date that. It was truncated by the post-medieval ditch [F17] at its west end and terminated in a rounded butt-end at its eastern end. A deepening [F110: 0.7m wide, 0.9m deep], filled with a mixed grey clayey silt [109], was present below the base of the post-medieval ditch at the point where it truncated this ditch. This was potentially a deeper continuation section of the earlier ditch.

Pits

5.22 South of the barrow were a cluster of shallow pits. Towards the west, the largest of these [F50: 2m in diameter, 0.15m deep] was sub-circular and filled with a brown loam [49]. Palaeoenvironmental analysis of the fill produced results strongly indicative of a prehistoric date, although it is not clear whether this was Neolithic or Bronze Age activity. The other pits in this area are undated but have been grouped together on the basis of proximity. Towards the east, pit [F52: 1.1m by 0.7m, 0.2m deep] was oval and filled with a brown loam [51]. North of this, pit [F46: 1m in diameter, 0.1m deep] was circular and filled with a similar material [45]. At the northern end of the group, pit (or possible posthole) [F48: 0.5m in diameter, 0.05m deep] was filled with a brown loam [47].

5.23 Two pits were recorded to the east of the barrow ditch. A shallow elongated pit [F147: 0.7m by 0.35m, 0.05m deep], filled with a brown silty clay [148], was present just outside the southern segment of the possible mortuary enclosure ditch. Palaeoenvironmental analysis of the sample produced results suggestive of a prehistoric date but provided no conclusive evidence. To the west of this, and just inside the enclosure ditch, was a small pit or posthole [F167: 0.6m by 0.3m, 0.05m deep], filled with a brown silty clay [166].

Phase 6: Modern

5.24 In the centre of the ring-ditch was an irregular pit [F211: 0.82m by 0.76m, 0.21m deep] filled with a loosely compacted black silty loam [210], suggesting this was a recent feature, post-dating removal of the barrow mound.

5.25 Topsoil, a brown clay loam [10: 0.25m deep], overlay the whole site.

6. The artefacts

Lithics analysis

Introduction

6.1 A small flint assemblage was recovered, totalling 21 pieces from 10 contexts. The majority of these are of natural origin, including a number of quartz chips and fragments. There are five worked artefacts present, made up of two heated tool fragments, a microlith and two flint chips.

Results

Assemblage

6.2 The typological breakdown by context is shown in Table A and the worked artefacts are described in detail in the catalogue below (paragraphs 6.9-6.13). Natural pieces (n=16), which show no signs of being humanly worked came from contexts [45],

[104], [105], [121], [150] and [158]. Contexts [104] and [105] were slightly unusual in that they contained tiny flint and quartz chips. Context [104] was most prolific with four fragments of quartz and four of flint. [105] produced only one fragment of flint and one of quartz.

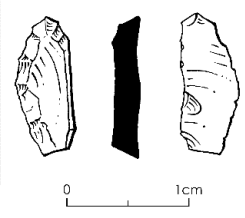
Context	Tool	Chip	Natural	Total
45			1	1
49	1			1
51		1		1
104			8	8
105			2	2
121			1	1
150			1	1
158			3	3
178	1			1
226	1	1		2
Total	**3**	**2**	**16**	**21**

Table A: Breakdown of the assemblage by context and type

6.3 Of the five worked pieces, two are small chips on grey flint. These come from contexts [51] and [226]. The two retouched tools from [178] and [226] have been subject to varying degrees of heating. [178] looks like it is a rougher, coarser grained flint and has been heated to a greater extent than [226], exhibiting total failure of the rock structure, splitting it into two refitting pieces. The distinctive crazing and cracking lines can be seen throughout the artefact (Schmidt 2014) and the outer surface has been stained grey with blacker areas of burning/heating visible. In contrast, [226] displays very fine cracking lines and seems to be made of a more homogenous fine-grained flint. Here heating has merely turned the artefact white and created fine cracks in the material.

6.4 [178] is a large artefact and hard hammer struck and whilst there is not enough left of the possible retouch to help determine tool type, the size and hard hammer technology does suggest this is of a later date that the others, perhaps later Bronze Age or even Iron Age. The white tool segment from [226] is altogether more refined, indicating that it is likely earlier, although a more definite date is hard to assign.

6.5 The final tool is the microlith from pit fill [49]. This is small scalene form and these smaller geometric types are characteristic of the heavily retouched narrow blade industries of later Mesolithic date (Butler 2005; Bishop 2008). The tool is finely made with a break at the proximal end. It fits most likely within Clark's Group D1b and Jacobi's Class 7 microlith typologies (Clark 1933; Jacobi 1978).



Illustrated microlith from pit fill [49]

Raw material

6.6 The grey and dark brown flint is of good quality and most likely derives from coastal deposits in Yorkshire (Young 1984). The quartz looks naturally fractured and not humanly worked, though worked quartz is notoriously difficult to identify due to

different fracture mechanics (Ballin 2008; Driscoll & Warren 2007). Given that no quartz was present anywhere else on the site, it is potentially possible that the presence of quartz fragments and chips in contexts [104] and [105] are the result of human activity.

Discussion and conclusion

6.7 The lithic assemblage is very limited, with only five worked pieces, comprising chips and a small number of tools. The occupation is mixed, spanning a long time period, from the Later Mesolithic microlith [49], to the heat-damaged hard hammer tool fragment [178] which is more likely to be of a Later Bronze Age or Iron Age date. Chips are unfortunately too small and ubiquitous to give any indication of date. A Neolithic radiocarbon date for one of the postholes provides evidence of an earlier phase of occupation. Whilst this feature did not contain any flint, a cluster of shallow pits to the south of the barrow feature contained palaeoenvironmental evidence characteristic of earlier prehistoric deposits and these fills produced the microlith [49] and a chip [51]. [104] and [105] are fills of the ring ditch which produced radiocarbon dates for the early to middle Bronze Age, but unfortunately no worked tools were recovered, only tiny natural flint and quartz chips. One of the fills of a penannular ring-gully [226] produced a retouched tool fragment and chip and the gully fills are of a middle Bronze Age date. The tool segment is quite refined, although there is not enough remaining to assign a definitive date based on typology, but it would fit with the radiocarbon date. The two retouched tools from [178] and [226] have been heated during whatever activities were being conducted on site, whether at the time of deposition, or during later occupation. Pit fill [178] produced a post-medieval date although may have been formed from slumped barrow ditch fills. The retouched tool from this deposit is considerably damaged by heating, but its crude, hard hammer form suggests most likely a later Bronze Age or even Iron Age date.

6.8 Whilst not very helpful in providing additional information on human activities at the site, the small assemblage does tie in with the evidence for long term use of the area. The occurrence of so few artefacts gives the impression of a very ephemeral signature, with limited use and no manufacture taking place. Microliths are parts of composite tools most often associated with hunting activities and would have been discarded during the course of these activities. The chips indicate some slight retouching or re-working, but it is interesting that the only tools recovered display signs of breakage and any usable tools have been removed elsewhere. The barrow would have acted as a focal point in the landscape and as such you would have expected more lithic artefacts to have been recovered. However monumental landscapes had specific functions, separate from the day to day activities which required the production and use of stone tools, so this is perhaps not a great surprise.

Catalogue of worked components

6.9 [49] <6> Small scalene microlith on good quality brown flint. Break at proximal end removing butt. Steep, semi-invasive, sub-parallel retouch present on all the edges except the break. On the right side it forms a straight side, on the left it is convex forming the scalene side, these two meet at the tip to create a blunted point, removing the termination. Non-cortical, glossy in appearance. L = 10.69mm, W = 4.25mm, Th = 2.16mm.

6.10 [51] <7> Tiny flint chip on grey flint. Humanly worked with a visible bulb and thin butt. Circular in shape, feather termination, non-cortical, one removal on the dorsal surface. L = 2.55mm, W = 2.19mm, Th = 0.43mm.

6.11 [178] Thick, crude flake tool which has been subject to extreme heat causing internal cracking and failure, fracturing it into two refitting pieces. White internally as a result of the heating process, with the outer surfaces brown/grey turning to black in places. Proximal and distal missing. Two removals on the dorsal surface, with the main one struck from the proximal end. The other removal is too damaged to tell direction of flaking. Ventral is slightly curved at the proximal end suggesting the presence of a bulb of percussion, although the point of impact is missing. Hard hammer percussion. Cortex is present along the left side, forming a backed edge (25-50% cortex). The right edge is very badly damaged but in places there are removals that look like they might have once been rough retouch. When complete this would have been a large tool. Late Bronze Age or Iron Age date. L = 60.40mm, W = 33.51mm, Th = 14.27mm.

6.12 [226] <80> Flint chip on dark grey flint, possibly worked. Dorsal is a natural surface, there is a bulb on the ventral, but this is quite prominent, and it almost looks like there is a second one starting to form next to it on the edge of the break. Breaks present on the distal and left sides. This piece may or may not be humanly worked. L = 3.67mm, W = 2.58mm, Th = 0.77mm.

6.13 [226] Mid-section fragment of a tool. Heated to a white colour, with fine dark cracks visible throughout the body of the piece. Breaks at both ends of the piece are smooth and look like they might have been created intentionally. One surface has ripples which further emphasises this. Fine retouch present on both sides of the distal edge. This is a segment from the edge of a tool. There is not enough remaining to give an idea of date, except that it is prehistoric.

Pottery

Results

6.14 The assemblage comprised 18 sherds from four contexts and unstratified, the largest number (11) found unstratified (Table B).

Context	No	Includes
u/s	11	BW, WW, SPWW, TPWW, MGCW, YGCW
89	3	CGW, WW,GBSGSTW
158	1	GEW
172	2	SW, GBSGSTW
226	1	P
Total	**18**	

Table B: Sherd numbers by context and type

Key:
BW Banded ware
CGW Colour glazed ware
GBSGSTW German brown salt glazed stoneware
GEW glazed earthenware
MGCW mottle glazed coarseware
P prehistoric
SPWW sponge-printed whiteware
SW slipware
TPWW transfer-printed whiteware
YGCW yellow glazed coarseware

6.15 The earliest material was a small sherd of prehistoric pot recovered from the sample of context [226], a fill of the penannular gully. It was too small for closer identification or dating.

6.16 The earliest hand-recovered material, from gully context [172], was a body sherd of red-bodied slipware and one from a brown salt-glazed German stoneware vessel, both of *c.*17th/18th-century date. Another abraded part neck, rim and part handle from a German stoneware jug (same vessel?) came from ditch fill [89], this time alongside later 19th-century sherds of glazed whiteware and colour glazed ware. A small abraded body sherd of 18th-/19th-century glazed earthenware came from ring-ditch fill context [158].

6.17 The unstratified material included sherds of 19th-century plain and transfer-printed whiteware, sponge-printed whiteware (post 1840 AD), 19th-century banded ware and 19th-century yellow and mottle-glazed coarseware and also a small fragment from a 19th-century glazed whiteware ?figurine ornament.

6.18 Also found unstratified was a small glazed whiteware ?drawer knob (21mm diam max) complete with part of its broken copper alloy collar, *c.*19th-century.

Clay pipe

Results

6.19 Gully fill context [205] produced part of an undecorated, post-medieval tobacco pipe bowl.

Glass

Results

6.20 The sample residue from ring-gully context [217] produced around 10 chips of water white, blue/green, blue and amber glass, none showing any weathering and all likely to be of post-medieval to modern origin.

Fired clay and ceramic building materials

Results

6.21 A small fragment of probable iron-rich soil/clay with burnt material attached was recovered from the sample of context [223]. It was probably not pot, but was too small to be certain.

6.22 A minute (5mm length) flake of hard-fired, post-medieval brick/tile/pottery with no original surfaces came from the sample residue of ring-gully context [217].

6.23 Sample residues from ditch fill contexts [103], [104] & [105] produced a very small quantity (<3g together) of fragments of lightly fired, dark or orange/dark coloured fired clay. It is not possible to determine the origin or date of these.

6.24 The sample residue from possible gully context [35] had a quantity of amorphous fragments of lightly fired, light buff clay (49g wt), sparsely tempered with sand and minute fragments of coal/charcoal. The fragments have no shape or original surfaces. Again, origin and date of these cannot be determined.

Burnt stone

Results

6.25 Eight fragments of burnt or heat-affected stone were recovered, all but two coming from sample residues.

6.26 Six small fragments were retained from sample residues from ditch fill contexts [103], [104] & [183]. Two larger and possibly associated pieces were hand-recovered from gully fill context [176]. These two abraded pieces are in a medium-grained, buff/grey sandstone and surviving curved shaping on the larger fragment (*c.*54 x 71 x 52mm) suggests they may have been parts of a re-used quern, the geology being suitable.

Discussion

6.27 Stones were heated and used extensively over a long period in the past to heat water, to cook food and also in aspects of industrial activity. Undateable alone, their presence confirms occupation and/or industrial and domestic activity in the area.

Metal objects

Results

6.28 A total of 76 metal objects were found by metal detection (MD), while just one iron horseshoe was hand-recovered from context [89]. The MD objects are mainly made from iron, copper alloy and lead. Most are fragmentary pieces and could not be positively identified. Many show low levels of corrosion, suggesting they may be fragments of agricultural tools, machines and fittings of post-medieval to 19th- or 20th-century date. The finding of two 20th-century coins supports this.

6.29 A few pieces could be more closely dated. A bent and completely rolled-up copper alloy jeton, possibly of 16th- to 17th-century date, is probably the earliest object found, though is not definitively identified. The horseshoe from context [89] is of a type found in the 17th century, while a MD broken copper alloy shoe or knee buckle is in a style dateable to the late 17th/early 18th century. A MD lead alloy pistol musket ball can be dated to the mid-18th century or later.

6.30 All metal objects are catalogued below:

Iron objects

6.31 Eight iron objects were found, 7 of them unstratified metal detected (MD) finds. All iron was X-radiographed (XR).

6.32 A moderately corroded, almost complete horseshoe came from ditch fill context [89]. It is 100mm long with a maximum span of *c*.122mm. There are no calkins and XR did not reveal fullering. The shoe is similar to the 'keyhole' type of *c*.17th-century date (Sparkes 1998, 19). These have a slightly convex lower surface (seen here), slightly concave upper (foot) surface (not seen here), chamfered heels (seen here) and commonly 6 nail holes, as here, one of which appears to have a nail *in situ*. XR7633.

6.33 The 7 u/s iron artefacts comprised:
A section of lightly corroded, curved, bar/handle, both ends broken, 158mm long, circular to sub-rectangular in section 12mm diam to 12 x 10mm. XR showed no surface detail. XR7634.

Almost complete, moderately corroded split pin with looped end, 88mm long, head 21mm diam, the arms 'D' shaped in section, *c*.11 x 8mm. Post-medieval, probably agricultural. XR7634.

Short length of bent wire, highly corroded and spalling, both ends broken, *c*.29mm long x 5mm diam section. Undateable. XR7634.

Two highly corroded, small objects/fragments, not resolved by XR, one with a bright speck on XR - ?adhering lead fragment. Undateable. XR7634.

?Handle, moderately corroded, 80mm long x 48mm wide max x 28mm thick max, with short length of projecting, broken, round-sectioned bar at one end. Unknown use. Probably post-medieval. XR7634.

Copper alloy objects

6.34 There were a total of 38 copper alloy MD objects/fragments plus 5 fragmentary MD objects in other metals. Ten copper alloy objects were X-radiographed.

6.35 The 5 other metal pieces consisted of moderately to highly corroded and damaged fragments of tin alloy or aluminium cans or containers. 19th- to 20th-century.

6.36 The 38 copper alloys comprised:
A broken, asymmetrical shoe or knee buckle, rectangular with rounded corners, 37 x 25mm. Three sides are circular in section, 4.5mm diam, the fourth side is flattened, 7 x 3mm, and curved in profile with a central dimple for resting the pin, now lost. Likely to date to the late 17th/early 18th century (Whitehead 2008, 97).
Three lightly corroded buttons, 18.5 x1mm, 18.5 x 1.5mm & 19.5 x 2mm thick. Two are flat with no decoration visible or revealed by XR, the third is undecorated but has a slightly bevelled margin on the front. The largest has the remains of a loop on the back (late 18th- to 19th century), the other two have traces of an integral shank on the back (18th- to 19th-century). XR7635.
Two lightly corroded pipe fittings/pipe joints, 14mm diam x 117mm long and 19mm diam x 56mm long. 19th- to 20th-century.
8 sheet fragments/offcuts, lightly corroded, some with cut edges, two folded and distorted. Unknown use, undateable.
Large, square nut 35 x 35 x 20mm, lightly corroded with internal thread. 19th- to 20th-century.
Small, tapering hexagonal nut, lightly corroded, with internal thread, 15mm diam x 5mm long max. 19th- to 20th-century.
Two small, partly melted metal lumps. Undateable.
Small bar fragment, both ends cut, 17 x 4 x 4mm, lightly corroded. Probably post-medieval.
?Roofing nail, 35mm long, flat circular head 7mm diam, moderately corroded. 19th- to 20th-century.
Wire, lightly corroded, both ends broken, 80mm long x 1.5mm diam. 19th- to 20th-century.
Lightly corroded hollow, tapering fitting, complete, with one blind end, 13mm long x 8-15mm diam, with internal and external screw threads. Factory made. 19th-century.
Circular, domed ?knob, 23mm long x 35mm diam, quite roughly made. Lightly corroded. Has part of the shank for attachment on the back. 19th-century.
Hollow, cast, door handle rose, moderately corroded, 18mm long x 33mm diam, undecorated. 19th-century.

Part of a shaped ?drawer pull, lightly corroded, both ends broken, 65mm long, sub-rectangular to circular in section, 12 x 8mm to 5mm diam. 19th-century.
Circular ?end cap from unknown object, corrosion suggests it is made from heavily leaded copper alloy. Moderately corroded, 27mm diam x 8mm thick max. Domed and slightly dished internally. Unknown use and date.
?Link/part object of unknown use, lightly corroded and undecorated. Sub-rectangular, 11 x 12 x 5mm thick, with an 8mm diam perforation. Broken projections at two corners indicate other, lost elements. Unknown use, probably post-medieval.
Sub-circular fragment, 11mm diam x 2.5mm thick, with a small, rounded lip and flat central area, moderately corroded. Broken projections at each end indicate other, lost elements. Unknown use and date.
Three flat, thin (1.5-2.5mm) buttons, 15, 13 & 12mm diam. The 15mm diam button has two perforations, the others are probably shanked but are too corroded to be certain. 19th-century.
Curved thin strip, one end broken, the other intact. 20mm long x 7mm wide x 1.5mm thick. XR shows very small (<2mm) perforation at intact end. Lightly corroded. XR7635. 19th-century.
Rough, semi-circular fragment/object, long edge cut, 22 x 7.5 x 4mm thick, moderately corroded. XR7635. Unknown use and date.
'T' shaped object fragment, 15mm long, lightly corroded, narrow end broken, head intact 15mm wide x 3mm thick. Unknown use, post-medieval. XR7635.
Part of lightly corroded ?key, 46mm long, with tapering shank, oval in section 14mm wide x 7mm thick, tapering to 11.5 x 4.5mm. Part of the curved, integral, circular-sectioned (4.5mm diam) head survives on one side. Post-medieval, XR7635.
Bar/?key shank fragment, bent 36mm long, oval in section, 12 x 5mm max, moderately corroded. Possibly part of the above key, though no join could be made. Probably post-medieval, XR7635.
Plate fragment, roughly rectangular 16 x 10.5 x 2.5mm thick, moderately corroded. XR shows one edge has part of a lipped curve, probably the edge of a perforation. Unknown use. Post-medieval, XR7635.
Irregularly shaped small fitting/fixing fragment, 22 x 15 x 6mm thick max, moderately corroded. XR shows remains of at least two partial perforations. Unknown use/date. XR7635.

Copper alloy coins/jeton:

6.37 Five coins were among the MD finds, all of which were X-radiographed:
Thin (0.8mm) x 25mm diam probable jeton, rolled-up and bent. XR shows indeterminate decoration inside a band of lettering on both surfaces. X10 examination of the outside could not decipher the decoration. The inside surface appears to be better preserved, but is unreachable. Cannot be closely dated, but probably dates to 16th/17th century, the period of greatest production and use of jetons with a similar decorative scheme. XR7635.
Thin, worn coin, 25mm diam x 1mm thick. Neither surface soil removal and X10 examination nor XR revealed surface detail beyond a trace of illegible lettering on one side. Size consistent with circa Victorian halfpenny. XR7635.
Coin 28.5 diam x 1.7mm thick. Surface soil removal and X10 examination revealed most of the corroded surface had been lost. XR reveals possible head, though unidentifiable. Size consistent with late 17th- to 18th-century halfpenny. XR7635.
Coin, little worn, with ?plough-battered edges, 30.6mm x 2mm thick. Legend reveals one penny of George V dated 1917. XR7635.

Halfpenny of George V, dated 1921, 25.5mm diam x 1.6mm thick, lightly corroded, little worn. XR7635.

Lead/lead alloy objects:

6.38 Twenty-one lead/lead alloy objects were among the MD finds. These comprised:
8 lightly corroded, mostly angular lumps or possibly folded bar fragments, the largest *c*.39 x 34 x 30mm, weighing 142g. These probably represent fresh lead intended for use or repair which has been discarded or lost. Undateable.
6 lightly to moderately corroded sheet fragments or part-melted run-offs, folded and distorted. Probably repair fragments discarded or lost. Undateable.
Small rectangular block 30 x 19 x 4mm thick, 17g wt, with two rounded and two angular corners. Faces flat and undecorated but scratched. Lightly corroded. Rounded/angular corners suggest the block may have been cut from a larger piece. Surface energy dispersive X-ray fluorescence (EDXRF) analysis identified the metal as pewter (lead/tin alloy). Not an artefact in itself, but perhaps a piece of pewter destined for object manufacture or repair, accidentally lost.
Two lightly corroded sheet lead pipe fragments, 12 & 18mm diam x 89 & 36mm long. 19th-century or later.
A pistol 'musket ball', moderately corroded, not noticeably distorted, 14.5mm diam, weighing 13g. This is the weight of a pistol ball used by British forces from the mid-18th century (PAS identification sheet). 18th- to 19th-century.
Lozenge-shaped ?weight with 2mm diam piercing through its long axis, 50mm long x 12-30mm wide x 8mm thick, 80g weight. Lightly corroded, well made, casting flash on one end. 19th-century.
Roughly-fashioned, moderately corroded ?part object of unknown use, with a sub-circular 'head' 40mm wide x 35mm long x 4.5mm thick which has a 5.5mm irregular perforation near the 'top' and a flat ?truncated 'shank' *c*.28mm long x 20mm wide x 4.5mm thick. Undateable.
Small, hollow cast, lead alloy toy horse's head, broken from body, *c*.20mm long x 25mm wide, with full bridle detail. Lightly corroded. 19th- to 20th-century.

Industrial residues

Results

6.39 The sample residue from ditch fill context [95] had a single flake of spheroidal hammerscale, providing very slight evidence of smithing taking place in the vicinity at some period.

7. The palaeoenvironmental evidence

Methods

7.1 Palaeoenvironmental assessment was undertaken on 36 bulk samples of ditch, gully, pit and posthole fills (Archaeological Services 2020b). Updated results produced through further analysis of the plant macrofossil and charcoal assemblages are incorporated with existing data and are presented in Tables 1.2 to 1.9. Radiocarbon dating confirms that the main phase of occupation was during the early to middle Bronze Age, with activity in the early Neolithic, early Iron Age and medieval/post-medieval periods also recorded. A small flint dates to the Mesolithic period. A summary of the radiocarbon dates is presented in Table 1.10.

7.2 The samples were manually floated and sieved through a 500μm mesh. The residues were examined for shells, fruitstones, nutshells, charcoal, small bones, pottery, flint,

glass and industrial residues, and were scanned using a magnet for ferrous fragments. The flots were examined at up to x60 magnification using a Leica MZ7.5 stereomicroscope for waterlogged and charred botanical remains. Identification of these was undertaken by comparison with modern reference material held in the Palaeoenvironmental Laboratory at Archaeological Services Durham University. Plant nomenclature follows Stace (2010). Habitat classifications follow Preston *et al.* (2002).

7.3 Selected charcoal fragments were identified, in order to provide material suitable for radiocarbon dating and to determine which tree species were exploited. Selection was influenced by fragment morphology, as each species/genus can have distinctive fractures along ring/ray boundaries and can produce characteristic surface patterns. The transverse, radial and tangential sections were examined at up to x500 magnification using a Leica DMLM microscope. Identifications were assisted by the descriptions of Gale & Cutler (2000), Hather (2000) and Schweingruber (1990), and modern reference material held in the Palaeoenvironmental Laboratory at Archaeological Services Durham University. Where comparable anatomical properties and poor preservation prevent secure identification, charcoal remains are recorded to genus level or assigned to family groups. Willow and poplar are grouped as Salicaceae (willow family), and Maloideae is a subfamily within Rosaceae (rose family), comprising hawthorn, apple, pear and whitebeams. Cherries includes blackthorn, plum, bird or wild cherry, while Fabaceae comprises gorse, broom and greenweeds.

7.4 The works were undertaken in accordance with the palaeoenvironmental research aims and objectives outlined in the regional archaeological research framework and resource agendas (Petts & Gerrard 2006; Hall & Huntley 2007; Huntley 2010).

Results

General comments

7.5 Preservation is through carbonisation with no evidence of waterlogged remains on the site. The samples typically produced small flots with variable quantities of often poorly preserved, mineral-encrusted charcoal. Occasional charred plant macrofossils include heather twigs, rhizomes/tubers, cereals, nutshells, weed seeds and a fruitstone. Coal and clinker occur in low concentrations in most of the samples. The few finds from the sample residues are discussed in the relevant specialist sections.

Barrow

7.6 The barrow fills produced small to moderate-sized flots with varying quantities of charcoal and low numbers of charred plant remains. Early to Middle Bronze Age radiocarbon dates were obtained from primary fills [93], [99], [104] and secondary fill [101]. Oak stemwood is frequently recorded, with minor amounts of branchwood/small stemwood of hazel, Maloideae, cherries and willow family. Fill [101] contains the largest quantity of charcoal on the site (>4mm fraction = 34g), and has the only record of ash (a single fragment of small stemwood). Growth ring widths in [101] are predominantly moderate, with occasional narrow-ringed fragments. Macrofossils are rare, with the exception of a few charred hazel nutshells.

7.7 Primary fill [97] and secondary fill [103] produced early Iron Age dates, suggesting the barrow ditches remained open for an extensive period of time, although the

dated material from [97](a small fragment of willow family charcoal) is presumed to be intrusive. Fill [103] stands out from other barrow fills in comprising large numbers of charred heather twigs and tuber/rhizomes and a weed flora of cinquefoils, buttercups and at least two species of sedges. Charcoal includes oak and hazel stemwood, and roundwood of alder and cherries (cf wild cherry – *Prunus avium*). Undated upper barrow fill [95] is similar in composition to most of the lower fills, although it contains a small number of *Cenococcum* sclerotia, a soil fungus associated with woodland soils. A larger number of these sclerotia are recorded in a probable earlier prehistoric pit [F52], located south of this section of the barrow ditch and on an alignment with ridge and furrow cultivation. It is likely that later agricultural activity has introduced these remains into the upper barrow fill.

7.8 Samples from pits, postholes and gullies located within the barrow typically produced tiny or small flots comprising very small assemblages of charcoal, heather twigs, rhizomes/tubers and (where present) very low numbers of charred seeds/nutshell. Hazel charcoal from posthole [F61] produced the earliest radiocarbon date from the site, suggesting there was transient activity during the early Neolithic period. Middle Bronze Age dates were recorded from gullies [F36] and [F70]. Although charred macrofossil remains are few in number from these fills, the presence of an alder cone in [F36] is unusual, and together with a sedge nutlet and heather fruiting head may point to the exploitation of wetland habitats, for fuel or thatch. Radiocarbon dates of pine charcoal and a heather twig from pit [F34], alongside deposits of fragmented coal and clinker, reflect background scatters of medieval/post-medieval fuel waste.

Rectangular enclosure

7.9 Five samples from the fills [125; 149; 150; 151; 156] of a rectangular enclosure ditch produced low numbers of charred heather twigs and rhizomes/tubers together with small assemblages of charcoal (cherries, willow family, oak). The only charred seed was a heath-grass caryopsis in fill [125]. Cherries charcoal from fill [150] produced a middle Bronze Age radiocarbon date. Fills of a nearby gully [F20=F127=F128], of unknown relationship to the enclosure, produced tiny flots with trace amounts of heather twigs, tuber/rhizomes and indeterminate charcoal.

Roundhouse

7.10 Five samples from the fills of a ring-gully [217; 219; 221; 223; 226] produced small flots with heavily mineral-encrusted charcoal (alder, oak, indeterminate diffuse porous species). Alder charcoal from fill [223] produced a Middle Bronze Age radiocarbon date. The charred plant remains comprise a few heather twigs, rhizomes/tubers, small fragments of hazel nutshell, a vetch seed and one poorly preserved barley grain. Probable post-medieval contamination is indicated by the presence of small quantities of clinker/cinder, a brick/tile/pottery fragment and tiny fragments of glass in the residue for gully fill [217].

Curvilinear ditch [F137]

7.11 Three lower fills of a curvilinear ditch [138; 139; 140] produced tiny flots (<5ml) with trace amounts of charred heather twigs, tuber/rhizomes and oak charcoal. A larger flot (50ml) from the upper fill [141] was different in composition, and contained material of probable late medieval/post-medieval origin including gorse-type charcoal, CBM, coal and large fragments of clinker (up to 30mm). A wheat grain from this fill was too poorly preserved for species determination.

Pits

7.12 The preponderance of wild food remains (hazelnuts and sloe) in the small charred assemblage from pit [F50] is characteristic of earlier prehistoric deposits. Charcoal comprises mineralised oak and hazel stemwood and cherries roundwood, with very narrow growth rings noted for all of the species. This suggests restricted growing conditions, possibly reflecting dense woodland cover. The fill also comprises a wheat grain, although it's very poor condition prevented it from being identified further.

7.13 Charcoal is trace or absent from nearby pits [F46], [F48] and [F52]. Rare macrofossils comprise heather twigs, tuber/rhizomes and seeds of common chickweed, grass and buttercup in fill [45], and a false oat-grass tuber, *Cenococcum* sclerotia and a grass seed in fill [51].

7.14 The sample from pit [F147] comprises heavily mineralised cherries roundwood charcoal with a few fragments of oak stemwood. A similar assemblage is in pit [F167], but with the addition of hazel roundwood. Ring widths are narrow to moderate. Although diagnostic plant remains are absent, the heavily mineralised condition of the charcoal in these pits is consistent with a prehistoric origin.

Later features

7.15 Two north/south ditches in the eastern area of the excavation are potentially associated with a post-medieval field system. A post-medieval/modern radiocarbon date was produced from birch charcoal in fill [116], which also comprises cereal remains typical of post-medieval cultivation (bread wheat chaff). A high concentration of fragmented coal in fill [207] is also in line with this date. However, a small false oat-grass tuber and heath-grass caryopsis in [116] are more characteristic of late prehistoric activity, suggesting some material has been reworked, perhaps as a result of later farming activities.

7.16 Artefactual evidence from a right-angled enclosure ditch [F90] cutting the ditches, barrow and rectangular enclosure, indicates a post-medieval date. This is supported by palaeoenvironmental remains consistent with this period including grains and chaff of common oats (*Avena sativa*) and gorse-type charcoal and spines.

7.17 Samples from ditches [F184] and [F92] cutting the south edge of the barrow ditch, produced small flots with rare plant macrofossils (sedge, heath-grass, heather) and small quantities of mineral-encrusted charcoal (oak, cherries, Maloideae).

Discussion

Mesolithic/Neolithic

7.18 There is evidence of transient activity during the Mesolithic and early Neolithic periods, although the only feature radiocarbon dated to this early activity (posthole [F61]), provides little palaeoenvironmental information other than to say that hazel, a prime fuelwood, was locally available in the 4th millennium BC. It is likely that other undated isolated features on the site relate to this early phase. In particular, very narrow growth ring widths in all of the charcoal from circular pit [F50] is characteristic of the earlier prehistoric. It reflects dense woodland comprising oak, hazel and cherry species, from which wild foods, including sloes and hazelnuts, provided a primary food source. This is consistent with regional pollen evidence for dense forest cover during the Mesolithic/early Neolithic periods with little evidence for human impact on the forest canopy (Donaldson & Turner 1977). The fuel debris

from neighbouring pit [F52] comprises soil fungus remains associated with a woodland soil or leaf litter. This evidence has been identified in Neolithic pits at several sites in the region, where they have been interpreted as the remains of earthen covers used to cap features such as earth ovens and clamp kilns (Archaeological Services 2019; 2020a).

Bronze Age

7.19 Samples from the fills of the barrow ditch produced very low densities of charred plant macrofossils, whereas charcoal was comparatively more common which is typical of funerary/non-domestic sites. Where present, macrofossil remains are generally from wild-gathered foods, with cereal remains absent from the barrow feature and very rare elsewhere on the site. As most of the cereal remains are in medieval/post-medieval features, it is possible that some of the sparse occurrences in prehistoric fills are intrusions resulting from farming activity in these later phases.

7.20 While charcoal assemblages cannot be taken as direct representations of local woodland, as it is likely that certain woody species will have been preferentially selected, the evidence suggests that oak and hazel were readily available in the Bronze Age landscape. Maloideae and cherries were present, either forming a shrub layer or growing at the woodland margins. The single record of using ash at the site occurs during this period. This is surprising considering the excellent burning properties of this wood, and probably reflects a scattered distribution for this light-demanding species. Alder and willow family reflect the exploitation of areas of wet woodland, probably occupying damp ground along the banks of Seaton Burn and the small stream north of the site which runs parallel with it. Growth ring widths were generally moderately wide, which may reflect relatively open woodland at this time. This is consistent with recent studies from the north-east region that suggest woodland became increasingly open during the Bronze Age, largely as a result of human impact coupled with a shift to wetter climatic conditions (Archaeological Services 2020a).

Iron Age

7.21 An early Iron Age date was obtained for fill [103] which marks a depositional change in the barrow ditch fills. The charred assemblage within fill [103] is distinctly different from other barrow fills, and comprises indications of grassy heathland, including large numbers of heather twigs and a weed flora of cinquefoils, buttercups and at least two species of sedge. Abundant charred remains of tubers/rhizomes suggest that these derive from the use of heathy turves for fuel or roofing materials (Hall 2003). The importance of this resource has been recognised at several late prehistoric sites in the region, with recent investigations at Wallsend providing evidence for the exploitation and probable management of lowland heath during the Iron Age and Romano-British periods (Archaeological Services 2021). This is consistent with regional pollen evidence for an expansion of open heathland in the late prehistoric period following a long preceding phase of forest clearance (Davies & Turner 1979).

Medieval/Post-medieval

7.22 A background scatter of late medieval and post-medieval occupation waste is reflected in the use of cereals typical of these periods, including bread wheat and oats, recorded in gully [F117] and ditch [F90].

8. Radiocarbon dating

8.1 AMS radiocarbon dating and calibration were carried out by the Scottish Universities Environmental Research Centre (SUERC), East Kilbride, Scotland. The charcoal selected for sixteen individual dates provided adequate carbon for accurate measurement in each case, and analyses proceeded normally. Sample information and results are summarised in Table 1.10, and details of the results and calibrations are presented in Appendix 3.

9. Conclusions

9.1 Only one small pit was demonstrably earlier than the barrow, producing a Neolithic radiocarbon date. Since it was located in the centre of the later barrow mound, this would have protected it from later truncation. Many other shallow pits and postholes were present in this area. While some proved to be later insertions inside and around the ring ditch, and one to post-date the barrow's removal, some are undated. The one definite radiocarbon date demonstrates that there was activity on the site before the barrow was constructed, and it may be speculated that at least some of the other features also pre-dated it.

9.2 The dominant feature on the site was a large ring-ditch, characteristic of a round barrow. These are mounds, typically containing one or more burials, and generally of Early Bronze Age date, although examples do range from the later Neolithic through to the early medieval period (Historic England 2018). No burials were identified within the current example, and the mound material itself did not survive, having been completely truncated. Multiple radiocarbon dates from the primary fill of the ring-ditch returned an Early Bronze Age radiocarbon date of 1870-1640 cal BC, comparable to the typical date range of these features nationally.

9.3 Early investigations of these features focused on the mound itself, and on any associated burials, with the general assumption that there was one primary burial of a particularly noted individual, with later subsidiary burials cut into the sides of the barrow mound to gain prestige from the illustrious location. However, more recent interpretations have moved towards the view that these were long-lived monuments with a complex history, and with burials at various times throughout that, only being capped by a covering mound as a form of closure at the end of their lives (Historic England 2018, 1).

9.4 Three groups of features all produced Later Bronze Age radiocarbon dates, typically of around 1400-1200 cal BC. This is about 300-400 years later than the dates obtained from the bottom fills of the barrow ditch, indicating that they belong to a slightly later phase of activity. Towards the centre of the barrow were two mirror-image L-shaped gullies with deeper postholes at each end. These are probably part of the setting for a burial. Some of the undated postholes and gullies in this area may possibly have been related although this could not be confirmed. The burial itself did not survive; it was probably emplaced at a higher level and had been completely truncated. Only the base of the setting for this burial survived, so its exact form is unclear.

9.5 A small rectangular enclosure was present immediately to the east of the barrow, and produced similar Later Bronze Age radiocarbon dates. It is interpreted as a possible mortuary enclosure. These were common ancillary structures attached to

many barrows, and are thought to have been arenas for the excarnation of human remains prior to their final disposal. Only the gully ditches surrounding it survived and no postholes or other indications of any built structure were present. At Great Ayton Moor on the North York Moors, a rectangular Bronze Age mortuary enclosure is attached to a round cairn, although in that case the enclosure survives as a stone bank and is attached to a Neolithic cairn (Hayes 1967, 11-12).

9.6 The third feature producing similar dates was a shallow ring-gully *c.*5m in diameter, which was identified slightly to the north-east of the barrow. It was possibly the drainage gully for a small roundhouse, such as were beginning to be built at this time and which became more common throughout the Iron Age. However, the limited palaeoenvironmental evidence obtained from its fill was more suggestive of funerary sites than domestic ones. It could potentially be the almost entirely truncated remains of a second, much smaller round barrow. It was similar in size to a small round barrow excavated at Cushy Cow Lane, Ryton (Muncaster 2020), although that had a much more pronounced ditch around it.

9.7 There is considerable evidence that the barrow remained a recognisable feature in the landscape until the recent past. An Early Iron Age radiocarbon date of 750-400 cal BC was obtained from the overlying secondary fill of the ditch, indicating that the ditch filled up gradually over a long time period. A ring of heavily truncated medieval postholes was present around the outside edges of the barrow mound, suggesting that it was still a recognisable feature at that time. Plough furrows of medieval or post-medieval date, visible across the remainder of the site, were not evident across the barrow. Post-medieval field boundary ditches formed a box around it, clipping its ditch fills but not disturbing the barrow itself. Even the 19th- to 20th-century ceramic land drains ended at the barrow ditch, starting again (on a slightly different alignment) on the other side. In addition, historic Ordnance Survey maps mark a triangulation station on the site of the barrow. The height given is 222ft (67.7m) OD, approximately 3m higher than the ground level prior to excavation (*c.*64.5m). All this suggests a significant earthwork survived here until the mid-20th century (the height is shown on maps until the 1940s; Figure 8). Triangulation points are also recorded 745m to the east and 480m to the west, conceivably indicating further barrows existed in the area. These areas have since been developed over.

9.8 Round barrows, their associated monuments and material culture, comprise the largest dataset for the Early Bronze Age in north-east England (Fowler and Wilkin 2016, 122). Although such monuments are common across the upland areas of the north-east, few examples are known from lowland sites. One possible exception is preserved at Dewley Hill (NZ 160 680), 10km to the south-west of the site, near Throckley. This site is registered as a Scheduled Ancient Monument (1018678), and described as a 'well-preserved example of an exceptionally large round barrow'. It is recorded as being of earth and stone construction, and approximately 6m high and 40m in diameter. However, this interpretation has been questioned. Limited excavations on the mound have identified only glacial sand and gravel within it (HER 185). In addition, a Neolithic stone axe and flints of Mesolithic and Neolithic date are recorded as having been found on and around the mound. If these records are correct, then this would imply that the mound was significantly earlier, with some artefacts dating from a time before such mounds were ever constructed. It has therefore been suggested that the mound is of natural glacial origin, but because of its unusual conical shape, became a focus for prehistoric activity. A

number of cropmarks are recorded around the barrow, although these have never been investigated by excavation.

9.9 A small round barrow has recently been excavated at Cushy Cow Lane, Ryton (NZ 156 635), around 13.4km south-west of the site (Muncaster 2020). Like the Longbenton example, this was located on gently sloping terrain (although in this case on a terrace above the Tyne Valley) and only the ditch survived, but it was significantly smaller, enclosing an internal area of around 5m in diameter. This is closer in size to the penannular gully [F216] than to the main ring-gully on the current site, although the Ryton example was a substantial ditch (up to 1.4m wide by 0.6m deep) rather than the ephemeral gully seen here. Samples from the lower ditch fills produced radiocarbon dates of 1430-1290 cal BC, again comparable to those from the penannular gully. A large pit (around 1m diameter by 0.6m deep) was present in its centre and this contained traces of cremated human bone that provided a similar radiocarbon date.

9.10 Another example is Ceoppa's barrow (NZ 126 589) at Chopwell, Gateshead, 18.75km to the south-west. This is a tree-covered, rounded mound of earth and stones, 22.5m in diameter and 2.2m high, with what appears to be a surrounding ditch and bank (HER 337). Although local tradition identifies it as the burial mound of Ceoppa, the mythical Saxon founder of Chopwell, it is catalogued by specialists as a Bronze Age barrow (Young 1980, 5; Miket 1984, 10). The location of this monument however, is not strictly analogous to the present one. It sits at an elevation of 210m OD, high up on a steep hillside overlooking the valley of the River Derwent. Its location therefore is more analogous to upland examples than to the Longbenton one.

9.11 A barrow was opened at Bradley Hall, around 16.5km to the south-west of the site, in *c.*1787 and was reported to contain 'a square cavity, composed of stones set on edge, which enclosed the remains and ashes of the interred' (Hutchinson 1787, 437). Later reports describe a skeleton found within the supposed cist. The barrow has since been destroyed, and its original size and location are unknown. A barrow was claimed to be present in Ryton churchyard (*ibid*.), and this was recorded as such until recently, although it has recently been confirmed to be a medieval motte (HER 141). Another mound, in the grounds of Gibside Hall, has also been recorded as a possible prehistoric burial mound, although recently it has been suggested as an ornamental planting mound dating from the 18th or 19th century (HER 501). A mound was recorded by the Ordnance Survey in Axwell Park in 1952, and this has been suggested to be a possible prehistoric burial mound (HER 504). It was not visible when the site was revisited in the mid-1970s and has not been seen since.

9.12 As stated above, the barrow ditch only filled up slowly. Palaeoenvironmental evidence from this shows a change in the local environment in the Iron Age, away from woodland edge towards a more open, grassy heathland. This is consistent with regional pollen evidence for an expansion of open heathland in the late prehistoric period following a long preceding phase of forest clearance (Davies & Turner 1979). A similar change in depositional environments has recently been recorded at Wallsend (Archaeological Services 2021). No features of this date were definitely identified on site, although an undated ditch cutting through the mortuary enclosure was potentially of this period.

9.13 A circle of shallow cuts were present around the inside edge of the barrow ditch; one of these provided two separate medieval radiocarbon dates. Given this date, they are clearly unrelated to the original usage of the barrow. They are interpreted at heavily truncated postholes for a circular fenced enclosure, erected within the (still faintly visible) barrow ditch. All but one of the postholes were in the southern half of the ring-ditch, suggesting that the degree of truncation has been slightly heavier towards the north.

9.14 Two post-medieval north/south ditches were on a similar alignment to the surviving remnants of ridge and furrow. A later ditch crossed these at right-angles and then formed a box around the barrow. These ditches relate to post-medieval field systems. Post-medieval artefacts were recovered from the upper fills of the barrow ditch, indicating that the ditch and the possible mound accompanying it were still visible features in the landscape at this time.

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Appendix 1: Data tables

Table 1.1: Context data

The • symbols in the columns at the right indicate the presence of artefacts of the following types: P pottery, M metals, F flint, I industrial residues, G glass, C ceramic building material/fired clay, CP clay pipe, S stone.

No	Feature	Description	P	M	F	I	G	C	CP	S
10		Topsoil								
11		Natural subsoil								
12	F13	Primary ditch fill								
F13		Ditch cut								
F14		Ring-ditch cut								
F15		Posthole cut								
16		VOID								
F17		Ditch cut								
18	F19	Ditch fill								
F19		Ditch cut								
F20		Gully cut								
F21		Gully cut								
22		Trampled barrow mound deposit								
F23		Curvilinear ditch cut								
24		VOID								
25		VOID								
F26		Gully cut								
F27		Gully cut								
28		VOID								
F29		Gully cut								
30	F32	Upper ring-ditch fill								
31	F32	Primary ring-ditch fill								
F32		Ring-ditch cut S/A ring ditch [F14]								
33	F34	Posthole fill								
F34		Posthole cut								
35	F36	Gully fill						•		
F36		Gully cut								
37	F38	Possible post setting fill								
F38		Possible post setting cut within gully [F36]								
39	F40	Gully fill								
F40		Gully cut								
41	F42	Possible post setting fill								
F42		Possible post setting cut within gully [F42]								
43	F44	Gully fill S/A gully fill [35]								
F44		Gully cut S/A gully [F36]								
45	F46	Pit fill			•					
F46		Pit cut								
47	F48	Pit/posthole fill								
F48		Pit/posthole cut								
49	F50	Pit fill			•					
F50		Pit cut								
51	F52	Pit fill			•					
F52		Pit cut								
53	F54	Ditch fill								
F54		Ditch cut S/A ditch [F17]								
55	F57	Upper ditch fill								
56	F57	Primary ditch fill S/A ditch fill [12]								
F57		Ditch cut S/A ditch [F13]								
58	F59	Posthole fill								
F59		Posthole cut								
60	F61	Posthole fill								
F61		Posthole cut								
62		VOID								
63	F64	Posthole fill								
F64		Posthole cut								

No	Feature	Description	P	M	F	I	G	C	CP	S
65	F66	Posthole fill								
F66		Posthole cut								
67	F68	Posthole fill								
F68		Posthole cut								
69	F70	Possible post setting fill								
F70		Possible post setting cut								
71		VOID								
72		VOID								
73		VOID								
74		VOID								
75	F76	Posthole fill								
F76		Posthole cut								
77	F78	Posthole fill								
F78		Posthole cut								
79	F80	Pit fill								
F80		Pit cut								
81	F82	Gully fill								
F82		Gully cut								
83	F84	Possible post setting fill								
F84		Possible post setting cut								
85	F15/F86	Posthole fill								
F86		Posthole cut S/A posthole [F15]								
87	F88	Gully fill S/A gully fill [81]								
F88		Gully cut S/A gully [F82]								
89	F90	Ditch fill S/A ditch fill [53]	•	•						
F90		Ditch cut S/A ditch [F17]								
91	F92	Ditch fill								
F92		Ditch cut								
93	F94	Primary ring-ditch fill S/A ring-ditch fill [31]								
F94		Ring-ditch cut S/A ring-ditch [F14]								
95	F100	Upper ring-ditch fill S/A ring-ditch fill [30]				•				
96		VOID								
97	F100	Primary ring-ditch fill S/A ring-ditch fill [31]								
98		VOID								
99	F100	Primary ring-ditch fill S/A ring-ditch fill [31]								
F100		Ring-ditch cut S/A ring-ditch [F14]								
101	F94	Ring-ditch fill								
102	F106	Upper ring-ditch fill S/A ring-ditch fill [30]								
103	F106	Ring-ditch fill						•		•
104	F106	Primary ring-ditch fill S/A ring-ditch fill [31]			•			•		•
105	F233	Ring-ditch fill			•			•		
F106		Ring-ditch cut S/A ring-ditch [F14]								
107	F108	Ditch fill								
F108		Ditch cut								
109	F110	Possible ditch fill								
F110		Possible ditch cut								
111	F112	Ditch fill								
F112		Recut of ditch [F17]								
113	F32	Upper ring-ditch fill S/A ring-ditch fill [30]								
114	F115	Furrow fill								
F115		Furrow cut								
116	F117	Primary ditch fill S/A ditch fill [12]								
F117		Ditch cut S/A ditch [F13]								
118	F120	Upper ditch fill								
119	F120	Primary ditch fill S/A ditch fill [12]								
F120		Ditch cut S/A ditch [F13]								
121	F122	Ditch fill S/A ditch fill [53]			•					
F122		Ditch cut S/A ditch [F17]								
123		VOID								
124		VOID								
125	F21	Gully fill								

No	Feature	Description	P	M	F	I	G	C	CP	S
126	F127	Gully fill								
F127		Gully cut S/A gully [F20]								
F128		Gully cut S/A gully [F20]								
129	F128	Gully fill S/A gully fill [126]								
130	F131	Ditch fill S/A ditch fill [53]								
F131		Ditch cut S/A ditch [F17]								
132	F133	Gully fill S/A gully fill [125]								
F133		Gully cut S/A gully [F21]								
134	F136	Upper ditch fill								
135	F136	Ditch fill S/A ditch fill [53]								
F136		Ditch cut S/A ditch [F17]								
F137		Curvilinear ditch cut S/A ditch [F23]								
138	F137	Primary ditch fill								
139	F137	Ditch fill								
140	F137	Ditch fill								
141	F137	Upper ditch fill								
142	F143	Furrow fills								
F143		Furrow cuts								
144	F146	Upper ditch fill S/A ditch fill [141]								
145	F146	Ditch fill S/A ditch fill [140]								
F146		Curvilinear ditch cut S/A ditch [F23]								
F147		Elongated pit cut								
148	F147	Elongated pit fill								
149	F26	Upper gully fill								
150	F26	Gully fill			•					
151	F152	Gully fill S/A gully fill [150]								
F152		Gully cut S/A gully [F26]								
153	F155	Upper ditch fill S/A ditch fill [141]								
154	F155	Ditch fill S/A ditch fill [140]								
F155		Curvilinear ditch cut S/A ditch [F23]								
156	F157	Gully fill S/A gully fill [125]								
F157		Gully cut S/A gully [F21]								
158	F160	Upper ring-ditch fill S/A ring-ditch fill [30]	•		•					
159	F160	Primary ring-ditch fill S/A ring-ditch fill [31]								
F160		Ditch cut S/A ditch [F17]								
161	F162	Upper ditch fill S/A ditch fill [141]								
F162		Curvilinear ditch cut S/A ditch [F23]								
163	F165	Upper gully fill S/A gully fill [149]								
164	F165	Gully fill S/A gully fill [150]								
F165		Gully cut S/A gully [F26]								
166	F167	Pit/posthole fill								
F167		Pit/posthole cut								
F168		Gully cut S/A gully [F27]								
169	F168	Gully fill								
F170		Ditch cut S/A ditch [F17]								
171	F170	Ditch fill S/A ditch fill [53]								
172	F170	Upper ditch fill S/A ditch fill [134]	•							
F173		Ring-ditch cut S/A ring-ditch [F14]								
174	F173	Upper ring-ditch fill S/A ring-ditch fill [30]								
F175		Gully cut S/A gully [F27]								
176	F175	Gully fill S/A gully fill [169]								•
F177		Pit cut								
178	F177	Pit fill			•					
179	F181	Upper ditch fill								
180	F181	Primary ditch fill								
F181		Ditch cut								
182	F184	Upper ditch fill S/A ditch fill [179]								
183	F184	Primary ditch fill S/A ditch fill [180]								•
F184		Ditch cut S/A ditch [F181]								
185	F188	Upper ring-ditch fill S/A ring-ditch fill [30]								
186	F188	Ring-ditch fill S/A ring-ditch fill [103]								

No	Feature	Description	P	M	F	I	G	C	CP	S
187	F188	Primary ring-ditch fill S/A ring-ditch fill [31]								
F188		Ring-ditch cut S/A ring-ditch [F14]								
189	F29	Gully fill								
190	F191	Posthole fill								
F191		Posthole cut								
192	F193	Gully fill								
F193		Gully cut								
194	F195	Gully fill S/A gully fill [192]								
F195		Gully cut S/A gully [F193]								
196	F197	Elongated pit fill								
F197		Elongated pit cut								
198	F199	Elongated pit fill								
F199		Elongated pit cut								
200	F201	Ditch fill S/A ditch fill [18]								
F201		Ditch cut S/A ditch [F19]								
202	F203	Ditch fill S/A ditch fill [18]								
F203		Ditch cut S/A ditch [F19]								
F204		Ditch cut S/A ditch [F17]								
205	F204	Ditch fill S/A ditch fill [53]							•	
206	F204	Upper ditch fill S/A ditch fill [134]								
207	F203	Primary ditch fill								
208	F209	Pit fill								
F209		Pit cut								
210	F211	Pit fill								
F211		Pit cut								
212	F213	Ditch fill S/A ditch fill [18]								
F213		Ditch cut S/A ditch [F19]								
214	F215	Ditch fill S/A ditch fill [53]								
F215		Ditch cut S/A ditch [F17]								
F216		Ring-gully cut								
217	F216	Ring-gully fill					•	•		
F218		Ring-gully cut S/A ring-gully [F216]								
219	F220	Ring-gully fill S/A ring-gully fill [217]								
F220		Ring-gully cut S/A ring-gully [F216]								
221	F222	Ring-gully fill S/A ring-gully fill [217]								
F222		Ring-gully cut S/A ring-gully [F216]								
223	F224	Ring-gully fill S/A ring-gully fill [217]						•		
F224		Ring-gully cut S/A ring-gully [F216]								
F225		Ring-gully cut S/A ring-gully [F216]								
226	F225	Ring-gully fill S/A ring-gully fill [217]	•		•					
227	F228	Posthole fill								
F228		Posthole cut								
229	F230	Posthole fill								
F230		Posthole cut								
231	F232	Posthole fill								
F232		Posthole cut								
F233		Ring-ditch cut								

Table 1.2: Palaeoenvironmental data – barrow ditch

Calibrated C14 date (95.4%)				1502-1405 BC				1502-1416 BC	
		1741-1543 BC	1498-1312 BC	1866-1643 BC		748-404 BC	773-488 BC	1687-1519 BC	
Sample		29	30	32	33	31	26	27	25
Context		93	101	104	105	103	97	99	95
Fill		1°	2°	1°	1°	2°	1°	1°	Upper
Feature number		94	94	106	106	106	100	100	100
Material available for C14 dating		✓	✓	✓	✓	✓	✓	✓	✓
Volume processed (l)		15	7	23	18	19	15	12	16
Volume of flot (ml)		30	150	20	20	125	50	40	15
Flot matrix									
Charcoal		++	+++	++	+	++	+	++	+
Clinker / cinder		(+)	-	+	+	+	-	(+)	-
Coal		-	(+)	+	+	+	-	(+)	+
Heather twigs (charred)		+	(+)	++	++	+++	+	+	++
Monocot stems (charred)		-	-	-	-	-	(+)	-	+
Roots (modern)		+	-	+	+	+	+	+	+
Tuber / rhizomes (charred)		(+)	(+)	+	+	+++	+	(+)	++
Uncharred seeds		-	-	-	-	(+)	-	-	-
Charred remains (total count)									
(h) *Danthonia decumbens* (Heath-grass)	caryopsis	-	-	-	1	-	-	-	-
(r) *Galium aparine* (Cleavers)	seed	-	-	-	-	-	-	-	1
(t) *Corylus avellana* (Hazel)	nutshell frag	1	-	2	1	1	-	2	1
(w) *Carex* sp (Sedges)	biconvex nutlet	-	-	-	-	7	-	-	-
(w) *Carex* sp (Sedges)	trigonous nutlet	-	-	-	-	1	-	-	-
(x) *Cenococcum geophilum* (Soil Fungus)	sclerotia	-	-	-	1	-	-	-	30
(x) *Potentilla* sp (Cinquefoils)	achene	-	-	-	-	3	-	-	-
(x) *Ranunculus* subgenus *Ranunculus* (Buttercup)	achene	-	-	-	-	4	-	-	-
(x) *Rumex* sp (Docks)	nutlet	-	2	-	-	-	-	-	-
Identified charcoal (✓presence)									
Alnus glutinosa (Alder)		-	-	-	✓	✓	-	-	-
Corylus avellana (Hazel)		✓	✓	-	✓	✓	-	✓	-
Fraxinus excelsior (Ash)		-	✓	-	-	-	-	-	-
Maloideae (Hawthorn, apple, whitebeams)		-	-	✓	-	-	-	-	-
Prunus sp. (Cherries-blackthorn, wild and bird cherry)		-	✓	✓	-	-	-	-	-
Prunus cf. *avium* (cf. Wild Cherry)		-	-	-	-	✓	-	-	-
Quercus sp (Oaks)		✓	✓	✓	✓	✓	✓	✓	✓
Salicaceae (Willow, poplar)		-	✓	✓	-	-	✓	✓	-
Diffuse porous		-	-	-	-	✓	-	-	✓

[h-heathland; r-ruderal; t-tree/woodland; w-wet/damp ground; x-wide niche (+): trace; +: rare; ++: occasional; +++: common; ++++: abundant]

Table 1.3: Palaeoenvironmental data – internal features (postholes)

Calibrated C14 date (95.4%)	1233-1381 AD															
	1447-1631 AD		3768-3642 BC													
Sample	1	9	10	11	12	14	17	19	20	23	24	43	63	82	83	84
Context	33	58	60	62	63	65	73	83	67	75	77	124	190	227	229	231
Feature number	34	59	61	28	64	66	74	84	68	76	78	123	191	228	230	232
Material available for C14 dating	✓		✓						(✓)		(✓)	(✓)				
Volume processed (l)	5	1	6	1	4	3	7	6	7	5	6	4	7	5	6	1
Volume of flot (ml)	170	2	30	3	40	2	5	5	20	3	10	20	15	5	5	5
Flot matrix																
Charcoal	+	(+)	+	-	(+)	-	(+)	(+)	(+)	(+)	+	(+)	(+)	(+)	(+)	(+)
Clinker / cinder	+++	(+)	(+)	-	-	(+)	-	(+)	-	-	-	-	-	+	(+)	-
Coal	(+)	-	-	-	(+)	(+)	-	(+)	(+)	(+)	+	-	(+)	+	(+)	-
Heather twigs (charred)	+	(+)	(+)	(+)	+	-	(+)	(+)	+	-	+	+	+	-	(+)	(+)
Monocot stems (charred)	+	-	-	-	(+)	-	-	-	-	-	-	-	-	-	-	-
Roots (modern)	-	-	-	-	++	-	-	+	++	-	-	-	++	-	++	-
Tuber / rhizomes (charred)	+	-	-	-	(+)	-	-	(+)	+	-	+	-	-	-	-	-
Uncharred seeds	(+)	-	-	-	-	-	-	-	-	-	-	-	-	(+)	(+)	-
Charred remains (total count)																
(c) *Hordeum* sp (Barley species) rachis frag	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(c) *Triticum* sp (Wheat species) grain	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(h) *Calluna vulgaris* (Heather) leafy branch	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
(t) *Corylus avellana* (Hazel) nutshell frag	-	-	-	-	-	-	-	-	2	-	1	-	-	-	-	-
(x) Poaceae undiff. (Grass family) <1mm caryopsis	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Identified charcoal (✓presence)																
Alnus glutinosa (Alder)	-	✓	-	-	-	-	✓	-	-	-	-	-	-	-	-	-
Corylus avellana (Hazel)	-	-	✓	-	-	-	-	-	-	-	-	-	-	-	-	-
Pinus sylvestris (Pine)	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Quercus sp (Oaks)	-	-	-	-	-	-	✓	-	✓	✓	✓	✓	-	-	✓	✓
Salicaceae (Willow, poplar)	-	-	-	-	-	-	-	-	✓	-	-	-	-	-	-	-

[c-cultivated; h-heathland; t-tree/woodland; x-wide niche. (+): trace; +: rare; ++: occasional; +++: common; ++++: abundant. (✓) may be unsuitable for dating due to size or species]

Table 1.4: Palaeoenvironmental data – internal features (gullies and pits)

Calibrated C14 date (95.4%)		1389-1131 BC		1402-1226 BC									
Sample		2	3	18	21	37	39	58	64	67	68	72	73
Context		35	39	69	79	87	85	189	192	196	198	208	221
Feature number		36	40	70	80	88	86	29	193	197	199	209	222
Feature		Gully	Gully	Gully	Gully	Gully	Pit	Gully	Gully	Pit	Pit	Pit	Pit
Material available for C14 dating		✓	(✓)	✓		(✓)						✓	✓
Volume processed (l)		17	20	12	11	8	2	18	7	8	7	8	7
Volume of flot (ml)		90	40	150	20	10	10	70	30	5	5	10	15
Flot matrix													
Charcoal		(+)	-	-	-	(+)	(+)	(+)	(+)	(+)	++	+	+
Clinker / cinder		-	(+)	-	(+)	-	-	(+)	+	(+)	-	-	(+)
Coal		(+)	(+)	-	+	(+)	-	-	++	(+)	+	-	(+)
Heather twigs (charred)		+	+	++	(+)	+	-	++	(+)	+	-	+	++
Monocot stems (charred)		+	-	-	-	-	-	-	-	-	-	-	(+)
Roots (modern)		++	-	++	+	-	-	++	+	++	+	-	-
Tuber / rhizomes (charred)		++	-	(+)	(+)	-	-	-	-	-	-	(+)	(+)
Uncharred seeds		-	-	-	-	-	-	(+)	-	(+)	-	-	-
Charred remains (total count)													
(h) *Calluna vulgaris* (Heather)	fruiting head	1	-	-	-	-	-	-	-	-	-	-	-
(h) *Rumex acetosella* (Sheep's Sorrel)	nutlet	-	-	-	-	-	-	-	1	-	-	-	-
(r) *Galium aparine* (Cleavers)	seed	-	-	-	-	-	-	-	-	-	-	-	1
(t) *Alnus glutinosa* (Alder)	female cone	1	-	-	-	-	-	-	-	-	-	-	-
(t) *Corylus avellana* (Hazel)	nutshell frag	1	1	-	-	-	-	-	-	-	-	-	-
(w) *Carex* sp (Sedges)	trigonous nutlet	1	-	-	-	-	-	-	-	-	-	-	-
(x) *Cenococcum geophilum* (Soil Fungus)	sclerotia	-	-	-	-	-	-	5	-	1	-	1	-
Identified charcoal (✓presence)													
Corylus avellana (Hazel)		-	-	✓	-	✓	-	-	-	-	✓	✓	-
Maloideae (Hawthorn, apple, whitebeams)		-	-	-	-	-	-	-	-	✓	-	-	-
Quercus sp (Oaks)		-	-	✓	-	✓	-	✓	-	✓	✓	✓	✓
Salicaceae (Willow, poplar)		-	-	-	-	-	-	-	-	-	-	-	✓

[h-heathland; r-ruderal; t-tree/woodland; w-wet/damp ground; x-wide niche. (+): trace; +: rare; ++: occasional; +++: common; ++++: abundant. (✓) may be unsuitable for dating due to size or species]

Table 1.5: Palaeoenvironmental data – rectangular enclosure and nearby gully [F127=F128]

Calibrated C14 date (95.4%)			1416-1262 BC				
Sample	38	53	54	55	56	44	45
Context	125	149	150	156	151	126	129
Feature number	21	26	26	157	152	127	128
Material available for C14 dating	(✓)		✓		(✓)		
Volume processed (l)	8	15	6	12	7	2	16
Volume of flot (ml)	10	10	5	20	10	5	5
Flot matrix							
Charcoal	++	+	+	+	(+)	-	(+)
Clinker / cinder	(+)	-	-	-	-	(+)	(+)
Coal	+	+	-	-	-	(+)	(+)
Heather twigs (charred)	+	+	+	+	(+)	-	+
Roots (modern)	+	+	+	++	+	+	+
Tuber / rhizomes (charred)	+	+	+	+	-	-	(+)
Uncharred seeds	-	+	-	-	-	-	-
Charred remains (total count)							
(h) *Danthonia decumbens* (Heath-grass) caryopsis	1	-	-	-	-	-	-
Identified charcoal (✓presence)							
Prunus sp (Cherries-blackthorn, wild and bird cherry)	-	-	✓	-	-	-	-
Quercus sp (Oaks)	✓	✓	-	✓	✓	-	-
Salicaceae (Willow, poplar)	-	-	✓	-	-	-	-

[h-heathland. (+): trace; +: rare; ++: occasional; +++: common; ++++: abundant
(✓) may be unsuitable for dating due to size or species]

Table 1.6: Palaeoenvironmental data – roundhouse

Calibrated C14 date (95.4%)					1501-1326 BC	
Sample		76	77	78	79	80
Context		219	221	217	223	226
Feature number		220	222	216	224	225
Material available for C14 dating		(✓)	(✓)	✓	✓	(✓)
Volume processed (l)		6	5	16	7	6
Volume of flot (ml)		20	10	50	5	10
Flot matrix						
Charcoal		+	(+)	(+)	+	+
Clinker / cinder		-	+	++	-	+
Coal		++	(+)	+	+	+
Heather twigs (charred)		+	+	-	+	+
Roots (modern)		++	+	++	(+)	-
Tuber / rhizomes (charred)		(+)	-	-	+	-
Uncharred seeds		-	-	+	(+)	-
Charred remains (total count)						
(c) *Hordeum* sp (Barley species)	grain	-	-	1	-	-
(t) *Corylus avellana* (Hazel)	nutshell frag	1	2	2	3	2
(x) *Vicia* sp (Vetches)	seed	-	-	-	-	1
Identified charcoal (✓presence)						
Alnus glutinosa (Alder)		-	-	-	✓	-
Quercus sp (Oaks)		-	-	-	✓	-
Diffuse porous		-	-	✓	-	-

[c-cultivated; t-tree/woodland; x-wide niche
(+): trace; +: rare; ++: occasional; +++: common; ++++: abundant
(✓) may be unsuitable for dating due to size or species]

Table 1.7: Palaeoenvironmental data – curvilinear ditch

Sample	47	48	49	50
Context	138	139	140	141
Feature number	137	137	137	137
Material available for C14 dating				(✓)
Volume processed (l)	15	6	6	15
Volume of flot (ml)	5	5	1	50
Flot matrix				
Charcoal	(+)	(+)	(+)	(+)
Clinker / cinder	(+)	(+)	(+)	++
Coal	++	+	(+)	++
Heather twigs (charred)	(+)	+	-	++
Roots (modern)	-	+	+	-
Tuber / rhizomes (charred)	-	(+)	-	(+)
Uncharred seeds	(+)	-	-	-
Charred remains (total count)				
(c) *Triticum* sp (Wheat species) grain	-	-	-	1
Identified charcoal (✓presence)				
Fabaceae (Gorse / Broom / Greenweeds)	-	-	-	✓
Quercus sp (Oaks)	✓	-	-	-

[c-cultivated. (+): trace; +: rare; ++: occasional; +++: common; ++++: abundant
(✓) may be unsuitable for dating due to size or species]

Table 1.8: Palaeoenvironmental data – isolated pits

Sample		4	5	6	7	52	57
Context		45	47	49	51	148	166
Feature number		46	48	50	52	147	167
Material available for C14 dating		(✓)		✓	(✓)	✓	✓
Volume processed (l)		9	1	21	11	10	4
Volume of flot (ml)		5	1	20	20	10	30
Flot matrix							
Charcoal		(+)	-	++	(+)	++	++
Clinker / cinder		+	-	-	+	+	-
Coal		+	(+)	+	++	-	(+)
Heather twigs (charred)		++	-	+	(+)	-	+
Roots (modern)		+	-	+	+	-	+
Tuber / rhizomes (charred)		++	(+)	(+)	-	-	(+)
Uncharred seeds		-	-	+	(+)	-	-
Charred remains (total count)							
(c) *Triticum* sp (Wheat species)	grain	-	-	1	-	-	-
(g) *Arrhenatherum elatius* ssp *bulbosum* (False Oat-grass)	tuber	-	-	-	1	-	-
(r) *Stellaria media* (Common Chickweed)	seed	1	-	-	-	-	-
(t) *Corylus avellana* (Hazel)	nutshell frag	-	-	4	-	-	-
(t) *Prunus spinosa* (Sloe)	fruitstone frag	-	-	1	-	-	-
(x) *Cenococcum geophilum* (Soil Fungus)	sclerotia	-	-	-	40	-	-
(x) Poaceae undiff. (Grass family)	>1mm caryopsis	1	-	-	1	-	-
(x) *Ranunculus* subgenus *Ranunculus* (Buttercup)	achene	1	-	-	-	-	-
Identified charcoal (✓presence)							
Corylus avellana (Hazel)		-	-	✓	-	-	✓
Prunus sp. (Cherries-blackthorn, wild and bird cherry)		-	-	✓	-	✓	✓
Quercus sp (Oaks)		-	-	✓	✓	✓	✓
Diffuse porous		-	-	-	✓	-	-

[c-cultivated; g-grassland; r-ruderal; t-tree/woodland; x-wide niche
(+): trace; +: rare; ++: occasional; +++: common; ++++: abundant
(✓) may be unsuitable for dating due to size or species]

Table 1.9: Palaeoenvironmental data – later ditches

Calibrated C14 date (95.4%)					1644 - 1950 AD		
Sample		28	61	62	36	71	34
Context		91	182	183	116	207	89
Feature number		92	184	184	117	203	90
Material available for C14 dating			(✓)	(✓)	✓		✓
Volume processed (l)		7	8	7	15	6	16
Volume of flot (ml)		15	30	30	50	50	40
Flot matrix							
Charcoal		+	+	+	+	-	+
Clinker / cinder		(+)	+	(+)	++	-	+
Coal		(+)	+	-	+	+++	(+)
Heather twigs (charred)		(+)	+	+	+	-	++
Roots (modern)		+	-	+	+	-	-
Spines (charred - gorse-type)		-	-	-	-	-	+
Tuber / rhizomes (charred)		-	(+)	(+)	+	-	+
Uncharred seeds		-	-	-	+	-	-
Charred remains (total count)							
(c) *Avena sativa* (Common Oat)	floret base	-	-	-	-	-	2
(c) *Avena* sp (Oat species)	large grain (>2mm sieve)	-	-	-	-	-	6
(c) *Avena* sp (Oat species)	small grain (<2mm sieve)	-	-	-	-	-	6
(c) *Triticum aestivum* (Bread Wheat)	rachis frag	-	-	-	2	-	-
(g) *Arrhenatherum elatius* ssp *bulbosum* (False Oat-grass)	tuber	-	-	-	1	-	-
(h) *Calluna vulgaris* (Heather)	leaves	-	-	-	-	-	2
(h) *Danthonia decumbens* (Heath-grass)	caryopsis	-	-	2	2	-	1
(w) *Carex* sp (Sedges)	trigonous nutlet	-	1	-	-	-	1
(x) Poaceae undiff. (Grass family)	<1mm caryopsis	-	-	-	-	-	1
Identified charcoal (✓presence)							
Betula sp (Birches)		-	-	-	✓	-	-
Corylus avellana (Hazel)		-	-	-	✓	-	✓
Fabaceae (Gorse / Broom / Greenweeds)		-	-	-	-	-	✓
Maloideae (Hawthorn, apple, whitebeams)		-	✓	-	-	-	-
Prunus sp. (Cherries-blackthorn, wild and bird cherry)		-	-	✓	-	-	-
Quercus sp (Oaks)		✓	✓	-	✓	-	✓

[c-cultivated; g-grassland; h-heathland; w-wet/damp ground; x-wide niche
(+): trace; +: rare; ++: occasional; +++: common; ++++: abundant
(✓) may be unsuitable for dating due to size or species]

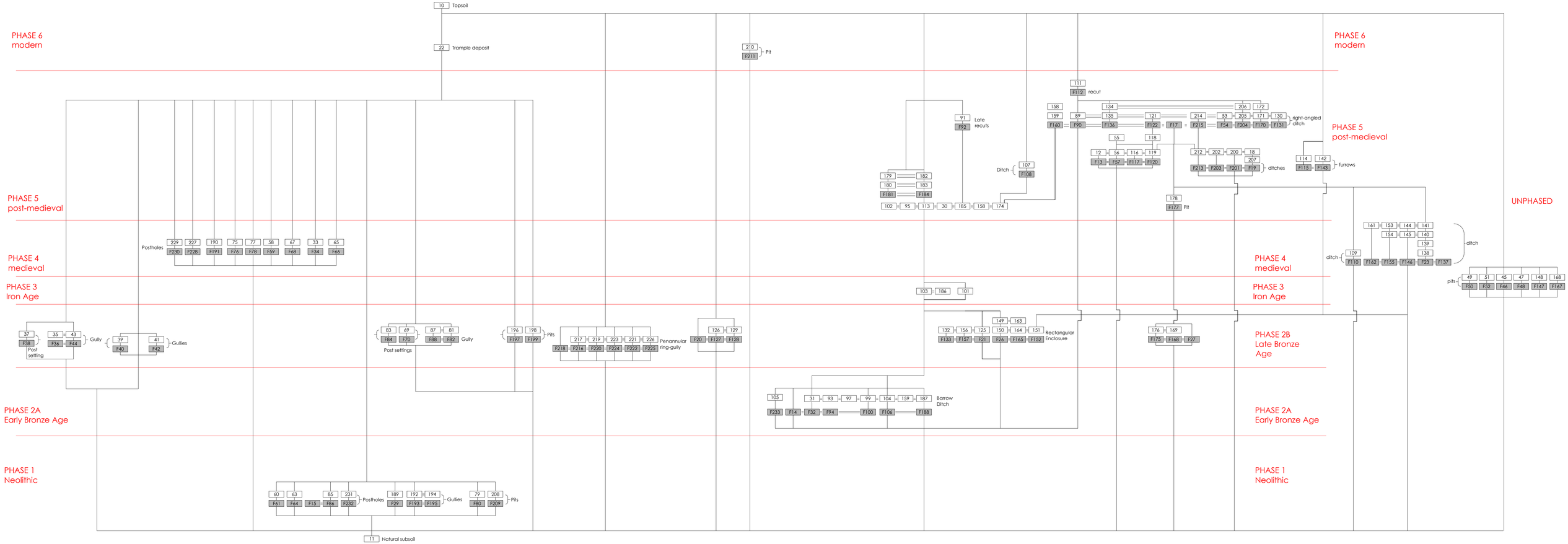
Table 1.10: Summary of radiocarbon dating

Laboratory code	Context	Sample	Feature No.	Material used for C14 dating	$\delta^{13}C$ ‰	Radiocarbon Age BP	Calibrated date 68.2% probability	Calibrated date 95.4% probability
SUERC-92624 GU54498	103	31	F106	Charred hazel nutshell	-27.0	2426 ± 27	540 (68.2%) 411 cal BC	748 (17.0%) 685 cal BC 666 (5.1%) 642 cal BC 587 (0.4%) 581 cal BC 556 (73.0%) 404 cal BC
SUERC-92744 GU54499	104	32	F106	Charred hazel nutshell	-27.2	3420 ± 24	1747 (68.2%) 1689 cal BC	1866 (2.9%) 1849 cal BC 1774 (92.5%) 1643 cal BC
SUERC-96291 GU56514	33	1A	F34	Charred heather twig	-27.3	381 ± 27	1456 (49.9%) 1506 cal AD 1596 (18.4%) 1617 cal AD	1447 (62.4%) 1524 cal AD 1560 (0.7%) 1564 cal AD 1571 (32.4%) 1631 cal AD
SUERC-96292 GU56515	33	1B	F34	Pine charcoal (2 growth rings)	-25.2	722 ± 27	1271 (68.3%) 1295 cal AD	1233 (1.1%) 1240 cal AD 1260 (89.0%) 1304 cal AD 1366 (5.4%) 1381 cal AD
SUERC-96293 GU56516	35	2	F36	Charred hazel nutshell	-24.6	3019 ± 27	1370 (8.8%) 1356 cal BC 1296 (59.4%) 1220 cal BC	1389 (20.5%) 1337 cal BC 1320 (71.9%) 1196 cal BC 1174 (1.4%) 1163 cal BC 1143 (1.6%) 1131 cal BC
SUERC-96294 GU56517	60	10	F61	Hazel charcoal (3 wide growth rings - small roundwood)	-26.8	4919 ± 27	3708 (51.5%) 3669 cal BC 3661 (16.8%) 3647 cal BC	3768 (14.4%) 3722 cal BC 3716 (81.0%) 3642 cal BC
SUERC-96295 GU56518	69	18	F70	Hazel charcoal (4 wide growth rings - small roundwood)	-25.8	3051 ± 27	1384 (32.8%) 1340 cal BC 1314 (35.5%) 1266 cal BC	1402 (89.0%) 1256 cal BC 1249 (6.5%) 1226 cal BC
SUERC-96299 GU56519	97	26	F100	Willow family charcoal	-26.2	2485 ± 27	756 (12.8%) 726 cal BC 701 (9.1%) 680 cal BC 671 (3.2%) 663 cal BC 651 (19.7%) 606 cal BC 597 (23.5%) 545 cal BC	773 (94.6%) 514 cal BC 498 (0.9%) 488 cal BC
SUERC-96300 GU56520	99	27A	F100	Hazel charcoal (9 variable rings - small roundwood)	-26.7	3332 ± 27	1624 (68.3%) 1541 cal BC	1687 (95.4%) 1519 cal BC

Laboratory code	Context	Sample	Feature No.	Material used for C14 dating	$\delta^{13}C$ ‰	Radiocarbon Age BP	Calibrated date 68.2% probability	Calibrated date 95.4% probability
SUERC-96917 GU57249	99	27B	F100	Charred hazel nutshell	-24.1	3181 ± 26	1496 (26.9%) 1476 cal BC 1459 (41.3%) 1427 cal BC	1502 (95.4%) 1416 cal BC
SUERC-96301 GU56522	93	29	F94	Hazel charcoal (5 even growth rings - small roundwood)	-24.6	3368 ± 27	1731 (5.6%) 1722 cal BC 1689 (62.6%) 1617 cal BC	1741 (14.1%) 1710 cal BC 1699 (71.9%) 1601 cal BC 1585 (9.4%) 1543 cal BC
SUERC-96302 GU56523	101	30	F94	Hazel charcoal (8 even rings – moderate curvature)	-27.1	3144 ± 27	1490 (3.7%) 1484 cal BC 1449 (62.8%) 1397 cal BC 1332 (1.8%) 1329 cal BC	1498 (84.7%) 1382 cal BC 1341 (10.7%) 1312 cal BC
SUERC-96303 GU56524	104	32	F106	Maloideae charcoal (6 growth rings – moderate curvature)	-25.1	3170 ± 27	1495 (20.0%) 1477 cal BC 1457 (48.2%) 1418 cal BC	1502 (95.4%) 1405 cal BC
SUERC-96304 GU56525	116	36	F117	Birch charcoal (4 narrow rings – moderate curvature)	-25.1	213 ± 27	1651 (26.4%) 1676 cal AD 1743 (5.5%) 1751 cal AD 1765 (36.4%) 1799 cal AD	1644 (33.0%) 1685 cal AD 1733 (53.7%) 1805 cal AD 1927 cal AD (8.7%) …
SUERC-96305 GU56526	150	54	F26	Cherries charcoal	-25.2	3072 ± 27	1397 (20.6%) 1368 cal BC 1359 (47.6%) 1291 cal BC	1416 (95.4%) 1262 cal BC
SUERC-96309 GU56527	223	79	F224	Alder charcoal	-27.3	3161 ± 27	1493 (13.8%) 1480 cal BC 1453 (54.4%) 1414 cal BC	1501 (93.9%) 1394 cal BC 1333 (1.5%) 1326 cal BC

[The calibrated age ranges are determined using OxCal4.4.2 (Bronk Ramsey 2020); IntCal20 curve (Reimer *et al.* 2020)]

Appendix 2: Stratigraphic matrix



on behalf of
Avant Homes

ARCHAEOLOGICAL SERVICES
DURHAM UNIVERSITY

Land east of Salters Lane
Longbenton
Tyne and Wear

post-excavation analysis
report 5406

Appendix: Stratigraphic matrix

Appendix 3: Radiocarbon certificates

Scottish Universities Environmental Research Centre
Rankine Avenue, Scottish Enterprise Technology Park, East Kilbride, Glasgow G75 0QF, Scotland, UK
Director: Professor F M Stuart Tel: +44 (0)1355 223332 Fax: +44 (0)1355 229898 www.glasgow.ac.uk/suerc

RADIOCARBON DATING CERTIFICATE
02 February 2021

Laboratory Code	SUERC-96291 (GU56514)
Submitter	Charlotte O'Brien Archaeological Services Durham University South Road Durham DH1 3LE
Site Reference	Salters Lane, Longbenton, North Tyneside (LSL19)
Context Reference	33
Sample Reference	1A
Material	Charcoal : Calluna vulgaris
$\delta^{13}C$ relative to VPDB	-27.3 ‰
Radiocarbon Age BP	381 ± 27

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.

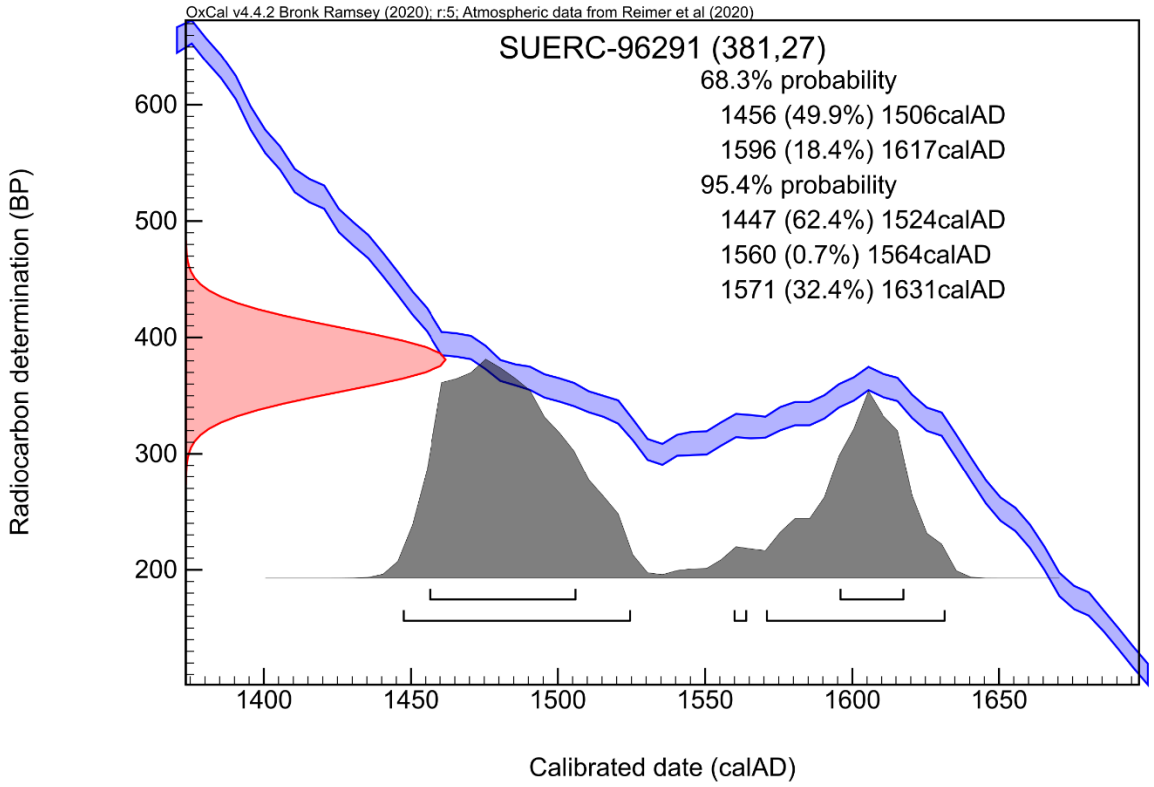
Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

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 : E. Dunbar

Checked and signed off by : P. Naysmith



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 IntCal20 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. (2020) *Radiocarbon 62(4) pp.725-57*

Scottish Universities Environmental Research Centre
Rankine Avenue, Scottish Enterprise Technology Park, East Kilbride, Glasgow G75 0QF, Scotland, UK
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RADIOCARBON DATING CERTIFICATE
02 February 2021

Laboratory Code	SUERC-96292 (GU56515)
Submitter	Charlotte O'Brien Archaeological Services Durham University South Road Durham DH1 3LE
Site Reference	Salters Lane, Longbenton, North Tyneside (LSL19)
Context Reference	33
Sample Reference	1B
Material	Charcoal : Pinus sp
$\delta^{13}C$ relative to VPDB	-25.2 ‰
Radiocarbon Age BP	722 ± 27

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.

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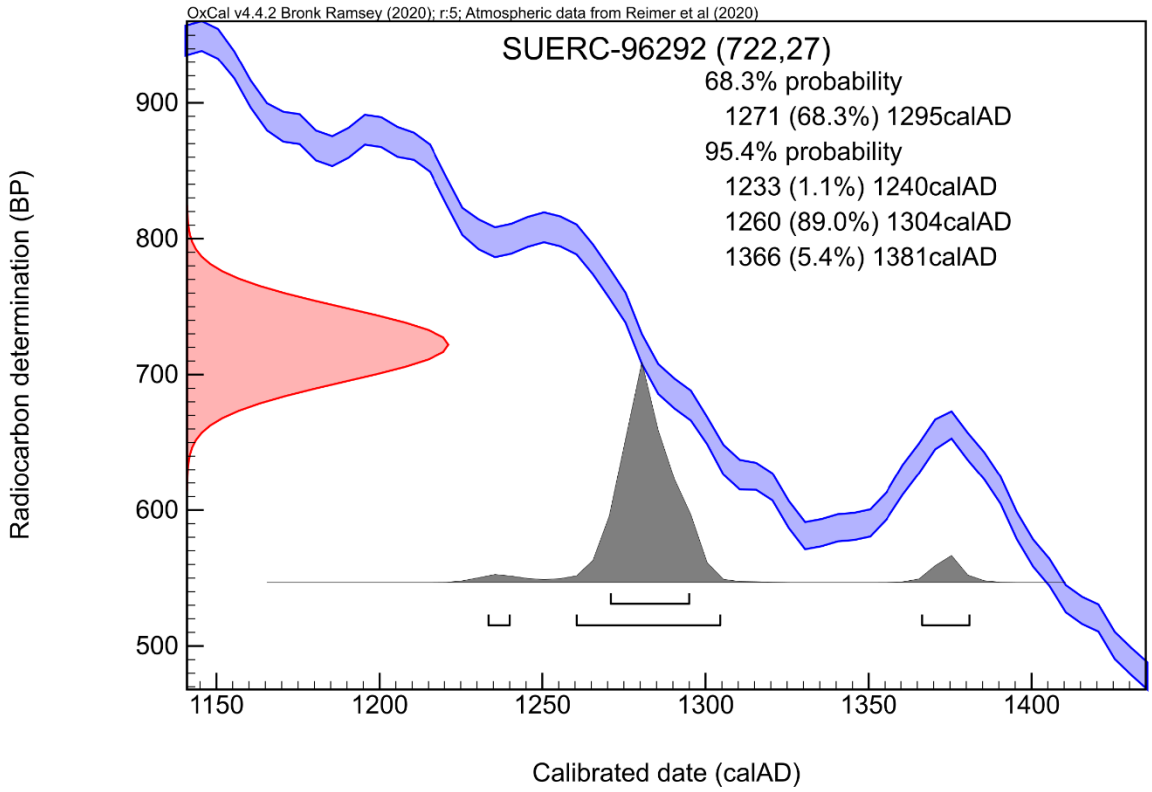
For any queries relating to this certificate, the laboratory can be contacted at suerc-c14lab@glasgow.ac.uk.

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

Checked and signed off by : P. Naysmith



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 IntCal20 atmospheric calibration curve†

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

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† Reimer et al. (2020) *Radiocarbon 62(4) pp.725-57*

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RADIOCARBON DATING CERTIFICATE
02 February 2021

Laboratory Code	SUERC-96293 (GU56516)
Submitter	Charlotte O'Brien Archaeological Services Durham University South Road Durham DH1 3LE
Site Reference	Salters Lane, Longbenton, North Tyneside (LSL19)
Context Reference	35
Sample Reference	2
Material	Charred nutshell : Corylus avellana
$\delta^{13}C$ relative to VPDB	-24.6 ‰
Radiocarbon Age BP	3019 ± 27

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.

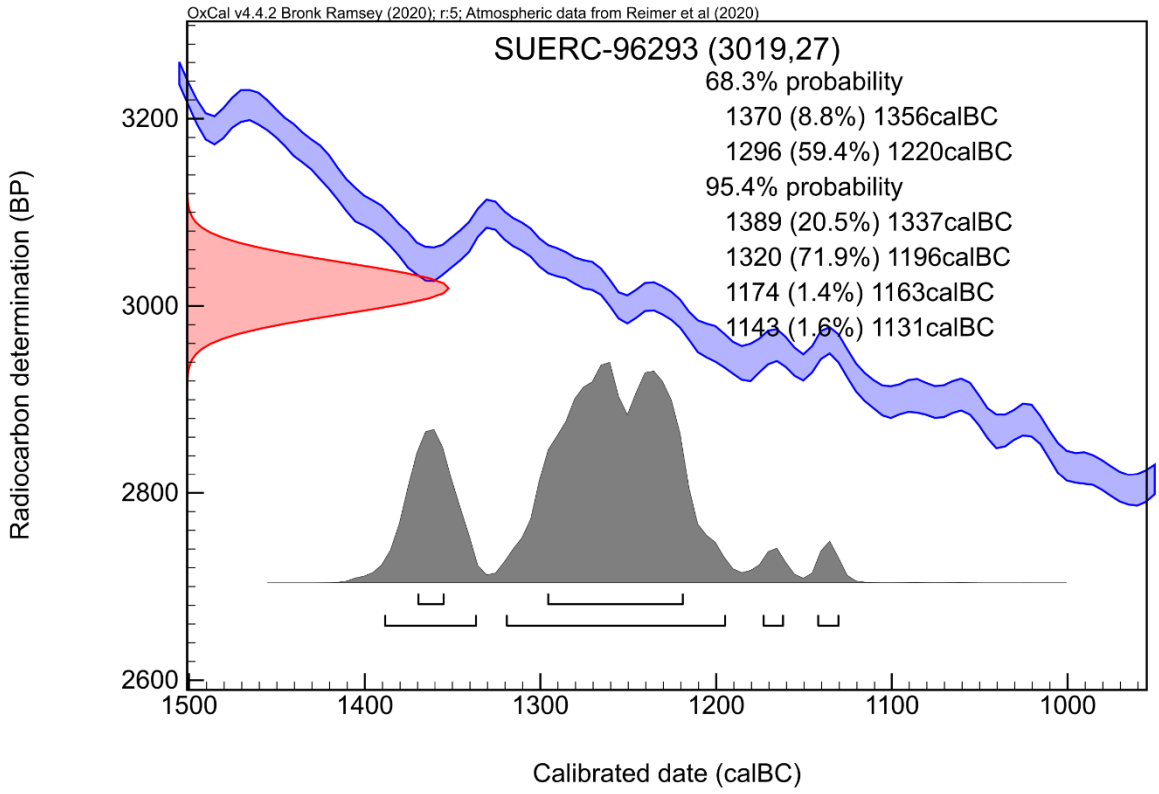
Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

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 : E. Dunbar

Checked and signed off by : P. Naysmith



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 IntCal20 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. (2020) *Radiocarbon 62(4) pp.725-57*

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RADIOCARBON DATING CERTIFICATE
02 February 2021

Laboratory Code	SUERC-96294 (GU56517)
Submitter	Charlotte O'Brien Archaeological Services Durham University South Road Durham DH1 3LE
Site Reference	Salters Lane, Longbenton, North Tyneside (LSL19)
Context Reference	60
Sample Reference	10
Material	Charcoal : Corylus avellana
$\delta^{13}C$ relative to VPDB	-26.8 ‰
Radiocarbon Age BP	4919 ± 27

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.

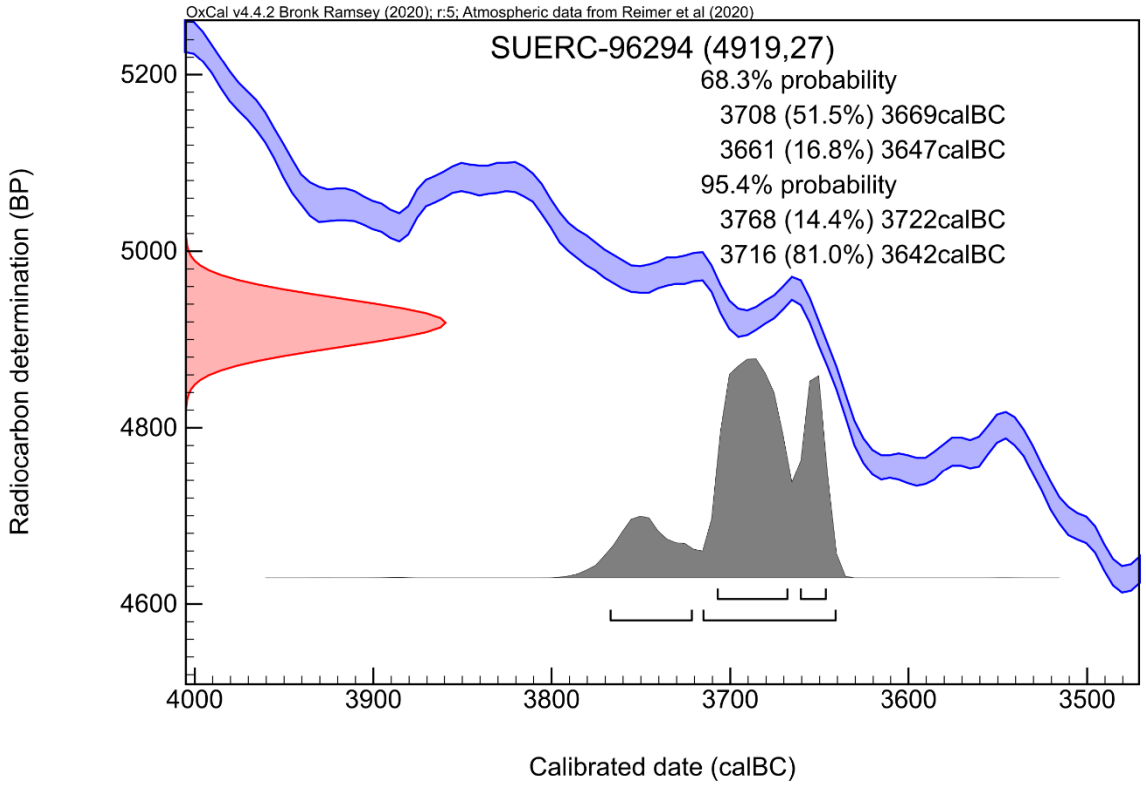
Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

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 : E. Dunbar

Checked and signed off by : P. Naysmith



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 IntCal20 atmospheric calibration curve†

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

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† Reimer et al. (2020) *Radiocarbon 62(4) pp.725-57*

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RADIOCARBON DATING CERTIFICATE
02 February 2021

Laboratory Code	SUERC-96295 (GU56518)
Submitter	Charlotte O'Brien Archaeological Services Durham University South Road Durham DH1 3LE
Site Reference	Salters Lane, Longbenton, North Tyneside (LSL19)
Context Reference	69
Sample Reference	18
Material	Charcoal : Corylus avellana
$\delta^{13}C$ relative to VPDB	-25.8 ‰
Radiocarbon Age BP	3051 ± 27

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.

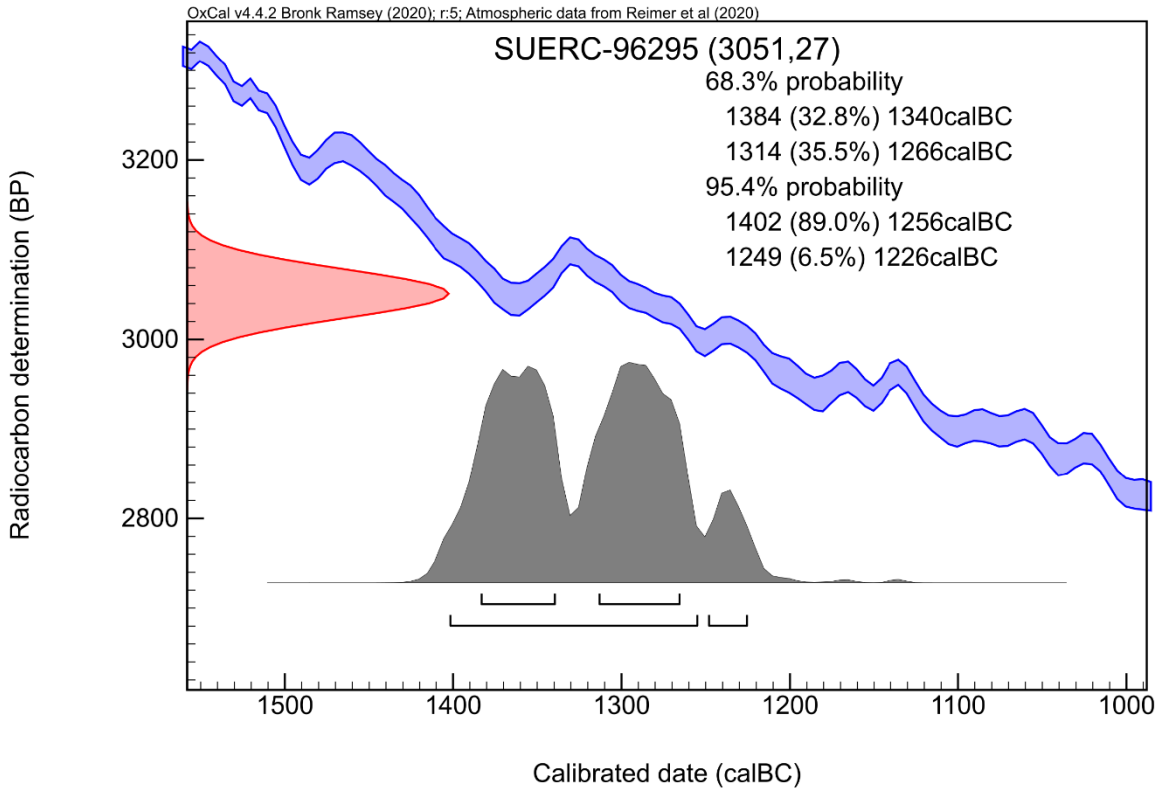
Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

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 : E. Dunbar

Checked and signed off by : P. Naysmith



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 IntCal20 atmospheric calibration curve†

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

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† Reimer et al. (2020) *Radiocarbon 62(4) pp.725-57*

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RADIOCARBON DATING CERTIFICATE
02 February 2021

Laboratory Code	SUERC-96299 (GU56519)
Submitter	Charlotte O'Brien Archaeological Services Durham University South Road Durham DH1 3LE
Site Reference	Salters Lane, Longbenton, North Tyneside (LSL19)
Context Reference	97
Sample Reference	26
Material	Charcoal : Salicaceae
$\delta^{13}C$ relative to VPDB	-26.2 ‰
Radiocarbon Age BP	2485 ± 27

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.

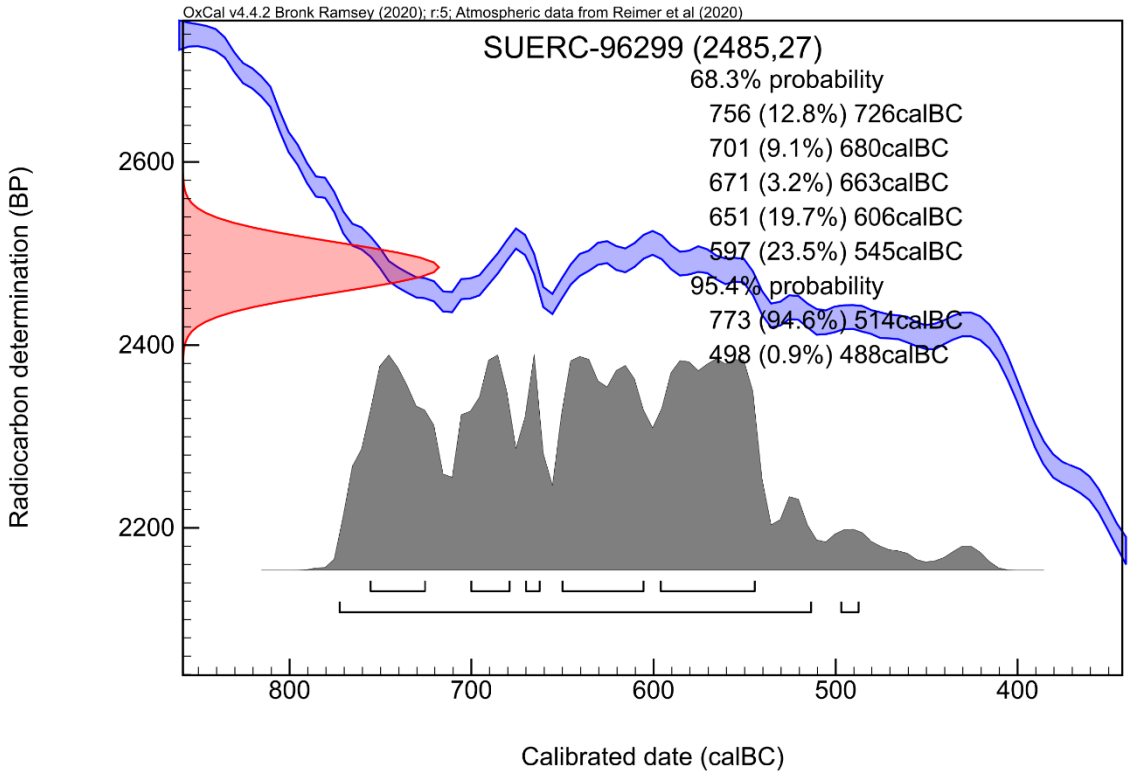
Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

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 : E. Dunbar

Checked and signed off by : P. Naysmith



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 IntCal20 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. (2020) *Radiocarbon 62(4) pp.725-57*

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RADIOCARBON DATING CERTIFICATE
02 February 2021

Laboratory Code	SUERC-96300 (GU56520)
Submitter	Charlotte O'Brien Archaeological Services Durham University South Road Durham DH1 3LE
Site Reference	Salters Lane, Longbenton, North Tyneside (LSL19)
Context Reference	99
Sample Reference	27A
Material	Charcoal : Corylus avellana
$\delta^{13}C$ relative to VPDB	-26.7 ‰
Radiocarbon Age BP	3332 ± 27

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.

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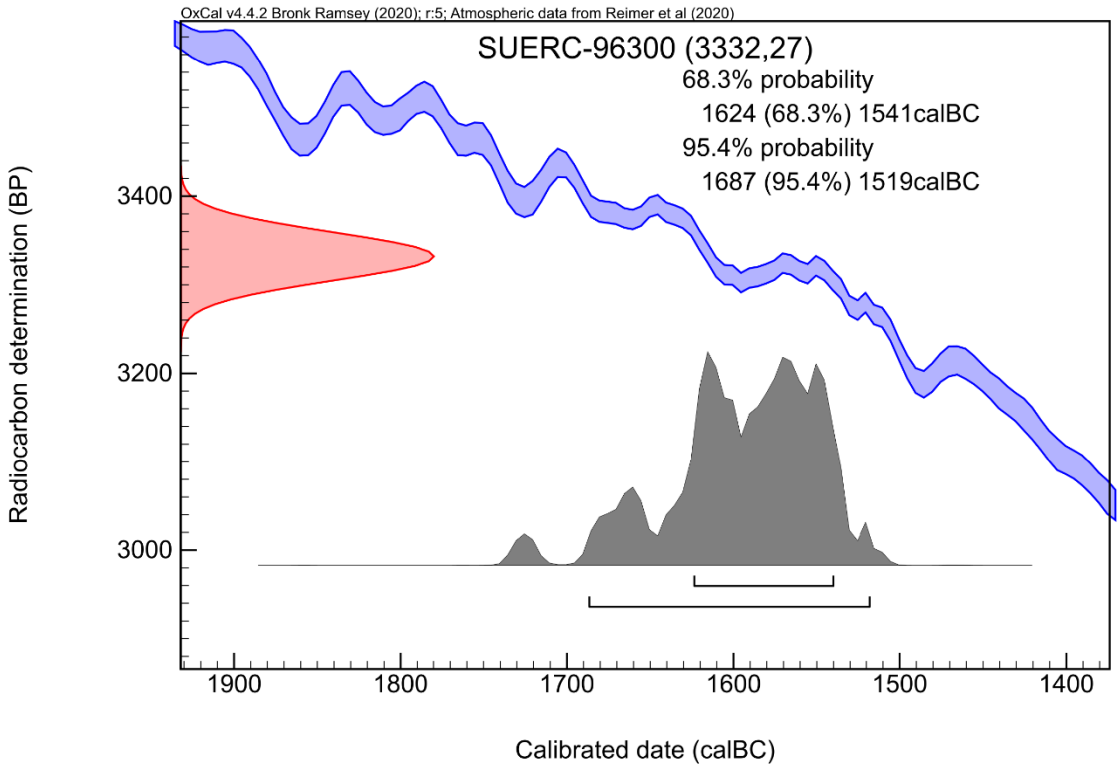
For any queries relating to this certificate, the laboratory can be contacted at suerc-c14lab@glasgow.ac.uk.

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

Checked and signed off by : P. Naysmith



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 IntCal20 atmospheric calibration curve†

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† Reimer et al. (2020) *Radiocarbon 62(4) pp.725-57*

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RADIOCARBON DATING CERTIFICATE
02 February 2021

Laboratory Code	GU56521
Submitter	Charlotte O'Brien Archaeological Services Durham University South Road Durham DH1 3LE
Site Reference	Salters Lane, Longbenton, North Tyneside (LSL19)
Context Reference	99
Sample Reference	27B
Material	Charred nutshell : Corylus avellana
Result	Failed due to insufficient carbon.

N.B. Any questions directed to the laboratory should quote the GU coding given above.

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.

Checked and signed off by : P. Naysmith

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RADIOCARBON DATING CERTIFICATE
02 February 2021

Laboratory Code	SUERC-96301 (GU56522)
Submitter	Charlotte O'Brien Archaeological Services Durham University South Road Durham DH1 3LE
Site Reference	Salters Lane, Longbenton, North Tyneside (LSL19)
Context Reference	93
Sample Reference	29
Material	Charcoal : Corylus avellana
$\delta^{13}C$ relative to VPDB	-24.6 ‰
Radiocarbon Age BP	3368 ± 27

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.

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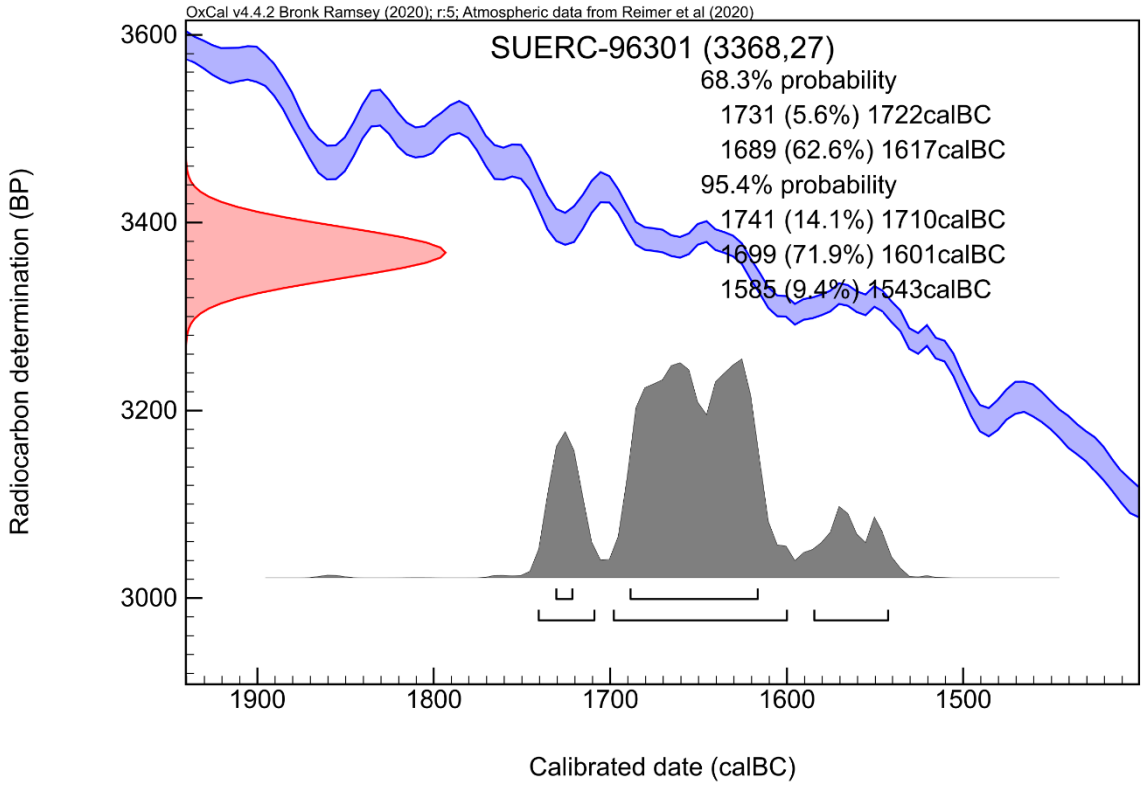
Conventional age and calibration age ranges calculated by : E. Dunbar

Checked and signed off by : P. Naysmith



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 IntCal20 atmospheric calibration curve†

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

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† Reimer et al. (2020) *Radiocarbon 62(4) pp.725-57*

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RADIOCARBON DATING CERTIFICATE
02 February 2021

Laboratory Code	SUERC-96302 (GU56523)
Submitter	Charlotte O'Brien Archaeological Services Durham University South Road Durham DH1 3LE
Site Reference	Salters Lane, Longbenton, North Tyneside (LSL19)
Context Reference	101
Sample Reference	30
Material	Charcoal : Corylus avellana
$\delta^{13}C$ relative to VPDB	-27.1 ‰
Radiocarbon Age BP	3144 ± 27

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.

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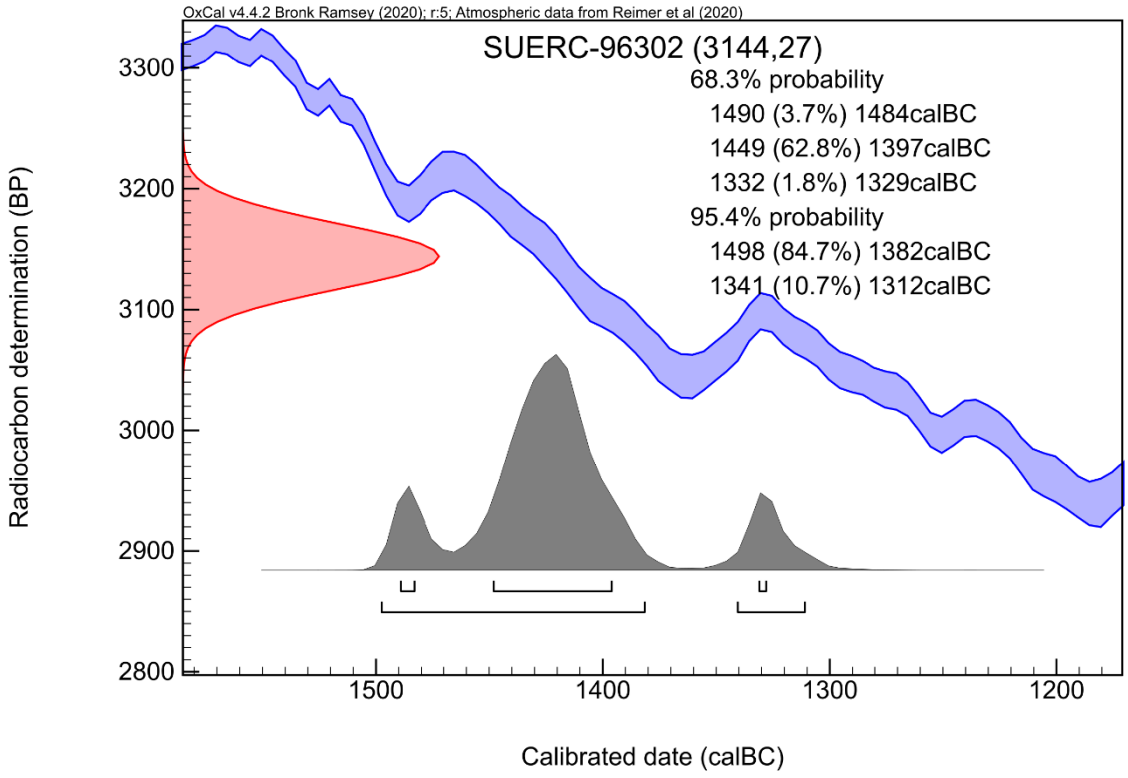
Conventional age and calibration age ranges calculated by : E. Dunbar

Checked and signed off by : P. Naysmith



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 IntCal20 atmospheric calibration curve†

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RADIOCARBON DATING CERTIFICATE
02 February 2021

Laboratory Code	SUERC-96303 (GU56524)
Submitter	Charlotte O'Brien Archaeological Services Durham University South Road Durham DH1 3LE
Site Reference	Salters Lane, Longbenton, North Tyneside (LSL19)
Context Reference	104
Sample Reference	32
Material	Charcoal : Maloideae
$\delta^{13}C$ relative to VPDB	-25.1 ‰
Radiocarbon Age BP	3170 ± 27

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.

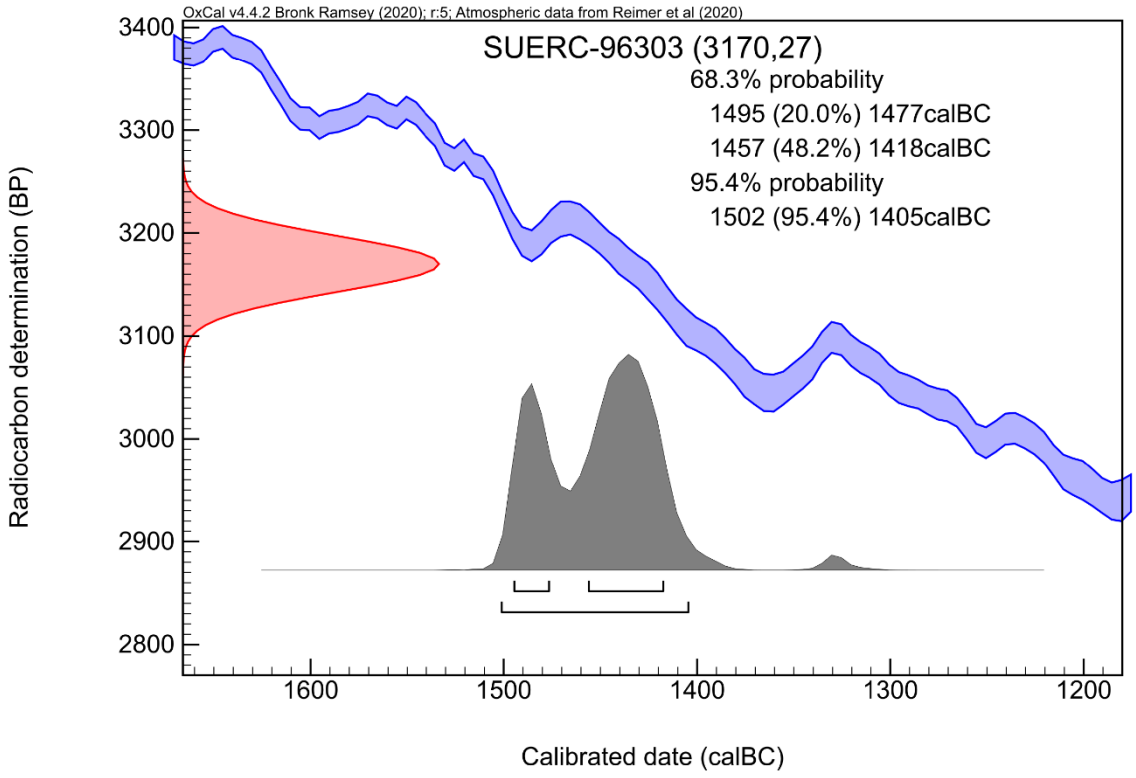
Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

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 : 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 IntCal20 atmospheric calibration curve†

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

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RADIOCARBON DATING CERTIFICATE
02 February 2021

Laboratory Code	SUERC-96304 (GU56525)
Submitter	Charlotte O'Brien Archaeological Services Durham University South Road Durham DH1 3LE
Site Reference	Salters Lane, Longbenton, North Tyneside (LSL19)
Context Reference	116
Sample Reference	36
Material	Charcoal : Betula sp
$\delta^{13}C$ relative to VPDB	-25.1 ‰
Radiocarbon Age BP	213 ± 27

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.

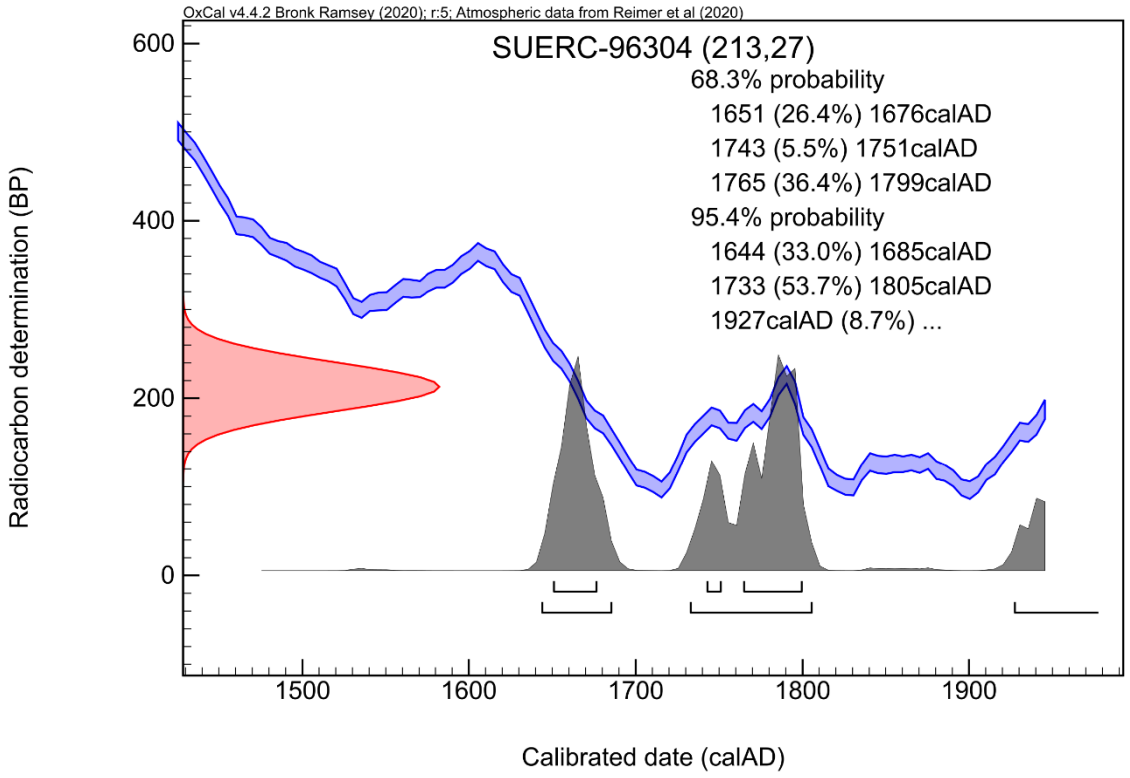
Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

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 : 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 IntCal20 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. (2020) *Radiocarbon 62(4) pp.725-57*

Scottish Universities Environmental Research Centre
Rankine Avenue, Scottish Enterprise Technology Park, East Kilbride, Glasgow G75 0QF, Scotland, UK
Director: Professor F M Stuart Tel: +44 (0)1355 223332 Fax: +44 (0)1355 229898 www.glasgow.ac.uk/suerc

RADIOCARBON DATING CERTIFICATE
02 February 2021

Laboratory Code	SUERC-96305 (GU56526)
Submitter	Charlotte O'Brien Archaeological Services Durham University South Road Durham DH1 3LE
Site Reference	Salters Lane, Longbenton, North Tyneside (LSL19)
Context Reference	150
Sample Reference	54
Material	Charcoal : Prunus sp
$\delta^{13}C$ relative to VPDB	-25.2 ‰
Radiocarbon Age BP	3072 ± 27

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.

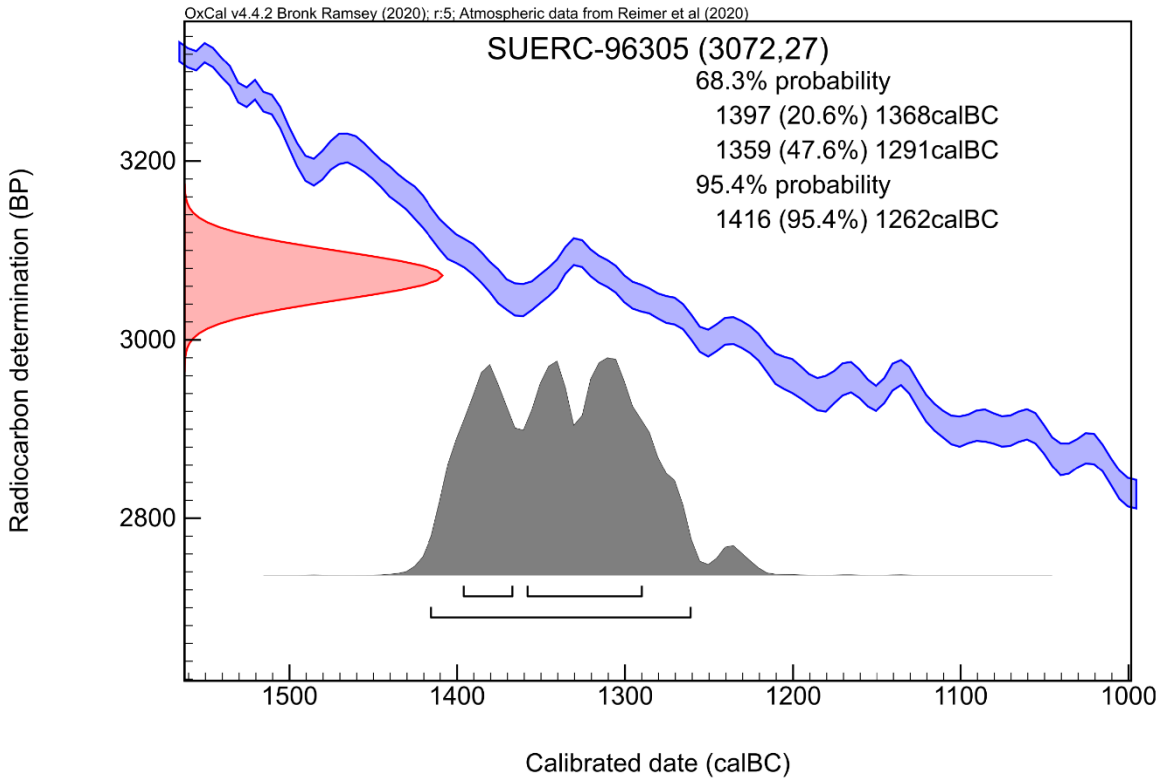
Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

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 : E. Dunbar

Checked and signed off by : P. Naysmith



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 IntCal20 atmospheric calibration curve†

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

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† Reimer et al. (2020) *Radiocarbon 62(4) pp.725-57*

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RADIOCARBON DATING CERTIFICATE
02 February 2021

Laboratory Code	SUERC-96309 (GU56527)
Submitter	Charlotte O'Brien Archaeological Services Durham University South Road Durham DH1 3LE
Site Reference	Salters Lane, Longbenton, North Tyneside (LSL19)
Context Reference	223
Sample Reference	79
Material	Charcoal : Alnus glutinosa
$\delta^{13}C$ relative to VPDB	-27.3 ‰
Radiocarbon Age BP	3161 ± 27

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 : E. Dunbar

Checked and signed off by : P. Naysmith

The University of Glasgow, charity number SC004401

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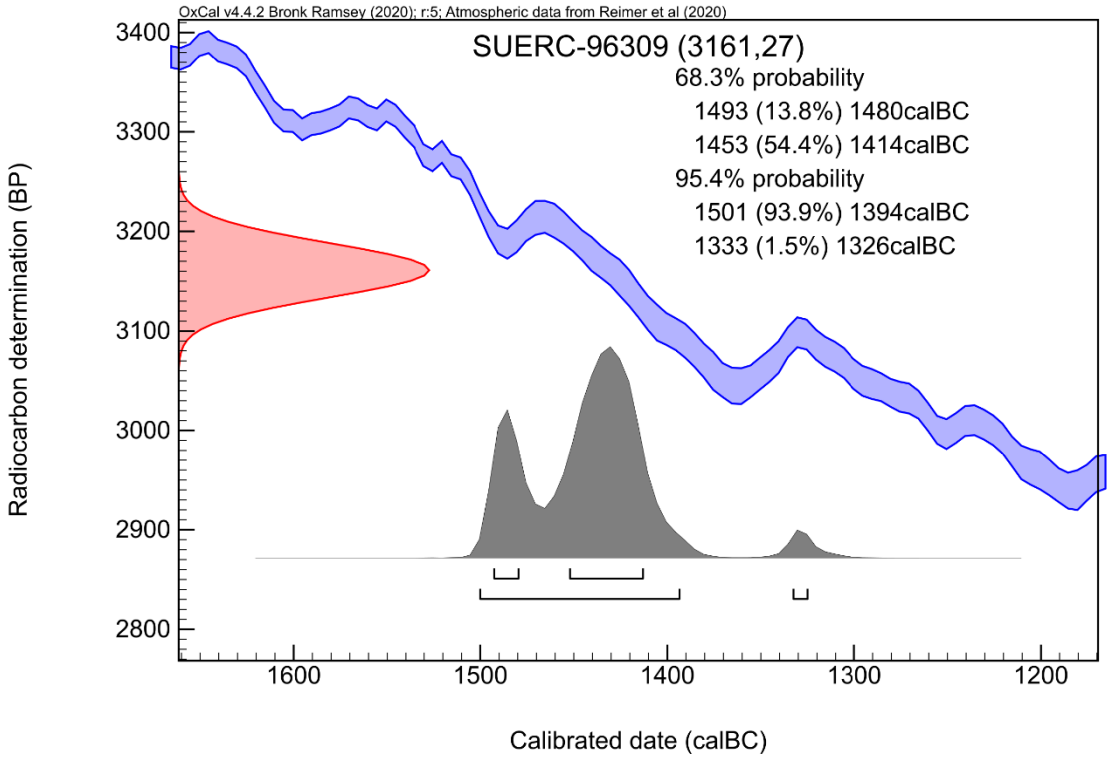

The radiocarbon age given overleaf is calibrated to the calendar timescale using the Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.*

The above date ranges have been calibrated using the IntCal20 atmospheric calibration curve†

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

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† Reimer et al. (2020) *Radiocarbon 62(4) pp.725-57*

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RADIOCARBON DATING CERTIFICATE
03 March 2021

Laboratory Code	SUERC-96917 (GU57249)
Submitter	Charlotte O'Brien Archaeological Services Durham University South Road Durham DH1 3LE
Site Reference	Salters Lane, Longbenton, North Tyneside (LSL19)
Context Reference	99
Sample Reference	27B
Material	Charred nutshell : Corylus avellana
$\delta^{13}C$ relative to VPDB	-24.1 ‰
Radiocarbon Age BP	3181 ± 26

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.

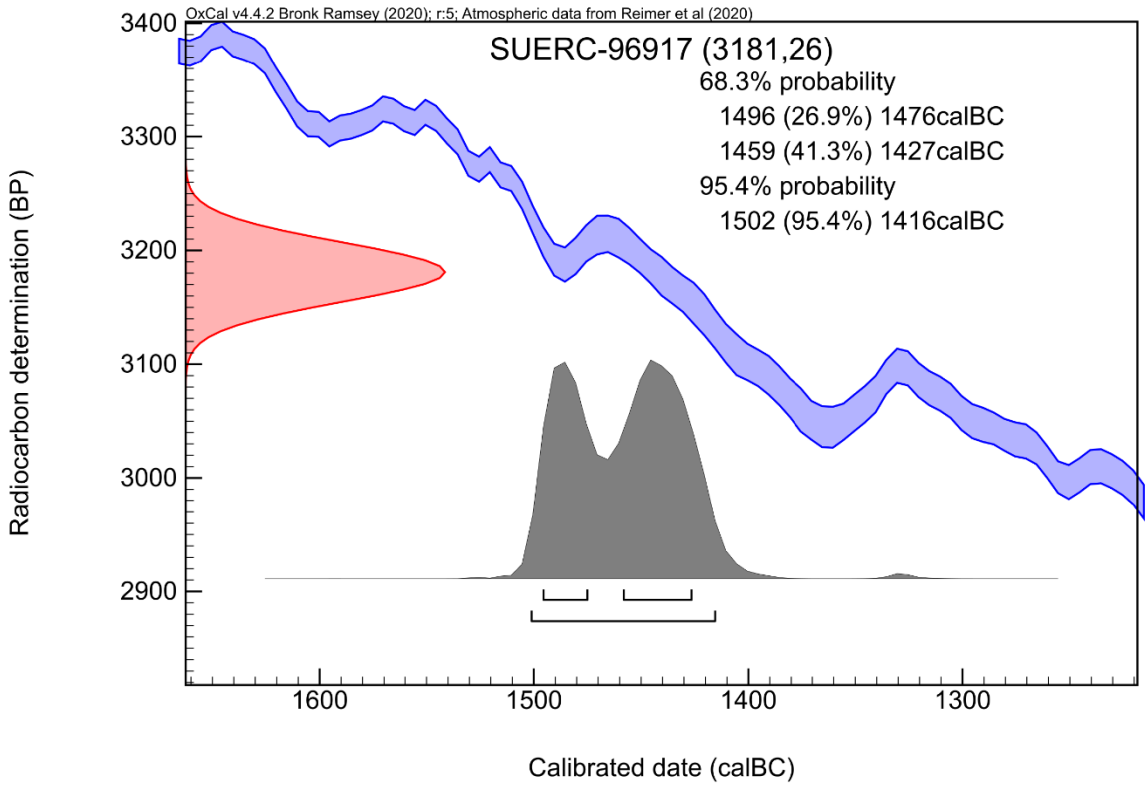
Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

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 : E. Dunbar

Checked and signed off by : P. Naysmith



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 IntCal20 atmospheric calibration curve†

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* Bronk Ramsey (2009) *Radiocarbon 51(1) pp.337-60*
† Reimer et al. (2020) *Radiocarbon 62(4) pp.725-57*

Photo 1: The excavation area from above, north at top

Photo 2: The barrow ring-ditch, looking west

Photo 3: Barrow internal structure [F82], looking south-west

Photo 4: Mortuary enclosure gully, looking west

Photo 5: Abrupt change in barrow ditch fills, looking north

Photo 6: Medieval posthole [F66], looking north

Photo 7: Intersection between barrow (L) and post-medieval (R) ditches, looking north

Photo 8: Unphased ditch [F137], looking west

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Tyne and Wear

post-excavation analysis
report 5406

Figure 1: Site location

site location

0 1km
scale 1:25 000 for A4 plot

site boundary

geophysical interpretation

area of excavation

trench

furrow

ditch

pipe/drain

0 75m

scale 1:1500 for A3 plot

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Figure 2: Trench location

edge of excavation

section 2

profile 2

furrow

drain

geotechnical pit

phase 1: Neolithic

phase 2a: Early Bronze Age

phase 2b: Late Bronze Age

phase 4: medieval

phase 5: post-medieval

phase 6: modern

unphased

0 10m

scale 1:200 for A2 plot

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Longbenton
Tyne and Wear

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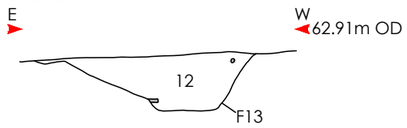
Figure 3: Phase plan

Section 1



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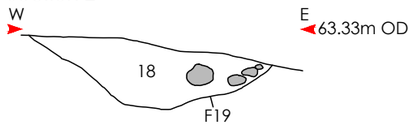

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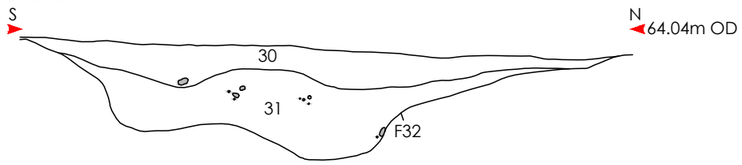

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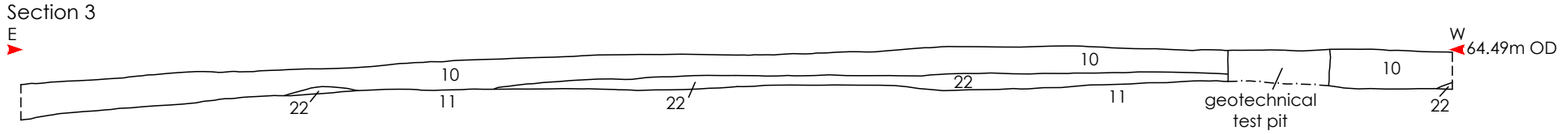

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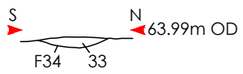

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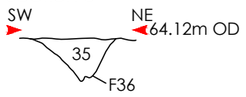

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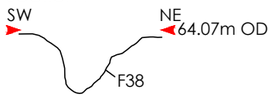

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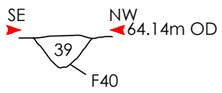
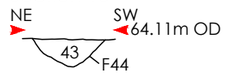


Section 9

Section 10



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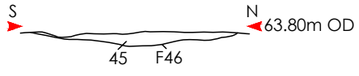

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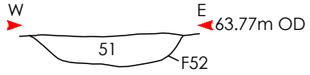
Section 13

Section 14



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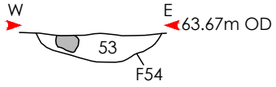

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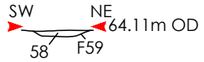

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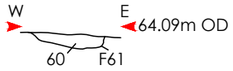

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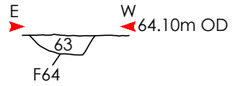

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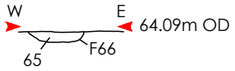

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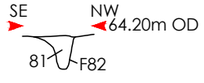

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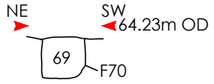

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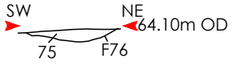

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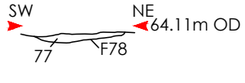

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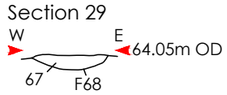

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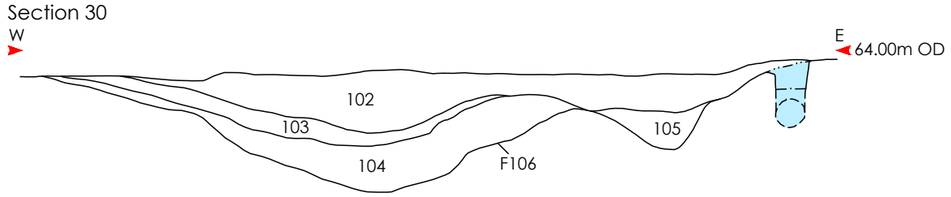

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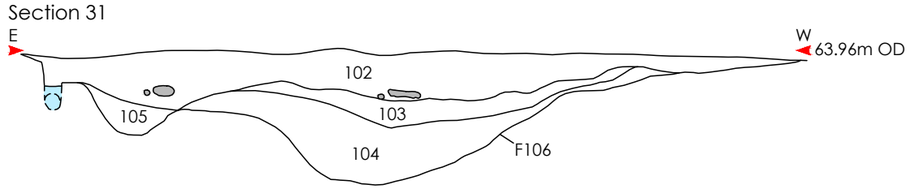

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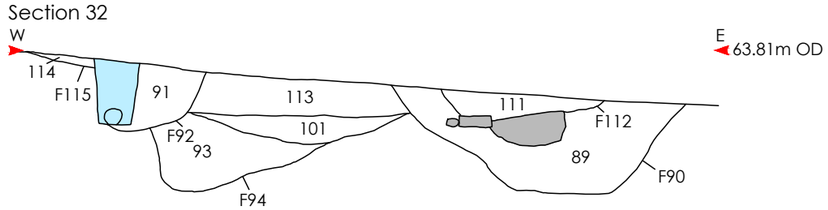

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DURHAM UNIVERSITY

on behalf of
Avant Homes

Land east of Salters Lane
Longbenton
Tyne and Wear

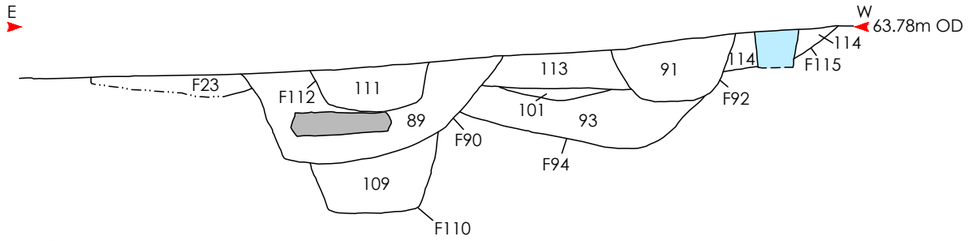
post-excavation analysis
report 5406

Figure 4: Sections 1-32

0 1.5m
scale 1:30 for A3 plot

extent of excavation
section
re-deposited natural
stone
pipe

Section 33



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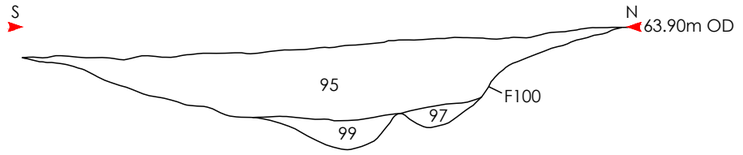

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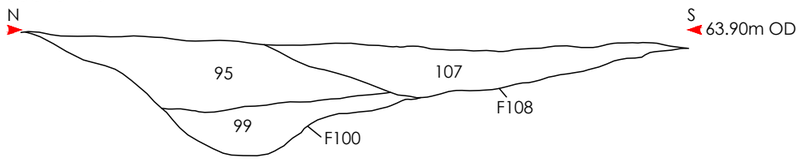

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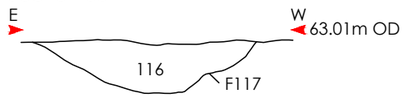

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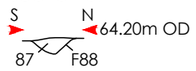

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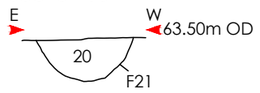

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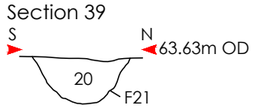

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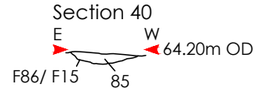

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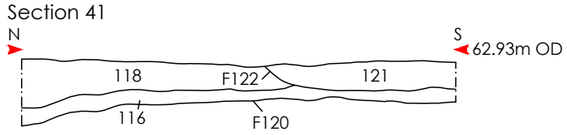

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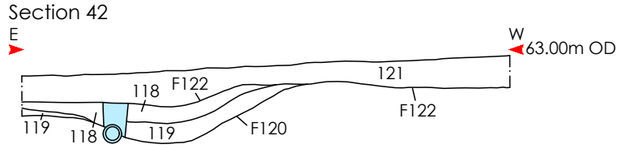

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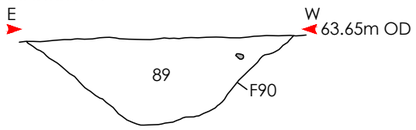

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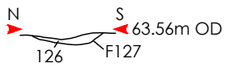

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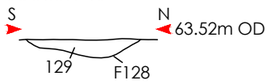

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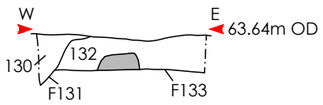

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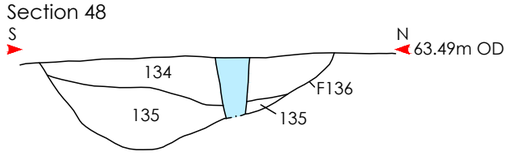

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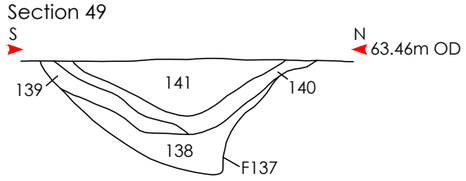

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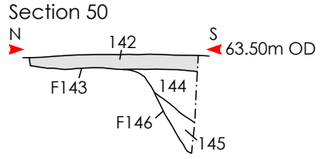

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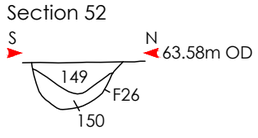

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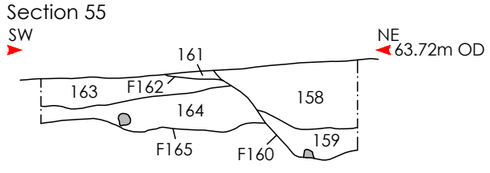
Section 54

Section 55



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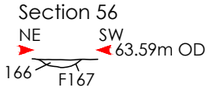

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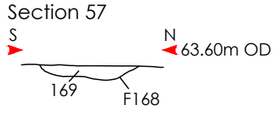

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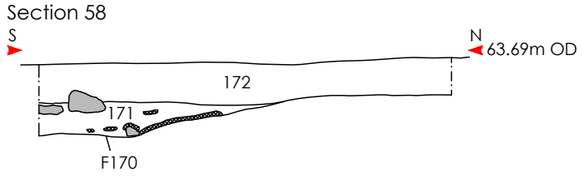

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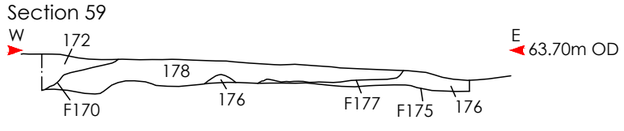

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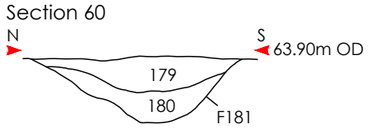

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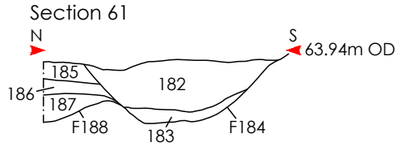

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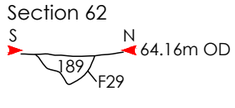

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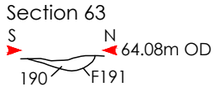

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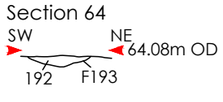

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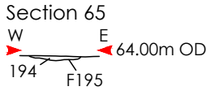

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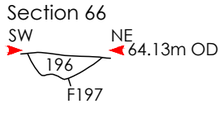

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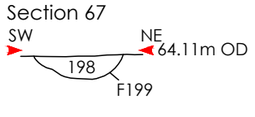

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Tyne and Wear

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Figure 5: Sections 33-67

0 1.5m
scale 1:30 for A3 plot

extent of excavation
section
charcoal
stone
pipe
furrow

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extent of excavation

section

profile x1

profile x5

0 1.5m
scale for sections 1:30 for A3 plot

0 5m
scale for profile 1:100 for A3 plot

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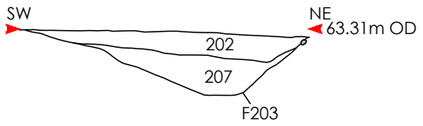
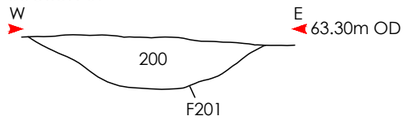
Figure 6: Sections 68-81 and Profile

Section 68

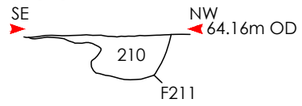


Section 69



Section 70

Section 71



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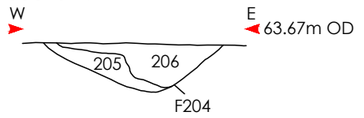

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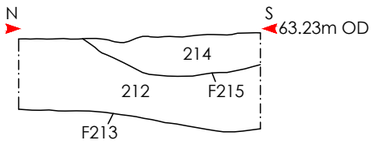
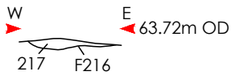
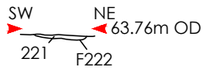


Section 74



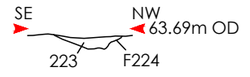
Section 75

Section 76



Section 77

Section 78



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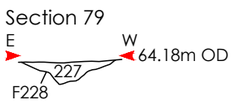

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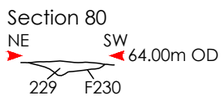
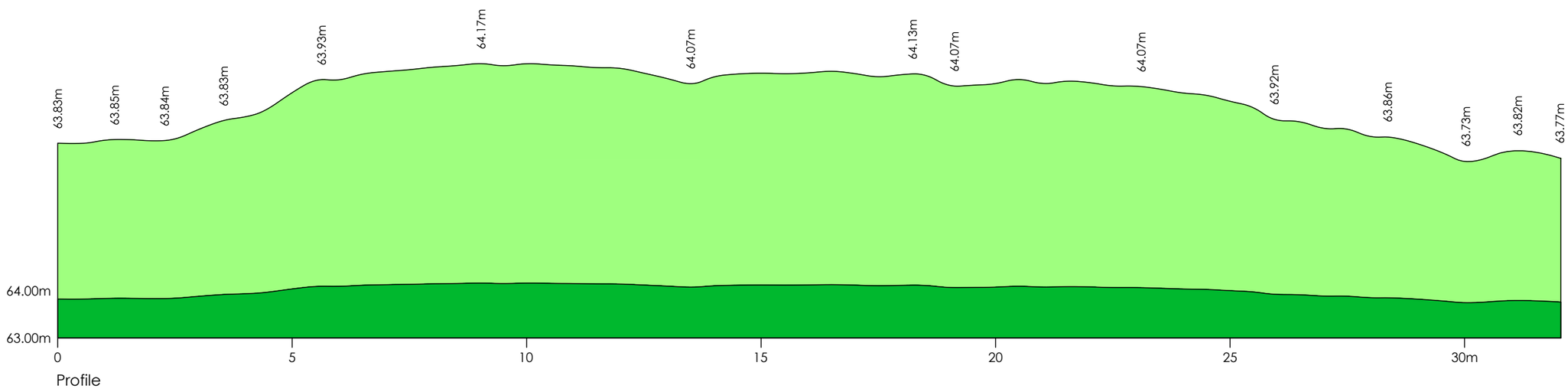


Section 81



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0 20m
scale 1:400 for A3 plot

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Figure 7: Photogrammetric aerial view and phase plan

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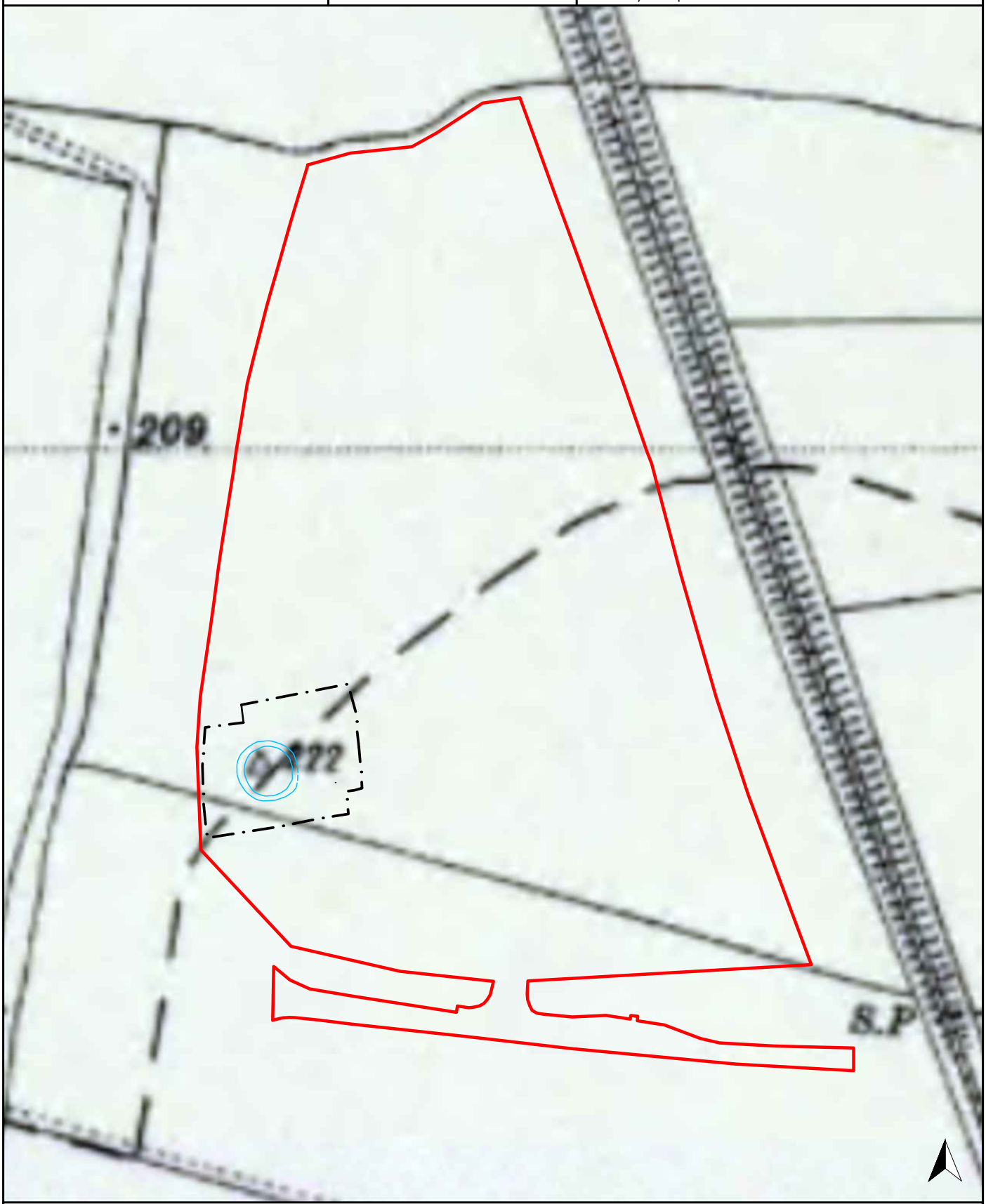
Figure 8: Extract from the 1948 Ordnance Survey map



site boundary

excavation area

phase 2b feature

0 1km
scale 1:25 000 for A4 plot