ARCHAEOLOGICAL SERVICES
DURHAM UNIVERSITY

on behalf of
Raby Estates

Land west of Grice Court
Staindrop
County Durham

post-excavation analysis

report 5767
October 2022

Durham University

Contents

Photographs

Figures

Ushaw: Historic House, Chapels & Gardens · Durham · DH7 9RH · tel 0191 334 1121
archaeological.services@durham.ac.uk · www.dur.ac.uk/archaeological.services

1. Summary

The project

1.1 This report presents the results of the analysis of an archaeological excavation conducted for a development at land west of Grice Court, Staindrop. Following post-excavation assessment, radiocarbon dating and further artefactual analysis was conducted. The results of the assessment and analysis have been incorporated into this analysis report.

1.2 The works were commissioned by Raby Estates and conducted by Archaeological Services Durham University.

Results

1.3 The archaeological features comprised a ring-gully encircling a natural mound and several pits. They indicate recurrent transient exploitation of the area over a period spanning of almost 2500 years, from the Early Neolithic to the Middle Bronze Age, focussed around the mound. The Early Neolithic features are most likely to indicate domestic activity, while the Bronze Age activity may be a result of a mixture of domestic and funerary/ ceremonial practices. The site's location on a gravel terrace close to a river was probably an important factor in its continued use throughout the early prehistoric period.

1.4 The limited lithic assemblage, probably Mesolithic or Early Neolithic, is consistent with this transient activity.

1.5 The palaeoenvironmental evidence indicates transient activity related to the exploitation of natural resources, such as wild-gathered food plants, wood fuel, and the nearby Sudburn Beck. The landscape context is significant as there is a distinct change in wood fuel use during the Neolithic-Bronze Age transition that is reflected both regionally and nationally in an increased wetland environment. Despite the absence of human bone, this activity could either be domestic or ceremonial in nature as they have similar palaeoenvironmental characteristics.

2. Project background

Location (Figure 1)

2.1 The site is located on land west of Grice Court, Staindrop, County Durham. The development site covers an area of approximately 6.1 ha. The site is bordered by agricultural land to the west, Sudburn Beck to the south and Winston Road to the east, both with agricultural land beyond, and Staindrop to the north with Raby Castle beyond. The excavation area was centred on NGR NZ 413509 520197.

Development

2.2 The development is residential. The planning application reference number is DM/20/01185/FPA.

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, set within its regional context.

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:

Mesolithic

Mv. Mesolithic lithics in the North-East
Mvii. Activity and occupation sites in the wider landscape
Miv. The Mesolithic / Neolithic transition

Specification

2.5 The works have been undertaken in accordance with an Updated Project Design (Archaeological Services 2022, Appendix 3).

Dates

2.6 Fieldwork was undertaken between 11th October and 3rd November 2021. This report was prepared for October 2022.

Personnel

2.7 Fieldwork was conducted by Charlotte Coldwell, Caitlan Wakefield and Rachel Wells (supervisor). This report was prepared by Rachel Wells, with illustrations by Janine Watson. Specialist reporting was conducted by Dr Helen Drinkall (lithics), and Lorne Elliott (palaeoenvironmental). Sample processing was undertaken by Charlotte Coldwell and Dr Ronan O'Donnell. The Project Manager was Matthew Claydon.

Archive/OASIS

2.8 The site code is **SGC21**, for **S**taindrop **G**rice **C**ourt 20**21**. The archive has been prepared for deposition and will be transferred to County Durham Archaeological Archives when it is open. The palaeoenvironmental residues were discarded following examination. The flots and charred plant remains 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 **archaeol3-509578**.

Acknowledgements

2.9 Archaeological Services Durham University is grateful for the assistance of personnel from Durham University Library in facilitating this scheme of works.

3. Landuse, topography and geology

3.1 At the time of the works, the development area comprised 4 fields of pasture. The excavation area was situated adjacent to the centre of the western site boundary.

3.2 The area rose slightly from approximately 100m OD in the south to 106m OD in the north. Small undulations in south part of the site result from former watercourses of Sudburn Beck. The mound subject to excavation was between approximately 100.6 and 101.7m OD.

3.3 The underlying bedrock geology of the area comprises Mudstone, Siltstone and Sandstone of the Stainmore Formation, overlain by Devensian diamicton till and alluvial clay, silt, sand and gravel (The British Geological Society).

4. Previous archaeological works

4.1 A geophysical survey (James and Speed 2019) has been undertaken over the site. This identified geological or pedological changes, particularly relating to the pre-channelled route of Sudburn Beck, previous ploughing regimes and former field boundaries.

4.2 Subsequent archaeological evaluation trenching (Hartley 2020) was carried out, which identified gullies thought likely to represent a discontinuous feature that enclosed an area of raised ground. A concentration of worked flints of possible Mesolithic date were recovered nearby.

4.3 The resulting excavation (Archaeological Services 2022) revealed a continuous oval ring-gully encircling a natural mound. One small pit was identified within the ring gully, with five external pits to the west and south. Palaeoenvironmental evidence from the features was compatible with funerary sites and other prehistoric monuments, or sites pre-dating the use of cereal crops, and artefactual evidence indicated a Mesolithic or possibly Early Neolithic date for these features.

4.4 The mound was artificially enhanced at a later date. A post-medieval pit was also identified.

5. The excavation

Introduction

5.1 Following the evaluation trenching, an irregular octagonal trench, 39.5m by 33.5m along its longest axes, was excavated in the west of the site (Archaeological Services 2022). This targeted several features identified during the evaluation phase. All excavations were conducted using a machine equipped with a toothless ditching bucket under constant archaeological supervision. The trench location is shown on Figure 2; the phased trench plan on Figure 3; profiles and sections are shown on Figures 4 and 5. Context data is summarised in Table 1.1.

5.2 At the centre of the trench was a low oval mound, approximately 27m (north/south) by 17m (east/west) and surviving to a height of approximately 0.6m (Figure 5). In order to establish if this was a natural or anthropogenic feature a slot was excavated through it. This confirmed that the mound was a natural geological feature which may have been prominent enough in the landscape to be utilised in the prehistoric period.

5.3 Three broad phases of activity were recorded on the site (Figure 3). Phase 1 comprises activity in the Neolithic period, followed by Bronze Age activity in Phase 2. This phase has been split into two sub-phases. Phase 3 represents later post-medieval activity.

5.4 Natural subsoil, a yellow clayey sand and gravel [3], was identified between 0.45m (north end; 101.2m OD) and 0.9m (south end; 100.8m OD) below ground level around the outside of the mound, reducing to 0.25m (101.6m OD) below ground level on the top of the mound.

Phase 1 – Neolithic

5.5 In the south of the site were two small, shallow pits. The southern pit [F12: 0.24m long by 0.2m wide, 0.05m deep; Photo 1] was filled by a light grey clayey sand [11]. Hazel charcoal from this deposit returned a date of 3720-3630 cal BC.

5.6 Approximately 1.9m north of this was a second small pit [F10: 0.31m long by 0.17m wide, 0.03m deep], filled by a grey-brown clayey sand [9]. As the palaeoenvironmental evidence was undiagnostic and did not produce any material suitable for radiocarbon dating, this feature was assigned to this phase based on its proximity and similarity in form to [F12].

5.7 To the east of [F12] was a larger oval-shaped pit [F6: 0.92m long by 0.51m wide, 0.1m deep], filled by a grey clayey sand [5] with charcoal flecks towards the base. A flint blade and two undiagnostic flakes were recovered from this context. The blade probably dates to the Mesolithic or possibly the Early Neolithic period. Hazel charcoal from this feature produced an early Neolithic date of 3640-3370 cal BC.

Phase 2 – Bronze Age

5.8 This phase has been divided into two sub-phases based on radiocarbon evidence. Phase 2.1 comprises Early Bronze Age (*c.*2500-1500 BC) activity, and Phase 2.2 Middle Bronze Age (*c.*1500-1000 BC) activity.

Phase 2.1 – Early Bronze Age (*c.*2500-1500 BC)

5.9 In this phase, the mound was encircled by a continuous, slightly irregular oval ring-gully [F14=F18=F22=F26=F29]. This feature was originally identified in trenches 28, 29 and 41 of the evaluation. The gully had a circumference of approximately 74m and was between 0.65m and 0.93m wide and 0.07m and 0.18m deep. It had a broad profile with a flat base (Photo 2), and enclosed an area of approximately 400m^2.

5.10 Excluding the north end, the gully was filled by a grey clayey sand with some yellow patches [17=21=25=28: 65m long by 0.55m-0.85m wide, 0.07m-0.18m deep]. A grey-brown loamy sand with patches of yellow [13=27: over 11m long by 0.95m wide, 0.12m deep] overlaid this in the north-west part of the gully; this was the only deposit in the gully on the north side. A crested flint blade, probably dating to the Mesolithic or Early Neolithic period, was recovered from this context. This is likely to be residual.

5.11 Ash charcoal from the south-east of the gully (Context [21]) returned a radiocarbon date of 2470-2240 cal BC. However, a much later Iron Age date of 380-190 cal BC was obtained from ash charcoal from the north-east of the gully (context [17]). Given the palaeoenvironmental evidence, the earlier date is more likely for this feature, with the later date being a result of later disturbance.

5.12 In the south of the site, south-east of Phase 1 pit [F12], was a circular pit [F8: 0.5m diameter; 0.1m deep; Photo 3], filled by a grey clayey sand [7]. This contained more than a dozen charred hazel nutshells, one of which returned a radiocarbon date of 2340-2140 cal BC.

5.13 A second pit [F24: 0.51m diameter, 0.14m deep; Photo 4], located on the north-west side of the mound within the ring gully, also dates to this phase. This was circular with steep sides and a flat base, and was filled by a dark grey-brown silty sand containing gravel [23]. Two radiocarbon dates were obtained for this feature. One, from alder stemwood charcoal, returned a date of 2200-1980 cal BC, and the second, from charred hazel nutshell, returned a date of 2140-1960 cal BC.

Phase 2.2 – Middle Bronze Age (*c.*1500-1000 BC)

5.14 A large but shallow oval pit [F20: 0.84m long by 0.61m wide, 0.12m deep; Photo 5] was located in the south-east of the trench. It was filled by mixed light grey and orange-brown clayey sand [19], which returned a radiocarbon date of 1420-1260 cal BC.

Phase 3 – Post-medieval activity

5.15 The natural mound and Phase 2.1 pit [F24] were overlain by a red-brown gravelly sand deposit [4: approximately 30m long by 25m wide, 0.14m-0.3m deep], suggesting that the mound may have been artificially enhanced. The material contained a small amount of hammerscale and cindered coal and overlaid parts of the ring gully, indicating that the mound had been enhanced after the gully went out of use. Although the presence of hammerscale is compatible with a later prehistoric date, the palaeoenvironmental evidence suggests a post-medieval date is more likely.

5.16 A dark grey silty clay alluvial deposit [2: up to 0.42m deep] was present in the southern part of the trench over the earlier pits, deepest at the southern end and petering out towards the ring gully and mound.

5.17 Cutting the alluvium [2] in the west side of the trench was a small pit [F16: 0.41m long by 0.27m wide, 0.05m deep; Photo 6], filled by a very dark brown silty clay loam [15]. Two pieces of clay pipe was recovered from this, indicating a post-medieval date. Above this and over the whole trench was a dark grey-brown sandy loam topsoil [1: 0.1-0.39m deep].

6. The artefacts

Lithics analysis

Introduction

6.1 Lithics (stone tools) can provide extensive information about prehistoric people and how they lived, from the types of occupation, activities undertaken, manufacture strategies, raw material procurement and exchange networks. Often, they can be the only artefacts surviving such long time periods, making them an important source of evidence. Grice Court spans a time frame from the Mesolithic/ Early Neolithic to the Iron Age, with minimal later activity. The worked flint comes from a single pit and a ring gully. The assemblage comprises four artefacts. These were recovered from the palaeoenvironmental samples.

Assemblage

6.2 Terminology and definitions used in the analysis of the assemblage are based on various methodologies detailed in Ashton (1998), Ashton and McNabb (1996), Andrefsky (1998) and Whittaker (1994). Typological classification is based on attributes of knapped material discussed in Butler (2005), with additional specialist typologies consulted and referred to where needed.

6.3 The assemblage comprises a small group of four pieces which come from two contexts. Context [5] is the fill of a pit located to the south end of the area, close to the southern end of the ring ditch; it is one of four pits which form a small cluster. The pit produced three of the artefacts. The first [5] <2> is a tiny silver of a medial blade fragment, broken horizontally across the blade's surface, with the left and right edges intact. The piece is non-cortical and has three previous blade scars which can just be seen on the dorsal surface, forming a trapezoidal cross-section. The blade was clearly finely made on light brown flint. The form, thinness and positioning of the scars is more in keeping with a Mesolithic, rather than Early Neolithic date, although the latter cannot be ruled out (L = 1.58mm, W = 6.82mm, Th = 0.56mm). A similar light brown flint was used for the second artefact, a flake fragment. Here the butt is missing and there is a partial break at the distal end, although the original termination would have been of feather form. There are five previous flake scars visible on the dorsal surface, along with a fragment of cortex (<25%). The piece is non-diagnostic (L = 9.65mm, W = 8.56mm, Th = 1.84mm). The final fragment is also part of a small flake or blade and has again been manufactured on light brown flint. The distal is broken and it is non-cortical with a soft-hammer butt and three scars visible on the dorsal. This is also lacking any diagnostic features (L =5.00mm, W = 3.65mm, Th = 1.13mm). Hazel charcoal from this pit fill has produced an early Neolithic date, which is broadly consistent with the form of the artefacts recovered.

6.4 The last artefact was recovered from the northern edge of the ring-gully, from context [13] <10>. This appears to be a crested blade, also manufactured on light brown flint. The artefact is non-cortical, with a plain butt, feather termination and a triangular cross-section. The right side of the crest is more weathered and natural in appearance, compared to the left which has four previous removals visible. Crested blades are created during the preparation of a core to produce a workable platform, from which to continue the production of suitably sized blades (Butler 2005). On this example a small amount of platform preparation can be seen on the crest, along with impact damage visible on the left weathered surface, where removals have been struck off. This is most probably of Mesolithic or Early Neolithic date (L = 28.98, W = 10.30mm, Th = 7.25mm).

Discussion

6.5 In general, typological analysis provides information on the forms of artefacts present at a site and the activities these represent. This can help determine whether any occupation was related to flint knapping, procurement of raw material, resource processing or domestic activities. At Grice Court the small number of artefacts recovered provide us with limited interpretive scope. Debitage products such as flakes, chips and fragments are generally undiagnostic and could have been produced wherever stone was used as a raw material. This is the case with the two flake fragments from [5] <2>. In contrast, blades are singled out because their production is related to particular technological strategies employed in Mesolithic and early Neolithic assemblages (Butler 2005). They are chronological indicators and the medial blade fragment, also from [5] <2>, can be assigned with reasonable certainty to the Mesolithic or possibly the Early Neolithic period. The similarity of the light brown raw material used to manufacture the three artefacts from [5] could imply that the undiagnostic flake fragments are also of this date.

6.6 The presence of a crested blade indicates that at some point flint knapping and more specifically core-rejuvenation was taking place on site. Crested blades are created during the preparation of a core to produce a workable platform, from which suitably shaped blades can be removed (Butler 2005). The form of this artefact can tentatively be assigned to the Mesolithic or possibly Early Neolithic period, although it is clearly residual and has been recovered from a later feature radiocarbon dated to the Early Bronze Age. The lithics tie in chronologically with an assemblage of flints of possible Mesolithic date mentioned in an interim report from previous work on the site. An assemblage of 69 pieces of flint was recovered from a trench located across the raised mound. These have been described as including working waste, blades and at least one core, although no further information is available (Hartley 2020).

6.7 Although all four artefacts are manufactured on light brown flint, the crested blade has cream inclusions indicating a similar but alternative raw material source was used for this artefact. Whilst flint does not exist naturally in chalk deposits in the Durham area, there are small quantities present in the boulder clay deposits of the region (Henson 1983). Flint from these boulder clays comes in a variety of colours, including light brown, however a source derived from the coastal deposits of light grey/ brown flint in Yorkshire (Robinson and Foulds 2018) cannot be ruled out.

6.8 Whilst no features are linked to the Mesolithic period, three of the small pits at the southern end of the site did return Early Neolithic radiocarbon dates. [F10] and [F12] contained no flint, however pit [F6] produced three of the lithics, along with hazel charcoal from the fill [5] which produced a date of 3640-3370 cal BC. Other palaeoenvironmental remains were indicative of food plants, such as hazelnuts, wild raspberries and apples.

6.9 Activity is also represented in the Early and Middle Bronze Ages with dates from other features, however the lithic evidence is more consistent with the earlier occupation phase. Early Neolithic occupation, certainly in County Durham, is most commonly represented by flint scatters and findspots which are rarely tied into radiocarbon and dating chronologies. The presence of dated pit features at Grice Court is particularly significant, even though they contain a sparse and not particularly diagnostic assemblage, and is an important addition to the evidence and of regional significance.

6.10 The limited lithic assemblage and small number of pits are likely representative of ephemeral, transient activity throughout the early prehistoric period. Hartley (2020) has interpreted the larger assemblage from the evaluation phase as being discarded on the edge of an extensive wetland area to the south of the site with the nearby Sudburn Beck, although the immediate vicinity of the site is indicated by palaeoenvironmental evidence to have been wooded at this time. Prehistoric people would have been attracted to this rich environment and the flora and fauna which were available for exploitation both for food and other resources.

7. The palaeoenvironmental evidence

Introduction

7.1 A palaeoenvironmental assessment was carried out on 13 bulk samples, taken from a group of features that were thought to be prehistoric. Several were from an oval ring-gully [F14=F18=F22=F26] encircling a small mound, and another was from gravelly material covering the mound [4]. The rest were pits [F6, F8, F10, F12, F20, F24] located adjacent to or within the ring-gully, and an alluvial deposit [2] that covered features at the southern end of the excavation. The palaeoenvironmental evidence was thought to be more characteristic of funerary sites and other prehistoric monuments rather than settlement activity, although cremated bone was absent. Signs of differential preservation gave some indication that there may be more than one phase of activity. An updated account of the charcoal and plant macrofossil record was recommended in light of relevant radiocarbon dating evidence. Following analysis of the plant macrofossil and charcoal assemblages, updated results were incorporated with existing data, and are presented in Tables 1.2-1.5.

7.2 Eight radiocarbon dates were obtained, including duplicate dates for a pit [F24] located within the ring-gully. The results confirm there was more than one phase of activity, as the dates range from the early Neolithic to the middle Iron Age, with a concentration of activity occurring during the Bronze Age. A summary of the dating evidence is presented in Tables 1.6 and 1.7.

Methods

7.3 The charcoal and plant macrofossil studies were undertaken in accordance with the aims and objectives outlined in the relevant research frameworks and resource agendas (Petts & Gerrard 2006; Hall & Huntley 2007; Huntley 2010). The bulk samples were manually floated and sieved through a 500μm mesh. The flots were examined at up to x60 magnification using a Leica MZ7.5 stereomicroscope for waterlogged and charred botanical remains. Identifications were aided by comparison with modern reference material held in the Palaeoenvironmental Laboratory at Archaeological Services Durham University, and by reference to relevant literature (Cappers *et al.* 2006). Plant nomenclature follows Stace (2010). Habitat classification follows Preston *et al.* (2002).

7.4 A detailed charcoal record for the fill [5] of pit [F6] was made to gain an overview of the species present, from which local woodland characterisation and wood fuel use could be considered. As context [5] contained a substantial amount of charcoal, a riffle box was used to provide a 20% sub-sample. The study concentrated on fragments from the >4mm dry-sieved fraction, although a few (<5) fragments in the 2mm fraction were examined to trace twiggy material and small woods or shrubs (Asouti & Hather 2001; Asouti & Austin 2005). Twigs are defined as <10mm in diameter including pith and bark (Huntley 2010). Analysis follows Marguerie & Hunot (2007), which in addition to species identification, involved recording roundwood diameter, tree ring curvature, tree ring growth, the number of tree rings, and the presence of pith, bark, tyloses, insect degradation, radial cracking, reaction wood and alteration by vitrification.

7.5 For charcoal identifications 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 Schweingruber (1990), Gale & Cutler (2000) and Hather (2000), and modern reference material held in the Palaeoenvironmental Laboratory at Archaeological Services Durham University.

7.6 Where comparable anatomical properties and poor condition prevented secure identification, charcoal remains were recorded to genus level or assigned to family groups. Apple and hawthorn are represented by the subfamily Maloideae.

Results

7.7 Detailed palaeoenvironmental evidence and a presumed date for each context are presented in Tables 1.2-1.3. Below is a summary of the key results based on the radiocarbon evidence.

Neolithic activity

7.8 The fill [5] of pit [F6] has the most palaeoenvironmental evidence. Charcoal is common, although very mineral-encrusted and in a poor state. The assemblage is almost entirely hazel branchwood and oak stemwood (sapwood and heartwood), apart from a few traces of Maloideae (representing apple or hawthorn). There was some evidence of vitrification and radial cracking, which might be a sign that burning occurred at a relatively high temperature. The charcoal is slightly magnetic possibly due to having incorporated burnt clay. The charred macrofossil assemblage includes several hazel nutshells (mainly <4mm), a raspberry fruitstone (*Rubus idaeus)* and a few soil fungus sclerotia (*Cenococcum geophilum*). A charred, mineral-encrusted hazel nutshell failed to provide a radiocarbon date. Hazel charcoal produced an early Neolithic date of 3640-3370 cal BC.

7.9 Charcoal from the fill [11] of pit [F12] is similar to that from pit [F6]. It has the same orange mineral-encrusting, it is also magnetic and has the same mix of species (roughly equal amounts of hazel branchwood and oak stemwood). Hazel charcoal produced a similar radiocarbon date of 3720-3630 cal BC. The slight difference in the dates between these two pits is probably due to the ages of the woods used.

Bronze Age activity

7.10 The fill [7] of pit [F8] has a similar amount of mineral-encrusted charcoal as pit [F12], but in contrast, the assemblage is dominated by ash and alder. The fill includes a modest number of charred, mineral-encrusted hazel nutshells, one of which, gave an early Bronze Age radiocarbon date of 2340-2140 cal BC.

7.11 The fill [23] of the pit [F24] located within the ring-gully has small quantities of charcoal and charred plant remains, but unlike other contexts, the material is in much better condition. The charcoal assemblage is similar to pit [F8], with a predominance of alder and ash, and a smaller amount of hazel. Sparse charred plant remains comprise a few hazel nutshells and two probable apple endocarp fragments. Two radiocarbon dates were obtained because of the differential preservation observed in this feature compared to elsewhere on the site. Alder charcoal provided a date of 2200-1980 cal BC and a fairly-well preserved charred hazel nutshell produced a date of 2140-1960 cal BC. The slightly older date for the charcoal is probably because this was stemwood.

7.12 The fill [19] of pit [F20] has a small amount of mineral-encrusted charcoal largely made up of hazel branchwood and a trace of oak stemwood. Hazel charcoal gave a later Bronze Age date of 1420-1260 cal BC. Other charred plant remains are absent.

7.13 Palaeoenvironmental evidence from the ring-gully is particularly sparse, which means there is more chance of identifying and dating residual or intrusive material. As is often the case from this site, the charred plant material from this feature is generally in poor condition and quite mineral-encrusted. Fill [21], from the south-east area of the feature, has the most evidence, though this is still small in quantity. There are several fragments of ash charcoal, one of which produced another early Bronze Age date of 2470-2240 cal BC. However, mineral-encrusted ash charcoal from fill [17] in the north-eastern part of the feature gave a mid- Iron Age date of 380-190 cal BC. Mineral-encrusted alder charcoal from fill [21] failed to give a date.

Post-medieval activity

7.14 The hammerscale and coal recovered from mound deposit [4] is not in keeping with the rest of the evidence from the site and probably relates to post-medieval activity. Evidence from pit [F16] also fits with a post-medieval date as suggested by artefactual evidence.

Discussion

Neolithic activity

7.15 As the evidence is limited there is obviously some uncertainty when attempting to characterise the chronology and social context of the site, and even more so when there is clearly more than one phase of activity. That said, there is no doubt that the radiocarbon dates for pits [F6] and [F12] are representative, and because the paleoenvironmental evidence and the condition of the remains are so comparable, it is possible to say with some confidence that these features are contemporaneous.

Bronze Age activity

7.16 Duplicate radiocarbon dates evidently provide more certainty as is the case for the early Bronze Age pit [F24], but for the other features there needs to be an element of caution, particularly concerning the ring-gully. Of the two dates obtained for this feature the early Bronze Age date from [21] is probably the most representative, considering the particularly sparse material in fill [17] is more likely to be intrusive. Furthermore, the Iron Age date seems incongruous with other evidence, and it is unusual not to have additional Iron Age indicators. It seems reasonable to assume then that based on the available evidence, the ring-gully is broadly contemporary with pits [F24] and [F8], especially as ash and alder charcoal are characteristic of all three of these contexts but they are absent from the Neolithic features.

Landscape context

7.17 The palaeoenvironmental evidence generally indicates a wooded environment and the presence of *Cenococcum geophilum* soil fungus sclerotia in early Neolithic pit [F6] suggests that there were trees nearby, as this species is associated with tree roots. Charcoal evidence shows there were mature oak trees, although the low number of soil fungus may indicate open rather than dense woodland cover.

7.18 Most striking is the change in wood fuel use, with oak and hazel dominating the early Neolithic features, while alder and ash are more predominant in the early Bronze Age contexts. This is consistent with evidence from across the region, including Great Lumley, Leadgate, Callerton, Alnwick and Spennymoor (Archaeological Services 2018/19a/19b/20a/21b), where there is a dramatic shift to the use of trees that reflect damp conditions. This begins sometime during the Neolithic-Bronze Age transition and occurs throughout the Bronze Age and into the earlier Iron Age. These episodes of increased wetness and the associated rise in regional water tables, resulted in floodplain expansion and the widespread occurrence of alder dominated fen woodland (Mansell *et al*. 2014). Ash also tolerates periodically waterlogged soils and is found in alder carr.

7.19 The general paucity of charred plant macrofossils, and the complete lack of evidence for cultivated crops, suggests activity was transient, and related to the exploitation of natural resources, such as wild-gathered food plants, wood fuel, a well-drained sandy soil, and the close proximity of Sudburn Beck. As the site is located at the edge of an alluvium deposit it demonstrates the area is susceptible to seasonal flooding (The British Geological Society). Although this sporadic activity may be domestic, the palaeoenvironmental evidence is also consistent with funerary sites, as food plants such as hazelnuts, wild raspberries and apples are often found in ritual deposits. Examples occur at an early Neolithic site at Duns in the Scottish Borders (Anderson 2017), and a Bronze Age site at Low Coniscliffe in County Durham (Archaeological Services 2021c). Also, funerary sites are often located next to streams and rivers.

7.20 It is plausible that cremation-related contexts can have no human bone. For instance, 'cenotaph' deposits are one possible explanation for finding empty funerary pits with the exact same palaeoenvironmental remains as pits with bone (O'Donnell 2016). A regional example was found at Belsay Bridge, Northumberland, where there was a pit with charcoal and amber beads, but no evidence of bone. The site also included a possible mortuary enclosure (Archaeological Services 2017).

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 charred macrofossil material selected for eight individual dates provided adequate carbon for accurate measurement in six cases, and analyses proceeded normally. Alternative material was selected for the remaining two features, which successfully provided adequate carbon for accurate measurement, and analyses then proceeded normally. Sample information and results are summarised in Tables 1.6 and 1.7, and details of the results and calibrations are presented in Appendix 3.

8.2 The dates were assessed for Bayesian analysis but were found to not be suitable for modelling because of the wide range of dates.

9. Conclusions

9.1 The remains recorded here represent recurrent transient exploitation of a partially wooded environment throughout the early prehistoric period over the course of almost 2500 years, from the Early Neolithic to the Middle Bronze Age, focussed around a natural mound. There is also an indication of activity in the Iron Age.

9.2 There is little evidence for early prehistoric activity in the immediate vicinity of the site. Prehistoric flint arrowheads were found near Sink House, 1.5km north-east of the site (Wooler 1908, 220). Approximately 2.6km south-west of the site, excavations at Dunhouse Quarry (Robinson 2020) found evidence of a possible early prehistoric pit and a palisaded enclosure, with associated pottery most likely dating to the early Neolithic - but potentially dating to the Bronze Age or Early Iron Age, - followed by an Iron Age field system. No scientific dating has been undertaken on this site as yet, so this phasing remains tentative. Additionally, a potential Bronze Age barrow described as a "grass covered mound", possibly "elongated E/W by ploughing, situated in a pasture field" with "no evidence for surrounding bank and ditch" was identified *c.*2.7km to the south of the Staindrop site in Winston (Young 1980, 14), although no excavation has been conducted to determine the legitimacy of this mound as a prehistoric monument.

9.3 It has been noted by several authors that there is a conspicuous lack of evidence for Neolithic activity in County Durham compared to the surrounding counties of Cumbria, Northumberland, and North Yorkshire (Petts & Gerrard 2006, 127; Hewitt *et al* 2011, 45). Therefore, the presence of early Neolithic activity at Staindrop is regionally significant.

9.4 The majority of Neolithic evidence in County Durham comes from isolated findspots and flint scatters (Petts & Garrard 2006, 133). However, some evidence for Neolithic activity in the county in the form of pits has been identified through developer-funded excavations. These are generally interpreted as evidence of temporary activity related to exploitation of the local landscape resources.

9.5 Between 2007 and 2010, excavations in advance of the construction of a wind farm near Haswell, County Durham, approximately 31km north-east of Staindrop, uncovered evidence for several prehistoric pits (Archaeological Services 2012). Two of these returned early Neolithic radiocarbon dates of 3766-3641 cal BC and 3523-3366 cal BC, and others were assigned to the same phase based on morphological similarities. Similar features were also identified at Pelton, County Durham (Archaeological Services 2011). A similar distance away at Ingleby Barwick, approximately 32km to the south-east, a pit dating to 3800-3690 cal BC was recorded (Archaeological Services 2020b). As at Staindrop, no conclusive artefactual evidence was recovered from the pits at any of these sites, while the palaeoenvironmental evidence comprised fuel waste, particularly oak and hazel, and food waste predominantly in the form of hazel nutshells. Groups of pits of Neolithic and later date can be found at several other sites in the region, for example at Great Lumley, County Durham, near Leadgate, County Durham, at Callerton, to the west of

Newcastle, and at Windy Edge, Alnwick (Archaeological Services 2018a; 2019a &b; 2020).

9.6 Neolithic activity is sometimes associated with post-built structures, as at Street House, near Loftus, North Yorkshire (Sherlock 2019), approximately 58km west of Staindrop, and at several sites in the Milfield Basin, Northumberland (Waddington *et al* 2011), over 100km to the north. At Street House, these structures took the form of a sunken structure, dated to 4080-3720 cal BC and containing evidence of the use of wattle screens (Sherlock 2019, 17), and a circular structure comprising a segmented ring ditch with shallow post-settings both in the base of the ditches and inside the structure. This was dated to 3766-3647 cal BC (*ibid.*, 20). In the Milfield Basin, several postholes thought to relate to structures have been identified, along with pits (Waddinton *et al* 2011, 292-295). One of these, from Lanton Quarry, returned a date of 3620-3350 cal BC (*ibid.*), while a circular structure from Thirlings was dated to 3640-2890 cal BC (Miket *et al* 2008, 14). These dates are all comparable to those from pits [F12] and pit [F6] at Staindrop, which returned dates of 3720-3630 cal BC and 3640-3370 cal BC respectively. The pits do not however have the morphological characteristics of postholes.

9.7 At Staindrop, the Neolithic evidence comprises two shallow pits with an associated contemporary larger pit. Therefore, the evidence from Staindrop, scant though it is, is much more comparable to that from the Milfield Basin than Street House. This reflects Street House being a specialized salt-working site (Sherlock 2021, 666), while the Milfield Basin sites represent more general activity (Waddington *et al* 2011, 296).

9.8 The lack of cultivated crops in the palaeoenvironmental samples suggests temporary activity, as agricultural remains would indicate the presence of a sedentary settlement nearby, as is the case at Street House (Elliot 2019, 138). The site at Staindrop is just north of Sudburn Beck, and the palaeoenvironmental evidence indicates open woodland in the earlier Neolithic, with wetland emerging in the Bronze Age. Alluvium indicates some seasonal flooding of the area. Both the Neolithic and Bronze Age pits are compatible with seasonal activity, perhaps with the higher ground of the mound being utilised for the exploitation of the resources associated with the beck and of wild foods. The comparable sites in the region where pit groups of these dates have been identified (above, 9.5) typically are also situated for the exploitation of nearby rivers and associated resources. The sites also produce radiocarbon dates indicating long periods, nearly 1000 years at Staindrop, where no evidence for activity is recorded, indicating perhaps that groups returned to the site because of the value of the location, rather than because of a contiguous tradition.

9.9 There is a significant change however in the Early Bronze Age with the construction of the gully around the mound, which indicates a more formal exploitation of the feature. The potential for the mound to have been utilised as a barrow needs to be considered.

9.10 Mounds, as prominent places in the landscape, are often seen as focusses of activity in the early prehistoric period (Bradley 2019, 200-201). While antiquarians and archaeologists have mostly focussed on human-built monuments such as barrows (Woodward 2000, 11-12), natural mounds were also frequently used (Bradley 2019, 200). Some were enhanced, such as the barrows at Ingleby Barwick and Longbenton (Archaeological Services 2016 & 2021a), while others were not. For example, a cist burial was inserted in the top of a natural mound at Steeple Hill near Tunstall, Sunderland, approximately 43km north-east of Staindrop (Greenwell & Clinch 1905, 208). Another example is the Scheduled Monument at Dewley Hill near Throckley (Scheduled Monument number 1018678; HER 185), *c.*50km north of Staindrop. This was originally thought to be a "well-preserved example of an exceptionally large round barrow", but the excavation of a 10-foot-deep trial hole in 1966 encountered only glacial sand and gravel, indicating that it was a natural feature. However, several finds of worked flint including a polished neolithic axe head from on top of the mound, and significant cropmark evidence surrounding it shows it was a focus of prehistoric activity, nevertheless.

9.11 The ring-gully encircling the mound at Staindrop marks it as a significant place. Ring-ditches dating to the Early Bronze Age are often interpreted as barrows. However, typical barrow ditches were usually a more orthodox circular shape and much more substantial than the gully at Staindrop (Last 2007b, 157-158; 161). For example, the ditch encircling the round barrow at Longbenton, Tyne & Wear (Archaeological Services 2021a) measured 2.5m wide and 0.5m deep, whereas the gully at Staindrop was just 0.93m wide and 0.18m deep at its largest. While horizontal truncation or erosion may have reduced the size of the gully at Staindrop over the course of 4,500 years, the presence of the extant mound suggests this was not significant. Furthermore, barrows usually date to the latter half of the Early Bronze Age between *c.*2200-1500 BC (Historic England 2018, 3; Garwood 2007, 41), when a marked change in burial practices occurred (Garwood 2007, 41, Table 4.1; Fowler 2013, 6-7; Fowler & Wilkin 2016, 114, 127).

9.12 In his consideration of the variation and complexity of barrow forms in Britain, Last (2007b) identifies several sites where smaller, less substantial ring ditches, often in irregular subcircular shapes, have preceded later bowl barrows (*ibid.*, 157), as well as similar features that were not succeeded by barrows (*ibid.* 160). These are thought to have been open mortuary enclosures (*ibid.* 157-163). This interpretation was also suggested for the oval enclosure found at Belsay Bridge (Archaeological Services 2017), although this ring-gully was much smaller than the one at Staindrop. Garwood (2007, 34) expands on the idea of these 'open area ceremonial sites', and broadly categorises them as either "small embanked enclosures with flat or concave interior surfaces", or "low flat-topped mounds". Within this categorisation, there is considerable variation amongst sites even within a small area: geophysical evidence from Barrow Clump, Wiltshire, shows the wide variety of sizes and forms these enclosures could take, including circular, oval, pear-shaped and sub-rectangular (Last 2007b, 156; 160-161). From this the low, fairly flat shape of the mound at Staindrop (Figure 5), coupled with the lack of evidence for artificial mound material, suggests a possible interpretation of an open ceremonial or mortuary site.

9.13 The lack of human remains identified at Staindrop does not invalidate an interpretation of funerary activity. In developing a chronology for Early Bronze Age funerary monuments, Garwood (2007, 34-36; 41, Table 4.1) found that open area sites dating to between *c.*2500-2150 BC rarely contained burials or evidence of structures. He also found the earliest open area sites to be spatially separate from contemporary burial mounds (*ibid.*, 41, Table 4.1), indicating a distinct function that, while probably related, was not directly concerned with burial. Archaeologically invisible funerary rites such as excarnation or ceremonial feasting are possible interpretations. While Garwood's chronology was developed from sites in the south of England, particularly Wiltshire, it has been found to be broadly applicable to the north-east (Fowler 2013, 8). Furthermore, the nationwide lack of archaeologically visible burials of this period is particularly noted in County Durham (Fowler 2013, 6-7; Fowler & Wilkin 2016, 114, 127), possibly indicating a distinct funerary culture in the area. Therefore, the evidence from Staindrop could be taken as consistent with funerary activity of both the period and region.

9.14 However, if the ring-gully at Staindrop defined a special 'ceremonial' area, it might be expected that the pits 'inside' and 'outside' the ring-gully represent different types of activity. There is no evidence for this. Although there is differential preservation in the palaeoenvironmental remains from the two Early Bronze Age pits, this can be attributed to the pit outside the ring-gully being subject to flooding in the past, as evidenced by the alluvium in that area, whereas the pit on top of the mound would have remained dry and well-drained. Therefore, the palaeoenvironmental evidence from both pits is comparable.

9.15 Pits in the Early Bronze Age could have a variety of functions, including domestic activity, deposition of human remains, and deposition of material related to ceremonial activity such as 'cenotaph' pits (O'Donnell 2016, 169-170). At Staindrop, the palaeoenvironmental evidence from the Early Bronze Age pits is consistent with either domestic or funerary/ ceremonial activity. This was also the case at Haswell Windfarm (Archaeological Services 2012). There, the presence of Beaker pottery in pits with comparable dates to those at Staindrop suggested funerary activity, but no other evidence such as human remains were identified. Therefore, the function of the pits was concluded to be unknown.

9.16 Brük (1999, 60-63) argues that the concept of the 'domestic' did not exist in the Early Bronze Age, and thus trying to define a feature or site as either 'ritual' or 'domestic' is anachronistic. This idea is echoed by Fowler (2013, 194) with regard to binary distinctions between the 'living' and the 'dead'. This reflects a broader trend in recent Early Bronze Age studies, where features traditionally interpreted as strictly funerary are increasingly seen as sites of complex and changing social significance, similar to the modern parish church (Historic England 2018, 1; Last 2007a, 10-11). Therefore, even though there are unequivocal distinctions between some Bronze Age burial and settlement sites, it may not be necessarily to define the activity at Staindrop as exclusively domestic, funerary, or ritual. Given that the palaeoenvironmental evidence can support both an interpretation of transient domestic activity and funerary/ ritual activity, and given the lack of a distinction between the pits 'inside' and 'outside' the ring-gully, a broader interpretation of the site as a 'focus of activity' may be all that can be determined.

9.17 It is not known how long the ring-gully enclosure stayed in use for. However, the presence of a single pit [F20] dated to the Middle Bronze Age, around 1000 years after the gully's construction, demonstrates recurrent, if sporadic, use of the site. This recurrent use of specific locations from the Neolithic through the Bronze Age is also seen at many of the sites in the Milfield Basin in Northumberland, and has been taken to imply persistent knowledge of specific locations over a couple of thousand years (Waddington *et al* 2011, 296), and continuity of inhabitation practices, at least in lowland areas (Fowler 2013, 172). Reuse of settlement sites, for example following Bronze Age abandonment, is very common, and might be anticipated simply because of the location of the site and because the land had been cleared. Prime locations for the exploitation of natural resources might be rediscovered by different communities at different times. Reuse of the same location was also seen at Haswell Windfarm on the upland East Durham Plateau (Archaeological Services 2012), which had evidence of activity from the Mesolithic to the Iron Age; Pelton (Archaeological Services 2011), which had features from the Neolithic to the Middle Bronze Age; and Ingleby Barwick (Archaeological Services 2016), which was used from the Neolithic to the Iron Age. Furthermore, the presence of possibly Mesolithic flints recovered during the evaluation stage of the works at Staindrop (Hartley 2020) and a Middle Iron Age date from the ring-gully, although probably intrusive, suggests activity at the site over an even longer period.

9.18 As locations near waterways have been shown to be important for both the living and the dead throughout the early prehistory of the north-east (Fowler 2013, 193), this suggests that the location of a site may have been exploited for different specific activities at different points in time. The Staindrop site's location close to Sudburn Beck was therefore likely a significant factor in its recurrent use throughout early prehistory, regardless of the nature of the activity.

10. Sources

Anderson, S, 2017 A prehistoric cremation burial at Duns Law Farm, near Duns, Scottish Borders. *Proc Soc Antiq Scot* **147**, 29-47

Andrefsky, W Jr., 1998 Lithics. Macroscopic approaches to analysis. *Cambridge Manuals in Archaeol,* Cambridge

Archaeological Services 2011 *Newfield Farm, Pelton, Co. Durham: plant macrofossil analysis*. Unpublished report **2738**, Archaeological Services Durham University

Archaeological Services 2016 *Ingleby Manor Free School, Stockton-on-Tees, Teesside: post-excavation assessment*. Report **4032**, Archaeological Services Durham University

Archaeological Services 2017 *Land at Belsay Bridge, Belsay, Northumberland: archaeological evaluation*. Unpublished report **4396**, Archaeological services Durham University

Archaeological Services 2018 *Land at Scorer's Lane, Great Lumley, County Durham: palaeoenvironmental analysis*. Unpublished report **4895**, Archaeological Services Durham University

Archaeological Services 2019a *Bradley Surface Mining Scheme, Leadgate, County Durham: post-excavation full analysis*. Unpublished Report **5024**, Archaeological Services Durham University

Archaeological Services 2019b *East Middle Callerton, Newcastle upon Tyne, Tyne and Wear: post-excavation full analysis*. Unpublished Report **5069**, Archaeological Services Durham University

Archaeological Services 2020a *Windy Edge, Alnwick, Northumberland: post-excavation full analysis*. Unpublished Report **5221**, Archaeological Services Durham University

Archaeological Services 2020b *Land at Ingleby Barwick, Stockton on Tees: post-excavation analysis*. Unpublished report **5211**, Archaeological Services Durham University

Archaeological Services 2021a *Land east of Salters Lane, Longbenton, Tyne and Wear: post-excavation analysis*. Report **5406**, Archaeological Services Durham University

Archaeological Services 2021b *Middlestone Moor, Spennymoor, County Durham: palaeoenvironmental analysis*. Unpublished report **5452**, Archaeological Services Durham University

Archaeological Services 2021c *Low Coniscliffe, Darlington, County Durham: palaeoenvironmental assessment*. Unpublished report **5512**, Archaeological Services Durham University

Archaeological Services 2022 *Land west of Grice Court, Staindrop, County Durham: post-excavation assessment.* Report **5653rev1**, Archaeological Services Durham University

Ashton, N, 1998 Appendix VI: Flint Analysis Methodology, in Ashton, N, Lewis, S G, & Parfitt, S, (eds) *Excavations at the Lower Palaeolithic Site at East Farm, Barnham, Suffolk 1989-94.* British Museum Occasional Paper **125**, London, 288-291

Ashton, N & McNabb, J, 1996 The Flint industries from the Waetcher Excavations, in Conway, B, McNabb, J & Ashton, N, (eds) *Excavations at Barnfield Pit, Swanscombe, 1968-72.* British Museum Occasional Paper **94**. London, 201-236

Asouti, E, & Austin, P, 2005 Reconstructing woodland vegetation and its exploitation by past societies, based on the analysis and interpretation of archaeological wood charcoal macro-remains. *Env Archaeol* **10**, 1-18

Asouti, E, & Hather, J, 2001 Charcoal analysis and the reconstruction of ancient woodland vegetation in the Konya Basin, south-central Anatolia, Turkey: result from the Neolithic site of Çatalhöyük East. *Veget Hist Archaeobot* **10**, 23-32

Bradley, R 2019 *The Prehistory of Britain and Ireland*. 2nd ed. Cambridge

Bronk Ramsey, C, 2009 Bayesian analysis of radiocarbon dates. *Radiocarbon* **51(1)**, 337-360

Brück, J, 1999 What's in a settlement? Domestic practice and residential mobility in Early Bronze Age southern England, in Brück, J, & Goodman, M (eds) *Making Places in the Prehistoric World : Themes in Settlement Archaeology*. London, 52-75

Bronk Ramsey, C, 2020 OxCal 4.4.2 Manual. https://c14.arch.ox.ac.uk/oxcal.html

Butler, C, 2005 *Prehistoric Flintwork*. Stroud

Cappers, R T J, Bekker, R M, & Jans, J E A, 2006 *Digital Seed Atlas of the Netherlands*. Groning

Elliot, L, 2019 Samples from Neolithic Structure 18, excavated in 2016 (Area K), in Sherlock, S, *A Neolithic to late Roman landscape on the north-east Yorkshire coast: excavations at Street House, Loftus, 2004-17*. Tees Archaeology Monograph Series **7**, 138

Gale, R, & Cutler, D, 2000 *Plants in archaeology; identification manual of vegetative plant materials used in Europe and the southern Mediterranean to c.1500*. Otley

Garrow, D, 2007 Placing pits: landscape occupation and depositional practice during the Neolithic in East Anglia. *Proc Prehist Soc*, **73**, 1-24

Greenwell, W G, & Clinch, G 1905 Early Man, in Page, W (ed) *The Victoria History of the Counties of England - Durham*, **1**, 199-208

Hall, A R, & Huntley, J P, 2007 *A review of the evidence for macrofossil plant remains from archaeological deposits in northern England*. Research Department Report Series no. **87**. London

Hartley, A, 2020 *Winston Road, Staindrop, County Durham: archaeological evaluation*. Unpublished interim report **20-41**, NAA

Hather, J G, 2000 *The identification of the Northern European Woods: a guide for archaeologists and conservators*. London

Henson, D, 1983 The flint resource of Yorkshire and the East Midlands. *Lithics* **4**, 28-33

Huntley, J P, 2010 *A review of wood and charcoal recovered from archaeological excavations in Northern England*. Research Department Report Series no. **68**. London

James, A, & Speed, G, 2019 *Winston Road, Staindrop, County Durham: geophysical survey report*. Unpublished report **19-37**, NAA

Last, J, 2007a Beyond The Grave: new perspectives on barrows, in Last, J, (ed) *Beyond the Grave: New Perspectives on Barrows*. Oxford, 1-13

Last, J, 2007b Covering Old Ground: barrows as closures, in Last, J, (ed) *Beyond the Grave: New Perspectives on Barrows*. Oxford, 156-175

Mansell, L J, Whitehouse, N J, Gearey, B R, Barratt, P, & Roe, H M, 2014 Holocene floodplain palaeoecology of the Humberhead Levels; implications for regional wetland development. *Quat Int* **341**, 91-109

Marguerie, D, & Hunot, J-Y, 2007 Charcoal analysis and dendrology: data from archaeological sites in north-western France. *J Archaeol Sci* **34**, 1417-1433

Miket, R, Edwards, B, & O'Brien, C, 2008 Thirlings: a Neolithic site in Northumberland. *Archaeol J*. **165**, 1–106

O'Donnell, L, 2016 The power of the pyre – A holistic study of cremation focusing on charcoal remains. *J Archaeol Sci* **65**, 161-171

Petts, D, & Gerrard, C, 2006 *Shared Visions: The North-East Regional Research Framework for the Historic Environment*. Durham

Preston, C D, Pearman, D A, & Dines, T D, 2002 *New Atlas of the British and Irish Flora.* Oxford

Reimer, P, Austin, W, Bard, E, Bayliss, A, Blackwell, P, Bronk Ramsey, C, . . . Talamo, S, 2020 The IntCal20 Northern Hemisphere Radiocarbon Age Calibration Curve (0–55 cal kBP). *Radiocarbon* **62(4),** 725-757

Robinson, G & Foulds, F W F, 2018 A Late Mesolithic or Early Neolithic findspot on Barningham Moor, County Durham, UK. *Lithics* **38**, 32-39

Robinson, G, 2020 *Dunhouse Quarry, Staindrop, County Durham Phase 4 Extension: Post-Excavation Assessment Report*. Unpublished report **20/76**, NAA

Schweingruber, F H, 1990 *Microscopic wood anatomy*. Birmensdorf

Sherlock, S, 2021 Early Neolithic salt production at Street House, Loftus, north-east England. *Antiquity*, **95** (**381**), 648-669

Sherlock, S, 2019 *A Neolithic to late Roman landscape on the north-east Yorkshire coast: excavations at Street House, Loftus, 2004-17*. Tees Archaeology Monograph Series **7**

Stace, C, 2010 *New Flora of the British Isles*. Cambridge

Waddington, C, & Davies, J, 2002 An Early Neolithic Settlement and Late Bronze Age Burial Cairn near Bolam Lake, Northumberland: fieldwalking, excavation and reconstruction. *Archaeol Aeliana*, **5** (**30**), 1-47

Waddington, C, Marshall, P, & Passmore, D 2011 Towards Synthesis: Research and Discovery in Neolithic North-East England. *Proc Prehist Soc*, **77**, 279-319

Whittaker, J C, 1994 *Flintknapping: Making and Understanding Stone Tools*. Austin

Woodward, A, 2000 *British Barrows: A Matter of Life and Death*. Stroud
Wooler, E, 1908 Monthly meeting, 27 May, 1908. *Proc Soc Antiq Newcastle*, **3**rd ser, Vol **3**, 220
Young, R, 1980, An Inventory of Barrows in Co. Durham, *Trans Archit Archaeol Soc Durham Northumberland*, New series **5**, 5, 1-16

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: C clay pipe, F flint, I industrial residues

No	Phase	Description	C	F	I
1	3	Topsoil			
2	3	Alluvial subsoil			
3	-	Natural subsoil			
4	3	Possible mound material/gravelly subsoil			•
5	1	Fill of pit [F6]		•	
6	1	Cut of pit			
7	2.1	Fill of pit [F8]			
8	2.1	Cut of pit			
9	1	Fill of pit [F10]			
10	1	Cut of pit			
11	1	Fill of pit [F12]			
12	1	Cut of pit			
13	2.1	Fill of ring-gully [F14]		•	
14	2.1	Cut of ring-gully (north end)			
15	3	Fill of pit [F16]	•		
16	3	Cut of post-medieval pit			
17	2.1	Fill of ring-gully [F18]			
18	2.1	Cut of ring-gully (north-east)			
19	2.2	Fill of pit [F20]			
20	2.2	Cut of pit			
21	2.1	Fill of ring-gully [F22]			
22	2.1	Cut of ring-gully (south-east)			
23	2.1	Fill of pit [F24]			
24	2.1	Cut of pit			
25	2.1	Fill of ring-gully [F26]			
26	2.1	Cut of ring-gully (south-west)			
27	2.1	Upper fill of ring-gully [F29]			
28	2.1	Primary fill of ring-gully [F29]			
29	2.1	Cut of ring-gully (north-west)			

Table 1.2: Updated palaeoenvironmental evidence

Sample	Context	Feature	Volume processed (l)	Flot volume (ml)	C14 available	Rank	Notes
1	4	Mound material	12	150	N	*	Flot mainly has modern roots, with fragmented (<10mm) cindered coal and a scrap of charcoal (cf. alder). There are no charred plant macrofossils. Uncharred raspberry fruitstone and dock. Finds (hammerscale). **Post-medieval**
2	5	F6 pit	11	100	Y	***	The sample produced a large amount of very mineral-encrusted charcoal (magnetic - daub?) mainly hazel branchwood and oak stemwood, also a trace of Maloideae. Other charred material - several mineral-encrusted hazel nutshells, a wild raspberry fruitstone (*Rubus idaeus*) and two soil fungus sclerotia (*Cenococcum geophilum*). Finds (flints). **Early Neolithic**
3	7	F8 pit	3	20	Y	***	A moderate amount of orange, mineral-encrusted charcoal, and a modest number of charred hazel nutshells (fragmented). The charcoal includes ash stemwood (short rings), hazel branchwood, alder longshoot and oak sapwood sliver. **Bronze Age?**
4	9	F10 pit	1	<5	N	-	Tiny flot with flecks of coal and cinder and a trace of modern roots. No diagnostic evidence. **Uncertain**
5	11	F12 pit	1	5	Y	**	Tiny flot with traces of coal, charcoal, and modern roots. Modest amount of charcoal (30ml) in residue. Charcoal is very encrusted possibly with daub (increased weight - magnetic). Roughly equal amounts of oak stemwood sapwood and hazel branchwood (short and average growth rings). Some oak and hazel are consistent with using deadwood. **Early Neolithic**
6	15	F16 pit	1	30	Y	*	Flot dominated by fragmented (<10mm) coal and cinder, and a trace of charcoal (oak sapwood sliver in good condition). No plant macrofossils. Evidence fits with the suggested post-medieval date. Finds (Iron nail). **Post-medieval**
7	17	F18 ring-gully (NE)	12	50	Y	*	Small flot with flecks of coal, cinder, and modern roots. Heavily mineralised charcoal in the residue, mainly indeterminate due to poor state. Alder is most representative, also traces of ash, and oak stemwood. No Iron Age indicators. **Prehistoric**
8	19	F20 pit	12	40	Y	*	Small flot with flecks of coal and cinder and modern roots. The residue contains some quite mineralised charcoal - mainly hazel branchwood (strong curvature) also oak stemwood. **Prehistoric**
9	23	F24 pit	6	60	Y	**	Small flot with charcoal, trace of coal/cinder, modern roots, several charred hazel nutshells (all <4mm) and two possible apple endocarps. The charcoal has fewer mineral inclusions (better condition). In contrast to other samples, charcoal is mainly in flot rather than residue – mainly alder longshoot and ash branchwood, also hazel, Maloideae and oak. **Bronze Age**
10	13	F14 ring-gully (N)	13	100	N	-	Small flot containing fragmented (mainly <4mm) coal and cinder, and frequent modern roots. Nothing in the residue apart from a single flint. There is no charcoal and no charred plant remains. Finds (flint). **Prehistoric**
11	21	F22 ring-gully (SE)	22	60	Y	**	Flot contains fragmented (all <4mm) coal and cinder, and modern roots. The residue has some mineral-encrusted charcoal (mainly hazel, also ash, alder, oak and Maloideae). Not as encrusted as Neolithic pits. No plant macrofossils. **Bronze Age?**
12	25	F26 ring-gully (SW)	13	70	?	*	Small flot with flecks of coal and cinder and modern roots. The residue has a trace of mineralised charcoal (ash stemwood with short growth rings). There are no other charred plant remains or charcoal. **Prehistoric**
13	2	Alluvial deposit	8	60	N	-	A small flot of only modern roots. The residue has traces of fragmented coal and mineralised charcoal. The condition of the charcoal is too poor to identify or to provide a radiocarbon date. There are no other plant remains. **Uncertain**

[Rank: *: low; **: medium; ***: high; ****: very high potential to provide further palaeoenvironmental information. ? = may be insufficient material for radiocarbon dating]

Table 1.3: Data from palaeoenvironmental analysis

Sample	1	2	3	4	5	6	7	8	9	10	11	12	13
Context	**4**	**5**	**7**	**9**	**11**	**15**	**17**	**19**	**23**	**13**	**21**	**25**	**2**
Feature number	**-**	**F6**	**F8**	**F10**	**F12**	**F16**	**F18**	**F20**	**F24**	**F14**	**F22**	**F26**	**-**
Feature	**MM**	**P**	**P**	**P**	**P**	**P**	**RG**	**P**	**P**	**RG**	**RG**	**RG**	**AD**
Material available for radiocarbon dating	N	Y	Y	N	Y	Y	Y	Y	Y	N	Y	Y	N
Volume processed (l)	12	11	3	1	1	1	12	12	6	13	22	13	8
Volume of flot (ml)	150	100	20	<5	5	30	50	40	60	100	60	70	60
Residue contents													
Charcoal	-	+++	++	-	++	-	+	+	(+)	-	+	(+)	(+)
Coal /cinder	+	-	-	-	-	+	-	-	+	-	-	-	-
Flint (number of fragments)	-	5	-	-	-	-	-	-	-	1	-	-	(+)
Hammerscale ball / flake	++	-	-	-	-	-	-	-	-	-	-	-	-
Iron nail (number of fragments)	-	-	-	-	-	1	-	-	-	-	-	-	-
Flot matrix													
Charcoal	(+)	++	-	-	+	(+)	-	-	++	-	-	-	-
Cinder vesicular	++	(+)	-	(+)	-	++	(+)	(+)	++	++	++	++	-
Coal	+	(+)	-	(+)	(+)	++	(+)	(+)	+	++	++	+	-
Roots (modern)	+++	++	++	(+)	+	+	++	++	++	+++	++	-	++
Uncharred seeds	(+)	-	-	-	-	-	-	-	-	-	-	-	-
Charred remains (total count)													
(t) *Corylus avellana* (Hazel) nutshell frag.	-	6	26	-	-	-	-	-	6	-	-	-	-
(t) cf. *Malus sylvestris* (Crab Apple) endocarp	-	-	-	-	-	-	-	-	2	-	-	-	-
(t) *Rubus idaeus* (Wild Raspberry) fruitstone	-	1	-	-	-	-	-	-	-	-	-	-	-
(x) *Cenococcum geophilum* (Soil fungus) sclerotia	-	2	-	-	-	-	-	-	-	-	-	-	-
Charcoal													
Weight (g)	<0.05	182	16	-	16	<0.05	1	2.5	1	-	3.5	<0.05	-
Volume (ml)	<1	200	20	-	30	<1	<5	<5	<10	-	<5	<1	-
Alnus glutinosa (Alder)	(+)	-	+	-	-	-	+	-	++	-	(+)	-	-
Corylus avellana (Hazel)	-	+++	+	-	++	-	-	++	+	-	++	-	-
Fraxinus excelsior (Ash)	-	-	++	-	-	-	(+)	-	++	-	+	(+)	-
Maloideae (Apple, hawthorn)	-	(+)	-	-	-	-	-	-	+	-	(+)	-	-
Quercus sp (Oaks)	-	+++	(+)	-	++	(+)	(+)	(+)	-	-	(+)	-	-

[t-tree/woodland; x-wide niche. AD-Alluvial deposit, MM-Mound material, P-Pit, RG-Ring gully, (+): trace; +: rare; ++: occasional; +++: common; ++++: abundant]

Table 1.4: Detailed results from charcoal analysis

Sample	**2**
Context	**5**
Feature number	**F6**
Feature	**Pit**
Radiocarbon date (95.4%)	3632-3378 cal BC
Charcoal (g/number of fragments)	
Corylus avellana (Hazel)	22.144 (91F)
Maloideae (cf. hawthorn)	0.675 (2F)
Quercus sp (Oaks)	13.349 (35F)
Indet.	0.453 (4F)
Weight of fragments in the >10mm fraction (g)	15.1
Weight of fragments in the >4mm fraction (g)	166.2
Weight of fragments in the >2mm fraction (g)	10.8
Weight of fragments analysed (g)	36.6
Weight of fragments >4mm not analysed (g)	146.2
% of fragments analysed	20
Number of fragments analysed	132
Largest fragment (mm)	20

Table 1.5: Growth ring data from the charcoal record

		Growth ring curvatures (%)				
Sample	**Context**	**Strong (s)**	**Moderate (m)**	**Weak (w)**	**Indet. (i)**	**Species (with the types of ring curvature represented)**
2	5	21	61	11	7	Hazel (s/m/w/i), Oak (m/w/i), Maloideae (s/m)

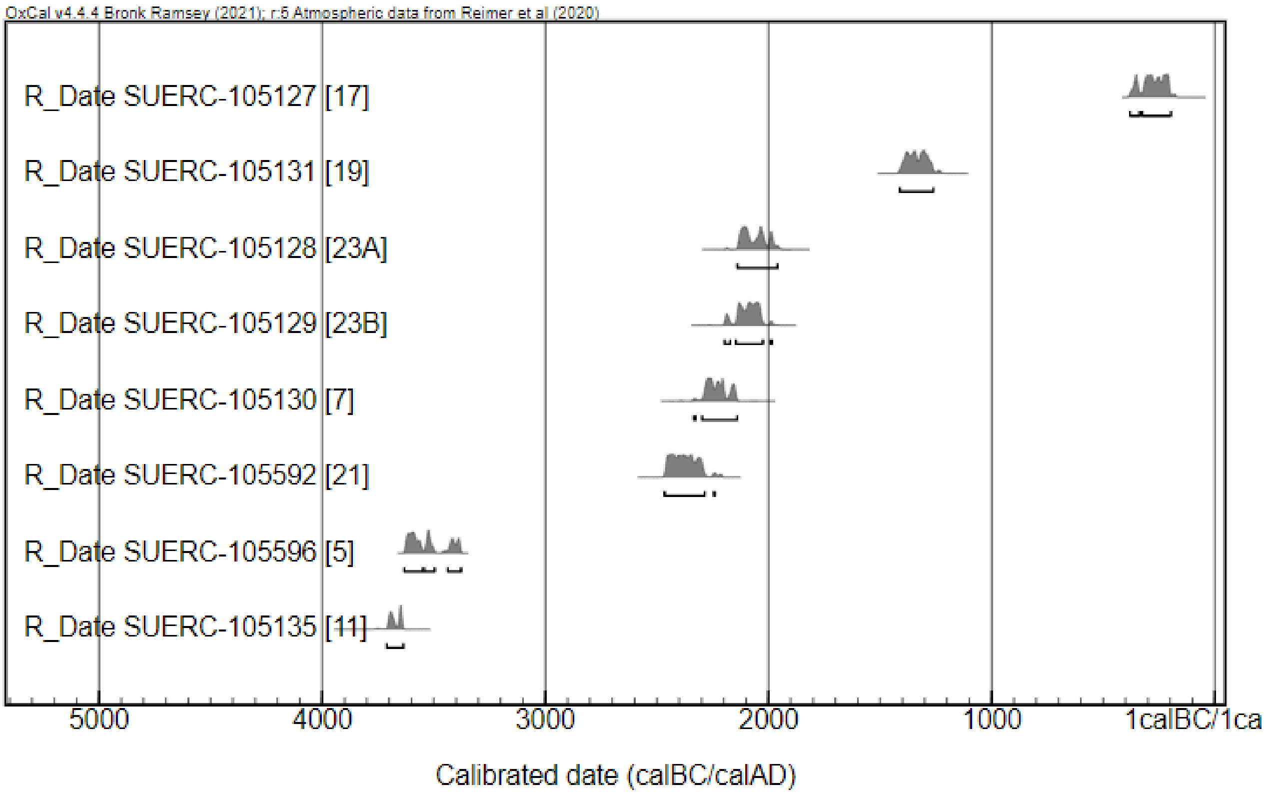
[Indeterminate curvature was often due to small fragment size or radial fracturing producing narrow 'slivers'. Ring curvature is based on Marguerie & Hunot 2007]

Table 1.6: Summary of radiocarbon dating

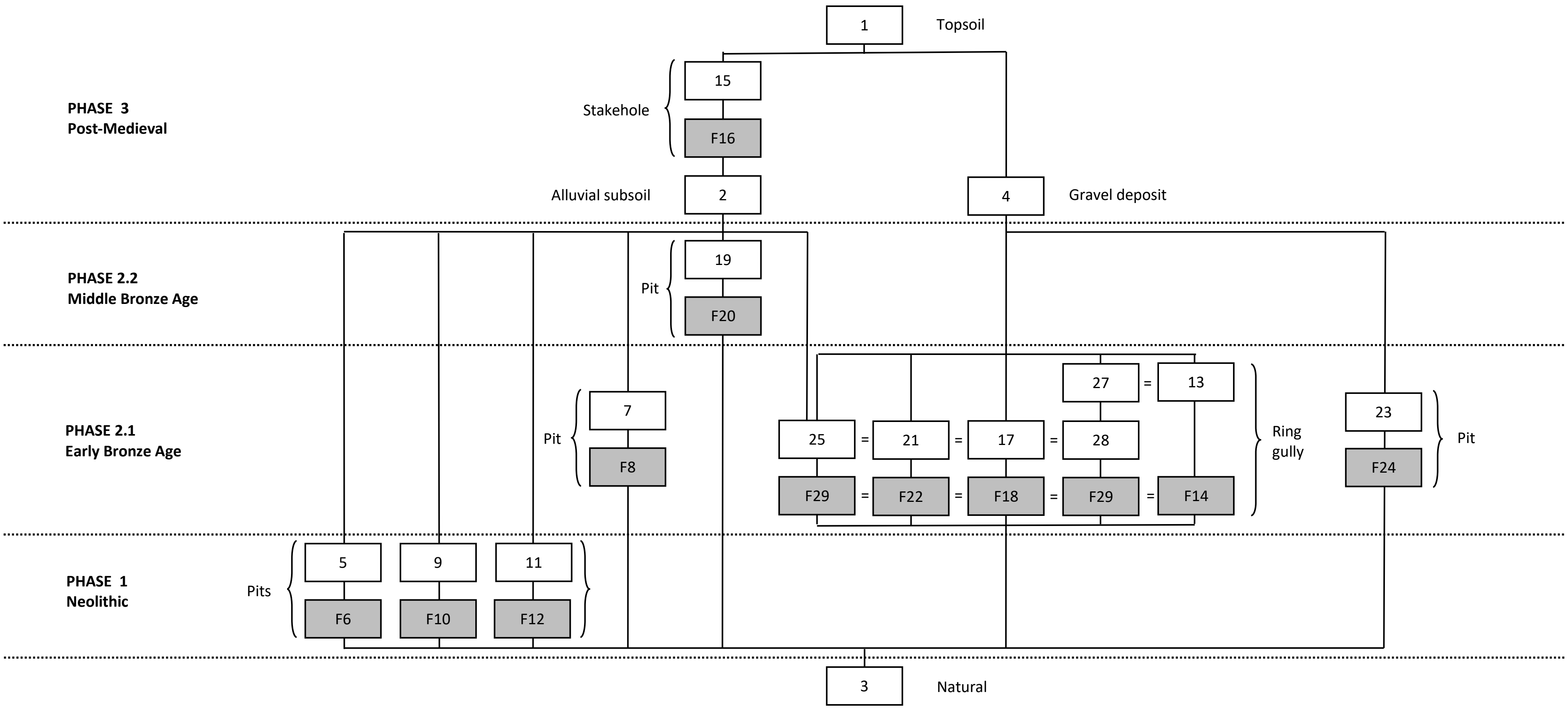
Laboratory code	Sample	Context	Context description	Material used for C14 dating	$\delta^{13}C$ ‰	Radiocarbon Age BP	Calibrated date 68.3% probability	Calibrated date 95.4% probability
SUERC-105127 GU60958	7	17	Ring-gully [F18]	Ash charcoal (3 wide rings) Stemwood Mineralised	-24.8	2217 ± 24	360 (8.2%) 347 cal BC 314 (26.8%) 275 cal BC 263 (12.2%) 243 cal BC 235 (21.0%) 205 cal BC	380 (17.9%) 337 cal BC 327 (77.5%) 198 cal BC
SUERC-105592 GU61967	11	21	Ring-gully [F22]	Ash charcoal (1 wide ring) Moderate ring curvature Mineral-encrusted	-25.0	3886 ± 27	2456 (64.8%) 2341 cal BC 2316 (3.4%) 2310 cal BC	2466 (94.8%) 2287 cal BC 2245 (0.6%) 2240 cal BC
SUERC-105128 GU60960	9A	23	Pit [F24]	Charred hazel nutshell Moderate condition	-26.9	3671 ± 24	2132 (38.0%) 2086 cal BC 2050 (21.4%) 2021 cal BC 1995 (8.8%) 1981 cal BC	2139 (95.4%) 1961 cal BC
SUERC-105129 GU60961	9B	23	Pit [F24]	Alder charcoal (2 wide rings) Stemwood Good condition	-26.5	3703 ± 24	2138 (17.6%) 2115 cal BC 2099 (50.7%) 2037 cal BC	2197 (8.1%) 2171 cal BC 2147 (86.4%) 2026 cal BC 1991 (0.9%) 1985 cal BC
SUERC-105130 GU60962	3	7	Pit [F8]	Charred hazel nutshell Mineral-encrusted	-24.3	3797 ± 24	2285 (32.4%) 2248 cal BC 2236 (27.7%) 2199 cal BC 2163 (8.2%) 2151 cal BC	2336 (0.9%) 2328 cal BC 2299 (94.5%) 2141 cal BC
SUERC-105596 GU61968	2	5	Pit [F6]	Hazel charcoal (5 rings) Small roundwood Mineral-encrusted	-25.0	4736 ± 27	3626 (35.2%) 3576 cal BC 3571 (4.8%) 3561 cal BC 3534 (14.4%) 3513 cal BC 3425 (7.9%) 3410 cal BC 3395 (6.0%) 3384 cal BC	3632 (48.4%) 3551 cal BC 3543 (21.8%) 3497 cal BC 3437 (25.3%) 3378 cal BC
SUERC-105131 GU60964	8	19	Pit [F20]	Hazel charcoal Strong ring curvature Poor condition	-28.1	3066 ± 24	1390 (40.3%) 1336 cal BC 1322 (28.0%) 1286 cal BC	1412 (95.4%) 1262 cal BC
SUERC-105135 GU60965	5	11	Pit [F12]	Hazel charcoal (>8 rings) Moderate ring curvature Mineral inclusions	-26.9	4895 ± 24	3703 (37.3%) 3681 cal BC 3656 (31.0%) 3642 cal BC	3711 (95.4%) 3636 cal BC

[The calibrated age ranges are determined using OxCal4.4.2 (Bronk Ramsey 2009; 2020); IntCal20 curve (Reimer *et al.* 2020)]

Table 1.7: Radiocarbon multiplot data



Appendix 2: 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
11 July 2022

Laboratory Code	SUERC-105127 (GU60958)
Submitter	Charlotte O'Brien Archaeological Services Durham University South Road Durham DH1 3LE
Site Reference	Grice Court, Straindrop, County Durham (SGC21)
Context Reference	17
Sample Reference	SGC21-7
Material	Charcoal : Fraxinus excelsior
$\delta^{13}C$ relative to VPDB	-24.8 ‰
Radiocarbon Age BP	2217 ± 24

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

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

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

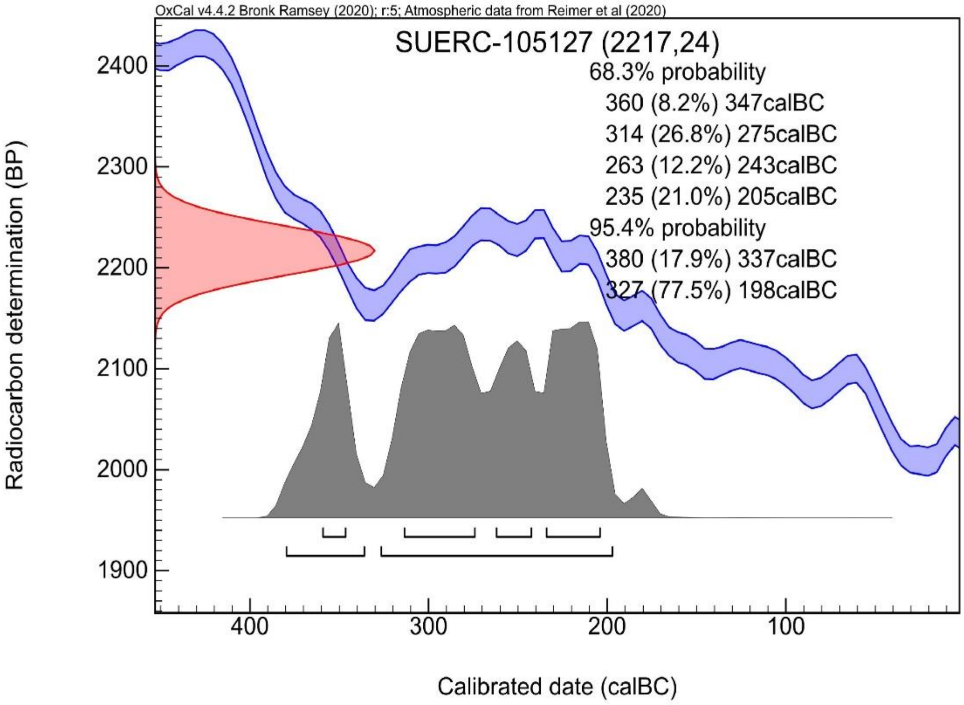
For any queries relating to this certificate, the laboratory can be contacted at suerc-c14lab@glasgow.ac.uk.

Conventional age and calibration age ranges calculated by :

Checked and signed off by :

The University of Glasgow, charity number SC004401

The University of Edinburgh is a charitable body, registered in Scotland, with registration number SC005336



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
11 July 2022

Laboratory Code	GU60959
Submitter	Charlotte O'Brien Archaeological Services Durham University South Road Durham DH1 3LE
Site Reference	Grice Court, Straindrop, County Durham (SGC21)
Context Reference	21
Sample Reference	SGC21-11
Material	Charcoal : Alnus glutinosa
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

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
11 July 2022

Laboratory Code	SUERC-105128 (GU60960)
Submitter	Charlotte O'Brien Archaeological Services Durham University South Road Durham DH1 3LE
Site Reference	Grice Court, Straindrop, County Durham (SGC21)
Context Reference	23
Sample Reference	SGC21-9A
Material	Charred nutshell : Corylus avellana
$\delta^{13}C$ relative to VPDB	-26.9 ‰
Radiocarbon Age BP	3671 ± 24

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

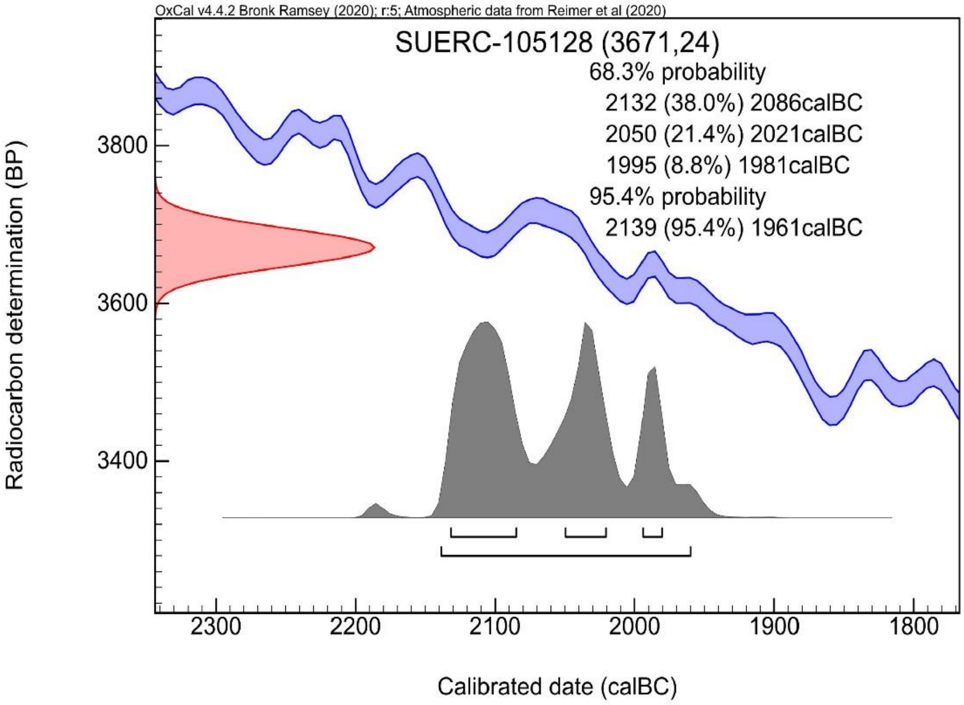
Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

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

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

Conventional age and calibration age ranges calculated by :

Checked and signed off by :



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

The above date ranges have been calibrated using the 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
11 July 2022

Laboratory Code	SUERC-105129 (GU60961)
Submitter	Charlotte O'Brien Archaeological Services Durham University South Road Durham DH1 3LE
Site Reference	Grice Court, Straindrop, County Durham (SGC21)
Context Reference	23
Sample Reference	SGC21-9B
Material	Charcoal : Alnus glutinosa
$\delta^{13}C$ relative to VPDB	-26.5 ‰
Radiocarbon Age BP	3703 ± 24

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

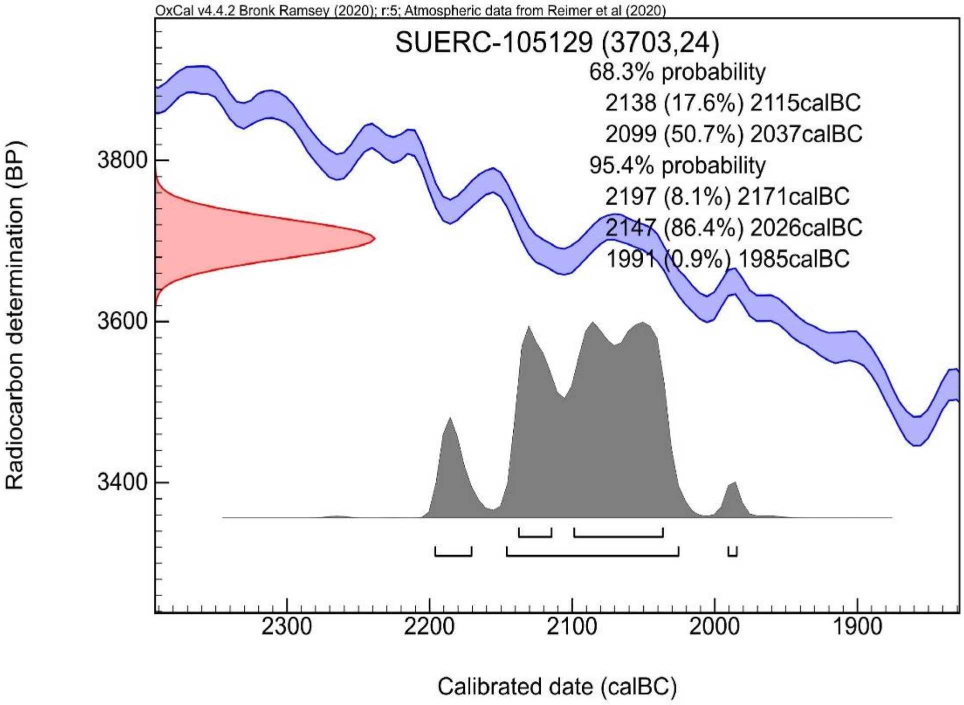
Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

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

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

Conventional age and calibration age ranges calculated by :

Checked and signed off by :



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

The above date ranges have been calibrated using the 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
11 July 2022

Laboratory Code	SUERC-105130 (GU60962)
Submitter	Charlotte O'Brien Archaeological Services Durham University South Road Durham DH1 3LE
Site Reference	Grice Court, Straindrop, County Durham (SGC21)
Context Reference	7
Sample Reference	SGC21-3
Material	Charred nutshell : Corylus avellana
$\delta^{13}C$ relative to VPDB	-24.3 ‰
Radiocarbon Age BP	3797 ± 24

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

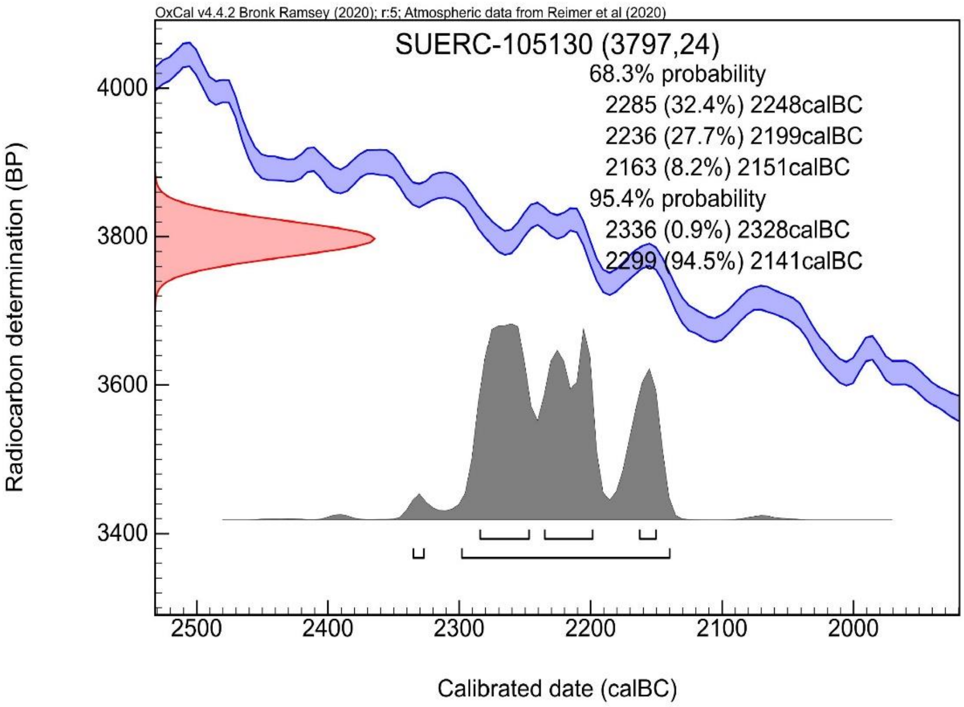
Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

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

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

Conventional age and calibration age ranges calculated by :

Checked and signed off by :



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

The above date ranges have been calibrated using the 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
11 July 2022

Laboratory Code	GU60963
Submitter	Charlotte O'Brien Archaeological Services Durham University South Road Durham DH1 3LE
Site Reference	Grice Court, Straindrop, County Durham (SGC21)
Context Reference	5
Sample Reference	SGC21-2
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

The University of Glasgow, charity number SC004401

The University of Edinburgh is a charitable body, registered in Scotland, with registration number SC005336

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
11 July 2022

Laboratory Code	SUERC-105131 (GU60964)
Submitter	Charlotte O'Brien Archaeological Services Durham University South Road Durham DH1 3LE
Site Reference	Grice Court, Straindrop, County Durham (SGC21)
Context Reference	19
Sample Reference	SGC21-8
Material	Charcoal : Corylus avellana
$\delta^{13}C$ relative to VPDB	-28.1 ‰
Radiocarbon Age BP	3066 ± 24

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

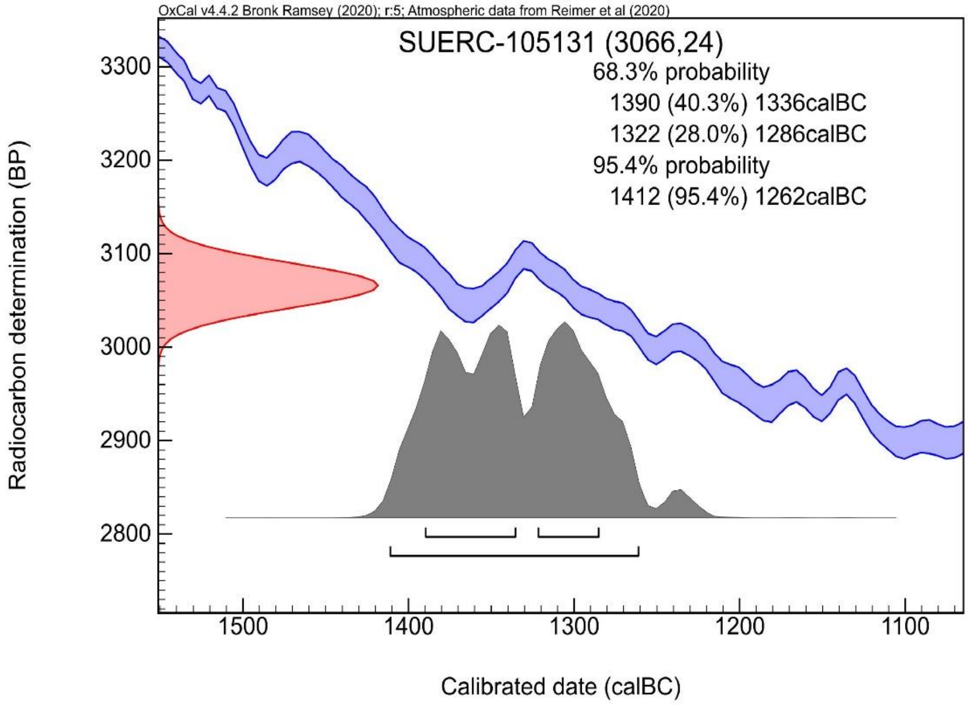
Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

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

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

Conventional age and calibration age ranges calculated by :

Checked and signed off by :



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

The above date ranges have been calibrated using the 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
11 July 2022

Laboratory Code	SUERC-105135 (GU60965)
Submitter	Charlotte O'Brien Archaeological Services Durham University South Road Durham DH1 3LE
Site Reference	Grice Court, Straindrop, County Durham (SGC21)
Context Reference	11
Sample Reference	SGC21-5
Material	Charcoal : Corylus avellana
$\delta^{13}C$ relative to VPDB	-26.9 ‰
Radiocarbon Age BP	4895 ± 24

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

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

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

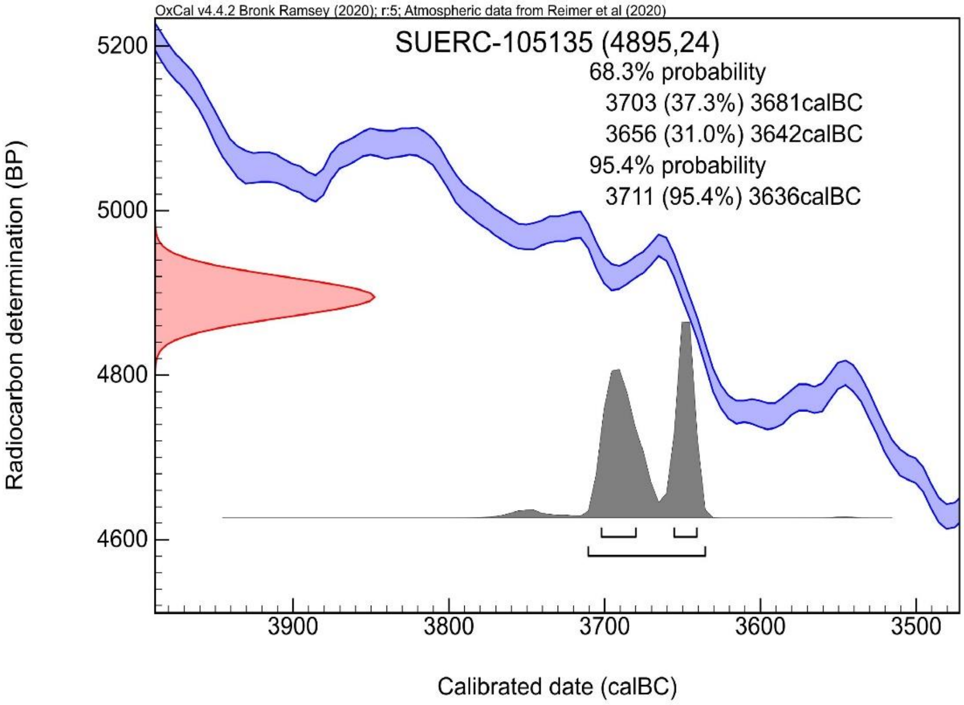
For any queries relating to this certificate, the laboratory can be contacted at suerc-c14lab@glasgow.ac.uk.

Conventional age and calibration age ranges calculated by :

Checked and signed off by :

The University of Glasgow, charity number SC004401

The University of Edinburgh is a charitable body, registered in Scotland, with registration number SC005336



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
23 August 2022

Laboratory Code	SUERC-105592 (GU61967)
Submitter	Charlotte O'Brien Archaeological Services Durham University South Road Durham DH1 3LE
Site Reference	Grice Court, Straindrop, County Durham (SGC21)
Context Reference	21
Sample Reference	SGC21-11
Material	Charcoal : Fraxinus excelsior
$\delta^{13}C$ relative to VPDB	-25.0 ‰ assumed
Radiocarbon Age BP	3886 ± 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.

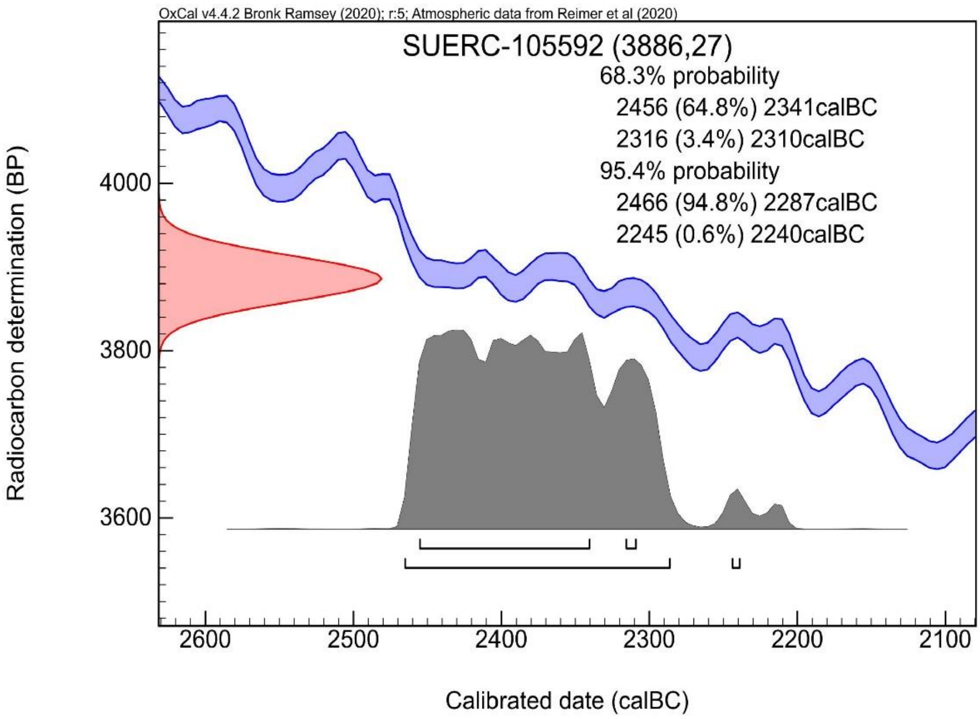
Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

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 : [signature]



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
23 August 2022

Laboratory Code SUERC-105596 (GU61968)

Submitter Charlotte O'Brien
Archaeological Services Durham University
South Road
Durham
DH1 3LE

Site Reference Grice Court, Straindrop, County Durham (SGC21)
Context Reference 5
Sample Reference SGC21-2

Material Charcoal : Corylus avellana

$\delta^{13}C$ relative to VPDB -25.0 ‰ assumed

Radiocarbon Age BP 4736 ± 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.

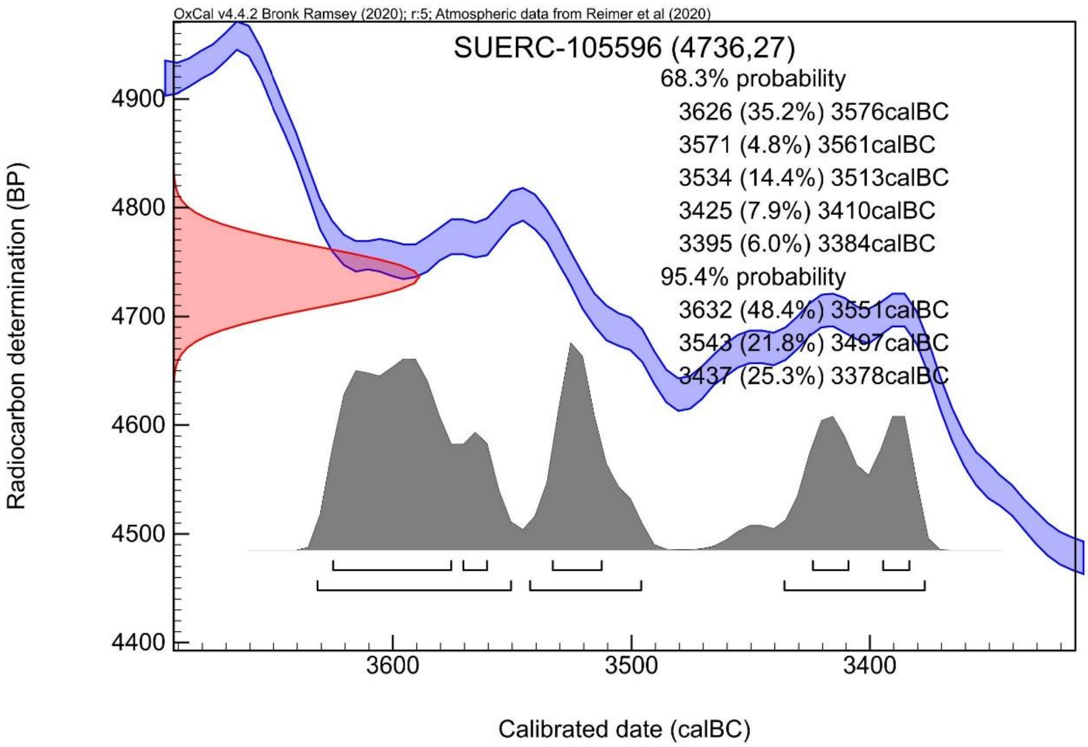
Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

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 :



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†

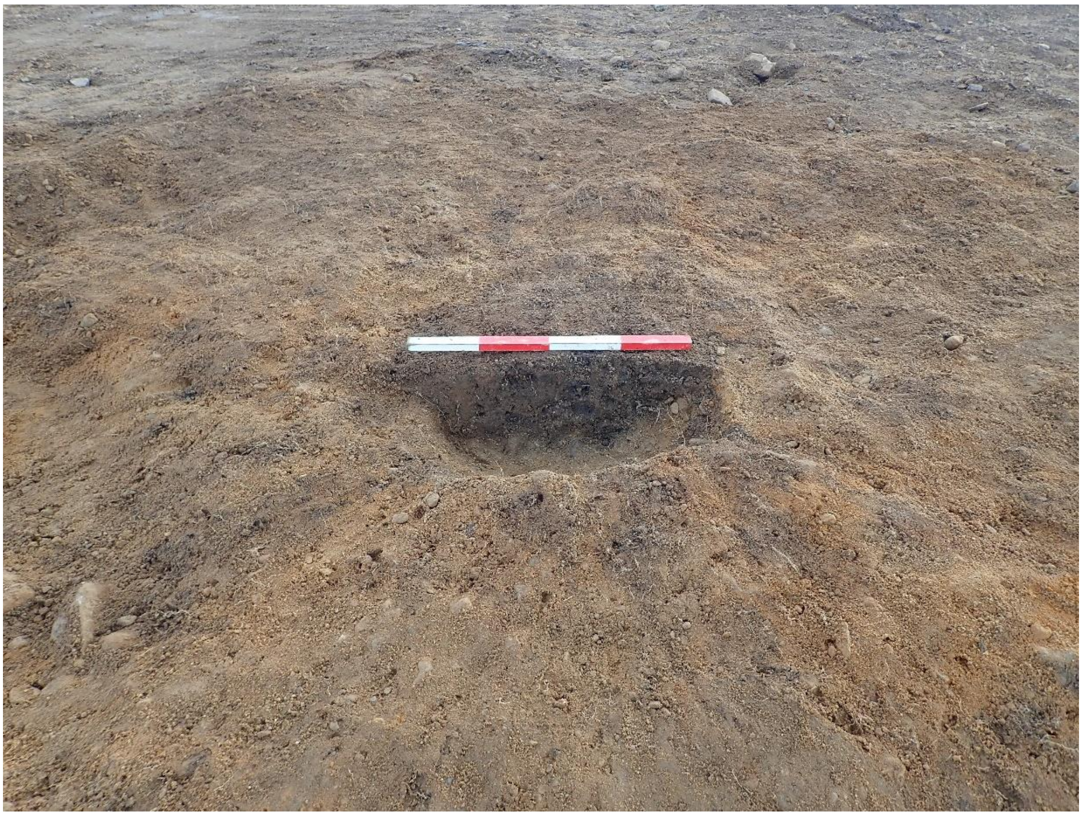
Please contact the laboratory if you wish to discuss this further.

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

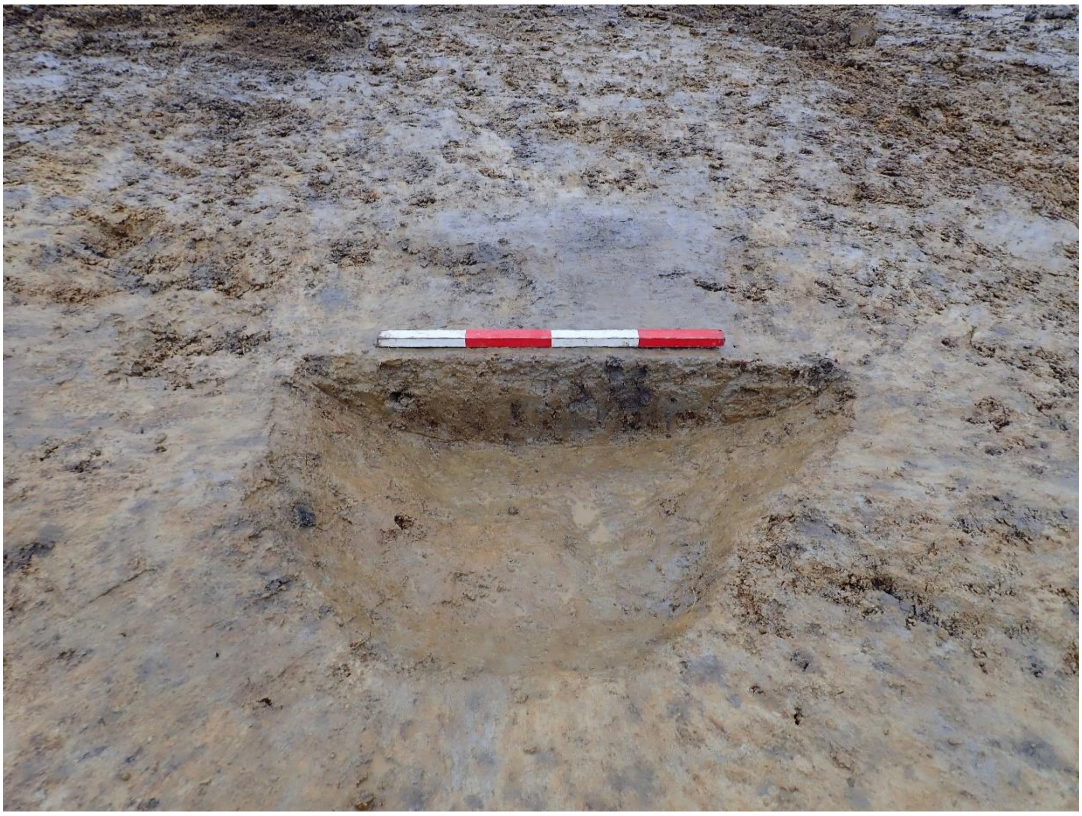
Photograph 1: Phase 1, pit [F12] with pit [F6] visible in the background, looking east

Photograph 2: Phase 2.1, ring-gully [F29], looking south

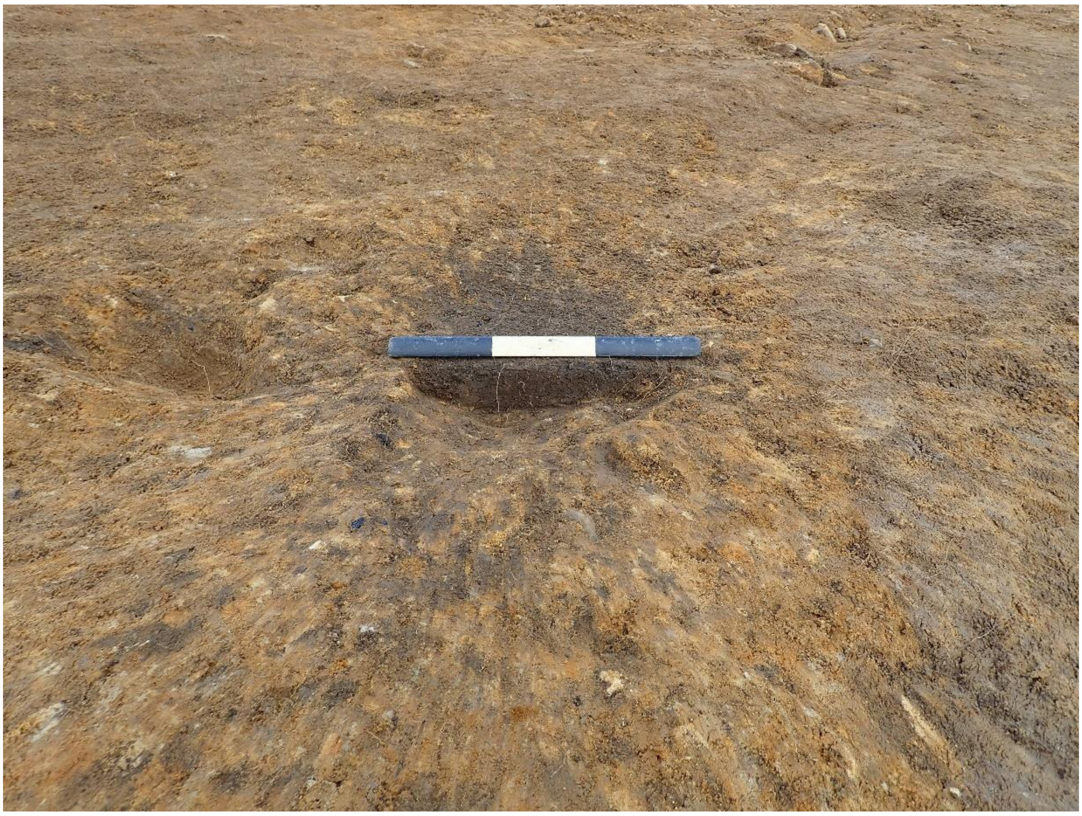
Photograph 3: Phase 2.1, pit [F8], looking east



Photograph 4: Phase 2.1, pit [F24], looking south



Photograph 5: Phase 2.2, pit [F20], looking east



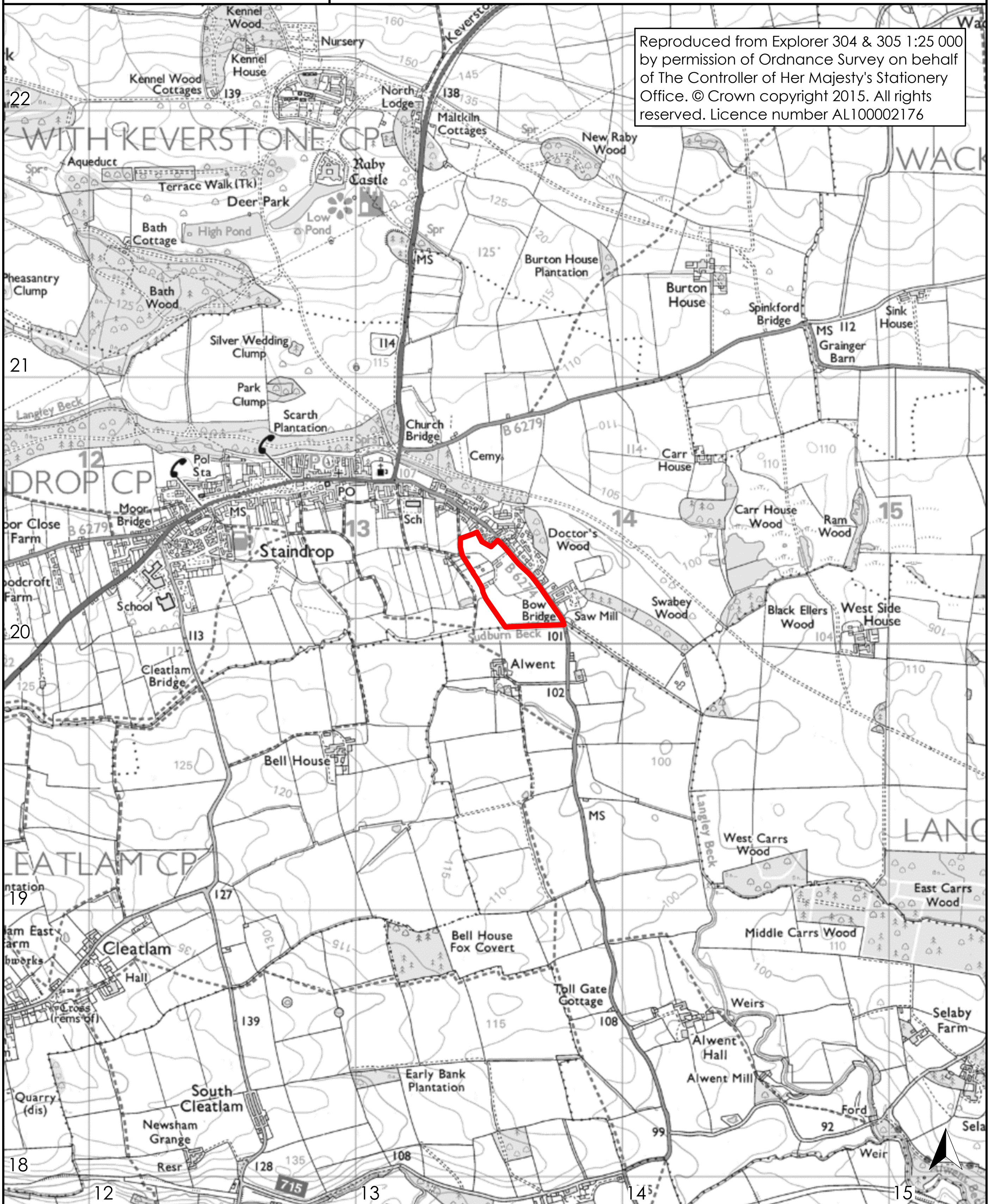
Photograph 6: Phase 3, pit [F16], looking east

ARCHAEOLOGICAL SERVICES
DURHAM UNIVERSITY

Land west of Grice Court
Staindrop
County Durham

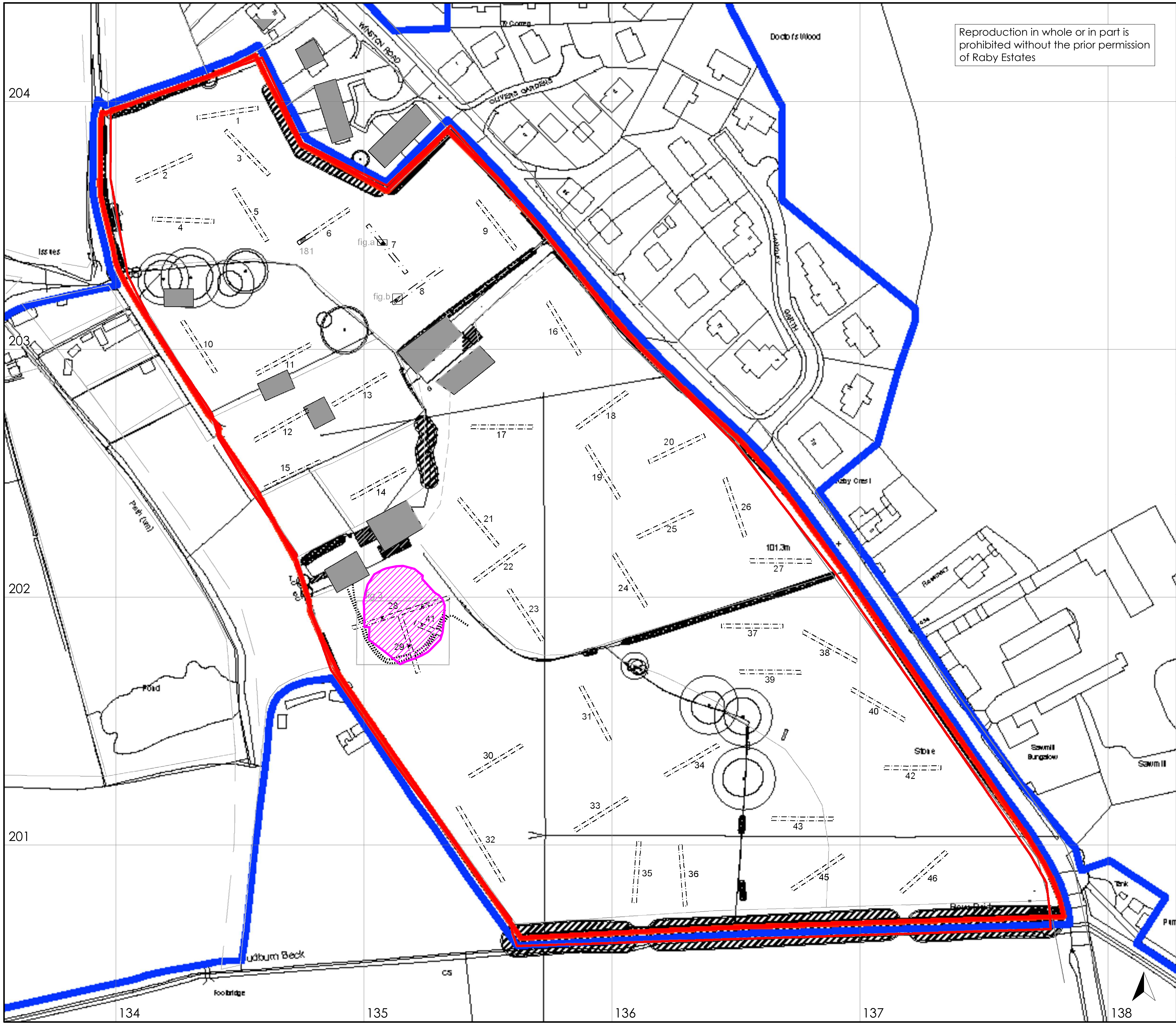
post-excavation analysis
report 5767

Figure 1: Site location



site boundary

0 1km
scale 1:20 000 for A4 plot



ARCHAEOLOGICAL SERVICES
DURHAM UNIVERSITY

Land west of Grice Court
Staindrop
County Durham

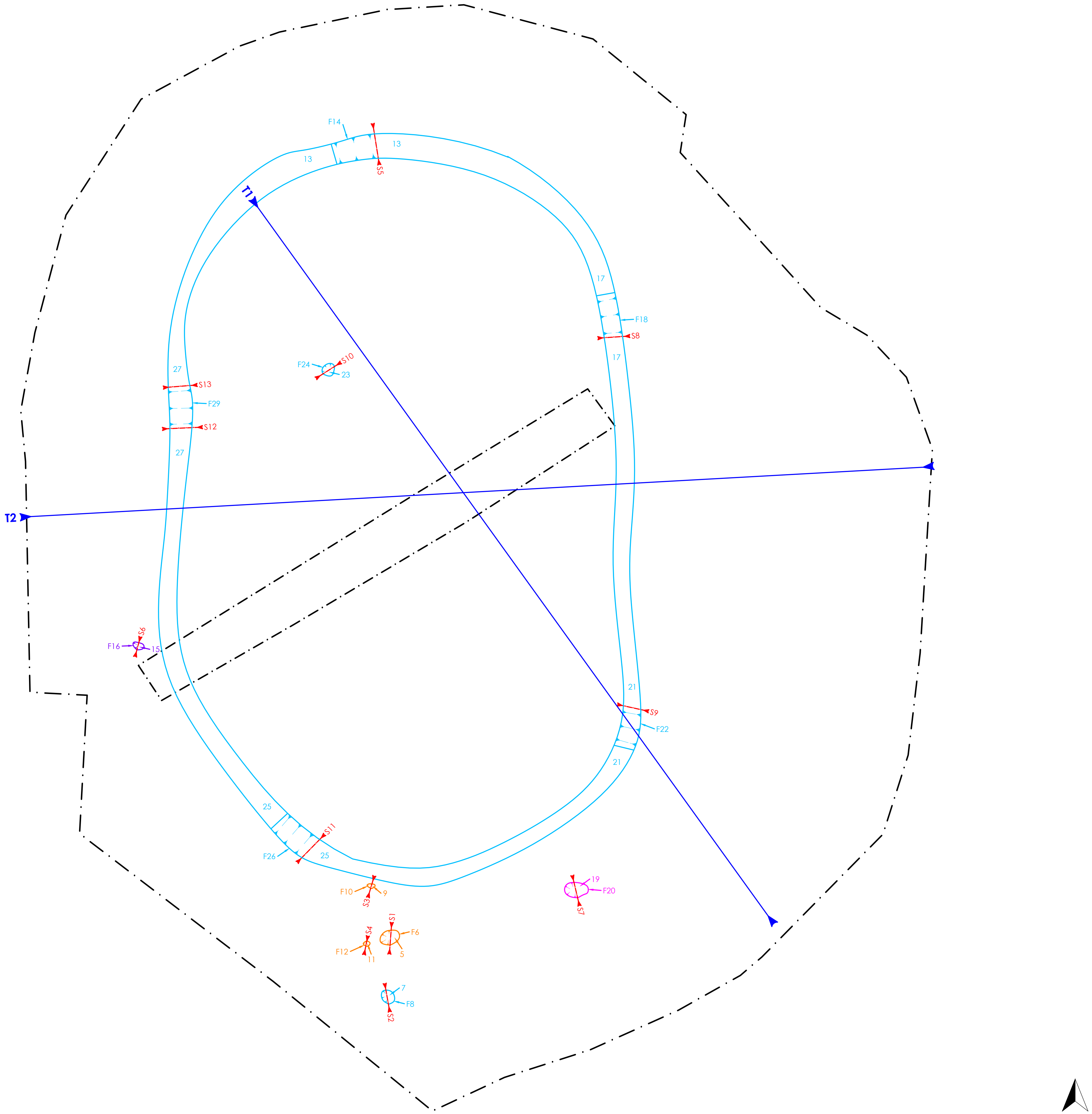
post-excavation analysis
report 5767

Figure 2: Area of strip, map and record with previous evaluation trenches

0 75m
scale 1:1500 for A3 plot

site boundary

area of strip, map and record



ARCHAEOLOGICAL SERVICES
DURHAM UNIVERSITY

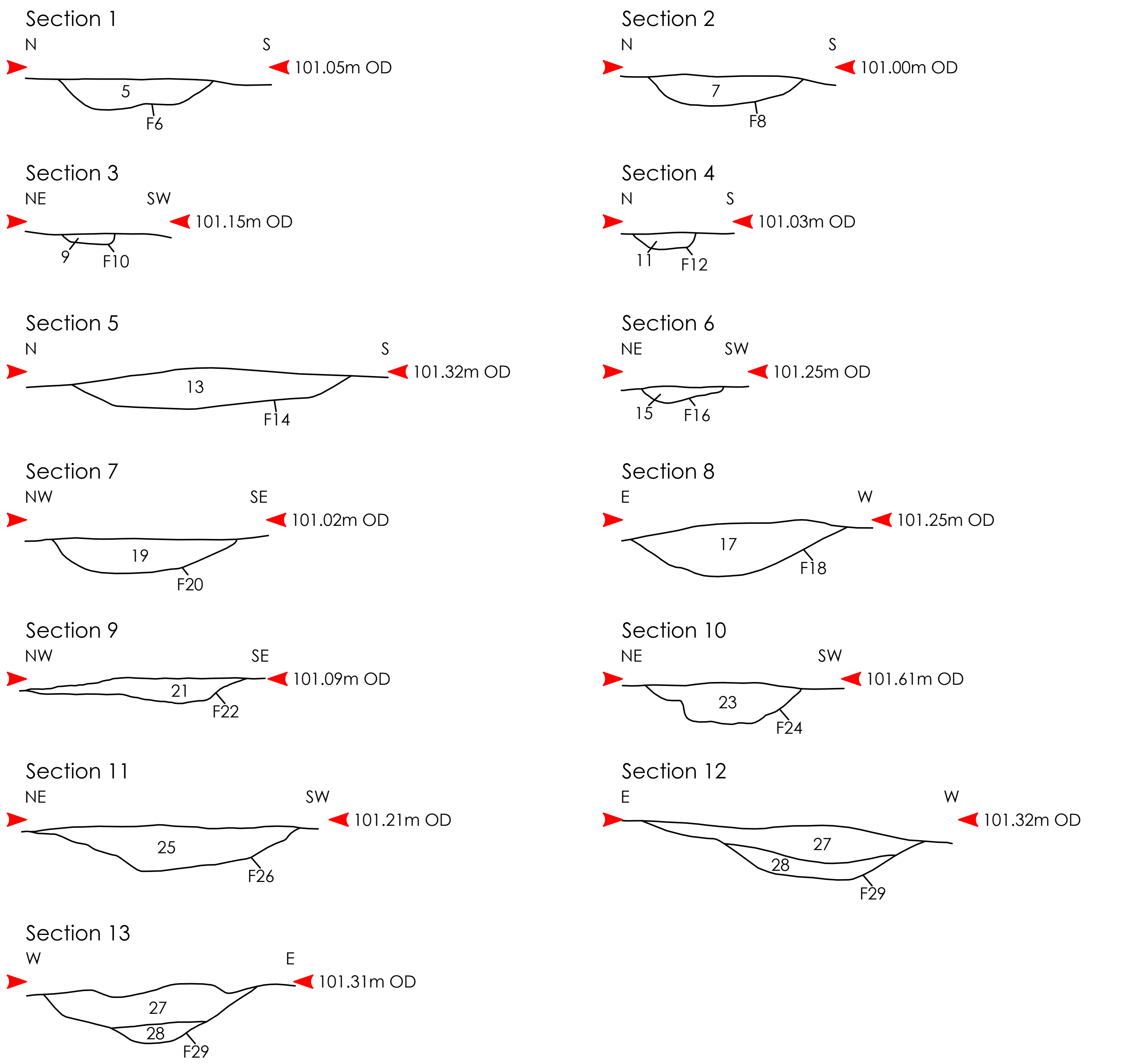
Land west of Grice Court
Staindrop
County Durham

post-excavation analysis
report 5767

Figure 3: Plan

0 7.5m
scale 1:100 for A3 plot

edge of excavation
section
topographic profile
phase 1: Neolithic
phase 2.1: Early Bronze Age
phase 2.2: Middle Bronze Age
phase 3: Post-medieval



ARCHAEOLOGICAL SERVICES
DURHAM UNIVERSITY

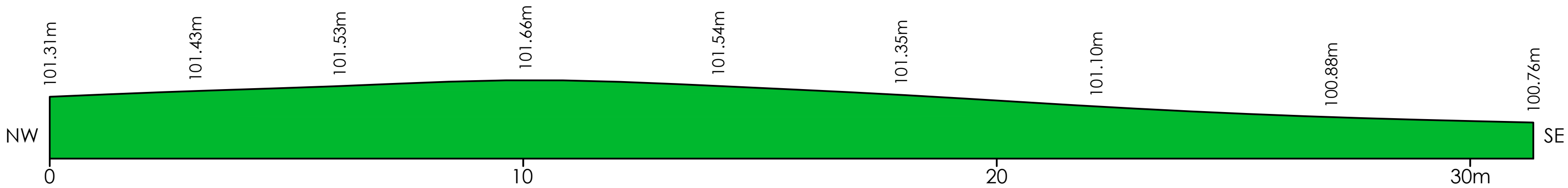
Land west of Grice Court
Staindrop
County Durham

post-excavation analysis
report 5767

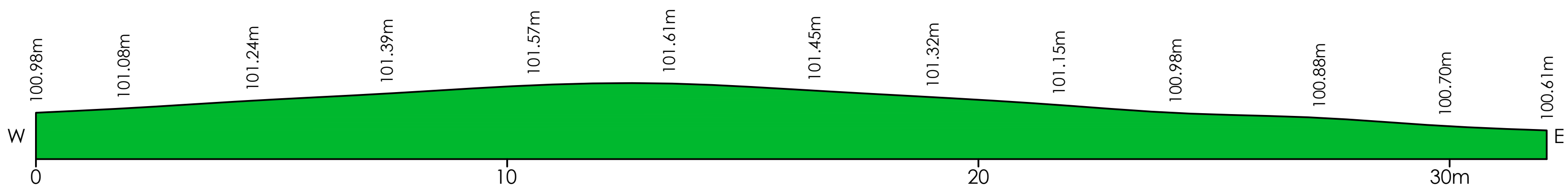
Figure 4: Sections

0 1m
scale 1:20 for A4 plot

sections



Profile T1



Profile T2

ARCHAEOLOGICAL SERVICES DURHAM UNIVERSITY

Land west of Grice Court
Staindrop
County Durham

post-excavation analysis
report 5767

Figure 5: Profiles

profile

0 7.5m
scale 1:150 for A4 plot