

on behalf of VB Turnbull Ltd

Land west of Davis Crescent Langley Park County Durham

post-excavation analysis

report 5797 September 2022



Contents

1.	Summary	1
2.	Project background	2
3.	Landuse, topography and geology	3
4.	Historical and archaeological background	3
5.	The excavation	3
6.	The artefacts	5
7.	The palaeoenvironmental evidence	6
8.	Radiocarbon dating	10
9.	Conclusions	10
10.	Sources	11
Арре	ndix 1: Data tables	14
Appe	ndix 2: Stratigraphic matrix	18
Appe	ndix 3: Radiocarbon certificates	19

Photographs

Photo 1:	Phase 1 ditch [F110], looking north-west
Photo 2:	Phase 1 ditch [F119], looking south-east
Photo 3:	Phase 2 pit [F133], looking south-west
Photo 4:	Phase 3 ditch [F114], looking east
Photo 5:	Phase 3 gully [F127] and ditch [F129], looking north-east
Photo 6:	Phase 3 ditch [F123], looking west
Photo 7:	Phase 3 ditch [F104], looking east
Photo 8:	Unphased ditch [F102], looking east

Figures

- Figure 2: Areas of excavation
- Figure 3: Phased plan of Areas A & E
- Figure 4: Phased plan of Area B
- Figure 5: Phased plan of Areas C, D & F
- Figure 6: Sections

1. Summary

The project

- 1.1 This report presents the results of the analysis of an archaeological excavation conducted for a development on land west of Davis Crescent, Langley Park, County Durham. The works comprised a strip, map and record. Following post-excavation assessment, radiocarbon dating was conducted. The results of the assessment and analysis have been incorporated into this analysis report.
- 1.2 The works were commissioned by VB Turnbull Ltd and conducted by Archaeological Services Durham University.

Results

1.3 Evidence of Bronze Age land division, Iron Age charcoal production and agriculture was recorded on the site. Palaeoenvironmental data indicates that the area would have been wetland at this time, with the features reflecting a managed landscape, with drainage and woodland clearance. The site remained in agricultural use during the medieval and post-medieval periods, with ridge and furrow, field boundaries and plough headlands recorded. This lack of domestic occupation was reflected in the small finds assemblage and the palaeoenvironmental data, which supported the interpretation of the site as being agricultural.

2. Project background

Location (Figure 1)

2.1 The site is located on land to the west of Davis Crescent, Langley Park, County Durham (NGR centre: NZ 2000 4500). It covers an area of approximately 5 ha. To the north is a disused railway, now a footpath, and the Blackburn Beck, with agricultural land beyond. To the east are residential properties along Davis Crescent and to the south is a cemetery and a small, enclosed field, bounded by Low Moor Road. Blackburn Farm and further agricultural land lies to the west.

Development

2.2 The development is residential. The planning application reference number is DM/18/03277/OUT.

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:

Late Bronze Age and Iron Age

lii: Settlement liii: Landscapes

Roman

Ri: The Iron Age to Roman transition Riv: Native and civilian life Rix: Landscape and environment

Medieval

MDii: Landscape

Methods statement

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

Dates

2.6 Fieldwork was undertaken between 19th August and 10th September 2021. The assessment report was produced for January 2022 and this report prepared for September 2022.

Personnel

2.7 Fieldwork was conducted by Meghan McCarthy, Shauna Townsend and Matthew Claydon. This report was prepared by Rebekah Walsh, with illustrations by David Graham. Specialist reporting was conducted by Lorne Elliott (palaeoenvironmental) and Jennifer Jones (artefacts). The Project Manager was Matthew Claydon.

Archive/OASIS

2.8 The site code is LPB21, for Langley Park, Blackburn Farm 2021. The archive has been prepared for deposition and will be transferred to the 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 Online AccesS to the Index of archaeological investigationS project (OASIS). The OASIS ID number for this project is archaeol3-509690.

3. Landuse, topography and geology

- 3.1 At the time of the excavation, the development area comprised the central and eastern parts of an arable field left fallow after the last harvest.
- 3.2 The area was gently undulating, generally sloping downwards from the south to Blackburn Beck in the north, with elevations between 98m to 110m OD.
- 3.3 The underlying bedrock geology of the area comprises Carboniferous mudstone, siltstone and sandstone of the Pennine Lower Coal Measures Formation, overlain by Devensian till (British Geological Survey 2022).

4. Previous archaeological works

- 4.1 The site has previously been the subject of a scheme of geophysical survey (Archaeological Services 2018a). This survey identified probable former ridge and furrow cultivation, as well as former field boundaries and a track illustrated on historic Ordnance Survey maps. It also identified probable soil-filled features which may reflect ditches or former water courses. An archaeological evaluation of the development area was subsequently completed (Archaeological Services 2020a). This targeted the anomalies identified in the geophysical survey and sampled the site. Furrows and a ditch, the remains of a medieval field system, were identified in the northern part of the site. These features contained medieval pottery. The shallow remains of ditches and gullies were identified in some of the trenches, particularly in the south-western part of the site. These remains could not be definitively dated, but a small assemblage of palaeoenvironmental evidence recovered was compatible with a later prehistoric or Roman date.
- 4.2 A subsequent excavation (Archaeological Services 2022a) confirmed the features recorded in the evaluation and established that some may be later prehistoric or Roman. One of the features could be identified as a field boundary on historic mapping.

5. The excavation Introduction

5.1 Six areas (A-F) were initially excavated across the site. Some areas were then extended in order to determine the full extent of archaeological features (Figure 2). The final measurements of the Areas were as follows. Area A measured 23m by 10m, Area B measured 20m long by 10m wide and Area E was 43m by 10m. Areas C,

D and F were extended in order to determine the full extent of identified features, becoming a single area covering approximately 1200m².

- 5.2 The trenches were excavated using a machine equipped with a toothless ditching bucket, under constant archaeological supervision. Phased plans can be seen on Figures 3 to 5, with sections on Figure 6. Context data is summarised in Table 1.1.
- 5.3 Natural subsoil, a yellow clayey sand [117], was identified at a depth of 0.3m (between 100.83m OD and 105.36m OD).

Phase 1 – Bronze Age

5.4 A radiocarbon date of 1200-930 cal BC was obtained from alder stemwood charcoal from a linear ditch extending across Areas D & F. This ditch [F110=F119=F125: over 75.6m long by 0.85m wide, 0.21m deep] was aligned north-west/south-east and extended beyond the edges of the excavation in both directions. It was filled with a grey-brown sandy silt loam [111=118=124] (Photos 1 & 2). The alder charcoal used for the radiocarbon date was representative of the sample, providing evidence of late Bronze Age activity on the site.

Phase 2 – Iron Age

5.5 In the centre of Area C was an elongated oval pit [F133: 1.8m by 0.55m, 0.2m deep] (Photo 3). The primary fill of the pit was a black burnt deposit [131: 0.15m deep], with a firm grey sand [130: 50mm deep] overlying it. Two radiocarbon dates were obtained from this feature – one of 760-410 cal BC from oak stemwood charcoal and a slightly later one of 360-100 cal BC from birch charcoal. Due to the 'old wood' effect, the later date is more likely to be accurate (below, paragraph 7.15). The feature is characteristic of a charcoal production pit.

Phase 3 – Post-medieval

- 5.6 Most of the features on site dated to this period. To the north of ditch [F110] was another ditch [F112: 1.4m wide, 0.16m deep, extending 2.7m from the western edge of excavation in Area D. This was aligned roughly east/west filled with a grey-brown sandy loam [113], which provided a radiocarbon date of 1520-1800 cal AD from a charred heather twig. A continuation of this ditch was recorded just 2.37m to the east. This ditch [F114=F129: 61.4m long, 0.5m to 1m wide, 0.05m to 0.2m deep] continued on the same alignment for approximately 4m (Photo 4), before turning to head north-east (Photo 5). The ditch was filled with a grey-brown sandy loam [115] at the south-western end, changing to a more mottled grey silty sand [128] to the north-east. Fragments of clay pipe and pot/tile were recovered from this deposit, confirming the post-medieval date of the feature. Deposit [115] contained possible worked stone fragments. Due to the shallowness of the feature, the gap between ditches [F112] and [F114] was attributed to ploughing truncation rather than an entranceway.
- 5.7 Parallel to the northern section of ditch [F114] was a narrower gully [F127: 33.3m long by 0.5m wide, 0.15m deep]. This was filled with a light grey sand [126] (Photo 5). It is probable that the two parallel features are related, perhaps reflecting a trackway.
- 5.8 Along the western edge of Area D was a roughly north/south aligned gully [F108: over 19m long by 0.67m wide, 0.15m deep]. This was filled with a dark grey-brown

sandy loam [109]. This feature cut Phase 1 ditch [F110] and post-medieval ditch [F112]. The gully was used as a field boundary, as shown on the 1st and 2nd edition Ordnance Survey maps of 1859 and 1896.

- 5.9 Further post-medieval features were recorded in the northern part of the site. Aligned roughly east/west through Area A was a broad linear ditch [F100=F123: over 23m long, 3.9m wide, 0.65m deep], which continued beyond the edge of excavation in both directions (Photo 6). This was primarily filled with an orange-brown sandy silty loam [122: 0.45m deep], overlain by a grey-brown silty loam [101=121: up to 0.65m deep].
- 5.10 On the same alignment in Area B was another ditch [F104: over 17m long, 3.75m wide, 0.35m deep], again extending beyond the trench edges (Photo 7). This was of similar dimensions, and it is likely to be a continuation of ditch [F100]. It was filled with a red-brown sandy loam [105], with inclusions of manganese and ironstone. The palaeoenvironmental sample from this deposit contained spelt wheat, though only in tiny quantities. Above this was an upper fill of grey-brown sandy loam [120: 0.23m deep] from which post-medieval window lead fragments were recovered. The feature is interpreted as a former field boundary or ditch associated with a plough headland and the furrows to the north, which were identified in the trial trench evaluation.

Unphased

- 5.11 In the eastern part of Area C was a fragment of gully [F106: 2.5m long by 0.62m wide, 30mm deep], which had been heavily truncated. What remained was aligned roughly north/south with a broadly flat base. It was filled with a mixed grey-brown and orange-brown sandy silt loam [107]. This was originally identified during the trial trench evaluation, but due to its shallow nature, little additional information could be gained.
- 5.12 A single east/west aligned ditch [F102: 27m long by 0.82m wide, 0.1m deep] was recorded across the centre of Area E (Photo 8). It was filled with a mixed grey-brown and orange-brown sandy loam [103]. Six north/south aligned plough furrows [F135], each measuring 1m-1.6m wide, spaced 3m-5m apart and filled with orange-brown sandy loam [134] were recorded in Area E, five of which cut the ditch.
- 5.13 Across all of the excavated areas was a brown loam topsoil [116: 0.3m deep].

6. The artefacts

Pottery/building materials Results

6.1 Context [128] produced a single, highly abraded, unglazed body sherd/tile fragment (7g wt). The fully oxidised fabric is liberally tempered with fine angular sand and occasional soft, iron-rich inclusions. It is 11mm thick max and does not survive to full thickness. It is not possible to determine whether this is pottery or tile. In either case, it is likely to be post-medieval.

Clay pipe

Results

6.2 Context [128] had an abraded fragment of clay tobacco pipe bowl with traces of rilling around the rim, suggesting a 17th- or 18th-century date.

Possible worked stone Results

- 6.3 Two pieces of very similar, possibly worked stone came from the sample residue from context [115]. Both are in a pale yellow/grey medium-grained sandstone.
- 6.4 The smaller piece is totally eroded with no fresh-looking surfaces, apart from a large, slightly weathered chip. It is roughly wedge-shaped in section and is c.72mm x 70mm x 38mm thick max. The larger piece, c.156mm x 135mm x 27mm thick max, has no visible tool marks, but the 'outer' face, though extremely weathered, is partly bi-facial. The 'back' has a fresher-looking, though still weathered large flaked loss.
- 6.5 These fragments may once have been building stones, though no evidence survives to determine their original shape or purpose.

Lead window came Results

6.6 Context [120] contained three highly corroded and damaged fragments of lead window came (plus crumbs) *c*.62mm, 18mm & 15mm in length, weighing 8g. All ends were broken. The crushed and twisted condition of the lead suggests loss or discard following demolition or removal. X10 examination of the base of the came web revealed milling marks inside the crushed 'H' shaped profile at *c*.6 per 10mm. These suggest the cames date to the 16th century or later, following the introduction of the milling machine.

7. The palaeoenvironmental evidence Introduction

- 7.1 A palaeoenvironmental assessment was carried out on 14 bulk samples, taken from the shallow remains of several ditches and gullies, and an elongated oval pit. The evidence indicated a possible late prehistoric or Roman date for some of the features (Archaeological Services 2022a). An updated account of the charcoal and plant macrofossil record was recommended in light of radiocarbon dating, with the aim of refining the palaeoenvironmental evidence. The results have been incorporated with existing data and are presented in Tables 1.2-1.4.
- 7.2 Four radiocarbon dates were obtained. The results confirm later prehistoric activity and demonstrate there is more than one phase of activity. A summary of the dating evidence is presented in Table 1.5.

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 [131] of pit [F133] was undertaken to gain an overview of the species present from which local woodland characterisation and a better understanding of its archaeological context could be considered. As context [131] contained a substantial amount of charcoal, a riffle box was used to obtain a 11% sub-sample. The study concentrated on fragments from the >4mm dry-sieved fraction, although a few (<5) fragments in the 2mm fraction were examined for small woods or shrubs and twiggy material (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.</p>
- 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. Salicaceae fragments are probably willow, based on heterogeneous ray cells.

Preservation

7.7 The preservation of plant remains is primarily through charring and nearly all are particularly mineral-encrusted, apart from a few heather twigs from ditch [F112] that are slightly less encrusted, which may explain the post-medieval radiocarbon date that one of them provided. Low numbers of uncharred propagules are scattered across the site, such as fruitstones of bramble and elder, and more notably sedge (*Carex* sp.) and bristle-club rush (*Isolepis setacea*) nutlets, the latter was recovered from pit [F133]. It is possible these are all mineral replaced remains and probably relate to later manuring.

Results

General comments

7.8 Most of the flots are small ranging from 30 to 110ml; the exception is pit [F133]. Small amounts of fragmented (<10mm) coal and cinder are noted throughout the samples, though this is likely to be intrusive material given most features have a shallow nature. The exception is the lower fill [131] of pit [F133], which has none of this burnt waste. Most contexts have a few small, charred rhizomes and tubers, and equally small heather twigs, though greater numbers occur in [113], [120] and [126]. Again, most of these underground plant parts are possibly intrusive or residual.

Area B

7.9 Samples from Area B comprise the upper [120] and lower [105] fills of ditch [F104]. The lower fill is the only deposit that has diagnostic plant remains, namely spelt chaff, although this evidence is restricted to a single glume base and spikelet fork. Their reasonable condition, however, implies little exposure to taphonomic factors, meaning they were probably deposited close to their original source. Further food waste from [105] includes a small (<4mm) charred hazel nutshell.

Area C

7.10 The upper [130] and lower [131] fills of pit [F133] have ample charcoal. The lower fill has the greatest volume, all of which is mineral encrusted and has a significantly increased density. Virtually all of the identified fragments are oak, though there are a few fragments of alder and birch. Most of the oak fragments are stemwood, including some evidence of heartwood. The birch is stemwood, whereas the alder is from longshoot and branchwood. There are several aspects of the assemblage that makes this feature seem unusual. Firstly, there is a high percentage of fragments (90%) displaying evidence of radial cracking and vitrification, of which a third are strongly vitrified (level II). Most of the vessels are enlarged, especially the latewood vessels and many fragments have a distorted morphology, some are twisted while others have a folded appearance. It is highly likely this is a sign of burning damp wood. There are also signs of reaction wood, a few of which may be root wood. Fragment size includes relatively large fragments up to 45mm. Oak stemwood charcoal produced a radiocarbon date of 760-410cal BC, whereas birch charcoal gave a date of 360-100cal BC.

Area D

7.11 Evidence from features [F112] and [F108] is limited, however it is worth noting the charcoal assemblages are similar to ditch [F119], comprising alder, oak, and Salicaceae (cf. willow) stemwood. The charred plant macrofossil assemblages, though also sparse, have similar characteristics, more specifically the presence of heath-grass and sedges. It is possible these features are contemporary based on the available palaeoenvironmental evidence, but this is limited. Heather charcoal from [113] gave a post-medieval date of 1520-1800cal AD. This is surprising given the fact that this was root wood rather than stemwood, as other instances of dating heather root wood in the region have provided Iron Age and Romano-British dates. However, a post-medieval date is a possibility as most lowland heathlands have been lost in the last 200 years.

Area E

7.12 There is very little evidence from the fill [103] of ditch [F102] that can be used to date this feature with any certainty.

Area F

7.13 Two samples were taken from the fill [118] of ditch [F119], one of which had a reasonable amount of mineral-encrusted charcoal. Most of this charcoal was recovered from the sample residue due to mineral precipitates increasing the density of the material. Many of the fragments are alder stemwood, though there are smaller quantities of oak heartwood stemwood and Salicaceae. Series of narrow growth rings are common, suggesting tree growth was restricted for some reason. There are a sufficient number of alder fragments to suggest this is representative material, therefore the late Bronze Age date (1200-930 cal BC) obtained from alder charcoal is a reliable indication that occupation occurred in this area, at that time.

Discussion

Bronze Age activity

7.14 As the ecofactual and artefactual evidence is limited, there is clearly some difficulty in characterising the chronology and economic context of the site, and even more so as there are several phases of activity. That said, there is no doubt that the alder charcoal from ditch [F119], which gave a late Bronze Age date of 1200-930cal BC, is

representative material. This may not date the feature, but it does show activity occurred in this area and at that time.

Iron Age activity

- 7.15 Many of the samples have similar background scatters of burnt waste. The makeup of these remains is often consistent with Iron Age and Romano-British occupation, especially for this region (Archaeological Services 2021; Walsh in prep.). However, as these remains are limited this is not conclusive evidence. The duplicate radiocarbon dates for elongated pit [F133] evidently provide more certainty and also confirm late prehistoric activity. Of the two dates obtained for this feature, the earlier Iron Age date (760-410 cal BC) from oak charcoal is the more representative material, however, as this is oak stemwood and the fact that heartwood was noted during the analysis, this date could certainly be older than the actual date due to the 'old wood' effect. It is therefore likely the later Iron Age date (360-100cal BC), produced from birch charcoal, is more accurate. It can be said with more confidence though that the combined evidence demonstrates middle Iron Age activity.
- 7.16 The general paucity of charred plant macrofossils, and the almost complete absence of domestic waste, is indicative of background activity beyond the main focus of occupation. The only signs of food waste or cereal cultivation are the scant remains from Area B, at the western edge of the site. As far as dating evidence is concerned, the spelt wheat remains from Area B are typically associated with Iron Age or Roman activity, which is consistent with the radiocarbon dates from pit [F133].

Landscape context

- 7.17 The most notable aspect of the palaeoenvironmental evidence is that Bronze Age and earlier Iron Age dated contexts have a predominance of wetland species, such as alder and willow. This is particularly significant considering it is consistent with evidence from across the region, including sites at Great Lumley, Leadgate, Alnwick and Staindrop (Archaeological Services 2018b; 2019a; 2020b; 2022b). Therefore, Langley Park is another addition to the wider picture. It has been suggested that during these periods, episodes of increased wetness and the associated rise in regional water tables, resulted in floodplain expansion and the widespread occurrence of alder dominated wet woodland (Mansell *et al.* 2014). It is possible therefore that some of these features relate to land drainage for agricultural purposes, as was recently suggested for a similar dated ditch near Darlington (Archaeological Services 2022c).
- 7.18 Considering soil fungus sclerotia are associated with tree roots; the concentration of charred *Cenococcum geophilum* in the lower fill of pit [F133] suggests there were trees nearby. Charcoal evidence from the pit shows that there were mature oak trees, although the low number of soil fungus remains probably indicates open woodland rather than dense cover. It was suggested in the archaeological evaluation that the charcoal-rich fills of pit [F133] were characteristic of charcoal production, particularly as the assemblage is almost exclusively oak stemwood and the presence of charred soil fungus resting bodies perhaps reflects a woodland soil heaped over a pit or kiln. Similar evidence occurred at Colchester (Archaeological Services 2019b). The charcoal assemblage has an unusual makeup comprising reaction wood, and regular signs of vitrification and distorted wood. The latter two characteristics are typically an indication of burning damp wood rather than seasoned wood, and the combined evidence is likely to represent the clearance of trees. There is no

indication of coppicing from the growth ring data. It is worth adding that pollen evidence from Hallowell Moss, just a few miles to the east of the site, shows the clearance of wooded areas dominated by oak and birch, around that time (Donaldson & Turner 1977).

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 four individual dates provided adequate carbon for accurate measurement in each case, and analyses proceeded normally. Sample information and results are summarised in Table 1.5, and details of the results and calibrations are presented in Appendix 3.

9. Conclusions

Phases of occupation

- 9.1 Various phases of transient occupation were recorded on the site. The earliest of these dated to the late Bronze Age, represented by a linear ditch, over 75m long, extending across the southern part of the site on a north-west/south-east alignment. Alder charcoal dated this feature to 1200-930 cal BC. The data from the palaeoenvironmental sample indicates a wetland landscape at this time, suggesting that the ditch may have been for drainage as well as a potential land division boundary.
- 9.2 An Iron Age pit was recorded to the north of the Bronze Age ditch. This provided two radiocarbon dates of 760-410 cal BC and 360-100 cal BC, though due to the materials they were obtained from, the latter date is thought to be more accurate. Charcoal and charred soil fungus evidence from the pit is compatible with charcoal production and is also consistent with the clearing of trees, presumably for agricultural purposes. Scant spelt wheat remains were recovered from Area B, which provide evidence of arable cultivation or food waste from the Iron Age or Roman periods.
- 9.3 No further activity was identified within the excavated areas until the post-medieval period, though medieval ridge and furrow was recorded to the north of the site during the archaeological evaluation. A north/south aligned field boundary ran down the western side of Area D, cutting through the Bronze Age ditch; this boundary is marked on historic Ordnance Survey maps. The remaining post-medieval features could be field boundaries or plough headlands but are generally agricultural in nature. The palaeoenvironmental remains and the tiny artefactual assemblage support the theory that this site was agricultural rather than a focus of domestic activity.
- 9.4 Two further features were unphased, due to the scarcity of dating material during excavation and in the palaeoenvironmental samples.
- 9.5 The results of the excavation and post-excavation analysis provided evidence of Bronze Age and Iron Age landscapes, particularly linear boundaries, a key research theme in the North-East Regional Research Framework (Petts & Gerrard 2006).

Regional context

- 9.6 Though limited in nature, the Phase 1 ditch adds to the knowledge of Bronze Age County Durham. There is little evidence of activity during this period in the immediate vicinity, with the nearest being a cist burial at Esh and flints found near Witton Gilbert (https://keystothepast.info). A Bronze Age enclosure was recorded at Mountjoy in Durham City, with outlying pits (Archaeological Services 2022d); this is the nearest incidence of concentrated Bronze Age domestic activity. This scarcity in the archaeological record makes the boundary at Langley Park of greater significance, providing much needed information about land divisions in this period.
- 9.7 Similarly there is little Iron Age activity recorded in the vicinity. A quern stone was found *c*.3km west of the site, near Witton Gilbert, but this is the sole confidently dated find from the surrounding area. More substantial evidence of Iron Age occupation is recorded slightly further afield in Durham (Archaeological Services 2022d), where part of a field system was recently excavated. The charcoal production pit at Langley Park is a valuable addition to the archaeological record, reflecting small-scale activity in the area.
- 9.8 Bronze Age and Iron Age features are often recorded on the same sites, which is perhaps unsurprising, if the area had already undergone land management processes such as drainage or woodland clearance (Archaeological Services 2022c, 7). Despite this patchy continuity of occupation, the features are in relative isolation and are not closely related to any known settlement.

Summary

9.9 The archaeological remains at Langley Park provided limited but valuable information on the activities of the Bronze Age and Iron Age population of the area, through evidence of land division, charcoal production and arable cultivation. This contributes to the somewhat sparse archaeological record in the area.

10. Sources

- Archaeological Services 2018a Land east of Blackburn Farm, Langley Park, County Durham: geophysical survey. Report **4846**, Archaeological Services Durham University
- Archaeological Services 2018b Land at Scorer's Lane, Great Lumley, County Durham: palaeoenvironmental analysis. Report **4895**, Archaeological Services Durham University
- Archaeological Services 2019a *Bradley Surface Mining Scheme, Leadgate, County Durham: post-excavation full analysis*. Report **5024**, Archaeological Services Durham University
- Archaeological Services 2019b Colchester Northern Gateway (South), Colchester, Essex: archaeological evaluation. Report **4977**, Archaeological Services Durham University
- Archaeological Services 2020a Land east of Blackburn Farm, Langley Park, County Durham: archaeological evaluation. Report **5261**, Archaeological Services Durham University
- Archaeological Services 2020b Windy Edge, Alnwick, Northumberland: postexcavation full analysis. Report **5221**, Archaeological Services Durham University

Archaeological Services 2021 Land at Station Road, Wallsend, Tyne and Wear: postexcavation analysis. Report **5213**, Archaeological Services Durham University

Archaeological Services 2022a Land to the west of Davis Crescent, Langley Park, County Durham: post-excavation assessment. Report **5584**, Archaeological Services Durham University

Archaeological Services 2022b Land west of Grice Court, Staindrop, County Durham: post-excavation analysis. Report **5767**, Archaeological Services Durham University

Archaeological Services 2022c Berrymead Farm, Harrowgate Hill, Darlington: postexcavation analysis. Report **5568**, Archaeological Services Durham University

Archaeological Services 2022d *Upper Mountjoy, Durham: post-excavation analysis*. Report **5571**, Archaeological Services Durham University

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

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

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

- Cappers, R T J, Bekker, R M, & Jans, J E A, 2006 *Digital Seed Atlas of the Netherlands*. Groningen
- Donaldson, A M, & Turner, J, 1977 A pollen diagram from Hallowell Moss, near Durham City, UK. J Biogeog 4, 25-33

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

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

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

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

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

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

Schweingruber, F H, 1990 Microscopic wood anatomy. Birmensdorf

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

Walsh, R, In Prep. Excavations at Station Road, Wallsend 2015-2016

Websites

https://geologyviewer.bgs.ac.uk – British Geological Survey https://keystothepast.info – Keys to the Past

Appendix 1: Data tables

Table 1.1: Context data

The • symbols in the columns at the right indicate the presence of artefacts of the following types: P pottery/tile, M metals, C clay pipe, S worked stone

No	Area	Description	Р	М	С	S
F100	Α	Cut of ditch				
101	Α	Fill of ditch [F100]				
F102	Е	Cut of ditch				
103	Е	Fill of ditch [F102]				
F104	В	Cut of ditch				
105	В	Fill of ditch [F104]				
F106	С	Cut of gully				
107	С	Fill of gully [F106]				
F108	D	Cut of field boundary				
109	D	Fill of field boundary [F108]				
F110	D	Cut of ditch				
111	D	Fill of ditch [F110]				
F112	D	Cut of ditch				
113	D	Fill of ditch [F112]				
F114	D	Cut of ditch				
115	D	Fill of ditch [F114]				•
116	All	Topsoil				
117	All	Natural subsoil				
118	F	Fill of ditch [F119]				
F119	F	Cut of ditch S/A ditch [F110]				
120	В	Upper fill of ditch [F104]		•		
121	Α	Upper fill of ditch [F123]				
122	А	Lower fill of ditch [F123]				
F123	Α	Cut of ditch S/A ditch [F100]				
124	D-F	Fill of ditch [F125]				
F125	D-F	Cut of ditch S/A ditch [F110]				
126	C-D	Fill of gully [F127]				
F127	C-D	Cut of gully				
128	C-D	Fill of ditch [F129]	•		•	
F129	C-D	Cut of ditch S/A ditch [F114]				
130	С	Upper fill of pit [F133]				
131	С	Lower fill of pit [F133]				
132	-	VOID				
F133	С	Cut of pit				
134	E	Fill of furrows [F135]				
F135	E	Cut of furrows				

Context 111 109 115 113 118 120 103 118 115 126 130 131 1 Feature number F110 F108 F114 F112 F119 F104 F102 F119 F114 F127 F133 F133 F13 F1 Feature number Ditch Ditch </th <th>128 129</th>	128 129
Feature number F110 F108 F114 F112 F119 F104 F102 F119 F114 F127 F133 F133	129
Feature Ditch Field boundary Ditch Ditc	
Area D D D D F B B E F D C-D C C C	vitch
	C-D
Material available for radiocarbon dating N ? N Y Y N Y ? N Y N Y N Y Y	N
Volume processed (I) 19 20 18 10 20 20 18 16 17 16 26 17 1	18
Volume of flot (ml) 60 70 30 40 70 30 40 110 50 90 150 550 7	70
Residue contents	
Charcoal - + + ++ - - - - - - ++	-
Iron-rich material magnetic - - - - - - ++ - ++	-
Pan (Iron / Manganese) non-magnetic - - +++ - - - +++ - - - - - +++ - - - - +++ - - - - +++ - - - - +++ - - - - - +++ - - - - - +++ - <th< td=""><td>-</td></th<>	-
Flot matrix	
Charcoal - (+) - + + - (+) (+) (+) +++ +++	-
Clinker / cinder vesicular ++	++
Coal / coal shale <10mm ++ <td>++</td>	++
Heather twigs (charred) - + (+) + (+)	-
Rhizomes / tubers (charred) (+) + (+) ++ (+) (+) (+) ++ (+)	(+)
Roots (modern) + ++ ++ ++ ++ ++ ++ (+) - -	+
Uncharred seeds + ++ (+) ++ (+) (+) - (+) ++ - </td <td>+</td>	+
Charred remains (total count)	
(c) <i>Triticum spelta</i> (Spelt Wheat) glume base 1 1	-
(c) Triticum spelta (Spelt Wheat) spikelet fork - - - 1 - - - -	-
(h) Danthonia decumbens (Heath-grass) caryopsis 1 cf.1 1 - 1	-
(t) Corylus avellana (Hazel) nutshell frag 1	-
(w) Carex sp (Sedges) trigonous nutlet - 1 -	-
(x) Cenococcum geophilum (Soil fungus) sclerotia - - - 6 3 - - 2 33	-
Identified charcoal	
Alnus glutinosa (Alder) + ++ (+) + +	-
Betula sp (Birches) (+) (+)	-
Quercus sp (Oaks) - + - ++ + - (+) (+) - - +++ ++++	-
Salicaceae (Willow, poplar) - (+) (+) - </td <td>-</td>	-

Table 1.2: Data from palaeoenvironmental analysis (LPB21)

[c-cultivated; h-heathland; t-tree/woodland; w-wet/damp ground; x-wide niche. U-upper; L-Lower (+): trace; +: rare; ++: occasional; +++: common; ++++: abundant (?) May be unsuitable for dating due to poor state]

Table 1.3: Detailed results from charcoal analysis

Sample	13
Context	131
Feature number	F133
Feature	Pit
	760-410cal BC
Radiocarbon date (95.4%)	and 360-100calBC
Charcoal (g/number of fragments)	
Alnus sp. (Alder)	0.224 (2F)
Betula sp. (Birch)	0.153 (1F)
Quercus sp (Oaks)	15.694 (117F)
Indet.	1.094 (4F)
Weight of fragments in the >10mm fraction (g)	30.5
Weight of fragments in the >4mm fraction (g)	121.0
Weight of fragments in the >2mm fraction (g)	249.0
Weight of fragments analysed (g)	17.2
Weight of fragments >4mm not analysed (g)	134.3
% of fragments analysed	11
Number of fragments analysed	124
Largest fragment (mm)	45

Table 1.4: Growth ring data from the charcoal record

		Growth ring curvatures (%)				
Sample	Context	Strong (s)	Moderate (m)	Weak (w)	Indet. (i)	Species (Various ring curvatures represented)
13	131	2	27	14	57	Alder (s/m), Oak (m/w/i), Birch (m)

[Indeterminate curvature is due to indistinct features or radial fracturing producing 'slivers'. Ring curvature is based on Marguerie & Hunot 2007]

Laboratory code	Sample	Context	Context description	Material used for radiocarbon dating	δ ¹³ C ‰	Radiocarbon Age BP	Calibrated date 68.3% probability	Calibrated date 95.4% probability
SUERC-105880 GU61472	4	113	Ditch [F112]	Charred Heather twig (rootwood ø 2.5mm) moderate condition	-26.4	250 ± 27	1639 (53.1%) 1666cal AD 1784 (15.1%) 1795cal AD	1523 (12.6%) 1572cal AD 1630 (59.9%) 1676cal AD 1743 (0.9%) 1751cal AD 1765 (22.0%) 1800cal AD
SUERC-105881 GU61473	5	118	Ditch [F119]	Alder stemwood charcoal mineral-encrusted (1 growth ring)	-27.9	2881 ± 27	1111 (68.3%) 1013cəl BC	1194 (2.7%) 1175cal BC 1160 (2.1%) 1145cal BC 1129 (88.6%) 977cal BC 951 (1.9%) 936cal BC
SUERC-105882 GU61474	13A	131	Lower fill Pit [F133]	Oak stemwood charcoal mineral-encrusted (>5 growth rings)	-24.4	2463 ± 27	751 (29.1%) 685cal BC 668 (12.8%) 635cal BC 619 (1.0%) 615cal BC 590 (25.4%) 516cal BC	758 (31.5%) 678cal BC 672 (60.3%) 458cal BC 441 (3.6%) 419cal BC
SUERC-105883 GU61475	13B	131	Lower fill Pit [F133]]	Birch charcoal mineral-encrusted fair condition	-26.3	2168 ± 27	351 (37.0%) 295cal BC 209 (31.2%) 166cal BC	357 (44.1%) 278cal BC 258 (1.6%) 246cal BC 234 (49.7%) 107cal BC

Table 1.5: Summary of radiocarbon dating

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

Appendix 2: Stratigraphic matrix



Appendix 3: Radiocarbon certificates



Rankina 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 05 September 2022

Laboratory Code	SUERC-105880 (GU61472)
Submitter	Charlotte O'Brien Archaeological Services Durham University South Road Durham DH1 3LE
Site Reference Context Reference Sample Reference	Land west of Davis Crescent, Langley Park, Co Durham 113 LPB21-4
Material	Charcoal : Calluna vulgaris
δ ¹³ C relative to VPDB	-26.4 ‰
Radiocarbon Age BP	250 ± 27

N.B. The above ¹⁴C 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 :

Bligney

Checked and signed off by : P. Nayout





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 curvet

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



Radiocarbon Age BP 2881 ± 27

N.B. The above ¹⁴C 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 <u>suerc-c14lab@glasgow.ac.uk</u>.

Brigny

Conventional age and calibration age ranges calculated by :



P. Nayonto







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



Calibrated date (calBC)

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





RADIOCARBON DATING CERTIFICATE 05 September 2022

Laboratory Code	SUERC-105882 (GU61474)
Submitter	Charlotte O'Brien Archaeological Services Durham University South Road Durham DH1 3LE
Site Reference Context Reference Sample Reference	Land west of Davis Crescent, Langley Park, Co Durham 131 LPB21-13A
Material	Charcoal : Quercus sp
δ ¹³ C relative to VPDB	-24.4 ‰

Radiocarbon Age BP 2463 ± 27

N.B. The above ¹⁴C 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 <u>sucre-c14lab@glasgow.ac.uk</u>.

Conventional age and calibration age ranges calculated by :

Bayny

Checked and signed off by :

P. Nayonto





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



Calibrated date (calBC)

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





RADIOCARBON DATING CERTIFICATE 05 September 2022

Laboratory Code	SUERC-105883 (GU61475)
Submitter	Charlotte O'Brien Archaeological Services Durham University South Road Durham DH1 3LE
Site Reference	Land west of Davis Crescent, Langley Park, Co Durham
Context Reference	131
Sample Reference	LPB21-13B
Material	Charcoal : Betula sp
δ ¹³ C relative to VPDB	-26.3 ‰

Radiocarbon Age BP 2168 ± 27

N.B. The above ¹⁴C 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.

Bayny

Conventional age and calibration age ranges calculated by :

Checked and signed off by : P. Nayout





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



Calibrated date (calBC/calAD)

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



Photo 1: Phase 1 ditch [F110], looking north-west



Photo 2: Phase 1 ditch [F119], looking south-east



Photo 3: Phase 2 pit [F133], looking south-west



Photo 4: Phase 3 ditch [F114], looking east



Photo 5: Phase 3 gully [F127] and ditch [F129], looking north-east

Photo 6: Phase 3 ditch [F123], looking west



Photo 7: Phase 3 ditch [F104], looking east



Photo 8: Unphased ditch [F102], looking east

ARCHAEOLOGICAL SERVICES DURHAM UNIVERSITY Land to the west of Davis Crescent Langley Park County Durham

post-excavation analysis report 5797

Figure 1: Site location







edge of excavation

furrow

phase 3 - post-medieval

pipe/drain/land drain

unphased





Land to the west of Davis Crescent Langley Park County Durham post-excavation analysis report 5797

Figure 3: Phased plan of Areas A and E



ARCHAEOLOGICAL SERVICES DURHAM UNIVERSITY
Land to the west of Davis Crescent Langley Park County Durham post-excavation analysis report 5797 Figure 4: Phased plan of Area B
0 7.5m scale 1:150 for A3 plot
edge of excavation section phase 3 - post-medieval





