

Beaumont Street Multi Storey Car Park Darlington

post-excavation analysis

report 5233 March 2020



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1. Summary

The project

- 1.1 This report presents the results of the analysis of an archaeological excavation conducted for a development at Beaumont Street, Darlington. Following the initial 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 Darlington Borough Council and conducted by Archaeological Services Durham University.

Results

- 1.3 The excavation revealed pits, postholes and ditches relating to the development of Darlington from the early medieval period onwards.
- 1.4 The earliest archaeological feature identified during the excavation was a pit containing charred remains, radiocarbon dated to 900-1030 cal AD. Although found in isolation, the pit is evidence of pre-conquest occupation in the area. This is consistent with other archaeological investigations in the locality, which identified a small number of early medieval features superseded by the medieval development of the town.
- 1.5 Medieval pits that probably relate to small-scale industrial and domestic activity were recorded at the back of burgage tenement plots belonging to properties facing onto Houndgate. The original purpose of the pits is unclear, but they may have been for the extraction of sand and gravel. The pits had a secondary use for the disposal of domestic waste. Ditches were also identified that delineated the boundary of the burgage plots. Radiocarbon dates and pottery analysis date these features to between the 13th and early 15th centuries.
- 1.6 Three pits or postholes of post-medieval date were excavated on the site. These provide little information regarding the later development of the site, although cartographic evidence shows that the site was as in use as gardens in the later post-medieval period and into the 20th century.

2. Project background

Location (Figure 1)

2.1 The site is located at Beaumont Street, Darlington (NGR centre: NZ 2888 1429) and was previously the site of a car park. It covers an area of approximately 0.5 ha. To the west and south is Beaumont Street, to the east further car parking and to the north is Houndgate.

Development

2.2 The development was a multi-storey car park.

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. This included six radiocarbon dates in order to establish a chronology for the site. This was combined with further works on the pottery and palaeoenvironmental assemblages.

Research Objectives

2.4 The regional research framework (Petts & Gerrard 2006) contains an agenda for archaeological research in the region. The scheme of works addresses agenda items: MDi Later medieval settlement; MDiii Later medieval urbanism; MDxi The medieval to post-medieval transition.

Specification

2.5 The works have been undertaken in accordance with recommendations provided in the post-excavation assessment report produced by Archaeological Services (2015a).

Dates

2.6 Fieldwork was undertaken between 27th January and 3rd February 2014 and between 2nd and 11th February 2015. This report was prepared for March 2020.

Personnel

2.7 Fieldwork was conducted by Patricia Edwards, Nathan Thomas, Dr Dave Webster and Matthew Claydon (supervisor). This report was prepared by Matthew Claydon, with illustrations by David Graham. Specialist reporting was conducted by Dr Chris Cumberpatch (ceramics), Louisa Gidney (animal bone), Jennifer Jones (other artefacts) and Dr Carrie Armstrong (palaeoenvironmental). Sample processing was undertaken by Dr Magdolna Szilágyi and Janice Adams. The Project Manager was Daniel Still.

Archive/OASIS

2.8 The site code is **DMS15**, for **D**arlington **M**ulti **S**torey 20**15**. The archive is currently held by Archaeological Services Durham University and will be transferred to County Durham Archaeological Archives in due course. 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 Index of archaeological investigation**S** project (**OASIS**). The OASIS ID number for this project is **archaeol3-377389**.

3. Landuse, topography and geology

- 3.1 At the time of the excavation, the development area comprised a former public car park.
- 3.2 The development area slopes gently down to the east from 44m OD to 41m OD. Beyond the eastern edge of the site the level of the ground drops in a series of terraces.
- 3.3 The solid geology of the site is calcareous mudstone of the Roxby Formation, overlain by Devensian glaciofluvial deposits of sands and gravels (BGS 2014). Recent boreholes undertaken as part of this project show sand and gravels to be present between 0.5m and 2.7m below ground level (Solmek 2013).

4. Previous archaeological works

4.1 The historical and archaeological background to the site is detailed in the Written Scheme of Investigation for the development (Hammond 2015). In summary, the area lies on the edge of the core of the medieval town, and would have been partially covered with the tenement plots leading back from Houndgate. There is also a 16th-century reference to part of the area being referred to as Kilngarth, which may reflect industrial activity on the site. In the post-medieval period the area became increasingly wealthy, with larger houses on the street frontage and parts of some tenements amalgamated into larger gardens. From the later 19th century and up into the 20th century further buildings were built on the site, including a school, and the demolition of these led to the conversion of the area into car parking in the 1970s. A series of archaeological excavation trenches on and adjacent to the site have taken place which indicate that there is some survival of archaeological deposits and other areas where modern activity has removed any deposits that were present. An Anglo-Saxon ditch has been postulated to cross the site.

5. The excavations (Figures 2-7) Introduction

- 5.1 This report examines the results from the archaeological evaluation undertaken in 2014 (Archaeological Services 2014b) and the subsequent excavation in 2015 (Archaeological Services 2015a). Some modern features that were recorded in the previous work have been omitted here as they are not archaeologically relevant.
- 5.2 The car park surface and modern overburden was stripped using a 360° excavator fitted with a toothless ditching bucket under archaeological supervision. Brick walls and concrete floors, the buried remnants of previous 20th-century structures on the site, were encountered during the strip.
- 5.3 Natural subsoil, comprising deposits of yellow sand, gravel and small pebbles [12], was identified across the site, varying greatly as a consequence of previous modern terracing between depths of 0.3m-1.5m below ground level (between 40m and 43.3m OD).

Phase 1: early medieval (Figure 3) Pit with charred remains

5.4 Cutting the natural subsoil in the south-east of the site was a distinctive small, shallow pit [F50: 1.5m in diameter, 0.15m deep, Photo 1], filled with a thin layer of dark brown clay [49: 0.05m deep] overlain by charcoal [48: 0.1m deep]. Over this was a deposit of charred material, which mainly comprised a significant assemblage of grain with a small amount of hazel roundwood charcoal also present. Insect degradation suggests the remains comprise burnt material of poor quality wood, probably from a domestic hearth. There was no scorching of the surrounding ground to indicate the charcoal had been burnt *in situ*, which suggests that the material had been dumped from another location. Charred cereal grain from the pit provided a radiocarbon date of 900-1030 cal AD (SUERC-90552 (1049, 25)), suggesting it may be the earliest feature identified on the site, and evidence of pre-Conquest occupation.

Phase 2: medieval (Figures 4 & 5) **Pits**

- 5.5 Across the site were a series of pits, some of which could be dated to the 13th-14th century. On the highest ground, at the west end of the site, was a pit that had previously been partially excavated in the evaluation phase. The pit [F7: 5.5m by 3.5m, 1.1m deep, Photo 2] had steep sides and a flat base. The lowest fill of the pit comprised brown gravelly sandy silt [15: 0.4m deep]. This was overlain by a deposit of orange gravel [14: 0.1m deep], possibly redeposited natural subsoil. Over this was brown sandy silt [13: 0.7m deep]. The pit had been recut centrally by a smaller pit [F16: 5.5m by 3m, 1.1m deep] which also had had steep sides and a flat base. At the base of the recut pit was a thin deposit of crushed charcoal [17: 0.1m deep]. This was overlain by a deposit of pink-orange clay containing lenses of brown soil [8: up to 0.65m deep], presumably formed during accumulated dumping. Over this was brown gravelly clayey sandy silt [6: up to 0.65m deep]. To the south-west, extending beyond the edge of the excavation, was a similar shallower pit [F5: 0.6m+ by 2.6m+, 0.5m deep] filled with dark brown gravelly sandy silt [4].
- 5.6 To the north was the south-east corner of another pit extending from the west edge of the excavation. This pit [F19: 5m+ by 1.5m+, 1.1m deep] had steep sides and a flat base. The primary fill was red clayey sand [32: 0.1m deep] that had been discoloured through heat exposure. Charred cereal grain from the clay produced a radiocarbon date of 1280-1400 cal AD (SUERC-90367 (655, 26)). Over this was a deposit of mixed brown gravelly sandy silty clay [34: 1m deep]. This pit had also been recut [F31: 1.2m+ by 1.1m+, 1m deep] by a pit with a similar profile. The recut was filled with yellow-orange clay [33: 0.35m deep], overlain by brown stony loam [18: 0.7m deep], from which charred cereal grain was radiocarbon dated to 1270-1400 cal AD (SUERC-90368 (659, 26)). The sequence of deposits within this pit and the recut was noticeably similar to that of pit F7. Pottery of 13th-14th century date was recovered from all of these pits.
- 5.7 Towards the centre of the site was another large pit [F21: 4m by 2.8m, 1m deep, Photo 3] filled with orange-brown clay [30]. This had been recut to the east by a pit with a similar profile [F29: 2.4m by 3m, 1m deep]. The pit was filled with a thin deposit of black ashy silt [28: 0.1m deep], overlain by orange gravelly sand [27: 0.3m deep] from which a charred cereal grain was radiocarbon dated to 1310-1430 cal AD (SUERC-90366 (GU53235)). Over this was another deposit of black ashy silt [26: 0.1m deep], covered by orange-brown clay [25: 0.2m deep]. Finally the pit had been

backfilled with mixed orange gravelly silty sandy clay [20: 0.6m deep]. Pottery of 13th-14th century date was recovered from the pit fills. It was cut on the east side by a smaller pit [F24: 1.2m+ by 1.3m, 0.6m deep], filled with black silt [23] against the east edge. A charred cereal grain from this was radiocarbon dated to 1300-1410 cal AD (SUERC-91107 (GU54501)). This was overlain by brown stony sandy clay [22].

- Towards the east end of the site was another large pit [F44: 4.5m by 2.5m, 0.7m deep, Photo 4]. This had a thin deposit of grey-brown clay [47: 0.05m thick] at the base, which was overlain by brown clayey silt [43: 0.7m thick].
- 5.9 North of this a possible remnant subsoil layer was recorded during the evaluation [119: 0.3m deep, 41.9m OD]. This was cut by a large oval pit [F103: 3.1m by 2.5m, 0.6m deep, Photo 5]. The pit was filled with a light grey brown loam [104] that contained medieval pottery.

Ditches

- 5.10 At the west end of the site, pit F19 was cut by a linear truncated ditch [F10: 0.5m wide, 0.1m deep, Photo 6], filled with dark grey-brown silty clay [9]. Material from this was radiocarbon dated to 1170-1270 cal AD (SUERC-90362 (GU53233)), one of the earliest dates from the site and probably reflecting residual material. This ditch was aligned east/west across the site, and was probably the truncated remnants of a boundary ditch at the rear of burgage plots stretching back from houses fronting on to Houndgate. In the centre of the site it was truncated by a modern concrete floor, but in the east part of the trench it survived to a greater extent [F42: 0.6m wide, 0.6m deep]. It was filled with gravelly brown sand [41], which was recut by a wider ditch [F36: 1.2m wide, 0.4m deep] filled with gravelly orange-brown silty sand [35]. The ditch extended to the east edge of the area of excavation, where it was truncated by modern disturbance.
- 5.11 At the east end of the site a parallel ditch was recorded 3.6m to the north of F42. This feature [F54=F56: 5m+ by 1m, 0.6m deep] was filled with grey-brown sandy silt [53: 0.5m thick], overlain on the north side by stony orange clay [60: 0.25m thick]. This was recut down the north side by a shallow ditch [F62: 1.5m wide, 0.25m deep] filled with grey brown loam [61]. The east end of the ditches continued beyond the edge of excavation. The west end of ditch F54=F56 had a rounded terminal that was heavily truncated by later pits. Here it was filled with orange-brown gravelly clayey sand [55].
- The ditch terminal was initially cut by a rounded pit [F59: 2m diameter, 0.4m deep]. This had a primary fill of black clay [58: 0.05m thick], overlain by orange-brown sandy silt [57: 0.35m thick]. Both the pit and ditch were cut on the north side by a larger pit [F52: 2.5m diameter, 0.7m deep]. This was filled with orange-brown sandy clay [51].

Deposit

5.13 In the north-west part of the site the natural subsoil was overlain by a thin deposit of brown silty sand [11: 0.1m thick] from which medieval pottery was recovered. This may have been remnants of medieval topsoil. No features were related to this deposit.

Phase 3: post-medieval (Figure 6)

- 5.14 North of the boundary ditch towards the east end of the site was a sub-rounded pit [F38: 1.5m diameter, 0.35m deep] filled with dark brown silty clay [37] from which a piece of wall plaster was recovered. It was made with animal hair and may be of preindustrial date (before 1750).
- 5.15 North of the pit was a shallow pit or posthole [F40: 0.5m diameter, 0.1m deep] also filled with dark brown silty clay [39]. Another small pit was recorded in the evaluation to the north [F105: 0.6m diameter and 0.2m deep]. This was again filled with a dark brown silty clay [106], from which a small fragment of post-medieval pottery was recovered.

6. The artefacts

Pottery analysis

Summary

6.1 The pottery assemblage from the excavation consisted of fifteen sherds of pottery weighing 271.25 g, representing a maximum of fourteen vessels. The data are summarised in Table 1.2.

Results

- 6.2 With the exception of two sherds from contexts [4 and 17] all the pottery was of Tees Valley ware type, with examples of all three sub-types (A, B and B/C) present.
- Valley ware was a major regional type which is common throughout the Tees Valley and more widely (Didsbury 2010: Figure 8.10) between the early to mid-13th and the 14th centuries. The type was first described and discussed in detail by Wrathmell (1987, 1990) and was subsequently the subject of a review by Didsbury (2010). The present report follows Didsbury's dating and typology although sherds which show the distinctive use of buff or white slip on an orange-firing body have been defined as sub-type B\C rather than being subsumed into sub-type B. The purpose of this is simply to highlight the use of slip and the resulting phenomenological distinction between buff-white and orange wares. Both the A and B types show some variation in the density and size of the inclusions, but it is unclear how far such variations relate to changes in clay procurement over time and/or over space. To date, no potteries involved in the manufacture of Tees Valley ware have been excavated and it is unclear how far production was centralised.
- 6.4 Tees Valley ware forms part of a wider regional tradition of buff and buff-white wares represented elsewhere by Yorkshire Gritty ware and a wide variety of both earlier and contemporary types subsumed under various names including Buff Sandy and Buff Gritty ware, which seem to have been the preferred types across Yorkshire and north-east England throughout the earlier part of the medieval period. A connection is also possible with the products of the Scottish Whiteware industry. In the present case, one small sherd, from context [17], may be of a slightly earlier Buff Gritty ware type, although the sherd in question was heavily burnt and discoloured.
- Tees Valley ware is distinguished typologically from superficially similar types most notably by the bifid rims such as the one from context [6] (cf. Didsbury 2010: Figures 8.13:34, 35, 36, 8.14; 43, 45, 46). The origins of this very distinctive form are unknown.

- The assemblage also included the rim of a handled jar or wide-mouthed pitcher in context [9] (Figure 8a) and the rim of a cooking pot in context [43] (Figure 8b), both in Tees Valley ware A. They are at the coarser end of the fabric spectrum and both show the high quality of manufacture and attention to detail which are characteristic of not only the Tees Valley wares but also the Buff Sandy/Buff Gritty ware tradition more generally.
- 6.7 Context [4] produced a single small sherd in a Reduced Sandy ware fabric. Reduced wares replaced the earlier buff ware tradition during the 14th century and, while the sherd in question was reduced in nature, it was not typical of the Reduced Greenware tradition which flourished during the later 14th and 15th centuries. A date in the late 13th to early/mid-14th century is probably appropriate for this sherd.

Discussion

6.8 The pottery assemblage appears to indicate a phase of deposition in the earlier part of the medieval period. Although Tees Valley A wares are generally somewhat earlier than the B and B\C wares, the evidence currently available is insufficient to establish the duration of the overlap between the two types. The use of buff slip to mask the orange-firing fabrics of the B wares would seem to imply that the use of iron-rich clays began while buff and buff-white wares were still popular, but a resolution of the problem must await an opportunity to examine a much larger assemblage from a site with well-stratified and chronologically secure contexts.

A comparison between the DMS15 and THD13 pottery assemblages

- 6.9 The pottery assemblages from Darlington Town Hall (THD13) and Darlington Multistory Car Park (DMS15) have been the subject of reports by the author in 2014 and 2019 respectively. This note is intended to provide a comparison between the two assemblages and should be read in conjunction with the full reports on the Town Hall site (Cumberpatch 2014).
- 6.10 The two assemblages consisted of very different quantities of pottery. The THD13 excavations produced a total of 276 sherds of pottery weighing 4129g, representing a total of 206 vessels, while the DMS15 assemblage consisted of just 15 sherds weighing 271.5g, representing a maximum of 14 vessels.
- 6.11 The date range of the THD13 assemblage was much broader than that from DMS15 and spanned the whole of the medieval period, with one sherd of earlier pottery and a rather larger quantity of early modern and recent material. In contrast, the DMS15 assemblage consisted exclusively of medieval pottery with no earlier material and no early modern or recent pottery.
- 6.12 Within the medieval pottery groups, local Tees Valley ware formed a high proportion of the assemblage from THD13 and the majority of the pottery from DMS15. Both sites included smaller quantities of local Buff Sandy ware, although in the case of DMS15 this was limited to a single sherd. Later medieval Reduced Greenware was present in the THD13 assemblage, although in relatively small quantities, but was absent from the DMS15 assemblage. This would seem to suggest that activity continued on and around the Town Hall site into the later medieval period, although perhaps at a lower intensity than was the case in the earlier period, while it ceased entirely in the area of the modern car park sometime during the 14th century. It

should be noted, however, that drawing inferences based upon such small assemblages is a hazardous undertaking and the results of such attempts can, at best, be no more than indicative. Both sites clearly saw activity involving the deposition of locally manufactured domestic pottery during the period between the early/mid 13th and mid/late 14th centuries with some level of activity before this, but to go beyond this basic statement would not be either advisable or defensible, given the very small size of the assemblage from the DMS15 site. Small assemblages are inherently likely to be more affected by chance factors than are larger assemblages and only further work on the Car Park site is likely to produce a larger assemblage that can be usefully compared with others from the town.

6.13 In general terms, it is clear from these and other excavations that the medieval population of Darlington was drawing heavily on the products of the local Tees Valley pottery industry, although as we do not currently know how this industry was organised or even where the potteries were located, it is impossible to go very much further than this in trying to reconstruct the patterns of marketing responsible for the distribution of the products of this important regional industry. The broad distribution pattern would indicate a dispersed industry, but the homogeneous character of the fabrics, vessel forms and stylistic traits might indicate a more centralised industry with a highly developed market structure. Until further work, such as that outlined by the author elsewhere (Cumberpatch 2016), is undertaken, such questions will remain the subject of mere speculation and it is, after all, largely futile to speculate in the absence of data.

Archiving and curation

6.14 Once the project has been completed, the DMS15 assemblage should be deposited in the appropriate local museum or finds depository where it will be available for further work in the future. This is of particular importance with regard to Tees Valley wares, given the levels of uncertainty that surround the organisation of production and distribution and the relationship of the type to wider regional traditions.

Animal bone

Results

- 6.15 Faunal remains were recovered from the fills of eight pits and one ditch of medieval date. The bones are in a good state of preservation. Fragments of cattle, sheep/goat and pig bones were counted as identifiable if they encompassed a 'zone', or discrete diagnostic feature. The cattle-size category indicates a vertebra. The species represented are listed in Table 1.3. The fragments from contexts [6] and [9] are indeterminate scraps.
- 6.16 It can be seen that cattle fragments are distributed throughout, while faunal refuse is concentrated in context [43]. The cattle fragments include a cattle frontal with female horn core in context [4] and a frontal with male horncore in context [18]. Unfused metapodials from calves older than newborn were seen in contexts [27] and [43]. Sheep/goat is represented by a mandible from context [43] with antemortem tooth loss, swelling on the buccal ramus and gum resorption on the lingual ramus, indicative of a long-term infection. A tibia fragment was present in context [51]. Two unfused bones from immature pig were found in context [43]. Bones of horse are the most abundant but found only in context [43]. All the bones had been deposited intact but subsequently fragmented, such that only one bone may possibly be used for an estimate of withers height. It would appear that one

- complete forelimb is represented, though the second and third phalanges are missing. The animal was adult with all epiphyses fused. Other horse body parts are indicated by part of another scapula, another first phalanx and a thoracic vertebra. Part of a roe deer metatarsal was present in context [20].
- 6.17 No elements of dog were recovered, but bones with canid gnawing marks are present in contexts [43] and [51], indicating this species was present on site.
- 6.18 In the sample residues, only indeterminate fragments are present in contexts [9], [23], [27] and [41]. Further small fragments of cattle horncore were found in context [4]. Context [18] produced a small mammal incisor, context 20 contained two small mammal limb bones and a vertebra, while vole teeth were present in context [48] and another rodent tooth in context [17]. A commensal small mammal fauna was therefore present on site.

Discussion

6.19 The unusual species composition of this collection has parallels in the finds associated with the Bishop of Durham's Manor (Archaeological Services 2015b). The roe deer bone certainly suggests the spread of high status waste to this site. Conversely, the cattle horn cores suggest some craft working debris.

Stone objects

Results

6.20 Fragments of two circular stone lids were found. A piece with an original diameter >160mm came from ditch fill [9]. It is 158 x 65mm max x 16mm thick, with a chamfered edge and two flat faces with possible evidence of pecking. The other small fragment came from pit fill context [27]. This is c.28 x 22mm max x 9mm thick, with a chamfered edge. Both lids are made of fine-grained, pale yellow sandstone. Not easily dated, but such objects were in common use during medieval and later periods.

Wallplaster

Results

6.21 A single, relatively large piece of wallplaster (250g wt) was recovered from pit context [37]. It is *c*.84 x 86mm x up to 52mm thick, with no evidence that this is the full thickness. It is quite a fine plaster composed of a single layer and sparsely tempered with fine grit, crushed coal or charcoal and animal hair. There is a fairly rough layer of white/cream paint on the surface. This is a particularly thick, well-preserved piece of well-made plaster. There is little evidence to go on, but it could be pre-industrial in date.

Fired clay

Results

6.22 A total of 1390g wt of fired clay fragments was recovered, the majority (1360g) from the sample taken from pit fill context [32]. There are c.80 pieces >10mm in size from this context, the largest fragment c.87 x 74mm x 44mm thick. A few pieces have slight convex or concave surface shaping, but there is no evidence of substrate impressions. The clay is lightly fired and red/brown in colour. Almost all pieces are oxidised throughout and sparsely tempered with very fine grit/sand and rather more liberally with organic material, now burnt out, leaving many longitudinal striations on the surfaces and in the fabric. These could derive from herbaceous monocot

- vegetation such as grasses (including straw and hay), sedges or horsetails. Fibrous plant material was added to help hold the mix together and to control shrinkage.
- 6.23 The fired clay fragments seen here are reminiscent of the large quantity recovered from an oven during excavations on the site of the Bishop of Durham's Manor (Archaeological Services 2015b), though this material is softer, has different temper and lacks substrate impressions. The slight shaping of some pieces does suggest it may also come from a furnace or oven, however.
- 6.24 Small quantities (30g wt total) of other fired clay fragments came from the samples from contexts [9], [17], [18], [23], [27] & [48]. These are small and abraded and cannot be identified as either fired clay or pottery.

Iron objects

Results

6.25 A single, highly corroded and broken nail came from pit fill context [27]. It is hand wrought, rectangular in section and survives to 47mm length. The head appears to be rectangular. Hand wrought nails were in use over a very long period and this example could be pre-industrial in date.

Industrial residues

Results

6.26 Two very small pieces (<2g wt) of fuel ash slag were recovered from the sample from pit fill context [23]. A further small amount of crushed fuel ash slag and possible hammerscale (<5g) came from pit fill context [18]. This very small quantity of material is undateable and is not indicative of industrial activity on site.

7. The palaeoenvironmental evidence Methods

7.1 Palaeoenvironmental assessment was undertaken on ten samples (Archaeological Services 2015a). Further analysis was later commissioned for the grain-rich plant macrofossil assemblage from Phase 1 pit fill [48] and five grain-rich pit fills from Phase 2 ([4], [20], [23], [27] and [18]). Updated results from these features are provided here. The samples were manually floated and sieved through a 500µm mesh. The residues were examined for shells, fruitstones, nutshells, charcoal, small bones, pottery, flint, glass and industrial residues, and were scanned using a magnet for ferrous fragments. The flots were examined at up to x60 magnification using a Leica MZ6 stereomicroscope for waterlogged and charred botanical remains. Identification of these was undertaken by comparison with modern reference material held in the Palaeoenvironmental Laboratory at Archaeological Services Durham University. Plant nomenclature follows Stace (2010). Habitat classifications follow Preston et al. (2002). For the analysis, charred seeds and fruits were counted in total, while abundance scores had been used for the earlier assessment from 1 to 5, where 1 = 1-2 seeds, 2 = 3-10 seeds, 3 = 11-40 seeds, 4 = 41-200 seeds, 5 = >200seeds. Charred weed seeds have been categorised in Table 1.4 and 1.5 according to broad ecological groups based on their most typical, present-day distribution. Oat grains were divided into two size categories: large grains which were retained on a 2mm sieve and small, slender grains which passed through this sieve. The flot from Phase 1 pit fill [48] was sub-sampled for the analysis using a riffle box due to the

- grain-rich nature of the sample, with grain counted from 25% of the flot (40ml) and the rest of the flot scanned for additional taxa present.
- 7.2 Selected charcoal fragments were identified. 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.
- 7.3 The works were undertaken in accordance with the palaeoenvironmental research aims and objectives outlined in the regional archaeological research framework and resource agendas (Petts & Gerrard 2006; Hall & Huntley 2007; Huntley 2010). In particular, this project has the potential to further understanding of patterns of medieval urbanism and consumption (MDiii) which have been cited as important research priorities (Petts & Gerrard 2006).

Results

General comments

7.4 Details of residue matrices are listed and discussed in the assessment report (Archaeological Services 2015a). Finds from the samples are discussed in relevant specialist sections. Palaeoenvironmental data from the assessment are listed in Table 1.4 and further analysis data are presented in Table 1.5. Charred botanical remains comprise of both cereal grains and weed seeds, with significant quantities of grain in the deposits analysed. Chaff fragments are more infrequently recorded. Charcoal assemblages are generally small. Radiocarbon results are summarised in Table 1.6.

Early medieval (Phase 1)

7.5 Early medieval pit [48] contains a high concentration of charred material, principally cereal grain, at a frequency of >300 items/litre of sediment. Oat grains dominate the cereal crop, with barley and wheat grains present in lower numbers and a single instance of rye present. The large size of many of the oat grains suggests the presence of common cultivated oat, Avena sativa. A few chaff fragments (generally more diagnostic to species level than grain) confirm the use of this crop. Approximately half of the oat grains are however small and slender, suggesting a significant proportion may also derive from the smaller-grained cultivated crop, bristle oats (Avena strigosa), or wild oats (Avena fatua). Bristle oat floret bases are also observed, confirming the presence of this oat type. Twisted awn fragments, characteristic of both bristle and wild oats as well as large-seeded grasses, similarly occur. Barley grains are the second most frequent grain present, with a proportion of the grain having the distinctive 'jackets' indicating the presence of hulled barley. A small number of indeterminate barley rachis fragments are present. The majority of the wheat grains have the characteristic compact shape of bread wheat (Triticum aestivum), and the presence of this variety is confirmed by diagnostic rachis fragments. Other economic plant remains include a few charred flax seeds and a mineralised hemp seed. A small assemblage of hazel roundwood charcoal is noted, with some insect damage observed.

Medieval (Phase 2)

7.6 Phase 2 medieval pit fills [23] and [27] contain particularly high quantities of charred material, with charred macrofossils at >100 items/litre of sediment. The cereal grain assemblages are similar to the phase 1 deposit, with oat grains (both large and small) dominating and barley and wheat grains present in lower numbers. Diagnostic oat chaff fragments indicate the presence of both common cultivated oat and bristle oat. Approximately half of the oat grains are typically slender, although in pit fill [4] small and slender grains dominate. Barley is the second most frequent grain typically present in the deposits, with some grains in all deposits appearing hulled, with the exception of Phase 2 pit fill [18] where wheat grains are more prevalent. Barley and bread wheat rachis fragments are occasionally noted. The majority of the wheat grains have the compact form of bread wheat suggesting this wheat variety dominated the wheat crop, although a few diagnostic rachis fragments from pit fill [27] indicate the additional presence of rivet wheat (Triticum turgidum). Very occasional rye grains are observed in three of the deposits, and rye rachis fragments are present in some quantity in pit fill [23] and more occasionally in pit fill [27]. A few charred flax seeds are occasionally noted. The remains of charred hazel nutshell in medieval Phase 2 pit fills [18] and [27] and a single elderberry fruitstone in both Phase 2 pit fills [4] and [23] reflects some of the range of wild foods available in the medieval period. Identification of a selection of charcoal fragments from the small Phase 2 charcoal assemblages demonstrates the presence of a range of species including hazel, Maloideae (hawthorn, apple, whitebeams), willow/poplar, alder, birch and oak.

Discussion

General comments

- 7.7 The presence of bone, pottery, charcoal, clinker/cinder and charred plant macrofossils in the deposits indicate the fills incorporated accumulations of domestic waste. The charred plant macrofossils reveal the predominant use of oats, with more limited utilisation of hulled barley, bread wheat, rye, flax and pea throughout the medieval occupation of the site. In general, the range and proportions of crops, weeds and other plant remains recorded are comparable to previous archaeobotanical assemblages recovered from early medieval and medieval features in other areas of Darlington (see for example Archaeological Services 1994, 2013, 2014a, 2015b, 2019a) and other urban areas in the north-east (Hall & Huntley 2007).
- As expected for an urban situation much of the carbonised plant material present was grain. Grain entering a town in the medieval period would be expected to be in a processed state, with the costs of transporting crops in the ear uneconomical (Archaeological Services 1994). This appears to be reflected here with only very limited proportions of chaff and weed seeds recovered in comparison to numerous cereal grains. The high concentration of grain in the samples may indicate the incorporation of remains of crop processing accidents or deliberately burned grain (i.e. disposal of a spoilt crop). A number of the grains in the deposits were noted as being of poor condition with poor surface condition of the grains. Puffing and pitting of grain may reflect exposure to intense heat (cf. Boardman & Jones 1990), although some of the surface damage may also have been post-depositional.
- 7.9 A small number of sprouted cereal grains and detached cereal sprouts were observed in both phase 1 and 2 deposits. Charred cereal grains with some degree of

germination may be present in a cereal assemblage for a number of reasons and are noted relatively frequently in occupation deposits (Hall & Huntley 2007). Such grains are most likely to reflect the remains of a crop which started to germinate accidently due to damp conditions (Hillman 1981) such as a wet summer (Van der Veen 1989; Fenton 1978), or in a granary with a lack of circulation. A rather more frequent number of the cereal grains in phase 2 pit fill [27] appear to be in the very early stages of sprouting, with around 30% of the barley grains and a few of the oat grains showing signs of sprouting. Such sprouting likely still reflects the temporary storage of the barley grain in damp conditions and/or the harvesting of a damp crop as the germination was not as developed as malting requires. There were only limited numbers of detached coleoptiles in the assemblage, and the grains present were not in the wasted/shrivelled condition generally seen from a malting assemblage.

Early Medieval (Phase 1)

- 7.10 While most of the preservation of macrofossils was through charring, with no evidence of waterlogged anoxic preservation, a small number of weed seeds from Phase 1 pit fill [48] were mineralised. This indicates the conditions for preservation due to mineral replacement in this feature, sometimes associated with cess pits or damp midden deposits (Historic England 2011; Green 1979). The majority of the macrofossils from this deposit were however preserved through charring and there are no diagnostic indicators of cess present.
- 7.11 Oats were a significant crop at Beaumont Street from the early medieval period onwards with evidence for the presence of both common and bristle oats. Such predominance of oats is common in the North-East (Hall & Huntley 2007). The low number of oat floret bases precludes a quantitative analysis of the relative proportions of the oat species present through the diagnostic chaff. While the bristle oats may be present as an arable weed of the common oat crop, deliberate utilisation of both oat species is also not unusual and has been suggested for several medieval sites in the North East, for example Claypath Durham (Archaeological Services 2018a), Clavering Place Newcastle (Archaeological Services 2016) and Newgate Street Newcastle (Archaeological Services 2019b), some of which feature occupation from at least the 11th century. Bristle oats are still grown on poor soils and in wet climates in the upland and hilly districts of Wales and Scotland (Godwin 1975) and it has been suggested that this crop may have been a more hardy choice for former cultivation in northern regions. The presence of a single rye grain in [48] represents a relatively early occurrence of this crop in northern England. Rye is a cereal which increased in popularity through the medieval period, although it has also been noted in small numbers from an Anglo-Saxon settlement at Shotton, Northumberland (Archaeological Services 2011a).
- 7.12 A very small number of charred flax seeds were recorded. Flax has frequently been recorded from medieval sites in North East England such as Darlington Market Place (Archaeological Services 1994) and Feethams West Darlington (Archaeological Services 2019a) and less frequently from early medieval sites such as Anglo-Saxon Shotton (Archaeological Services 2011a). A few flax seeds were also noted from the previous phase of work at this site (Archaeological Services 2014b). Hemp and flax were important crops in Britain, grown mainly for their fibre which was used to make sails, ropes, fishing nets and clothes, as well as oil from hempseed (Gearey et al. 2005). Flax may also have been cultivated to produce linseed oil for food, preservative or medicinal uses. The by-products of oil and fibre production could

also have been used as fodder or fuel (Bond & Hunter 1987). While flax could therefore be present as an economic crop, the limited number of seeds recorded is more indicative of accidental incorporation of weeds in the local environment or waste from domestic use. The single mineralized hemp seed similarly most likely has come from plants growing from waste seed originating from cultivation or culinary usage, with a single mineralised seed too little evidence to directly suggest the cultivation of hemp for retting is occurring on site. Seeds of hemp occur sporadically at other medieval sites in the North East, for example at INTO Newcastle (Archaeological Services 2011b) and Newcastle University New Music Building (Archaeological Services 2009).

7.13 The weed flora largely comprises a variety of species typical of arable, ruderal and wide-niche habitats. Weeds of cultivated ground are well represented. These are likely to have been growing with the cereal crops. Ruderal weeds are present and may indicate areas of waste ground in the vicinity, or may have been growing in the arable fields. Several species characteristic of damp conditions, including sedges and pale persicaria, suggest the presence of some damper conditions in the local environs. Ribwort plantain is associated with pasture soils (Behre 1986) and its common presence could suggest some pastoral farming practice in the vicinity of the site or derive from the remnants of animal dung/stable manure, potentially used as a low temperature fuel source (Spengler 2018).

Medieval (Phase 2)

- 7.14 As with Phase 1, much of the carbonised plant material present is cereal grain, with a much more limited occurrence of chaff and weed seeds. While the suite of cereal crops is similar across all of the features analysed and the ubiquitous presence of oats continues, small variations in crop ratios are apparent between the deposits. For example small oats atypically dominate over large oats in pit fill [4], bread wheat grains are atypically more common than barley grains in pit fill [18], and the level of dominance of oat over other crops is variable between the deposits. This may suggest some differences in the waste deposited in individual features, perhaps reflecting different mixes of crops in different processing events. While rye appears to be only a relatively minor component throughout the medieval period, a number of rye rachis fragments are noted from pit fill [23] possibly reflecting increased use of this crop during the later medieval period.
- 7.15 A few diagnostic rachis fragments from pit fill [27] provided evidence for the additional presence of rivet wheat alongside the more common presence of bread wheat. While rivet and macaroni wheat remains are difficult to separate on a morphological basis, the rachis fragments here are considered more likely to be rivet wheat, as macaroni wheat does not grow well in the British Isles and there is historical evidence of the former (Greig 1991). The presence of rivet wheat is noteworthy as there are few confirmed records of the use of this crop in medieval northern England (Hall & Huntley 2007) and further consideration of its occurrence in England has been identified as an important area of future research (Moffett 1991; Monckton 2003). Rivet wheat generally occurs in assemblages also containing bread wheat, as here. Examples of its presence in northern England include Thornton le Street North Yorkshire (Archaeological Services 2018b), Cartergate Grimsby (Archaeological Services 2011c) and Platts Orchard Southwell (Archaeological Services 2012).

- 7.16 A number of pea fruits and large-seeded members of the pea family were identified, suggesting that legumes were cultivated at Beaumont Street during this period. Legumes such as peas and beans were commonly consumed in medieval times, but their remains are often underrepresented in archaeobotanical assemblages. The presence of only a few charred hazel nutshells and elder fruitstones suggests that while some wild-gathered foods were also a source of food at the site their presence in low numbers possibly reflects a minor use of this particular food source. A few charred flax seeds were noted, again in low numbers and likely representing accidental incorporation of weed from the local environment rather than an economic use.
- 7.17 The weed flora largely reflects a similar range of arable, ruderal and damp ground habitats suggested for the previous phase of occupation. Vetch seeds are common in many of the medieval deposits and while these may derive from use as a fodder crop, these may also reflect the presence of vetch as a troublesome arable weed.
- 7.18 Identification of a limited selection of the small charcoal assemblages demonstrated the presence of a variety of species in the local landscape, with hazel and oak the most frequently utilised. The charcoal most likely derives from fuelwood used for domestic activities. A number of instances of insect degradation was noted across the samples suggesting the more likely utilisation of poor quality wood probably only useful for the domestic hearth.

8. Radiocarbon dating

8.1 ANS radiocarbon dating and calibration were carried out by the Scottish Universities Environmental Research Centre (SUERC), East Kilbride, Scotland. The charred macrofossil material selected for three individual dates provided adequate carbon for accurate measurement in each case, and analyses proceeded normally. Sample information and results are summarised in Table 1.6.

9. Discussion

Phase 1: early medieval

- 9.1 In 1913 a local antiquarian Edward Wooler claimed to have identified a substantial ditch 16ft (4.8m) wide at the bottom and 8ft (2.4m) deep which he theorised had been part of a late Anglo-Saxon defensive ditch around the whole town. The southern stretch of this boundary, if it existed, could cross east-west through the development area (Hammond 2015). Recent excavations in advance of a development immediately east of the site at Feethams identified a series of north-south and east-west ditches. The earliest ditch in this sequence contained no datable artefacts, but the palaeoenvironmental data currently suggests an early medieval to medieval date. The later ditches were all considered to be medieval (Archaeological Services 2019a). A possible Saxon ditch was also identified during the excavations to the rear of the Town Hall, although this was nowhere near as substantial as the ditch cited by Wooler (Archaeological Services 2015b).
- 9.2 Evidence of early medieval activity on the Beaumont Street site comprised a pit filled with charred cereal remains and some hazel roundwood. This was radiocarbon dated to 900-1030. No evidence of a ditch early enough or large enough to relate to the theoretical Anglo-Saxon *burh* was encountered during the excavation, indicating

that if the *burh* ditch is present in this area it must pass to the north or south of the site. The likelihood is that the Anglo-Saxon *burh* did not exist, and that Wooler's original suggestion was speculative.

Phase 2: medieval

- 9.3 The site lies immediately to the south of the historic core of Darlington Town Centre, which is arranged around the Market Place and St. Cuthbert's Church. Houndgate, which lies north of the site, may have been in existence since at least the 13th century. The properties facing onto it, although of post-medieval date, show the characteristic medieval development pattern of burgage plots: houses facing onto the street frontage with long thin plots to the rear. These would have been utilised as workshop space or for keeping of domestic livestock and growing vegetables (Hammond 2015).
- 9.4 The archaeological evidence therefore mainly relates to the exploitation of the area of tenement plots in the medieval period. Several large pits recorded across the site can be dated to the medieval period as they contain pottery of 13th-14th century date. Four radiocarbon dates from three of the pits place them between AD 1270 and 1430. These pits may have originally been dug to extract gravel or sand, or for another unknown purpose. The presence of horn cores and flax and hemp may be taken to indicate some craft activity in the area which may be associated with the pits. Subsequently they were used for the disposal of domestic waste. Three of the pits, two of which were completely within the excavation area and one of which extended beyond it, were very similar in size, plan and profile, and this could indicate that they had the same original function. Several of the pits had been significantly recut, suggesting that they had been deliberately targeted for reuse. Radiocarbon dating of the lower fill of one of the pits and of the fill of its recut returned very similar date ranges. Recut pits have been interpreted elsewhere as evidence for the removal of organic waste to be reused as fertilizer, such as at York Buildings, Southampton (Jervis 2010). However, the palaeoenvironmental evidence here does not support this as it mostly related to domestic waste, with cereal grain assemblages indicating the consumption of oats, hulled barley, bread wheat and rye. Flax and hemp were identified which may have been used for fibre or oil production, and may indicate small-scale industrial activity. The weed seed assemblages derive from arable, ruderal, grassland, wet ground and heath communities, such as may be associated with the edge of a medieval town. The animal bone assemblage is typical of domestic waste in the period, although the occurrence of some higher status items may reflect the nearby location of the Bishop's manor by the Town Hall.
- 9.5 Although the ditches identified during the excavation align with medieval ditches recorded on the site to the east in 2019, neither are anywhere near as substantial in size, and it is unlikely that they are the same features. It may be that those larger ditches to the east terminated short of the development site, or that they turned north like some of the other ditches (Archaeological Services 2019a). The longer ditch, which survives intermittently across the full length of the site, returned a radiocarbon date of AD 1170-1270 and may delineate the back of medieval burgage plots fronting on to Houndgate to the north. As the ditch cuts through one of the medieval pits, and has medieval pits either side of it, it may be that the area was used for the type of activity normally associated with burgage plots before they were formally laid out. An east / west boundary is shown further south on John Wood's map of 1826 (Figure 9), but is shown in close proximity on the 1st edition

Ordnance Survey of 1855 (Figure 10), which is surveyed to a greater degree of accuracy. Tenement boundary ditches were typically recut in slightly different positions during the period.

9.6 The medieval pottery from the excavation consisted of fifteen sherds representing a maximum of fourteen vessels. Most of the pottery was Tees Valley ware of 13th-14th-century date, typical of medieval sites in the area and found in larger quantities during the excavations behind the Town Hall. The assemblage included the rim of a handled jar or wide-mouthed pitcher and the rim of a cooking pot, both manufactured to a high quality. It is clear from these and other excavations that the medieval population of Darlington was drawing heavily on the products of the local Tees Valley pottery industry, although to date it is not known how this industry was organised or even where the potteries were located. The lack of pottery dating to after the 14th century may be taken to indicate a hiatus in activity from that time, but the small size of the assemblage prevents definitive conclusions.

Phase 3: post-medieval

- 9.7 The cartographic evidence suggests the site remained relatively undeveloped until the mid-19th century. Wood's map (Figure 8) shows neat rows of trees across most of the land south of the Houndgate street frontage, including over all of the development area. This may represent formal planting, perhaps an orchard, as elsewhere on the map a variety of different trees are depicted in less organised arrangements. A gap between buildings on the street frontage coincides with a gap in the trees west of the site and is shown belonging to Mr Arden. By the time of the 1st edition Ordnance Survey (Figure 9) this had been developed as Arden Street (now part of Beaumont Street). The area is shown to have been formally broken up into smaller land parcels belonging to different properties. Some small outbuildings, presumably workshops and sheds, are shown within the site.
- 9.8 Three small post-medieval pits were recorded during the evaluation and excavation. Little knowledge can be gleaned from them, but two of these features may be postholes, possibly reflecting outbuildings in the area.
- 9.9 The data contributes to our knowledge of the development of Darlington and of medieval urban settlement in the region. Further evidence for the pre-conquest settlement focus on the Market Place area has been obtained, although evidence for a formal defended *burgh* is absent. As the medieval town development, the area was on the edge of the settlement and was used for quarrying and other activities including rubbish disposal, before being formally divided into tenement plots. As is common in the region, more formal gardens were laid out over the tenement plots in the post-medieval period, although the data from the excavation is insufficient to date this transition.

10. Sources

Archaeological Services 1994 Darlington Market Place: archaeological excavations.

Unpublished report **306**, Archaeological Services Durham University

Archaeological Services 2009 New Music Building, King's Walk, Newcastle upon Tyne:

archaeological full analysis report. Unpublished report **2161**, Archaeological Services Durham University

- Archaeological Services 2011a Shotton OCCS, (Anglo-Saxon site) Blagdon,
 Northumberland: plant macrofossil analysis. Unpublished report **2592**,
 Archaeological Services Durham University
- Archaeological Services 2011b INTO Newcastle University, Newcastle upon Tyne, Tyne and Wear: archaeological full analysis. Unpublished report **2493**, Archaeological Services Durham University
- Archaeological Services 2011c Catergate, Grimsby, Lincolnshire:

 palaeoenvironmental analysis. Unpublished report **2579**, Archaeological Services Durham University
- Archaeological Services 2012 *Platts Orchard, Southwell, Nottinghamshire:*palaeoenvironmental assessment. Unpublished report **2976**, Archaeological Services Durham University
- Archaeological Services 2013 Feethams Development, Darlington: archaeological evaluation. Unpublished report **3277**, Archaeological Services Durham University
- Archaeological Services 2014a *Proposed Riverside Park, Feethams, Darlington:*archaeological evaluation. Unpublished report **3334**, Archaeological Services
 Durham University
- Archaeological Services 2014b Darlington multi-storey car park, Beaumont Street,
 Darlington: archaeological evaluation. Unpublished report **3348**,
 Archaeological Services Durham University
- Archaeological Services 2015a Darlington multi-storey car park, Beaumont Street,

 Darlington: archaeological post-excavation assessment. Unpublished report

 3695, Archaeological Services Durham University
- Archaeological Services 2015b *Darlington Town Hall, Darlington: post-excavation full analysis*. Unpublished report **3604**, Archaeological Services Durham University
- Archaeological Services 2016 Former BEMCO site, Clavering Place, Newcastle upon Tyne: post-excavation full analysis. Unpublished report **3904**, Archaeological Services Durham University
- Archaeological Services 2018a 18 to 29 Claypath, Durham: post-excavation full analysis. Unpublished report 4608, Archaeological Services Durham University
- Archaeological Services 2018b Roads to the Past, Thornton le Street Community Excavation, North Yorkshire: palaeoenvironmental assessment. Unpublished report **4949**, Archaeological Services Durham University
- Archaeological Services 2019a Feethams West, Darlington: post-excavation assessment. Unpublished report **5036**, Archaeological Services Durham University
- Archaeological Services 2019b Newgate Street, Newcastle-upon-Tyne, Tyne and Wear: palaeoenvironmental analysis. Unpublished report **5085**.

 Archaeological Services Durham University
- Behre, K-E, 1986 Anthropogenic indicators in pollen diagrams. Rotterdam
- Boardman, S, & Jones, G, 1990 Experiments on the effects of charring on cereal plant components. *J Archaeol Sci* **17**, 1-11
- Bond, J M, & Hunter, J R, 1987 Flax-growing in Orkney from the Norse period to the 18th Century. *Proc Soc Antiq Scotland* **117**, 175-181
- Bronk Ramsey, C, 2009 Bayesian analysis of radiocarbon dates. *Radiocarbon* **51(1)**, 337-360

- Cumberpatch, C G, 2014 Medieval and later pottery from Darlington Market Place (THD13) and Darlington Riverside (DRV13). Unpublished report for Archaeological Services University of Durham
- Cumberpatch, C G, 2016 Tees Valley ware: A petrographic and typological study of a regional medieval pottery industry. A proposal for PhD research, University of Durham.
- Didsbury, P, 2010 Medieval pottery, in: R Daniels (ed) *Hartlepool: An archaeology of the medieval town*, Tees Archaeology monograph series **4;** 218-246.
- Fenton, A S, 1978 The Northern Isles Orkney and Shetland. Edinburgh
- 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
- Gearey, B R, Hall A R, Kenwood, H, Bunting, M J, Lillie, M C, & Carrott, J, 2005 Recent palaeoenvironmental evidence for the processing of hemp (*Cannabis sativa* L.) in eastern England during the medieval period. *Med Archaeol* **49**, 317-22
- Godwin, H, 1975 History of the British Flora. Cambridge
- Green, F J, 1979 Phosphatic mineralisation of seeds from archaeological sites. *J Arch Sci* **6**, 279-284
- Greig, J R A, 1991 The British Isles, in W Van Zeist, K Wasylikowa & K-E Behre (eds) *Progress in Old World Palaeoethnobotany*. Rotterdam
- 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
- Hammond, N, 2015 Written Scheme of Investigation for mitigation; excavation for a Proposed Multi Storey Car Park at Beaumont Street, Darlington. Archaeo-Environment
- Hather, J G, 2000 The identification of the Northern European Woods: a guide for archaeologists and conservators. London
- Hillman, G C, 1981 Reconstructing crop husbandry practices from charred remains of crops, in R Mercer (ed) *Farming practice in British Prehistory*. Edinburgh
- Historic England 2011 Environmental archaeology: A guide to the theory and practice of methods, from sampling and recovery to post-excavation 2nd ed. Swindon
- Huntley, J P, 2010 A review of wood and charcoal recovered from archaeological excavations in Northern England. Research Department Report Series no. **68**. London
- Moffett, L, 1991 The archaeobotanical evidence for free-threshing tetraploid wheat in Britain, in Hajnalová, E (ed) *Palaeoethnobotany and Archaeology, International Workgroup for Palaeoethnobotany, 8th Symposium at Nitra-Nove Vozokany 1989. Acta Interdisciplinaria Archaeologia* **7**. Nitra.
- Monckton, A, 2003 An Archaeological Resource Assessment and Research Agenda for Environmental Archaeology in the East Midlands
- 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 J, Bard, E, Bayliss, A, Beck, J W, Blackwell, P G, Bronk Ramsey, C, Buck, C E, Cheng, H, Edwards, R L, Friedrich, M, Grootes, P M, Guilderson, T P, Haflidason, H, Hajdas, I, Hatté, C, Heaton, T J, Hoffman, D L, Hogg, A G,

Hughen, K A, Kaiser, K F, Kromer, B, Manning, S W, Niu, M, Reimer, R W, Richards, D A, Scott, E M, Southon, J R, Staff, R A, Turney, C S M, van der Plicht, J, 2013 IntCal13 and Marine13 radiocarbon age calibration curves, 0-50,000 years cal BP. *Radiocarbon* **55(4)**, 1869-1887

Schweingruber, F H, 1990 *Microscopic wood anatomy*. Birmensdorf Solmek 2013 *Borehole Logs, Beaumont Street car park*. Unpublished report Spengler, R N III, 2018 Dung burning in the archaeobotanical record of West Asia:

where are we now? *Veget Hist Archaeobot* https://doi.org/10.1007/s00334-018-0669-8

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

Van der Veen, M, 1989 Charred grain assemblages from Roman-period corn driers in Britain. *Archaeol J* **146**, 302-319

Wrathmell, S, 1987 The Pottery, in G A B Young *Excavations at Southgate, Hartlepool*, Cleveland 1981-82, Durham Archaeological Journal **3**, 15-55.

Wrathmell, S, 1990 Pottery, in R Daniels *The development of Medieval Hartlepool:* excavations at Church Close, 1984-85, Archaeological Journal **147**, 376-410.

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, B bone, M metals, O other materials.

		ner materials.	_			
No	Feature	Description	Р	В	M	0
1		Tarmac				
2		Dolomite				
3	_	Modern made ground				
4	F5	Pit fill		•		
F5		Pit cut				
6	F7	Pit fill	•			
F7		Pit cut				
8	F7	Pit fill				
9	F10	Ditch fill		•		
F10		Ditch cut				
11		Medieval soil				
12		Natural sand and gravel				
13	F16	Pit fill				
14	F16	Pit fill				
15	F16	Pit fill				
F16		Pit recut				
17	F16	Pit fill				
18	F31	Pit fill	•	•		
F19		Pit cut				
20	F29	Pit fill		•		
F21		Pit cut				
22	F24	Pit fill				
23	F24	Pit fill				
F24		Pit cut				
25	F29	Pit fill				
26	F29	Pit fill				
27	F29	Pit fill	•	•	•	
28	F29	Pit fill				
F29		Pit recut				
30	F21	Pit fill				
F31		Pit recut				
32	F19	Pit fill				
33	F31	Pit fill				
34	F19	Pit fill				
35	F36	Ditch fill				
F36	. 50	Ditch recut				
37	F38	Pit fill				•
F38	, 50	Pit cut				
39	F40	Posthole fill				
F40	1 70	Posthole cut				
41	F42	Ditch fill	-			
F42	174	Ditch cut				
43	F44	Pit fill		•		
F44	1 -1-4	Pit cut	<u> </u>			
45		void				
45		void				
47	F44	Pit fill				
47	F44 F50	Pit fill				
48	F50	Pit fill				
	FOU					
F50		Pit cut	-			
51		Pit fill		•		
F52	FF 4	Pit cut				
53	F54	Ditch fill				
F54	FFC	Ditch cut	-			
55	F56	Pit/ditch fill				

No	Feature	Description	Р	В	М	0
56		Pit/ditch cut				
57	F59	Pit fill				
58	F59	Pit fill				
59		Pit cut				
60	F54	Ditch fill				
61	F62	Ditch fill				
F62	F54	Recut of ditch F54				
F103	Tr1	Cut of large pit				
104	Tr1	Fill of pit F103	•	•		
F105	Tr1	Cut of small pit				
106	Tr1	Fill of small pit F105				

Table 1.2: Pottery

Context	Туре	No	Wt	ENV	Part	Form	Decoration	Date range	Notes
	Reduced Sandy								
4	ware	1	2	1	BS	Hollow ware	Thin green glaze ext	LC13th – C14th	
4	Tees Valley B	1	0.25	1	Chip	Hollow ware	Clear glaze ext	LC13th - C14th	
6	Tees Valley A	2	76	1	Bifid rim	Jar/CP	Rare spots of splashed glaze ext	E/MC13th - C14th	
9	Tees Valley A	1	7	1	BS	Hollow ware	U/Dec	E/MC13th - C14th	Coarser end of the Tees Valley A spectrum; sooted ext
9	Tees Valley A	1	56	1	Rim & handle	Handled jar/pitcher	U/Dec	E/MC13th - C14th	Coarser end of the Tees Valley A spectrum; heavy sub- square-sectioned rim w/ strap handle
17	Buff Gritty ware	1	4	1	BS	Hollow ware	U/Dec	C12th – C13th	Hard, thin-walled vessel; burnt
18	Tees Valley B	1	4	1	BS	Hollow ware	U/Dec	LC13th - C14th	Sooted ext
18	Tees Valley B \ C	1	7	1	Neck	Jug	Thin buff slip ext	LC13th - C14th	
20	Tees Valley A	1	15	1	BS	Hollow ware	U/Dec	E/MC13th - C14th	
27	Tees Valley A	1	2	1	BS	Hollow ware	Clear/yellow glaze ext	E/MC13th - C14th	
27	Tees Valley B	1	2	1	BS	Hollow ware	Spots of dark glaze ext	LC13th - C14th	
27	Tees Valley B	1	4	1	BS	Hollow ware	Small spots of dark glaze ext	LC13th - C14th	
27	Tees Valley B \ C	1	2	1	BS	Hollow ware	Thin buff slip ext	LC13th - C14th	Bright orange body
43	Tees Valley A	1	90	1	Rim	Jar/CP	Rilled body	E/MC13th - C14th	Elaborate triangular rim w/ groove below rim; heavily sooted ext
	Total	15	271.25	14					

Table 1.3: Fragment counts for the species present

Context	4	18	20	27	43	51
Cattle	1	1		1	5	1
Cattle-size						1
Sheep/goat					1	1
Pig					2	
Horse					10	
Roe deer			1			

Table 1.4: Data from palaeoenvironmental assessment

Sample	1	2	3	4	5	6	7	8	9	10
Context	4	17	9	20	23	27	32	18	41	48
Feature number	5	16	10	29	24	29	31	31	42	50
Feature	Pit	Pit	Gully	Pit	Pit	Pit	Pit	Pit	Ditch	Pit
Charred remains (abundance)										
(a) Agrostemma githago (Corncockle) seed	-	-	-	-	-	-	-	-	-	2
(a) Anthemis cotula (Stinking Chamomile) achene	1	2	-	2	1	2	-	2	-	3
(a) Centaurea cyanus (Cornflower) achene	-	-	-	-	1	-	-	-	-	-
(a) Chrysanthemum segetum (Corn Marigold) achene	3	-	-	-	-	-	-	-	-	-
(a) Fallopia convolvulus (Black-bindweed) nutlet	-	-	-	-	-	1	-	-	-	-
(a) Thlaspi arvense (Field Penny-cress) seed	-	-	-	-	-	-	-	-	-	1
(a) Valerianella dentata (Narrow-fruited Cornsalad) fruit	-	-	-	-	-	-	-	-	-	1
(c) Avena strigosa (Bristle oat) floret base	-	-	-	-	2	-	-	-	-	2
(c) Avena sativa (Common oat) floret base	-	-	-	-	-	1	-	-	-	-
(c) Avena sp (Oat species) floret base	1	2	-	-	-	-	-	1	-	2
(c) Avena sp (Oat species) large grain	4	1	1	3	4	3	-	3	-	3
(c) Avena sp (Oat species) small grain	3	-	-	3	3	4	-	2	-	5
(c) Cannabis sativa (Hemp) seed	-	-	-	-	-	-	-	-	-	1
(c) Cerealia indeterminate twisted awn frag.	2	2	-	-	-	-	-	2	-	2
(c) Cerealia indeterminate culm nodes	1	-	-	-	2	2	-	-	-	1
(c) Cerealia indeterminate grain	-	-	-	2	-	-	1	-	-	-
(c) Hordeum sp (Barley species) grain	3	1	1	3	4	4	1	3	-	3
(c) Hordeum sp (Barley species) rachis frag.	-	-	-	-	2	-	-	-	-	1
(c) Linum usitatissimum (Flax) seed	-	-	-	1	-	-	-	-	-	1
(c) Secale cereale (Rye) grain	2	-	1	1	3	2	-	-	-	-
(c) Secale cereale (Rye) rachis frag.	-	-	-	-	3	2	-	-	-	-
(c) Triticum cf. aestivum (cf. Bread Wheat) grain	3	-	2	2	4	3	1	3	-	3
(c) Triticum aestivum (Bread Wheat) rachis frag.	-	-	-	-	-	2	-	-	-	2
(c) Triticum sp (Wheat species) grain	-	-	-	-	2	-	-	-	-	-
(h) Rumex acetosella (Sheeps Sorrel) nutlet	2	-	-	-	-	-	-	-	-	-
(r) Lamium sp (Dead-nettles) nutlet	-	-	-	-	-	-	-	-	-	1
(r) Lapsana communis (Nipplewort) achene	-	-	-	-	-	-	-	1	-	-
(r) Persicaria maculosa (Redshank) nutlet	1	-	-	-	-	-	-	-	-	2
(r) Plantago lanceolata (Ribwort Plantain) seed	2	1	-	1	1	-	-	-	-	2
(r) Polygonaceae undiff. (Knotweed family) nutlet	-	-	-	-	-	-	-	-	-	2
(r) Polygonum aviculare (Knotgrass) nutlet	2	-	-	-	-	-	-	-	-	
(r) Stellaria media (Common Chickweed) seed	-	-	-	-	1	-	-	-	-	
(t) Corylus avellana (Hazel) nutshell frag.	-	-	-	-	-	1	-	2	-	-
(w) Carex sp (Sedges) biconvex nutlet	-	1	-	-	-	-	-	-	-	2
(w) Carex sp (Sedges) trigonous nutlet	-	-	-	-	-	-	-	-	-	1
(w) Persicaria lapathifolia (Pale Persicaria) nutlet	1	-	-	-	1	2	-	-	-	1
(w) Ranunculus flammula (Lesser Spearwort) achene	-	-	-	-	1	-	-	1	-	-
(x) Apiaceae (Carrot family) fruit	-	-	-	-	-	-	-	-	-	1
(x) Brassicaceae undiff. (Cabbage family) seed	_	-	-	-	-	-	-	1	_	1
(x) Fabaceae undiff. (Pea family) seed	2	-	1	-	2	-	-	-	_	-
(x) Galium sp (Bedstraws) seed	1	-	-	-	1	-	-	-	_	1
(x) Luzula sp (Wood-rushes) seed		-	-	-	1	-	-	-	_	
(x) Poaceae undiff. <2mm (Grass family) caryopsis	3	-	-	-	-	2	1	2	1	
(x) Rumex sp (Docks) nutlet	3	-	-	-	2	-	-	2		2
(x) Vicia sp (Vetches) seed	3	_	-	1	-	3	2	3		2
Identified charcoal (✓ presence)	J	l	1		l					
Alnus glutinosa (Alder)		-	-	-	√	✓	-	-	_	
		_	1		✓		_	_		
Betula sp (Birches)	- ✓	_	√	-	· /	_	_	_		
Corylus avellana (Hazel)	*	_	_	_	_				-	
cf. Fraxinus excelsior (cf. Ash)	-					_			-	-
Maloideae (Hawthorn, apple, whitebeams)	✓	-	-	-		-	_	_	-	-
Salicaceae (Willow, poplar)			0	1	✓					

[a-arable; c-cultivated; h-heathland; r-ruderal; t-tree/shrub; w-wet/damp ground; x-wide niche. Plant remains abundance are scored from 1-5 where 1: 1-2; 2: 3-10; 3: 11-40; 4: 41-200; 5: >200]

Table 1.5: Data from palaeoenvironmental analysis

Sample		1	4	5	6	8	10
Context		4	20	23	27	18	48
Feature number		5	29	24	29	31	50
Feature		Pit	Pit	Pit	Pit	Pit	Pit
Volume processed (I)		15	18	6	7	7	7
Volume of flot (ml)		60	45	280	55	45	160
Volume of flot analysed (ml)		60	45	280	55	45	40
Charred remains (total count)			1				
(a) Agrostemma githago (Corncockle)	seed	-	-	-	-	-	2
(a) Anthemis cotula (Stinking Chamomile)	achene	6	7	2	4	3	27
(a) Chenopodium album (Fat-hen)	seed .	-	3	-	1	-	2
(a) Chrysanthemum segetum (Corn Marigold)	achene	3	-	-	-	-	-
(a) Fallopia convolvulus (Black-bindweed)	nutlet	-	-	-	2	-	4
(a) Lithospermum arvense (Field Gromwell)	seed	2	-	1	-	1	-
(a) Raphanus raphanistrum (Wild Radish)	pod	2	-	1	-	-	1
(a) Thlaspi arvense (Field Penny-cress) (a) Valerianella dentata (Narrow-fruited Cornsalad)	fruit			-	-	_	1
(c) Avena sativa (Common oat)	floret base				4	1	1
(c) Avena strigosa (Bristle oat)	floret base	_		3	1	_	2
(c) Avena sp (Oat species)	floret base	1	_	3	5	_	1
(c) Avena sp (Oat species)	large grain	97	19	86	93	36	114
(c) Avena sp (Out species)	small grain	303	25	38	53	35	144
(c) Cerealia indeterminate	culm nodes	2	-	3	3	-	2
(c) Cerealia indeterminate	grain	142	41	325	362	138	163
	twisted awn frag.	3	5	3	-	4	13
(c) Hordeum sp (Barley species)	grain	26	15	90	127	32	54
(c) Hordeum sp (Barley species)	rachis frag.	-	-	4	4	-	3
(c) Linum usitatissimum (Flax)	seed	-	3	-	2	-	4
(c) Pisum sativum (Pea)	fruit	6	-	-	3	-	-
(c) Secale cereale (Rye)	grain	2	-	5	1	-	1
(c) Secale cereale (Rye)	rachis frag.	-	-	46	4	-	-
(c) Triticum aestivum (Bread Wheat)	rachis frag.	1	-	29	15	-	3
(c) Triticum cf. aestivum (cf. Bread Wheat)	grain	30	9	78	28	83	29
(c) Tritium cf. turgidum / durum (Rivet / Macaroni Wheat)	rachis frag.	-	-	-	2	-	-
(c) Triticum sp (Wheat species)	grain	7	-	20	-	10	20
(r) Galeopsis sp (Hemp-nettles)	nutlet	-	-	-	-	-	2
(r) Galium aparine (Cleavers)	seed	1	-	4	1	1	2
(r) Lamium sp (Dead-nettles)	nutlet	-	-	-	-	-	1
(r) Lapsana communis (Nipplewort)	achene	-	1	-	-	1	3
(r) Persicaria maculosa (Redshank)	nutlet	1	3	-	2	1	3
(r) Plantago lanceolata (Ribwort Plantain)	seed	1	1	2	-	-	14
(r) Polygonum aviculare (Knotgrass)	nutlet	1	-	-	-	1	2
(r) Stellaria media (Common Chickweed)	seed	-	2	1	4	-	-
(t) Corylus avellana (Hazel) (t) Sambucus nigra (Elder)	nutshell frag. fruitstone	1	-	1	3	3	-
(w) Carex sp (Sedges)	biconvex nutlet	1	1	1	-	-	2
(w) Carex sp (Sedges)	trigonous nutlet	2			1		1
(w) Persicaria lapathifolia (Pale Persicaria)	nutlet	1	4	_	2	_	9
(x) Amaranthaceae undiff. (Goosefoot family)	seed	4	19	5	7	_	5
(x) Apiaceae undiff. (Carrot family)	fruit	-	1	_	_	_	-
(x) Asteraceae undiff. (Daisy family)	achene	-		_	_	1	_
(x) Brassicaceae undiff. (Cabbage family)	seed	-	-	-	-	-	1
(x) Centaurea cf. nigra (cf. Common Knapweed)	achene	-	-	-	-	-	-
(x) Fabaceae undiff. (Pea family)	seed	-	-	6	-	1	-
(x) Poaceae undiff. <2mm (Grass family)	caryopsis	3	2	2	4	3	-
(x) Ranunculus subgenus Ranunculus (Buttercup)	achene	-	-	3	1	-	1
(x) Rumex sp (Docks)	nutlet	7	2	11	7	6	4
(x) Vicia sp (Vetches)	seed	46	4	56	8	31	3
Number of charred plant remains / litre of sediment		46.6	9.3	137.9	107.7	56	368
Mineralised remains (total count)		•	*	•	•	•	•
(c) Cannabis sativa (Hemp)	seed	-	-	-	-	-	1
(r) Galeopsis sp (Hemp-nettles)	nutlet	-	-	-	-	-	1
(x) Amaranthaceae undiff. (Goosefoot family)	seed	-	-	-	-	-	1

^{(+):} trace; +: rare; ++: occasional; +++: common; ++++: abundant (✓) may be unsuitable for dating due to size or species]

Table 1.6: Summary of radiocarbon dating

Laboratory code	Context	Sample	Material	δ ¹³ C ‰	Radiocarbon Age BP	Calibrated date 95.4% probability
SUERC-90362 GU53233	9	3	Charred wheat grain (cf. bread wheat)	-22.0	814 ± 26	1170 (95.4%) 1266 cal AD
SUERC-91107 GU54501	23	5	Charred large oat grain	-24.5	593 ± 24	1300 (70.3%) 1369 cal AD 1381 (25.1%) 1410 cal AD
SUERC-90366 GU53235	27	6	Charred small oat grain	-27.7	652 ± 26	1310 (50.8%) 1361 cal AD 1386 (44.6%) 1425 cal AD
SUERC-90367 GU53236	32	7	Charred hulled barley grain	-23.3	655 ± 26	1281 (44.9%) 1321 cal AD 1349 (50.5%) 1392 cal AD
SUERC-90368 GU53237	18	8	Charred wheat grain (cf. bread wheat)	-23.3	659 ± 26	1279 (47.1%) 1320 cal AD 1351 (48.3%) 1391 cal AD
SUERC-90552 GU53238	48	10	Charred small oat grain	-25.3	1049 ± 25	902 (5.1%) 920 cal AD 963 (90.3%) 1026 cal AD

[The calibrated age ranges are determined using OxCal4.2.4 (Bronk Ramsey 2009); IntCal13 curve (Reimer et al. 2013)]

Appendix 2: Stratigraphic matrix



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Appendix 2: Stratigraphic matrix

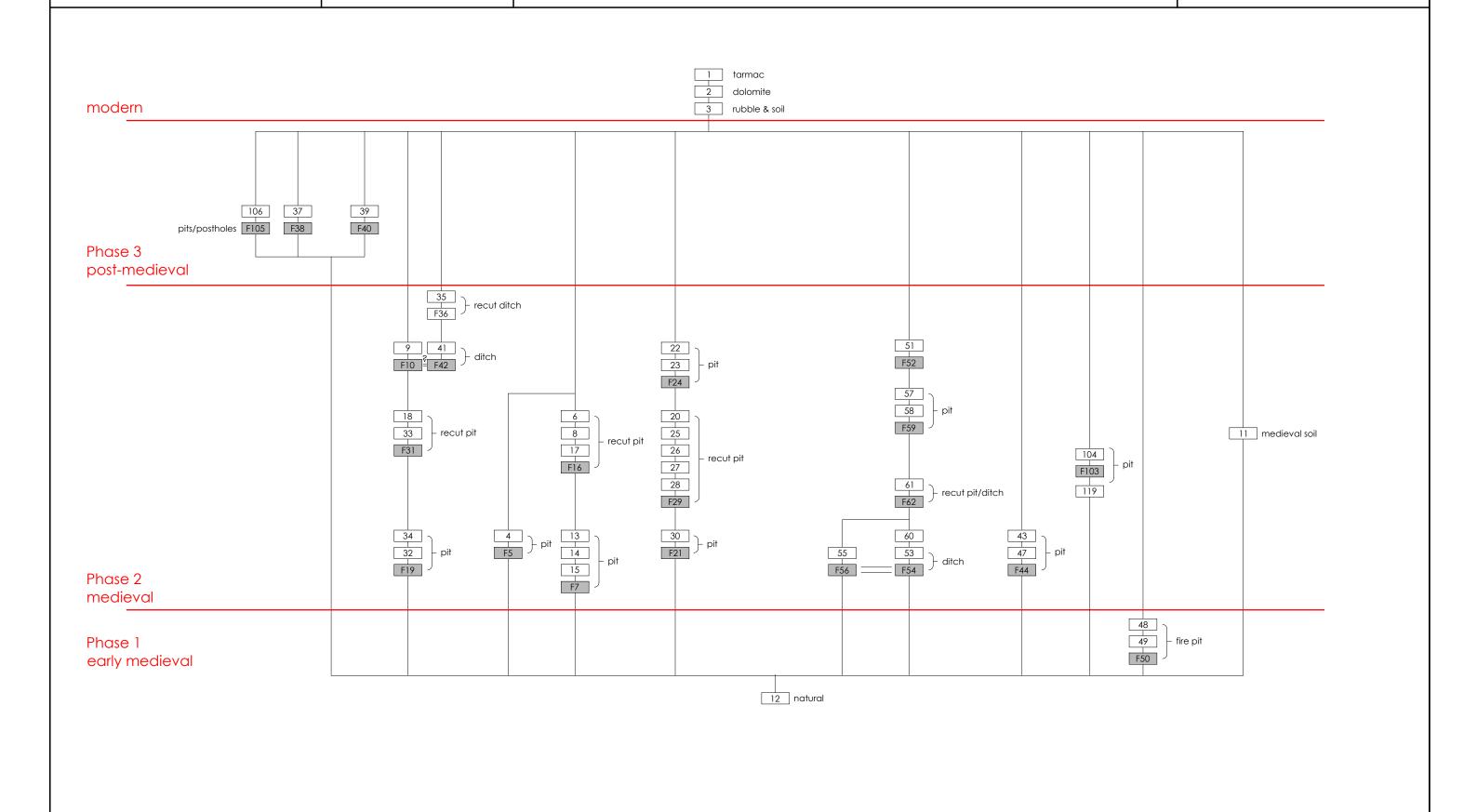




Photo 1: Pit F50, looking north



Photo 2: Pit F7, looking east



Phot 3: Pits F21/F24, looking north



Photo 4: Pit F44, looking north



Photo 5: Pit F103 from the evaluation, looking south-east

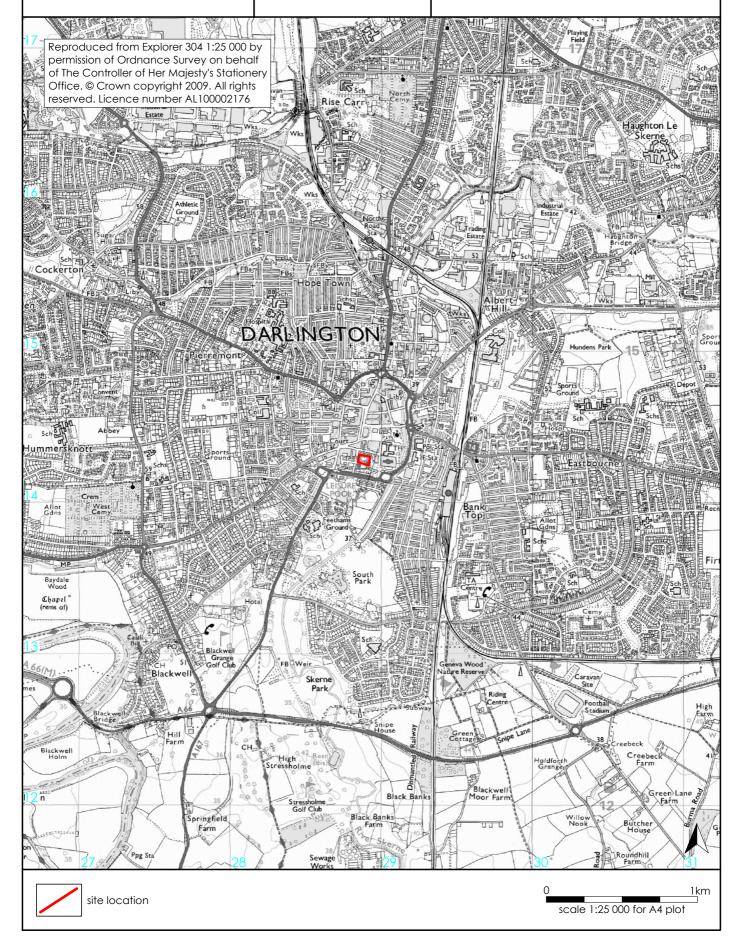


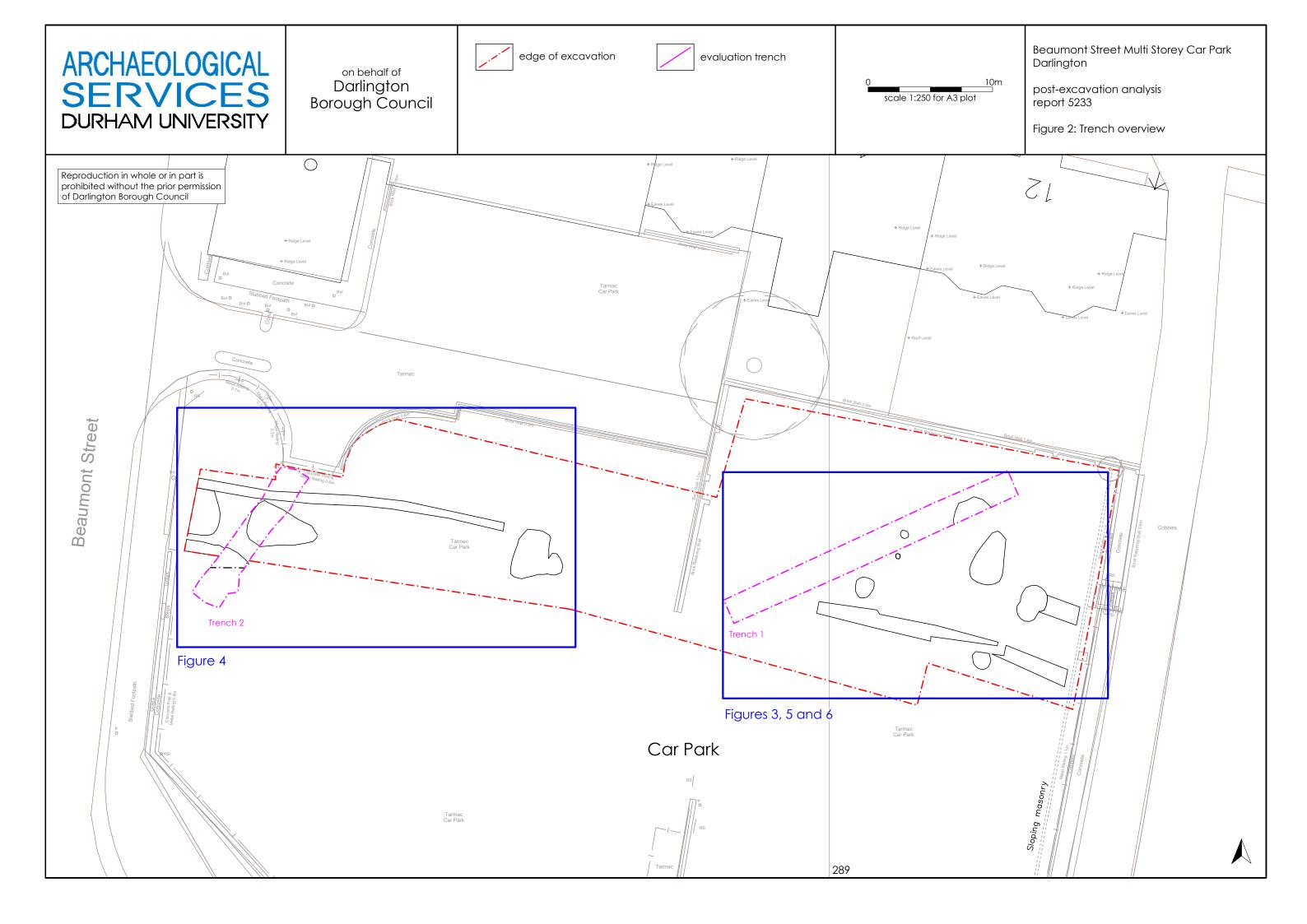
Photo 6: Ditch F10, looking west

on behalf of Darlington Borough Council Beaumont Street Multi Storey Car Park Darlington

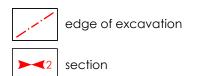
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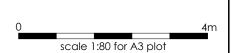
Figure 1: Site location











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Figure 3: Trench (east), phase 1 Reproduction in whole or in part is prohibited without the prior permission of Darlington Borough Council Brick Retaining Wall 0.6m Concrete RS Stp



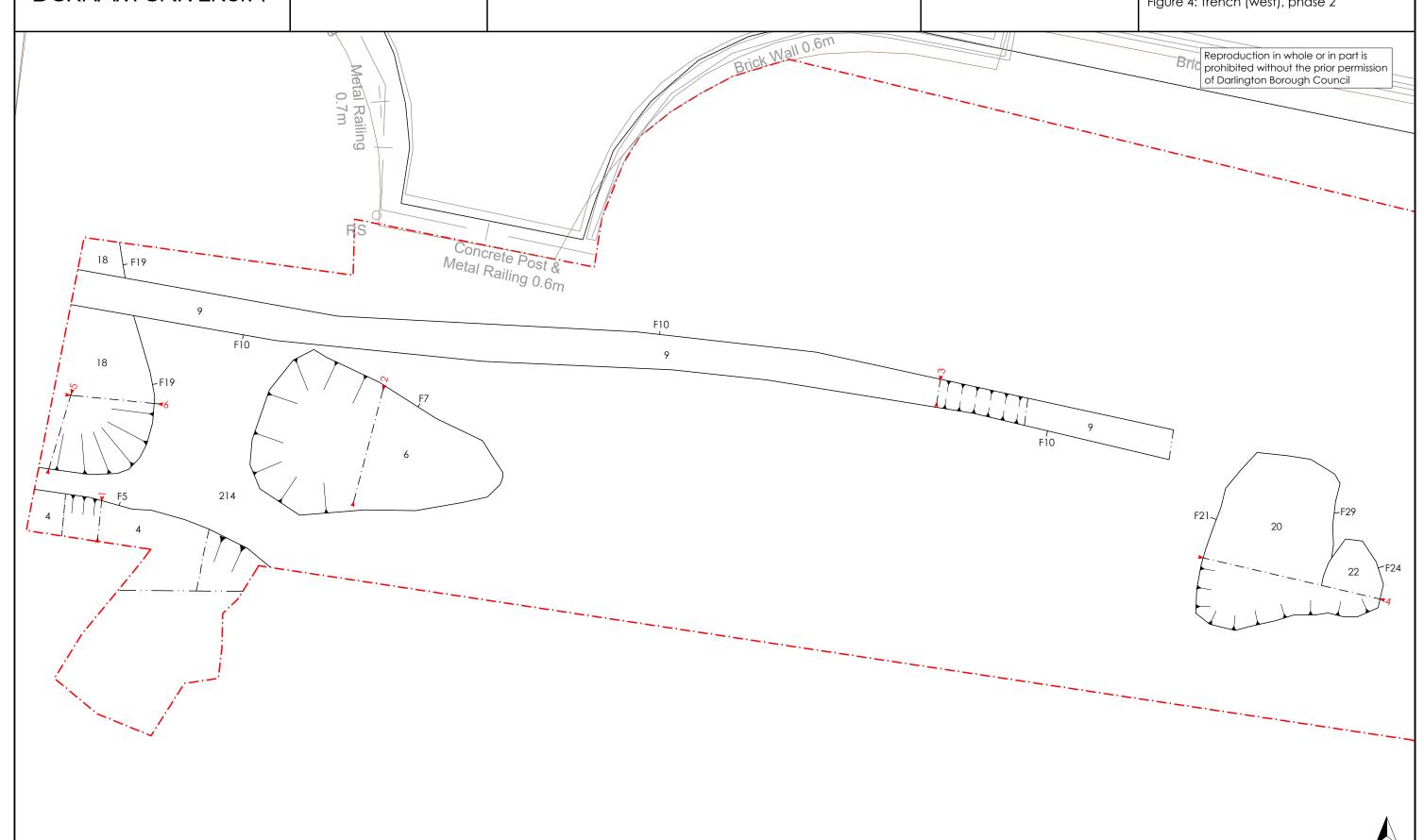
edge of excavation section

scale 1:80 for A3 plot

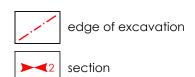
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Figure 4: Trench (west), phase 2





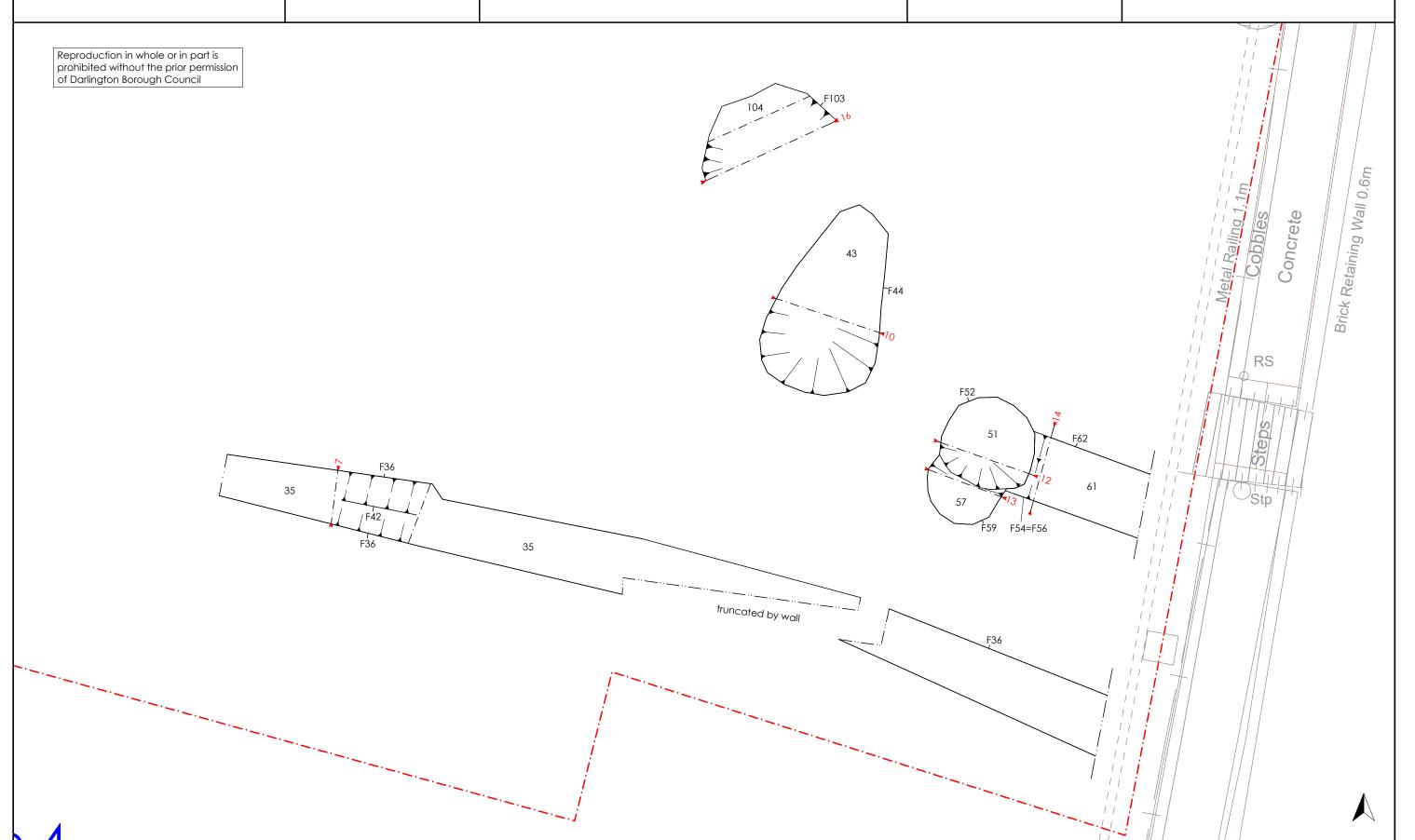




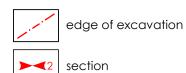
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Figure 5: Trench (east), phase 2







0 4m scale 1:80 for A3 plot Beaumont Street Multi Storey Car Park Darlington

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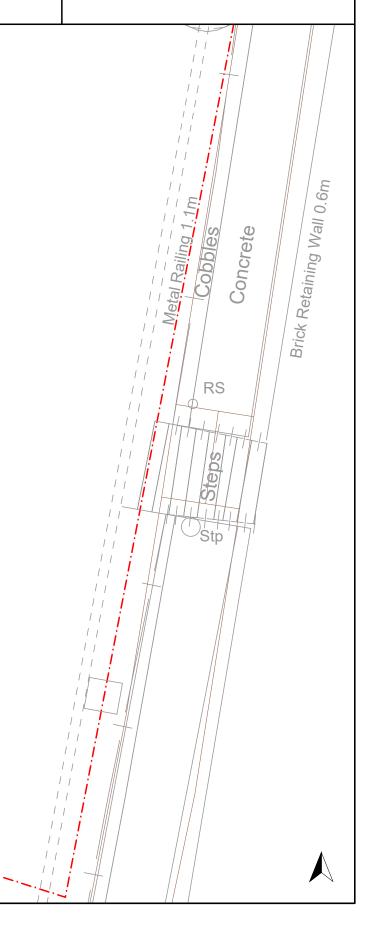
Figure 6: Trench (east), phase 3

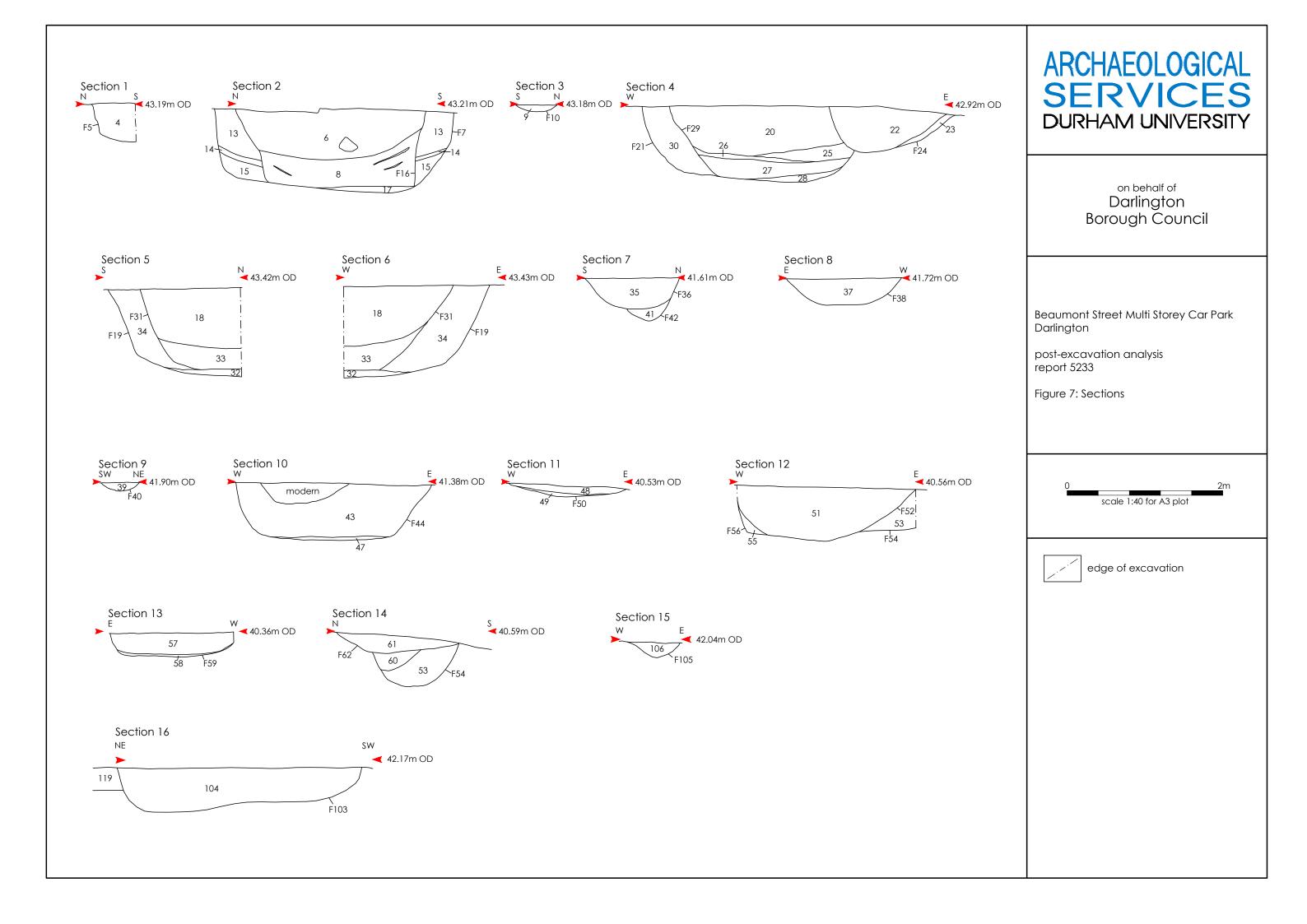
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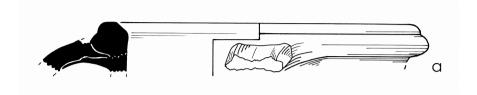


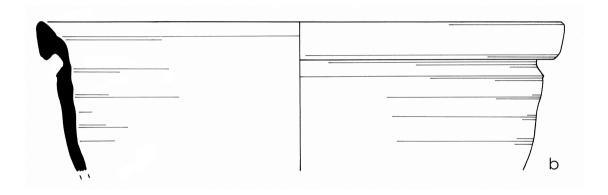












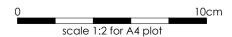
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Figure 8: Pot illustrations:

a - rim of a jar or wide-mouthed pitcher [9]

b - rim of a cooking pot [43]





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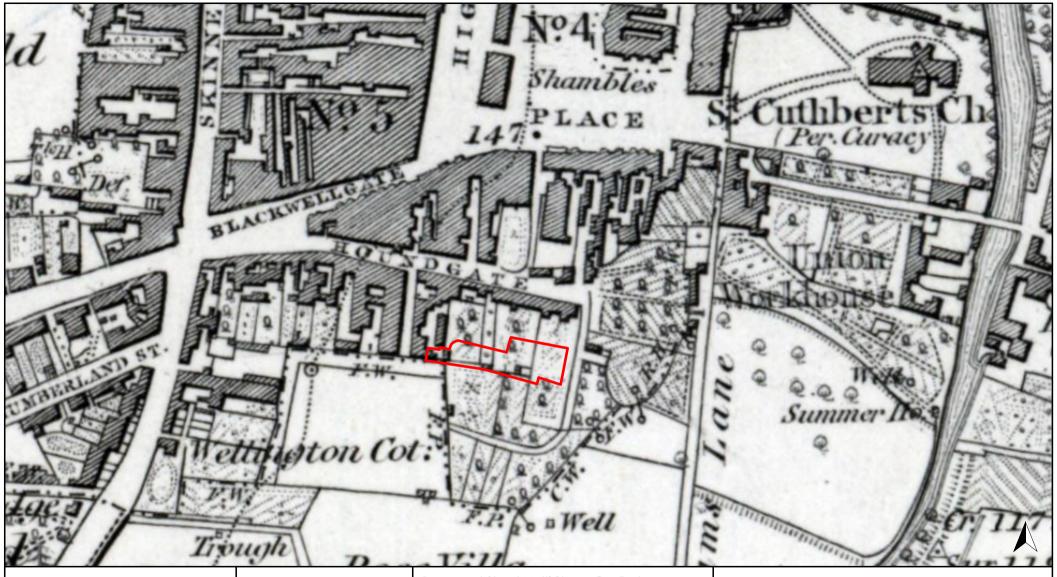
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Figure 9: Extract from John Woods map of Darlington, 1826



site location

0 50m scale 1:1250 for A4 plot



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Figure 10: Extract from the 1st edition Ordnance Survey map, 1855



site location

0 50m scale 1:1250 for A4 plot