Lanton Quarry, Northumberland

Phase 3 Archaeological Excavation

Grooved Ware vessel discovered in a midden pit

ARS Ltd Report No. 2010/69
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Report on an Archaeological Excavation

ARS Ltd Report 2010/69

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Archaeological Research Services Ltd

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Executive Summary

A third phase of archaeological excavation was conducted by Archaeological Research Services Ltd on an area totaling 1ha at Lanton Quarry, Milfield, Northumberland on behalf of Tarmac Ltd. The investigation took the form of a strip, map and sample, in which the topsoil was mechanically removed under archaeological supervision before a complete plan of archaeological features was made. A sampling strategy was then agreed and excavations were undertaken.

Archaeological remains were excavated dating from a number of different prehistoric periods including:

- *Neolithic 'midden pits' that contained Grooved Ware ceramics, including a semi-complete Grooved Ware vessel. This is the most complete vessel of this tradition to have been found in Northumberland*
- *Two hearth-pits also of likely Neolithic date*
- *Twenty-nine other isolated pits*

Analysis of the botanical macrofossils obtained through flotation has shown the presence of emmer wheat, hazelnut shells and other gathered wild resources in the Neolithic contexts, indicating a potential mix of agriculture and exploitation of natural resources. The picture of the Neolithic environment described by the botanical macrofossils is of cleared areas within a mixed deciduous woodland containing a variety of tree species.

Six radiocarbon dates were obtained on material from all three phases of excavation at the quarry. These comprised an early Neolithic date associated with a triangular post-built structure, excavated during Phase 1, two Neolithic dates on the semi-complete Grooved Ware vessel, a Bronze Age date on one of the six-posthole structures which were spatially close to the Bronze Age roundhouses excavated in Phases 1 and 2, and a mid 1st millennium cal AD date on a cereal from one of the buildings within the industrial hamlet excavated during Phase 1. Gaining Neolithic dates on the Grooved Ware vessel and the triangular structure is important as such dates are still rare and these therefore add very significant information to our understanding of Neolithic settlement and material culture. The date on the Anglo-Saxon building is of interest, particularly if its confirmed by additional dating, as this shows evidence of pioneer Anglo-Saxon settlement in the area.

The archaeological features and ceramic finds from the site add important new information to the wider story of prehistory in the Milfield Basin and also the wider region. A full discussion of their wider significance will be produced as part of the final site narrative.

1 Introduction

1.1 This report describes an archaeological strip, map and sample investigation undertaken at Lanton Quarry, Northumberland in 2010 by Archaeological Research Services Ltd on behalf of Tarmac Ltd. In May 2010 an area totaling 1 hectare was stripped of topsoil which revealed significant archaeological deposits. Excavation was undertaken between May and June 2010.

2 Location, Land Use and Geology

2.1 The Lanton Quarry site lies in the Milfield Basin north-east of the Cheviot Hills and is approximately three km north of Wooler (see Fig 1).

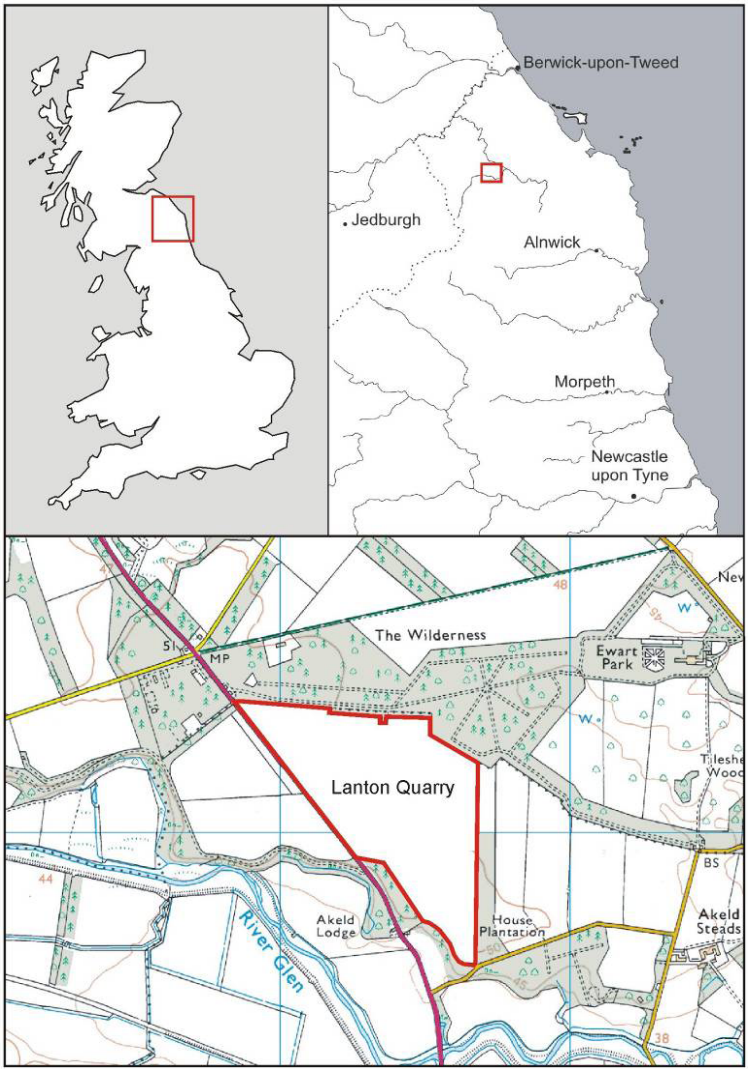


Figure 1: Site location

2.2 The Milfield plain is an area of low-lying ground which contains a complex sedimentary sequence, with glaciodeltaic and glaciofluvial sand and gravel deposits fanning out from the valley of the River Glen to form a series of terraces (Passmore *et al.* 2002). Inset below the gravel terraces is the in-filled glacial lake, Lake Ewart,

which forms an extensive alluvial floodplain. Eight hundred metres to the north-east of the site lies the present channel of the River Till, and beyond that the land rises to the Fell Sandstone escarpment that borders the basin on its eastern side. Three kilometres to the south, the igneous rocks of the Cheviot Hills rise abruptly from the plain above the River Glen, where the summits of Humbleton Hill, Harehope Hill and the double peak of Yeavering Bell form prominent landmarks. To the west, the northern foothills of the Cheviots run parallel to the Fell Sandstone ridge, leaving only a 2 km wide corridor at the northern end of the plain through which the River Till meanders. The archaeology of Lanton Quarry was situated on a terrace of glaciofluvial sand and gravel deposits, situated for the most part at *c.*45 m OD and covered by a ploughsoil of argillic brown earth origin (Payton 1992).

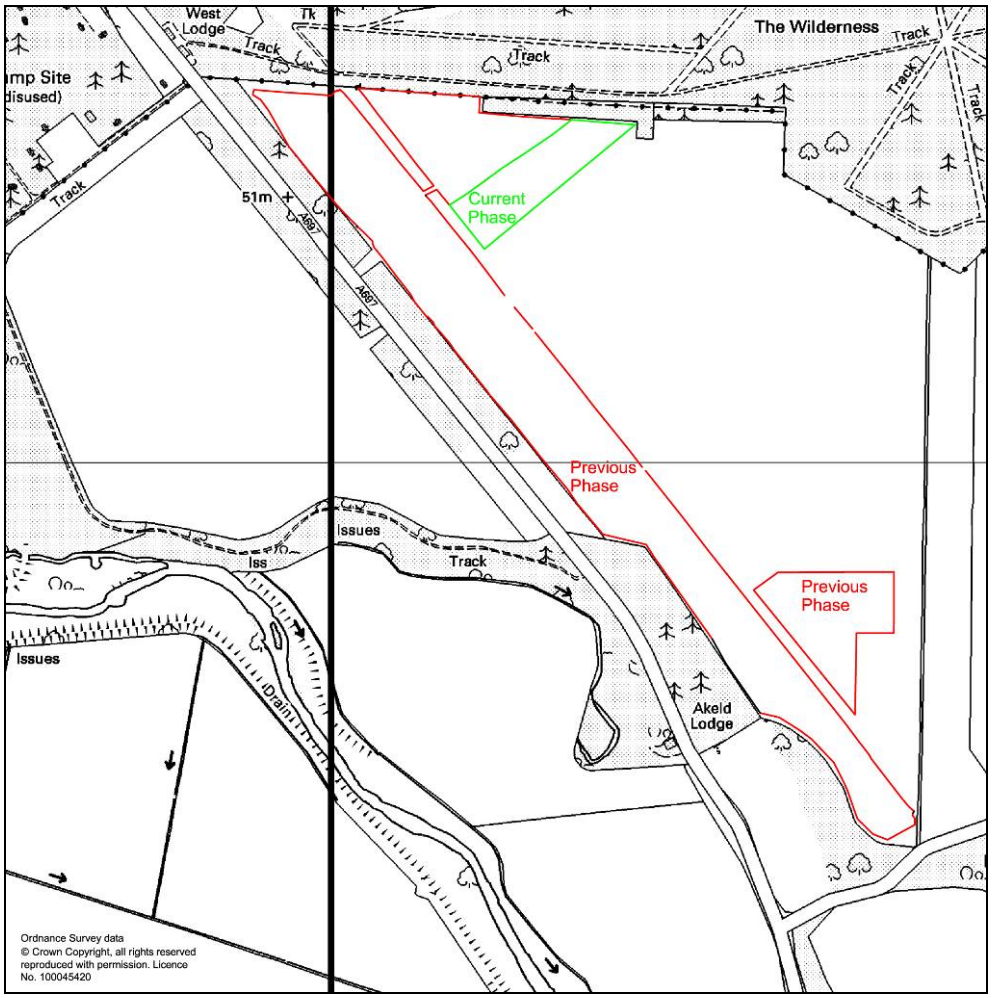


Fig. 2: Site plan showing locations of Phase 1, Phase 2 and current Phase 3 excavation areas.

3. Archaeological and Historical Background

3.1 Numerous and extensive archaeological remains are known from the vicinity of the quarry site, dating from all periods with important remains from the Mesolithic, Neolithic, Bronze Age and Anglo-Saxon periods.

3.2 The Phase 1 excavations at Lanton quarry, which took place between August and December 2006, uncovered multi-period remains. These remains included evidence for Neolithic settlement including four trapezoidal structures, three triangular

structures and associated hearths and pits; one Bronze Age roundhouse probably in association with two rectangular structures; one possible Iron Age roundhouse with large associated pits, and a concentration of Early Medieval settlement evidence along the southern half of the excavated area including two rectangular and two square post-built buildings, six sunken feature buildings and associated pits and postholes.

3.3 The Phase 2 excavations took place between December 2008 and February 2009. Multi-period remains uncovered during the excavation included, Early Neolithic 'midden pits' that contained Carinated Bowl ceramics, a probable Bronze Age circular post-built house similar in form to others found during a previous phase of work at this site and on the nearby Cheviot Quarry site, three probable Bronze Age rectangular and triangular post-built structures similar in form to others found during a previous phase of work at this site, three irregular post-built structures of uncertain date, similar in form to probable Early Neolithic structures found during previous work on this site, and a late Iron Age burial within a corbelled stone cist. A second nearby feature was probably also an Iron Age burial cist but this had been more deeply truncated by ploughing and so no remains were found in the base of this feature.

4. Method Statement

2.3 The excavation was carried out between May and June 2010 by stripping back the topsoil in spits with a 360° tracked excavator equipped with a toothless ditching bucket, exposing the underlying sand and gravel deposits into which archaeological features were cut. The entire process was monitored by suitably experienced archaeologists. As the machine stripped the ground, features were cleaned with a hoe and trowel, recorded in plan and photographed before being marked with wooden pegs and ascribed context and feature numbers.

2.4 Each of the features identified during the stripping process was subject to excavation and recording. This involved the sectioning of deposits to determine their form and dimensions, and the collection of artefacts and samples suitable for radiocarbon dating and environmental analysis. All excavation was undertaken with trowels and small tools. The content of all deposits were sieved through a 10mm mesh and deposits containing artefacts, or with potential for containing organic material, were subject to flotation through a 500μm sieve. All features were photographed using colour slide and black and white print film, and selective digital photographs were taken. All sections were drawn at 1:10 and features planned at 1:20. The section lines were surveyed to provide an Ordnance Survey datum for each feature.

2.5 All the deposits and cuts were described in the field on pro-forma context sheets. The sheets contain prompts for the recording of sediment composition, compaction and colour, the dimensions of the deposit, its relationship to other deposits and features, artefact content, environmental samples, drawing and photographic records and an interpretative discussion to ensure consistency across all records. All features were described in accordance with MoLAS conventions. Drawings were produced on drawing film and on graph paper on the reverse side of the context sheets. Registers of all contexts, samples, finds, levels, and drawings were also made. Artefacts were bagged individually and assigned an individual finds number, with the site code and the deposit from which they were recovered clearly indicated. Ceramic

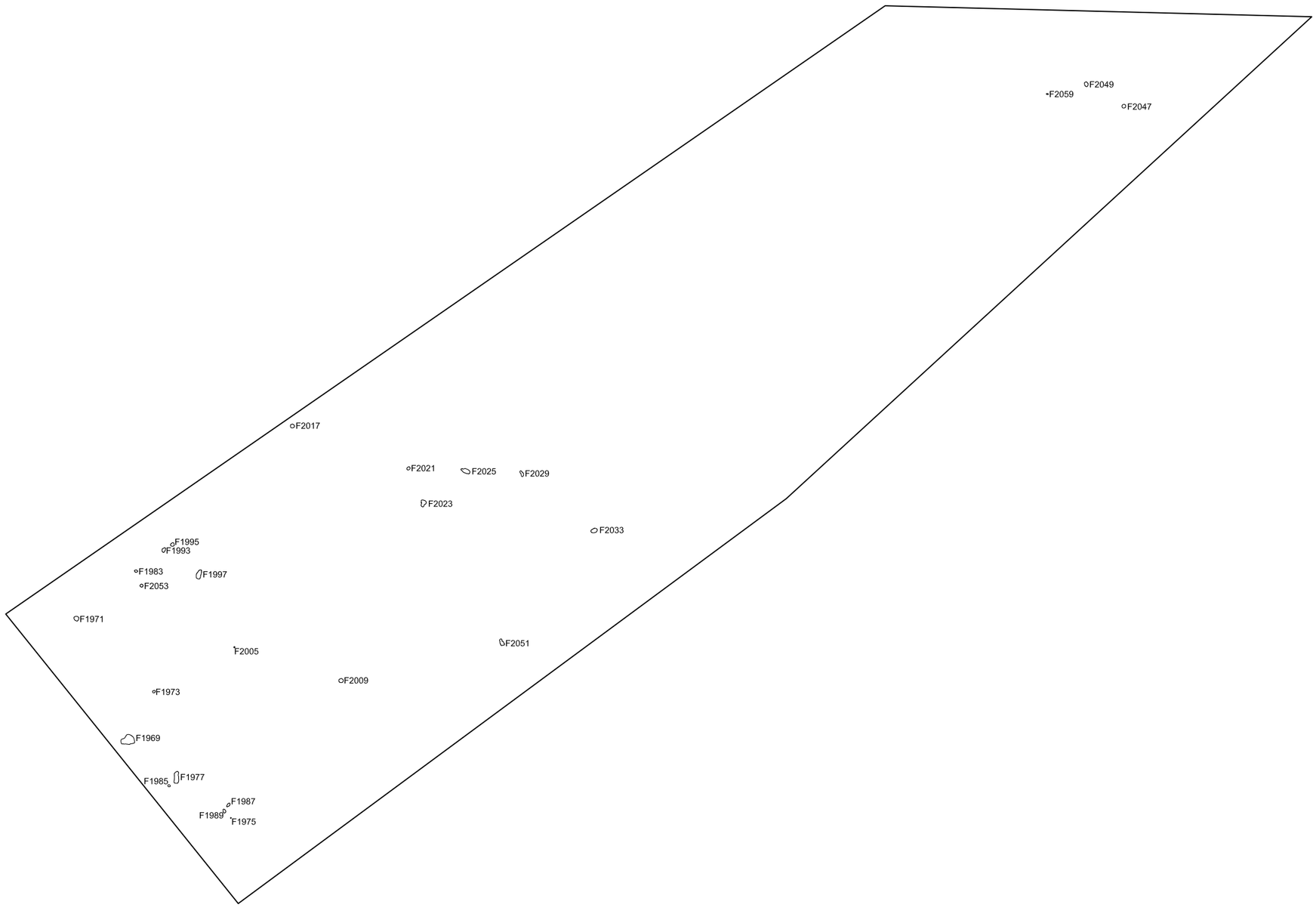
finds were bubble-wrap before being placed in labelled bags or boxes as appropriate. Any single entity charred material samples suitable for radiocarbon dating were wrapped in aluminium foil before being placed in labelled bags.

2.6 Flotation of sediments to recover organic materials was undertaken on site. The fill of every feature associated with a building, or which contained material culture or was organic-rich were dry-sieved through a 10mm mesh, and then passed through flotation to maximise recovery of small finds and organic material. The sediments were passed through four mesh sieves from 5mm down to the smallest which measured 500μm. Material from the sieve was air dried and then placed in a sealed bag marked with its context and environmental sample number. All the dating and environmental samples were recorded in a separate register.

Title:

Figure 3: Site plan showing Phase 3 excavation area and features

Key:



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5. Results

5.1 This section describes the results of the excavation. In summary the features discovered on site were:

- Twenty-nine pits of varying sizes, some of which contained burnt material but no evidence of *in-situ* burning.
- Two hearth pits showing evidence of *in-situ* burning.
- Two pits containing fragments of Neolithic Grooved Ware pottery.

5.2 All features on the site were truncated as a result of past agricultural practices. No archaeological features survived within the topsoil, only those features that were cut into the natural glaciofluvial gravel deposits remained. The features and deposits are discussed individually, but arranged under headings according to their period, association with other features and their type.

Topsoil. The topsoil (001) at Lanton Quarry consisted of a dark-brown sandy soil containing coarse to medium gravel inclusions and was loosely compacted.

Glaciofluvial Deposits. The soils of the Milfield Basin are underlain by thick glaciofluvial deposits from the Devensian glacial episode. A mixed deposit of gravel and coarse sand (002) was evident across the area, interspersed by bands of finer, fluvially deposited sand.

6. Stratigraphic Report

6.1 Truncation of features across much of the site was very severe and was particularly noticeable in the west. Due to this many features had a very shallow depth and may have originally been considerably deeper.

6.2 *Pits containing pottery*

6.2.1 F1971 was a small circular pit, rich with charcoal and charred hazelnut shells. A total of six flakes of flint and chert were discovered as well as a tiny sherd from a possible Grooved Ware vessel. No botanical macrofossils, other than the charred hazelnut shells, were noted within the assessment of the flot sample from this feature.

6.2.2 F2017 was an archaeologically rich pit. The pit contained remnants of hearth material (charcoal, burnt hazelnut shells) placed into it, although there was no evidence of *in-situ* burning. A semi-complete Grooved Ware vessel was found at the base of the pit, along with a single sherd from a second Grooved Ware vessel and several small sherds from a third, finely decorated vessel. Radiocarbon dating was undertaken on a single piece of charred hazelnut and on residue from the semi-complete Grooved Ware vessel. These gave radiocarbon dates of 2880 – 2610 cal BC (4140±30 BP; SUERC-31568) and 2880 – 2620 cal BC (4150±30 BP; SUERC-31569). Assessment of the botanical macrofossils showed harvesting of wild resources including hazelnuts and apple pips, as well as weed seeds from hemp-nettle, dock and cleaver.

Feature No.	Context Numbers	Description	Max. dimensions (mm)	Max. Depth (mm)	Colour of Fill	Composition
F1971	1971, 1972	Small pit containing burnt material	750 x 850	150	Dark brown/ black 7.5yr 3/1	Sandy silt
F2017	2017, 2018	Pit	620 x 630	100	Dark brown	Sandy silt

Table 1: Pits containing pottery

Figure 4. Pit (1971), looking south. Scale = 0.25m

Figure 5. Pit (2017), looking south west. Scale = 0.25m

6.3 *Hearth-pits*

6.3.1 The two hearth-pits (F2047, F2049), discovered at the eastern side of the excavated area had both been severely truncated due to ploughing. They were rich with charcoal and burnt material with clear signs of *in-situ* burning shown by fire-reddened gravel at their base. No material culture was recovered from either of these features. Charred heather twigs were noted in hearth-pit F2049 and over 150 emmer wheat grains, along with a hawthorn fruitstone, were observed in the flot sample from hearth-pit F2047.

Feature No.	**Context Numbers**	**Description**	**Max. dimensions (mm)**	**Max. Depth (mm)**	**Colour of Fill**	**Composition**
F2047	2047, 2048	Hearth pit	600 x 580	170	Black 10yr 2/1	Sandy silt
F2049	2049, 2050	Hearth pit	800 x 580	120	Black 10yr 2/1	Sandy silt

Table 2: Hearth pits

Figure 6. Hearth pit (2047), looking south. Scale = 0.25m

Figure 7. Hearth pit, (2049), looking south. Scale = 0.25m

6.4 *Isolated Pits*

6.4.1 Across the site there were a total of twenty-nine isolated pits, none of which appeared to be associated with any form of structure. The pits varied considerably in size and only four were a regular sub-circular shape, with most of the features being irregular in plan and profile. Some pits indicated burning activity, but none had evidence of *in-situ* burning. They are presented in table 3.

Feature No.	Context Numbers	Description	Max. dimensions (mm)	Max. Depth (mm)	Colour of Fill	Composition
F1969	1969, 1970, 2061, 2062	Very large pit	2000 x1500	500	Black 10yr 2/1	Silty sand
F1973	1973, 1974	Small pit containing burnt material	430 x 390	110	Very dark black/ brown 7.5yr 2.5/2	Sandy silt
F1975	1975, 1976	Small pit	170 x 170	70	Dark brown/ black/ grey 5yr 3/1	Sandy silt
F1977	1977, 1978	Large pit	1900 x 600	240	Dark orange/brown 10yr 3/6	Sandy silt
F1983	1983, 1984	Small pit	450 x 380	170	Grey orange 7.5yr 4/2	Sandy silt
F1985	1985, 1986	Small pit containing burnt material	430 x 380	120	Dark brown/black 10yr 2/1	Sand silt
F1987	1987, 1988	Pit	360 x 720	90	Dark brown 7.5yr 4/2	Silty sand
F1989	1989, 1990	Pit	600 x 460	110	Dark brown 7.5yr 4/2	Sandy silt

F1993	1993, 1994	Pit	400 x 720	110	Pale grey 10yr 2/2	Sandy silt
F1995	1995, 1996	Large pit	1130 x 500	250	Dark brown 7.5yr 3/1	Sandy silt
F1997	1997, 1998	Pit	600 x 600	200	Light brown 7.5yr 3/1	Silty sand
F2009	2009, 2010	Pit	500 x 200	200	Dark brown 7.5yr 3/2	Sandy silt
F2021	2021, 2022	Pit	550 x 470	260	Dark grey/ yellow 10yr 2/1	Silty sand
F2023	2023, 2024	Large pit	1000 x 900	180	Grey/ brown 7.5yr 4/1	Silty sand
F2025	2025, 2026	Large pit	1600 x 600	360	Pale brown/ orange 7.5yr 3/2	Sandy silt
F2029	2029, 2030	Pit	950 x 300	140	Dark brown/ orange 10yr 3/3	Sandy silt
F2031	2031, 2032	Large pit	1200 x 600	380	Light grey brown 7.5yr 4/1	Silty sand
F2033	2033, 2034	Large pit	1000 x 560	150	Dark brown/ black 10yr 2/1	Sandy silt
F2035	2035, 2036	Pit	1300 x 600	270	Grey/ brown	Sandy silt
F2037	2037, 2038	Pit	500 x 780	90	Brown/ orange 10yr 3/3	Sandy silt
F2039	2039, 2040	Pit	630 x 600	170	Grey/ brown 10yr 3/3	Silty sand
F2041	2041, 2042	Pit	170 x 170	40	Grey/ brown/ orange 10yr 3/3	Sandy silt
F2043	2043, 2044	Pit	390 x 200	180	Orange to brown 10yr 3/3	Sandy silt
F2045	2045, 2046	Pit	190 x 140	70	Brown/ orange 10yr 3/3	Sandy silt
F2051	2051, 2052	Pit	600 x1200	220	Dark yellow/ brown 10yr ¾	Sandy silt
F2053	2053, 2054	Pit	400 x 430	70	Light brown 7.5yr 5/2	Sandy silt
F2055	2055, 2056	Pit	175 x 180	50	Brown/ orange 10yr 3/3	Sandy silt
F2057	2057, 2058	Pit	170 x 175	150	Grey/brown 10yr 3/2	Sandy silt
F2059	2059, 2060	Pit	150 x 150	180	Grey/brown 10yr 3/2	Sandy silt

Table 3: Isolated pits

Figure 8

Plans and Sections of Features

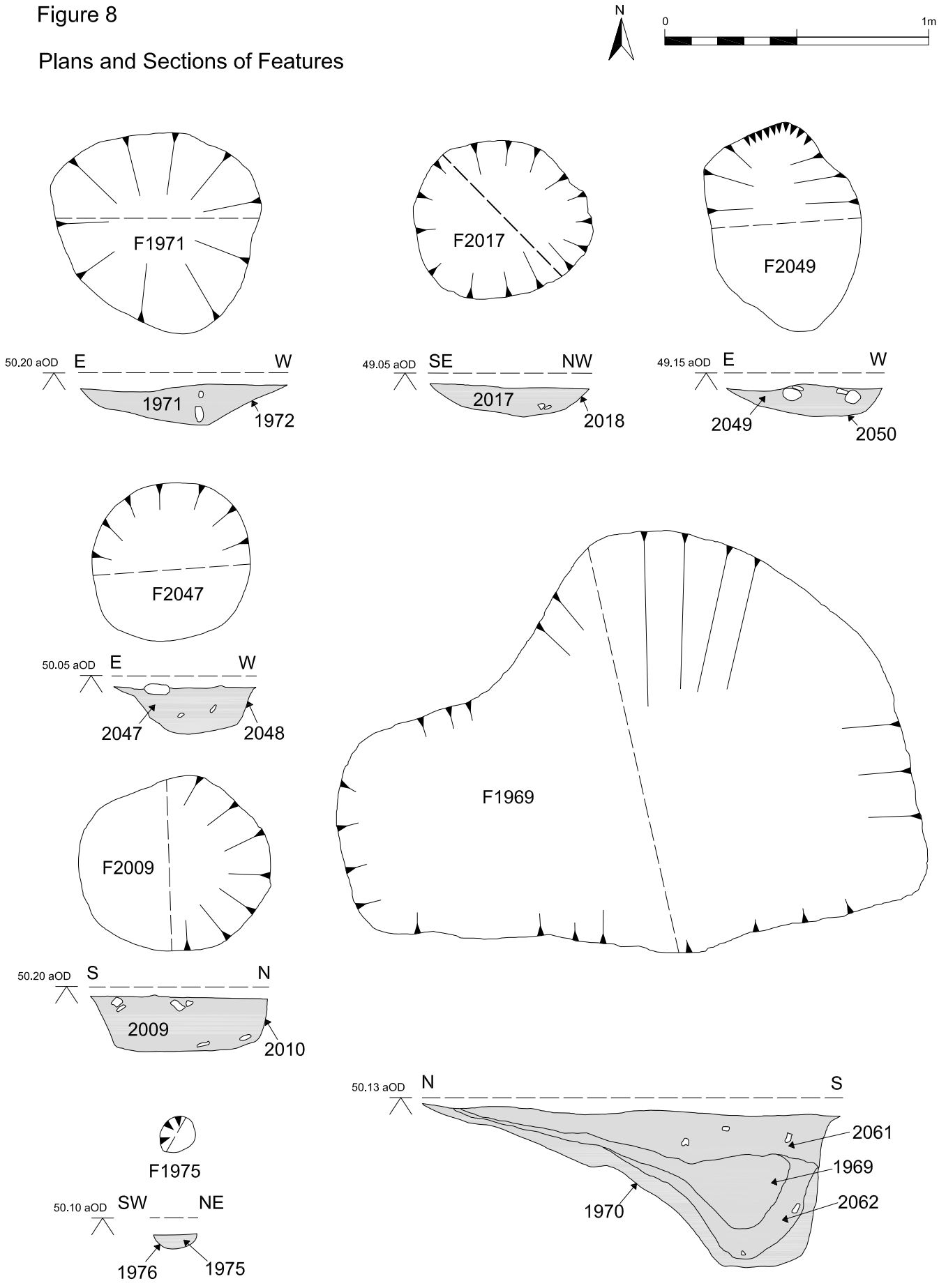


Figure 9

Plans and Sections of Features

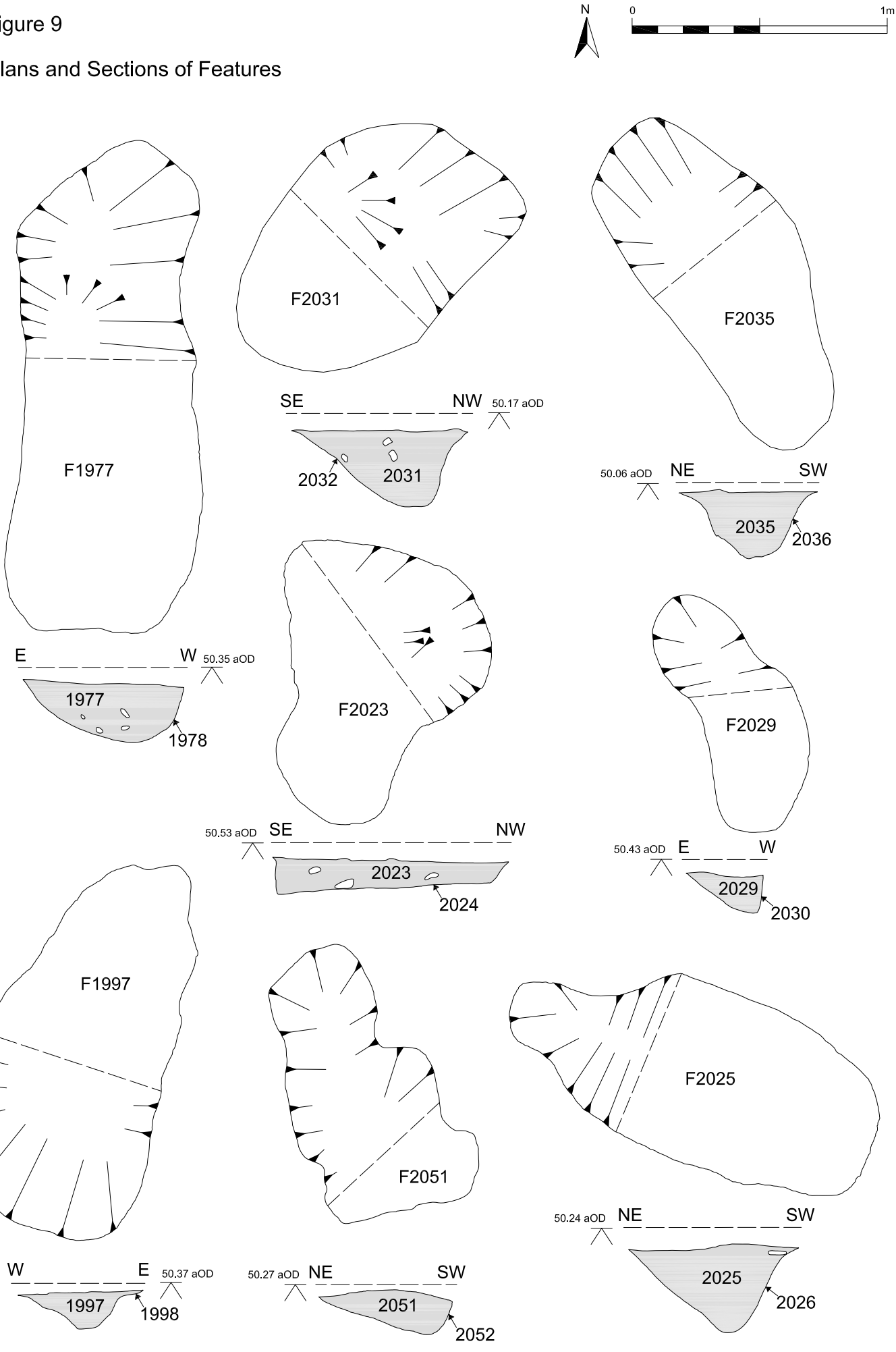
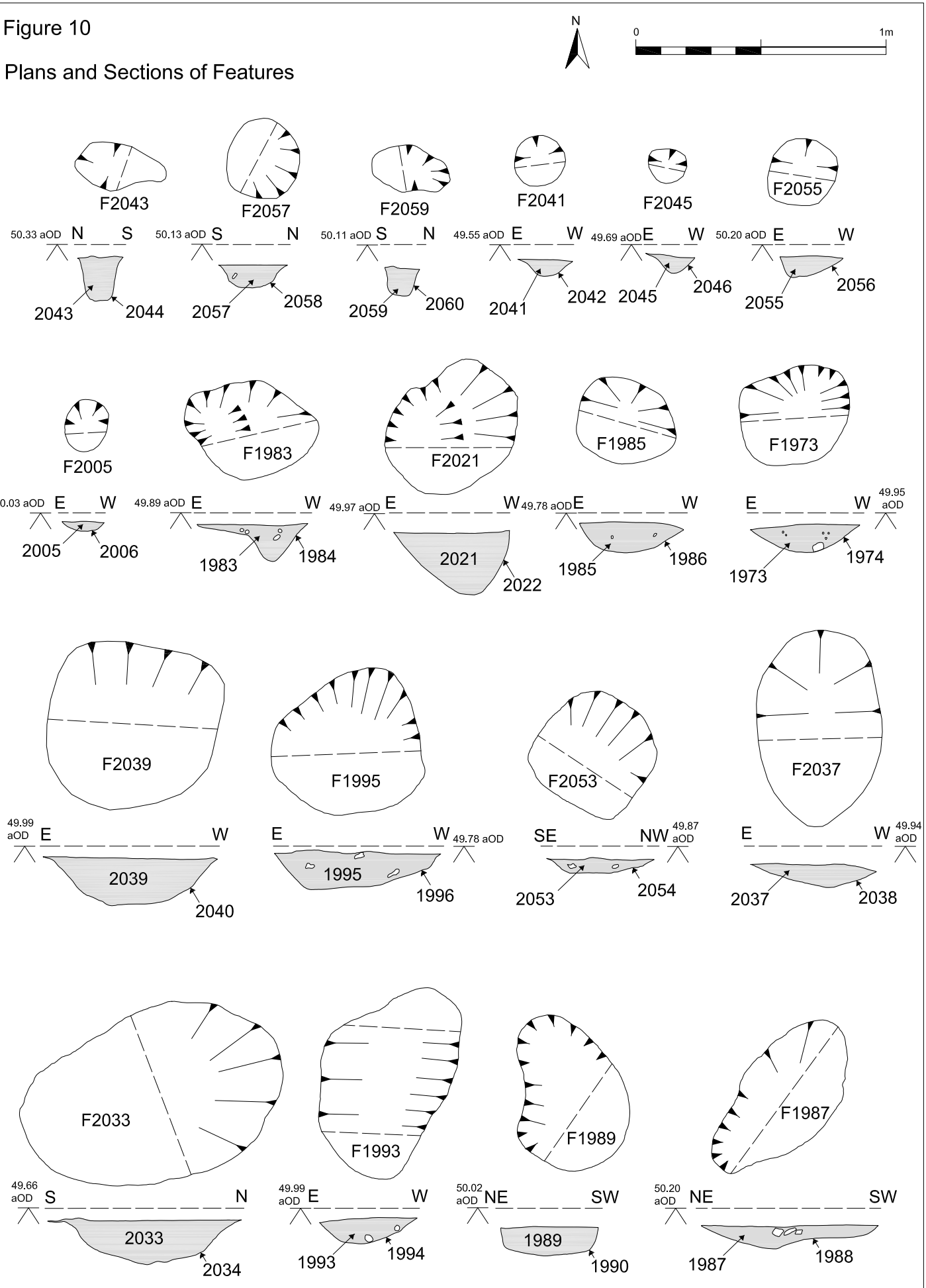


Figure 10

Plans and Sections of Features



7. Radiocarbon Dating

7.1 Six radiocarbon dates were obtained on material from all three phases of excavation at Lanton. These comprised:

- Two dates on a residue from the semi-complete Grooved Ware vessel and a single-entity charred hazelnut shell from F2017, excavated during Phase 3
- A single date on a barley grain from Sunken Floored Building 2, excavated during Phase 1 of the development
- A single date on a piece of short-lived birch charcoal from a six-posthole structure excavated during Phase 2 of the development
- Two dates on an indeterminate cereal grain and a piece of short-lived hazel charcoal from Triangular Post-Built Structure 8, excavated during Phase 1.

Feature	**Context**	**Sample**	**Lab No.**	**RC Age (BP)**	**$\delta^{13}C$ ($^0/_{00}$)**	**Calibrated date range (95.4% confidence)**
Pit with Grooved Ware	2017	Corylus	SUERC-31568	4140±30	-24.7	2880 – 2610 cal BC
Pit with Grooved Ware	2017	Residue on vessel	SUERC-31569	4150±30	-27.0	2880 – 2620 cal BC
Sunken Floored Building 2	017	Barley Grain	SUERC-31573	1500±30	-23.2	cal AD 430 – 640
Six Post-built structure 22	1736	Betula	SUERC-31574	3080±30	-27.8	1420 – 1260 cal BC
Triangular Post built structure 8	1182	Corylus	SUERC-31575	4805±35	-25.5	3660 – 3520 cal BC
Triangular Post built structure 8	1194	Indet. cereal	SUERC-31576	1560±30	-24.1	Cal AD 420 – 570 AD

Table 4. Radiocarbon dating results

7.2 The dates obtained on the pit containing the Grooved Ware vessel gave radiocarbon dates that are consistent with other dates obtained on Grooved Ware vessels in the Milfield Basin, which were in use during the first half of the third millennium cal BC (Johnson and Waddington 2010). The date obtained on the Sunken Floored Building places it just after the landing of the Anglo-Saxons at Bamburgh and the industrial hamlet is therefore considered to be an early development in the Anglo-Saxon colonisation of this part of England. Further radiocarbon dating on the features within the hamlet will help to refine this picture. The date obtained in the six-post structure, all examples of which were found in close association with circular post-built houses dating to the Bronze Age (from the mid-2nd millennium BC to the early 1st millennium BC), shows that these structures are Bronze Age in date. The dates obtained on the triangular structure are not consistent and the early date could be residual, or the later date intrusive, into the context. Given that the material culture associated with this feature comprised Carinated Bowl, a Neolithic ceramic vessel, the mid-1st millennium AD date is considered to by intrusive. Given the extensive Anglo-Saxon archaeology in the immediate vicinity of this feature this is not an unlikely scenario.

8. Plant Macrofossil Analysis, Pollen & Charcoal Assessment

Archaeological Services Durham University

8.1 Summary

The project

8.1.1 This report presents the results of palaeoenvironmental assessment of bulk samples taken during archaeological excavation at Lanton Quarry, Northumberland.

8.1.2 The works were commissioned by Archaeological Research Services Ltd and conducted by Archaeological Services Durham University.

Results

8.1.3 The small assemblages are typical of Neolithic sites in northern England, with the occurrence of wheat and barley grains and charred remains of hazelnuts, haws and crab apples, suggesting both cultivated crops and wild-gathered foods formed an important part of the diet. The importance of oak timber as a resource is indicated throughout the samples. The presence of rhizome/tubers and monocot stems in sample 345 may indicate the use of turves.

Recommendations

8.1.4 In their review of archaeobotanical remains in northern England, Hall & Huntley (2007) state that evidence for plant remains from sites of Neolithic date, has generally been sparse. If the features are securely dated to this period, then plant macrofossil analysis of sample 375 and charcoal analysis of samples 360 and 377 are recommended for full analysis.

8.2 Project background

Location

8.2.1 Bulk palaeoenvironmental samples were taken by Archaeological Research Services Ltd (ARS Ltd) during archaeological works at Lanton Quarry, Northumberland. This report presents the results of palaeoenvironmental assessment of 33 pits (including two hearth pits), of possible Neolithic origin, which were truncated as a result of past agricultural practices. The pits were of varying sizes, some of which indicated burning activity and some of which produced pottery.

Objective

8.2.2 The objective of the palaeoenvironmental assessment was to establish the potential of the samples to provide information about diet, land use and palaeoenvironment of the site, and to select material suitable for radiocarbon dating.

Dates

8.2.3 Samples were received by Archaeological Services Durham University on 28th June 2010. Assessment and report preparation was conducted between 15th and 18th August 2010.

Personnel

8.2.4 Sample processing was undertaken by ARS Ltd. Palaeoenvironmental assessment and C14 preparation was carried out by Lorne Elliott and Charlotte O'Brien, and report preparation was by Lorne Elliott.

Archive

8.2.5 The site code is **LAN10** for **Lan**ton Quarry, Northumberland, 20**10**. The flots, seeds and radiocarbon material have been returned to Archaeological Research Services Ltd, with the exception of three flots recommended for further analysis.

8.3 Methods

8.3.1 The flots were examined at up to x60 magnification for charred and waterlogged botanical remains using a Leica MZ6 stereomicroscope. Identifications were carried out by comparison with modern reference material held in the Environmental Laboratory at Archaeological Services Durham University. Plant nomenclature follows Stace (1997).

8.3.2 Where possible, fragments of charcoal were identified from the contexts. The transverse, radial and tangential sections were examined at up to x600 magnifications using a Leica DM/LM stereomicroscope. Identifications were assisted by the descriptions of Schweingruber (1978) and Hather (2000), and modern reference material held in the Environmental Laboratory at Archaeological Services Durham University. Material recommended for dating was cleaned of adhering roots and other organic material, wrapped in foil and put in labelled bags.

8.4 Results

8.4.1 All of the samples produced some evidence of burning, with the flots comprising varying amounts of charcoal. The charcoal was predominantly oak timber, with this taxon occurring in at least 26 of the samples. Other species recorded in order of abundance included hazel, Maloideae (hawthorn, whitebeams, apple), elm, birch and cherry family (blackthorn, wild and bird cherry). Charred heather twigs were noted in hearth pit sample 360 and pit sample 368.

8.4.2 Charred plant macrofossils were present in nine of the samples assessed, although they were generally few in number. Hearth sample 375 comprised the greatest number of charred remains, with approximately 150 wheat grains. These displayed the morphological characteristics typical of emmer wheat. A charred fruitstone of hawthorn was also recorded in this sample. Pit sample 377 comprised low numbers of charred hazel nutshell fragments, weed seeds of cleavers, dock and hemp-nettle and two apple pips. Hazel nutshell fragments also occurred in samples 350 and 354, hawthorn fruitstones were also present in sample 366, and seeds of cleavers were

also noted in samples 345 and 349. Weed seeds of sedge, vetch and grass were present in sample 361 and low numbers of indeterminate rhizome/tubers and monocot stems occurred in sample 345. A poorly preserved barley grain was present in sample 350 and an indeterminate cereal grain (again due to poor preservation), was present in sample 357.

8.4.3 The well-drained nature of the sediments and the presence of roots and earthworm egg cases, suggest the uncharred seeds (mainly fat-hen, black bindweed, fumitory, knotgrass and ivy-leaved speedwell) are recent introductions. Sclerotia of the soil fungus *Cenococcum geophilum* were present in several of the samples. This is an ectomycorrhizal species which has mutualistic associations with some tree roots, particularly members of the Pinaceae, Betulaceae and Fagaceae (which include oak and hazel), however, as these were not charred, they are probably modern material.

8.4.4 The results are presented in Appendix 1.

8.5 Discussion

8.5.1 The small assemblages are typical of Neolithic sites, giving some indication of the exploitation of both cultivated crops and wild-collected foods (Hall & Huntley 2007). The results suggest that wheat and barley were used, although the low number of charred plant macrofossils and lack of diagnostic chaff prevent firm conclusions from being drawn about the nature of the deposits or crop husbandry practices. The presence of cf. emmer and barley is characteristic of Neolithic sites in the north east of England (Huntley & Stallibrass 1995), and gathered foods such as hazelnuts, haws and crap apples also formed an important part of the diet. The presence of monocot stems and rhizome/tubers in sample 345 may indicate the burning or use of turves. The importance of oak as a fuel or building material is indicated throughout the samples, suggesting an abundance of this resource near to the site. The occurrence of several tree species probably indicates close proximity to mixed woodland.

8.6 Recommendations

8.6.1 In their review of archaeobotanical remains in northern England, Hall & Huntley (2007) state that evidence for plant remains from sites of Neolithic date, has generally been sparse. If the features are securely dated to this period, then plant macrofossil analysis of sample 375 and charcoal analysis of samples 360 and 377 are recommended for full analysis.

9. Lanton Quarry Phase 3 Prehistoric Ceramic Analysis

Clive Waddington

9.1 Introduction

9.1.1 The corpus of ceramic material recovered from the Phase 3 excavation at Lanton Quarry comprises ceramic material from three vessels from the fill of pit [2017] and a single tiny abraded sherd from a fourth vessel from pit [1971]. The material from pit [2017] includes a partial Grooved Ware vessel (1) and several small sherds from a small, finely decorated pot (vessel 2), together with a single sherd and crumbs from a larger, Grooved Ware vessel (3). Vessel 1 comprised 40 sherds, and as many have been able to be joined and glued together, this has allowed for the pot size and shape to be reliably reconstructed. The tiny sherd from pit [1971], vessel 4, has two parallel scratched grooves on its surface suggesting that this fragment could also belong to a Grooved Ware vessel. In total a minimum of four vessels can be identified from this assemblage, based upon consideration of profile, fabric, wall thickness, colour, and depositional context.

9.1.2 Whilst the assemblage is small it compliments the wider assemblage of Neolithic ceramics from the site. However, it is of particular interest as there are few finds of Grooved Ware in North East England and vessel 1 is one of the best-preserved Grooved Ware pots so far found in North-East England, despite it being fragmentary. The vessel has carbonised residue on its internal surface which has been submitted for radiocarbon dating and analysis of the residue (see relevant section in the report). Dating material, in the form of hazelnut shell and charred wood fragments, were also recovered from the fill of pit [2017]. With the discovery of Grooved Ware during the Phase 3 excavation the Lanton Quarry site has now produced ceramic material from all phases of the Neolithic period. The Grooved Ware can be compared with that recovered from the nearby sites of Cheviot Quarry (Johnson and Waddington 2008); the Milfield North Pit (Passmore and Waddington 2009), Ewart Pit Alignment (Miket 1981) and that from Yeavering (Ferrel 19990), and the possible Grooved Ware material from Thirlings (Miket *et al.* 2008). This assemblage from Lanton Quarry, and the associated radiocarbon dates, form a significant addition to our knowledge of the Neolithic pottery sequence in the region.

9.2 Method Statement

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

9.2.2 Grooved Ware Catalogue

No	Context	Description
V1	2017	Vessel 1 had collapsed *in situ* although not all the sherds have survived. A total of 40 sherds from this vessel can be identified although not all could be joined. The vessel was partially reconstructed allowing its size and form to be determined. It is flat based and the body flares towards the rim forming an open jar. The fabric is crumbly, though well-fired with brown-buff surfaces and a brown core. The fabric averages 5.5mm thick and contains crushed stone inclusions 1-3mm across, but interestingly it includes grog, some of which can be 4mm across. Voids visible on the surfaces of the ceramic indicate where organic inclusions have burnt out. Join breaks are visible on some of the sherds, showing the way it was made. The rim is round-topped and thin indicating this to be a delicate jar. No decoration is visible on the rim top or interior of the vessel. The decoration which covers the outer surface of the entire pot is zoned. Below the rim there are alternating zones, some with horizontal parallel grooves and others with oblique parallel grooves. Below this upper zone of decoration the rest of the pot hosts alternating zones of oblique parallel grooves and lozenges, formed by cross-hatched grooves, which extend to the base of the pot. The pot does not fit neatly into one of the conventional Grooved Ware sub-styles as it resembles a Durrington Walls form, albeit small, but with Woodland style decoration.

V2	2017	The four sherds grouped as vessel 2 include a single large body sherd from what is clearly a substantial-sized vessel. The fabric is hard and contains angular crushed stone inclusions, some of which appear to be limestone. A tiny area of internally bevelled rim survives on the large sherd although no decoration is apparent on the tiny are of rim that survives. The vessel wall averages 7mm thick and voids on the surface indicate where organic inclusions have burnt out. The surfaces have a distinctive orange-brown colour whilst the core is relatively pale grey-brown. The external surface of the vessel is decorated with grooving although they are more crudely executed than those on vessel 1. The neck zone, immediately below the rim, is decorated with a series of horizontal grooves and below this there is a zone of oblique parallel grooves with evidence for a cross hatch groove to one side. Three other crumbs of similar fabric are probably from this vessel, but with no further pieces surviving it is not possible to accurately reconstruct the dimensions of form of this vessel.
V3	2017	Vessel 3, also from pit [2017], is represented by two small sherds, one of which is a rim sherd that do not refit. The rim sherd has a modern break along one edge but the corresponding fragment could not be found in the assemblage. The fabric is hard and thin, averaging 4.5mm thick, and contains prepared crushed stone inclusions including occasional quartz. The surfaces are an orange-brown colour whilst the core is dark grey to black in colour suggesting a short firing. There is no evidence for internal decoration but the outer surface of the vessel has grooved decoration in parallel zig zag lines. The rim is plain and rounded. There sherds are so small that the dimensions and form of the vessel cannot be accurately reconstructed.
V4	1971	A single tiny abraded sherd from a vessel with an orange-brown outer surface and a darker brown core. The fabric is hard and well fired but there is so little surviving little more can be said regarding vessel fabric, form or dimensions. Two lines of faint scratched decoration are visible on the outer surface suggesting a possible Grooved Ware attribution, although it is by no means definitive. However, the proximity of this pit to the other Grooved Ware pit [2017] suggests that it could be associated.

9.3 Fabric

9.3.1 Four fabric groups were recognised, all being fairly coarse but well-fired. Inclusions have been finely crushed and grog is the favoured material for use as an opening agent. Fabric 1 contains small crushed stone and grog and frequent voids where organics have burnt out. Clear traces of join voids and/or coil breaks indicate that

coil, ring or strap building was the preferred potting method, though the fragmentary nature of this ceramic has left the pottery prone to crumbling. Fabric 2 is harder than fabric 1 and includes more, and larger, crushed angular stone which includes limestone. Fabric 3 is hard and thin and contains prepared crushed stone inclusions including occasional quartz. The surfaces are an orange-brown colour whilst the core is dark grey to black suggesting a short firing. The orange-brown colour of fabrics 1-3 indicates oxidation has taken place on these surfaces suggesting an open firing method.

9.4 Form

9.4.1 Vessel 1 is a small flat-based vessel that flares slightly from the base to the rim to form a jar with straight, though angled, sides. The form of vessels 2-4 remains unknown, although vessel 2 was evidently larger than vessel 1 though its shape can not be accurately reconstructed.

9.5 Decoration

9.5.1 Decoration is from a limited repertoire of grooving on vessels 1-3 and scratching on vessel 4, but with a different implement used to make the grooves on each vessel. The grooved lines tend to be in groups of oblique, straight or zig-zag lines so as to form herringbone patterns, lozenges and hachured designs. The grooved decoration and lozenge motifs on some sherds suggests parallels with Smith's 'Clacton' style (Smith 1956) although the form and decoration on vessel 1 also recalls the richly decorated grooves of the 'Durrington Walls' style (Wainwright & Longworth 1971). No cordons are present and the rims evident on vessels 1 and 3 are thin and rounded. Vessel 2 has a steep internally bevelled rim which bears a resemblance to the Durrington Walls sub-style. The decoration on vessel 4 is lightly scored and comprises two faint oblique parallel lines. This range of Grooved Ware styles is in keeping with the styles known to be present in the Milfield Basin as, in Gibson's recent review (Gibson 2002), parallels with Durrington Walls and Clacton style vessels have been attested at the nearby sites of Old Yeavering, Ewart 1 pit alignment, Redscar Bridge and the Milfield North pit and a further assemblage of Grooved Ware has since been reported on at Cheviot Quarry (Waddington in Johnson and Waddington 2008).

9.6 Numbers and size

9.6.1 A minimum of four vessels are present within the assemblage. Vessel 1 has an external basal diameter of 85mm and an external rim diameter of 120mm and a maximum overall height of 140mm. The vessel has an internal volume of 918cl. The other three vessels are represented by one only one or a few sherds and it is not possible to accurately reconstruct their diameters or size, suffice to say that the sherd from vessel 2 indicates that this is from a substantial vessel larger than vessel 1 and that the sherds from vessel 3 are from a slight vessel smaller than vessel 1.

Figure 11. Vessel 1 partially reconstructed showing an open jar with grooved decoration in herringbone, lozenge and horizontal parallel line decoration (scale = 10cm).

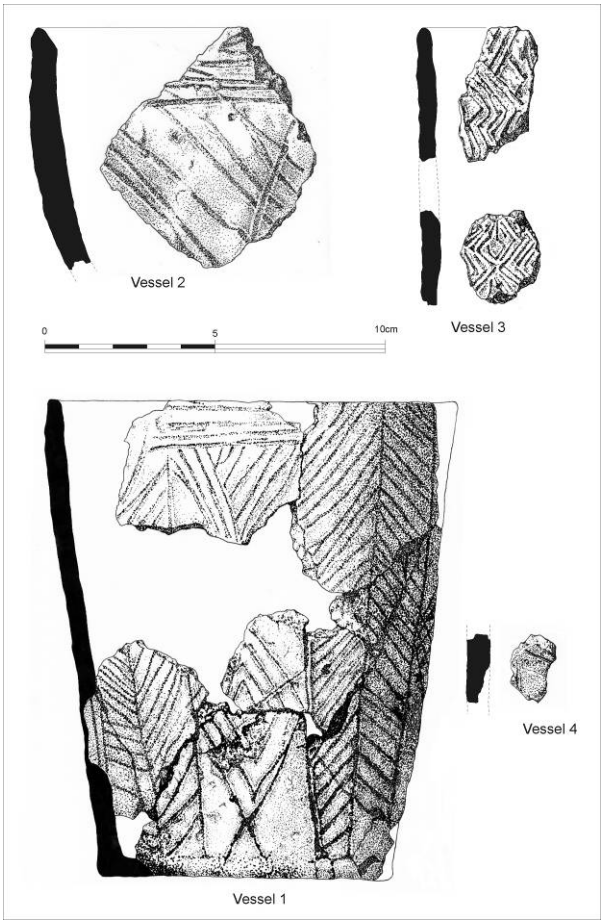


Figure 12. Illustration of four Grooved Ware vessels

9.7 Discussion

9.7.1 Finds of Grooved Ware are relatively rare in Northumberland and their chronology and use is only just beginning to be understood. The sherds from Lanton Quarry show clear evidence for grooved decoration and they form a pure Grooved Ware assemblage with no sherds from other traditions identifiable in the same context. The fabric of all the vessels reveals well-made ceramics. While the assemblage of ceramic material from Phase 3 is not large it provides a significant and complimentary addition to the overall Neolithic ceramic assemblage from Lanton Quarry. Apart from vessel 1 each vessel is represented by a small proportion of the original whole. The sherds from all the vessels are abraded. Carbonised deposits on vessel 1 indicate that this vessel had held foodstuffs prior to its deposition.

9.7.2 This Late Neolithic material all comes from midden pits cut into the sand and gravel terrace providing direct depositional comparanda to the Grooved Ware material recovered from Cheviot Quarry (Johnson and Waddington 2008), the Milfield North pit (Gibson in Passmore and Waddington 2009), Yeavering (Ferrell 1990) and the possible material from Thirlings (Miket *et al.* 2008). The decorative repertoire on the four vessels represented is relatively restricted but can be most closely aligned with the Durrington walls sub-style (Wainwright & Longworth 1971), although their small size, simplicity and lack of cordons means they are not classic examples of the style. As the Grooved Ware corpus for North East England grows the ceramics will be able to be more effectively compared to other regional assemblages. Although not all the vessels can be reconstructed a crude indication of size is afforded by the shape and size of the surviving sherds which suggest a fairly wide range of forms from large cooking vessels to smaller service vessels. All are executed in a fabric with varying quantities of grog and crushed stone, including limestone and quartz, and have been well fired. The surfaces are burnished and are covered in grooved, or in the case of vessel 4 scratched, decoration.

9.7.3 The prehistoric ceramics from Lanton Quarry provide an important opportunity for improving understanding of the ceramic sequence of the region, lifestyles and diet, and given the presence of datable burnt material, the opportunity to get to grips with the chronology of Grooved Ware in the region.

10. Lanton Lithic Assessment

Richard Chatterton

10.1 Factual Data

10.1.1 Quantity
A total of 11 lithic artefacts were recovered from the excavations at Lanton Quarry in 2010 and were identified as being of prehistoric date.

10.1.2 Provenance
Table 5 below lists the feature numbers/contexts from which the material was recovered. All of the artefacts were identified from the fills of three pit features (1971, 1975 and 2009).

Context No	Context Type	No Lithics	Lithic Types Present	Period
1971	Pit fill	6	Flakes, retouched flake	
1975	Pit fill	1	Retouched flake	
2009	Pit fill	4	Flakes	
Total		11		

Table 5. Lithic counts by context.

10.1.3 Dating

None of the lithic artefacts are diagnostic of a particular period as flakes were produced in the production process during all periods. However, the absence of regular blade forms may suggest that the assemblage post-dates the Mesolithic period and dates from either the Neolithic period or the Bronze Age. This is supported by the fact that pottery was discovered in context (1971).

10.1.4 Range and Variety

The assemblage consists primarily of unaltered flakes made from flint nodules. The only tools identified were retouched flakes (1135 and 1138) and an edge worn flake indicating that the flake had been utilised as a cutting tool. These tool forms suggest that processing activities had taken place on the site which can be taken as indicative of settlement on the site (Schofield 1994). A large number (73%) of the artefacts had been burnt suggesting that the flint had been deposited in hearths which had been cleared out prior to being deposited in the pit features.

The number of lithics made from different raw materials is shown in Table 6 below.

Raw Material	Quantity
Flint	9
Agate	1
Chert	1
Other	
Total	11

Table 6. Breakdown of lithics by raw material.

10.1.5 Contamination

All of the lithic material came from discrete pit features that had not been disturbed by later activity.

10.1.6 Residuality

Excavations at the Lanton Quarry site have confirmed that this area of landscape has been favoured for settlement from Mesolithic through Neolithic, Bronze Age, Iron Age and Early Medieval times, and therefore the potential for earlier material to become incorporated in the fills of features cut into the ground at a later date will always remain. However, the fact that most of the material is burnt within features containing burnt material suggests that the flint was contained previously in the same features (such as hearths) as the material that had been burnt.

10.1.7 Condition

All bar one of the pieces show no fresh breaks and therefore the broken pieces have been broken in antiquity prior to discard. One of the pieces is broken into two pieces and has clearly been broken since discard.

10.1.8 Primary Sources and Documentation
There are no primary sources or documentation that might enhance the study of this collection.

10.1.9 Means of Collecting the Data
The lithics were excavated from the ground using hand tools (trowels and small tools) and from sieves with a 1cm^2 mesh. Each lithic was washed in tap water and gently cleaned with a toothbrush before being left to air dry. Each lithic was placed in an individual plastic bag that was labelled with a unique small find number and the context number.

10.1.10 For the assessment, the lithics were un-bagged and laid out on tables and grouped by context. lithic counts were recorded and a preliminary examination made of all pieces. The lithics were then re-bagged and packed, by context, into a sturdy plastic storage box.

10.2 Statement of Potential

10.2.1 Value of the Data
This assemblage of material is very small and of little potential to inform research agendas for the region but should be combined with the material from earlier excavations at the site and thus be available to future researchers.

10.2.2 Integration of Study with Other Research
The study of this assemblage could be enhanced through comparison with the dates, styles and circumstances of discard with Neolithic assemblages from previous excavations at Lanton Quarry Waddington 2009, the nearby sites of Cheviot Quarry (Waddington 2000; Johnson and Waddington in press), Thirlings (Miket 1987), Bolam Lake (Waddington and Davies 2002) and elsewhere (e.g. Harding 1981; Miket 1976; 1981; 1985; Waddington 1996).

10.3 Archive Requirements

10.3.1 Storage and Curation
The lithics are currently contained in sealed and labelled plastic bags. Each lithic is individually bagged and those lithics from the same context all bagged again in a context specific larger bag. These bags are stored in a sturdy plastic storage box.

10.3.2 Retention and Discard Policy
It is recommended that all of this collection is kept for future study.

11. Discussion

11.1 The excavations and post-excavation assessment from Phase 3 have provided additional information to further our understanding of the Neolithic, Bronze Age and Anglo-Saxon archaeology of the quarry, in particular, and the region as a whole. The results of this phase of excavation at Lanton Quarry fit within the larger programme of excavation, assessment and analysis which is still ongoing. Therefore the discussion presented here has been kept brief and focuses purely on the results of this phase of work.

11.2 The Neolithic archaeology, comprising domestic midden pits, fits within the tradition of features revealed elsewhere in the quarry and also the distribution of fieldwalking finds from the field surface (Cockburn *et al.* 2009; Stafford and Johnson 2007), and the associated charred material indicates a similar pattern of arable cultivation of wheat and wild harvesting of hazelnuts and other fruits. The form of deposition, either wholly domestic or possibly with some ritual connotation, is a feature of Neolithic sites within the Milfield Basin (Johnson and Waddington 2008). The radiocarbon dates on the Grooved Ware vessel help to define the chronology of these kinds of vessels in northern England. The semi-complete Grooved Ware vessel that was recovered is the best preserved Grooved Ware vessel yet to be found in Northumberland and is an ideal candidate for display in the Great North Museum. The early Neolithic date on the triangular post-built structure also provides some of the first evidence for dating what are thought to be settlement structures of this form the early Neolithic period in northern England.

11.3 The radiocarbon date on the six-posthole structure, suggests this type of structure, of which four are known from the Phase 1 and Phase 2 excavations, dated to the Bronze Age. Given their close spatial association with the larger, circular, post-built structures which have also been dated to the Bronze Age, they form part of the settlement architecture of this period. There use still remains unclear but, given the size and dimensions of the postholes these were substantial features that must have supported tall posts. They are therefore considered to probably be raised granaries associated with the lowland farming settlements, such as those found during the nearby excavations at Cheviot Quarry. Here, a similar structure was found in proximity to two late Bronze Age roundhouses that contained extensive evidence of arable agriculture including charred cereal grains and quernstones (Johnson and Waddington 2008).

12. Publicity, Confidentiality and Copyright

12.1 Any publicity will be handled by the client.

12.2 Archaeological Research Services Ltd will retain the copyright of all documentary and photographic material under the Copyright, Designs and Patent Act (1988).

13. Statement of Indemnity

13.1 All statements and opinions contained within this report arising from the works undertaken are offered in good faith and compiled according to professional standards. No responsibility can be accepted by the author/s of the report for any errors of fact or opinion resulting from data supplied by any third party, or for loss or other consequence arising from decisions or actions made upon the basis of facts or opinions expressed in any such report(s), howsoever such facts and opinions may have been derived.

14. Acknowledgements

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Appendix 1: Data from palaeoenvironmental assessment

Sample		345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361
Context		**2009**	**1973**	**1983**	**1989**	**1997**	**1971**	**1975**	**2023**	**2053**	**2025**	**2035**	**1977**	**1995**	**2051**	**2039**	**2049**	**2033**
Feature		**pit**	**small pit**	**small pit**	**pit**	**pit**	**small pit**	**small pit**	**large pit**	**pit**	**large pit**	**pit**	**large pit**	**large pit**	**pit**	**pit**	**hearth pit**	**large pit**
Material available for radiocarbon dating		✓	-	-	-	-	✓	-	-	✓	✓	-	-	✓	-	-	✓	✓
Volume processed (l)		40	5	5	5	40	40	1	20	5	40	20	40	5	10	10	22	10
Volume of flot assessed (ml)		50	1	8	6	100	50	30	350	4	80	25	50	10	1	10	550	25
Flot matrix																		
Charcoal		+++	+	++	++	+++	+++	+++	+++	++	+++	++	+++	++	(+)	(+)	++++	++
Earthworm egg case		+	-	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-
Heather twig (charred)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
Insect/beetle		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roots (modern)		++	-	-	++	-	+	+	+	+	+	+	++	-	-	++	+	-
Uncharred seeds		++	+	+	+++	++	++	(+)	+	(+)	+	+	++	+	++	-	+	+
Charred remains (total count)																		
(c) Cerealia indeterminate	grain	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
(c) *Hordeum* spp (Barley species)	grain	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
(c) *Triticum* cf. *dicoccum* (cf. Emmer Wheat)	grain	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(r) *Galeopsis* sp (Hemp-nettle)	nutlet	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(r) *Galium aparine* (Cleavers)	seed	4	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
(t) *Corylus avellana* (Hazel)	nutshell frag.	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-
(t) *Crataegus monogyna* (Hawthorn)	fruitstone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(t) *Malus sylvestris* (Crab apple)	pip	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(w) *Carex* sp (Sedges)	biconvex nutlet	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16
(x) Indeterminate	monocot stem	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Indeterminate	tuber/rhizome	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Indeterminate	weed seed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Poaceae undifferentiated (Grass family)	<2mm caryopsis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
(x) *Rumex* sp (Docks)	nutlet	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) *Vicia* sp (Vetches)	seed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4

[c-cultivated; r-ruderal; t-woodland/scrub; w-wet ground; x-wide niche. (+): trace; +: rare; ++: occasional; +++: common; ++++: abundant]

Appendix 1: Data from palaeoenvironmental assessment

Sample		345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361
Context		**2009**	**1973**	**1983**	**1989**	**1997**	**1971**	**1975**	**2023**	**2053**	**2025**	**2035**	**1977**	**1995**	**2051**	**2039**	**2049**	**2033**
Feature		**pit**	**small pit**	**small pit**	**pit**	**pit**	**small pit**	**small pit**	**large pit**	**pit**	**large pit**	**pit**	**large pit**	**large pit**	**pit**	**pit**	**hearth pit**	**large pit**
Material available for radiocarbon dating		✓	-	-	-	-	✓	-	-	✓	✓	-	-	✓	-	-	✓	✓
Volume processed (l)		40	5	5	5	40	40	1	20	5	40	20	40	5	10	10	22	10
Volume of flot assessed (ml)		50	1	8	6	100	50	30	350	4	80	25	50	10	1	10	550	25
Flot matrix																		
Charcoal		+++	+	++	++	+++	+++	+++	+++	++	+++	++	+++	++	(+)	(+)	++++	++
Earthworm egg case		+	-	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-
Heather twig (charred)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
Insect/beetle		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roots (modern)		++	-	-	++	-	+	+	+	+	+	+	++	-	-	++	+	-
Uncharred seeds		++	+	+	+++	++	++	(+)	+	(+)	+	+	++	+	++	-	+	+
Charred remains (total count)																		
(c) Cerealia indeterminate	grain	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
(c) *Hordeum* spp (Barley species)	grain	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
(c) *Triticum* cf. *dicoccum* (cf. Emmer Wheat)	grain	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(r) *Galeopsis* sp (Hemp-nettle)	nutlet	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(r) *Galium aparine* (Cleavers)	seed	4	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
(t) *Corylus avellana* (Hazel)	nutshell frag.	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-
(t) *Crataegus monogyna* (Hawthorn)	fruitstone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(t) *Malus sylvestris* (Crab apple)	pip	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(w) *Carex* sp (Sedges)	biconvex nutlet	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16
(x) Indeterminate	monocot stem	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Indeterminate	tuber/rhizome	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Indeterminate	weed seed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Poaceae undifferentiated (Grass family)	<2mm caryopsis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
(x) *Rumex* sp (Docks)	nutlet	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) *Vicia* sp (Vetches)	seed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4

[c-cultivated; r-ruderal; t-woodland/scrub; w-wet ground; x-wide niche. (+): trace; +: rare; ++: occasional; +++: common; ++++: abundant]

Appendix 1: continued

Sample		362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377
Context		**2021**	**2059**	**1993**	**1969**	**2029**	**2031**	**2055**	**2037**	**1987**	**1985**	**2045**	**2005**	**2057**	**2047**	**2041**	**2017**
Feature		**pit**	**pit**	**pit**	**large pit**	**pit**	**large pit**	**pit**	**pit**	**pit**	**small pit**	**pit**	**-**	**pit**	**hearth pit**	**pit**	**pit**
Material available for radiocarbon dating		✓	-	✓	✓	✓	-	-	-	-	-	-	-	-	✓	-	✓
Volume processed (l)		25	5	15	40	12	40	2	10	10	5	10	5	1	40	1	-
Volume of flot assessed (ml)		150	5	15	2000	75	80	25	5	1	10	10	100	2	50	1	175
Flot matrix																	
Charcoal		+++	+	++	++++	+++	++	++	+	+	+	++	+++	+	++	+	+++
Earthworm egg case		-	-	-	-	-	+	-	(+)	(+)	-	-	-	-	-	-	-
Heather twig (charred)		-	-	-	-	-	-	(+)	-	-	-	-	-	-	-	-	-
Insect/beetle		-	(+)	-	-	-	-	-	-	-	-	-	-	-	-	-	(+)
Roots (modern)		-	(+)	-	-	-	-	-	-	(+)	-	-	-	-	+	-	(+)
Uncharred seeds		+	-	+	+	+	+	+	+	+	+	-	+	+	+	+	+
Charred remains (total count)																	
(c) Cerealia indeterminate	grain	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(c) *Hordeum* spp (Barley species)	grain	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(c) *Triticum* cf. *dicoccum* (cf. Emmer Wheat)	grain	-	-	-	-	-	-	-	-	-	-	-	-	-	>150	-	-
(r) *Galeopsis* sp (Hemp-nettle)	nutlet	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
(r) *Galium aparine* (Cleavers)	seed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10
(t) *Corylus avellana* (Hazel)	nutshell frag.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22
(t) *Crataegus monogyna* (Hawthorn)	fruitstone	-	-	-	-	2	-	-	-	-	-	-	-	-	1	-	-
(t) *Malus sylvestris* (Crab apple)	pip	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
(r) *Carex* sp (Sedges)	biconvex nutlet	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Indeterminate	monocot stem	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Indeterminate	tuber/rhizome	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Indeterminate	weed seed	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
(x) Poaceae undifferentiated (Grass family)	<2mm caryopsis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) *Rumex* sp (Docks)	nutlet	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
(x) *Vicia* sp (Vetches)	seed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

[c-cultivated; r-ruderal; t-woodland/scrub; w-wet ground; x-wide niche. (+): trace; +: rare; ++: occasional; +++: common; ++++: abundant]

Appendix 2: Material available for radiocarbon dating

Sample	Context	Context information	Single Entity 1	Weight	Single Entity 2	Weight	Notes
345	2009	pit	hazel charcoal	86mg	hazel charcoal	72mg	Weed seeds and indeterminate tubers present, are of insufficient weight and not recommended for dating. Mainly oak charcoal.
346	1973	small pit with burning	-	-	-	-	A few charcoal fragments present, too small to identify or to date.
347	1983	small pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
348	1989	pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
349	1997	pit	-	-	-	-	Oak timber charcoal fragments present, not recommended for C14 dating. Hazel 9mg too small for dating.
350	1971	small pit	hazel charcoal	77mg	hazel charcoal	70mg	Hazel roundwood charcoal present. Oak charcoal also noted. Grain & hazel nutshell of insufficient weight.
351	1975	small pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
352	2023	large pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
353	2053	pit	Maloideae charcoal	107mg	Maloideae charcoal	94mg	-
354	2025	large pit	hazel charcoal	133mg	hazel charcoal	90mg	Hazel nutshell (12mg) also included may be of insufficient weight. Oak charcoal also noted.
355	2035	pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
356	1977	large pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
357	1995	large pit	hazel charcoal	136mg	hazel charcoal	34mg	Indeterminate cereal grain of insufficient weight.
358	2051	pit	-	-	-	-	A few charcoal fragments present, too small to identify or to date.
359	2039	pit	-	-	-	-	Only tiny fragments of oak charcoal present.
360	2049	hearth pit	elm charcoal	125mg	elm charcoal	121mg	Roundwood of elm (small branchwood) present. Charred heather also noted.
361	2033	large pit	hazel charcoal	17mg	-	-	Mainly oak timber charcoal present, not recommended for C14 dating. Seeds are too small to date.
362	2021	pit	Maloideae charcoal	58mg	cherry family charcoal	71mg	Mainly oak timber charcoal present, not recommended for C14 dating. Cherry charcoal vitrified with radial cracks.
363	2059	pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
364	1993	pit	hazel charcoal	98mg	hazel charcoal	87mg	Mostly diffuse porous taxa noted. Roundwood hazel charcoal present.
365	1969	Very large pit	Maloideae charcoal	53mg	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating. Maloideae may be residual material (the only non-oak fragment from 204g of >4mm charcoal). (Fragment of oak charcoal 256mg is included).
366	2029	pit	Maloideae charcoal	52mg	charred hawthorn fruitstone	42mg	Mainly oak timber charcoal present, not recommended for C14 dating. Fruitstone has nibble mark (small mammal).
367	2031	large pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
368	2055	pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
369	2037	pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
370	1987	pit	-	-	-	-	Only tiny fragments of oak charcoal present.
371	1985	small pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
372	2045	pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
373	2005	-	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
374	2057	pit	-	-	-	-	Only tiny fragments of oak charcoal present.
375	2047	hearth pit	charred wheat grain	20mg	charred wheat grain	14mg	cf. emmer wheat abundant. Charcoal of oak, hazel and birch noted.
376	2041	pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
377	2017	pit	charred hazel nutshell	112mg	charred hazel nutshell	110mg	Oak and hazel charcoal noted.

* Maloideae (Hawthorn, whitebeams, apple)

Appendix 1: Data from palaeoenvironmental assessment

Sample		345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361
Context		**2009**	**1973**	**1983**	**1989**	**1997**	**1971**	**1975**	**2023**	**2053**	**2025**	**2035**	**1977**	**1995**	**2051**	**2039**	**2049**	**2033**
Feature		**pit**	**small pit**	**small pit**	**pit**	**pit**	**small pit**	**small pit**	**large pit**	**pit**	**large pit**	**pit**	**large pit**	**large pit**	**pit**	**pit**	**hearth pit**	**large pit**
Material available for radiocarbon dating		✓	-	-	-	-	✓	-	-	✓	✓	-	-	✓	-	-	✓	✓
Volume processed (l)		40	5	5	5	40	40	1	20	5	40	20	40	5	10	10	22	10
Volume of flot assessed (ml)		50	1	8	6	100	50	30	350	4	80	25	50	10	1	10	550	25
Flot matrix																		
Charcoal		+++	+	++	++	+++	+++	+++	+++	++	+++	++	+++	++	(+)	(+)	++++	++
Earthworm egg case		+	-	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-
Heather twig (charred)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
Insect/beetle		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roots (modern)		++	-	-	++	-	+	+	+	+	+	+	++	-	-	++	+	-
Uncharred seeds		++	+	+	+++	++	++	(+)	+	(+)	+	+	++	+	++	-	+	+
Charred remains (total count)																		
(c) Cerealia indeterminate	grain	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
(c) *Hordeum* spp (Barley species)	grain	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
(c) *Triticum* cf. *dicoccum* (cf. Emmer Wheat)	grain	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(r) *Galeopsis* sp (Hemp-nettle)	nutlet	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(r) *Galium aparine* (Cleavers)	seed	4	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
(t) *Corylus avellana* (Hazel)	nutshell frag.	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-
(t) *Crataegus monogyna* (Hawthorn)	fruitstone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(t) *Malus sylvestris* (Crab apple)	pip	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(w) *Carex* sp (Sedges)	biconvex nutlet	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16
(x) Indeterminate	monocot stem	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Indeterminate	tuber/rhizome	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Indeterminate	weed seed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Poaceae undifferentiated (Grass family)	<2mm caryopsis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
(x) *Rumex* sp (Docks)	nutlet	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) *Vicia* sp (Vetches)	seed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4

[c-cultivated; r-ruderal; t-woodland/scrub; w-wet ground; x-wide niche. (+): trace; +: rare; ++: occasional; +++: common; ++++: abundant]

Appendix 1: continued

Sample		362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377
Context		**2021**	**2059**	**1993**	**1969**	**2029**	**2031**	**2055**	**2037**	**1987**	**1985**	**2045**	**2005**	**2057**	**2047**	**2041**	**2017**
Feature		**pit**	**pit**	**pit**	**large pit**	**pit**	**large pit**	**pit**	**pit**	**pit**	**small pit**	**pit**	**-**	**pit**	**hearth pit**	**pit**	**pit**
Material available for radiocarbon dating		✓	-	✓	✓	✓	-	-	-	-	-	-	-	-	✓	-	✓
Volume processed (l)		25	5	15	40	12	40	2	10	10	5	10	5	1	40	1	-
Volume of flot assessed (ml)		150	5	15	2000	75	80	25	5	1	10	10	100	2	50	1	175
Flot matrix																	
Charcoal		+++	+	++	++++	+++	++	++	+	+	+	++	+++	+	++	+	+++
Earthworm egg case		-	-	-	-	-	+	-	(+)	(+)	-	-	-	-	-	-	-
Heather twig (charred)		-	-	-	-	-	-	(+)	-	-	-	-	-	-	-	-	-
Insect/beetle		-	(+)	-	-	-	-	-	-	-	-	-	-	-	-	-	(+)
Roots (modern)		-	(+)	-	-	-	-	-	-	(+)	-	-	-	-	+	-	(+)
Uncharred seeds		+	-	+	+	+	+	+	+	+	+	-	+	+	+	+	+
Charred remains (total count)																	
(c) Cerealia indeterminate	grain	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(c) *Hordeum* spp (Barley species)	grain	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(c) *Triticum* cf. *dicoccum* (cf. Emmer Wheat)	grain	-	-	-	-	-	-	-	-	-	-	-	-	-	>150	-	-
(r) *Galeopsis* sp (Hemp-nettle)	nutlet	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
(r) *Galium aparine* (Cleavers)	seed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10
(t) *Corylus avellana* (Hazel)	nutshell frag.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22
(t) *Crataegus monogyna* (Hawthorn)	fruitstone	-	-	-	-	2	-	-	-	-	-	-	-	-	1	-	-
(t) *Malus sylvestris* (Crab apple)	pip	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
(r) *Carex* sp (Sedges)	biconvex nutlet	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Indeterminate	monocot stem	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Indeterminate	tuber/rhizome	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Indeterminate	weed seed	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
(x) Poaceae undifferentiated (Grass family)	<2mm caryopsis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) *Rumex* sp (Docks)	nutlet	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
(x) *Vicia* sp (Vetches)	seed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

[c-cultivated; r-ruderal; t-woodland/scrub; w-wet ground; x-wide niche. (+): trace; +: rare; ++: occasional; +++: common; ++++: abundant]

Appendix 2: Material available for radiocarbon dating

Sample	Context	Context information	Single Entity 1	Weight	Single Entity 2	Weight	Notes
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347	1983	small pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
348	1989	pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
349	1997	pit	-	-	-	-	Oak timber charcoal fragments present, not recommended for C14 dating. Hazel 9mg too small for dating.
350	1971	small pit	hazel charcoal	77mg	hazel charcoal	70mg	Hazel roundwood charcoal present. Oak charcoal also noted. Grain & hazel nutshell of insufficient weight.
351	1975	small pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
352	2023	large pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
353	2053	pit	Maloideae charcoal	107mg	Maloideae charcoal	94mg	-
354	2025	large pit	hazel charcoal	133mg	hazel charcoal	90mg	Hazel nutshell (12mg) also included may be of insufficient weight. Oak charcoal also noted.
355	2035	pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
356	1977	large pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
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358	2051	pit	-	-	-	-	A few charcoal fragments present, too small to identify or to date.
359	2039	pit	-	-	-	-	Only tiny fragments of oak charcoal present.
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362	2021	pit	Maloideae charcoal	58mg	cherry family charcoal	71mg	Mainly oak timber charcoal present, not recommended for C14 dating. Cherry charcoal vitrified with radial cracks.
363	2059	pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
364	1993	pit	hazel charcoal	98mg	hazel charcoal	87mg	Mostly diffuse porous taxa noted. Roundwood hazel charcoal present.
365	1969	Very large pit	Maloideae charcoal	53mg	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating. Maloideae may be residual material (the only non-oak fragment from 204g of >4mm charcoal). (Fragment of oak charcoal 256mg is included).
366	2029	pit	Maloideae charcoal	52mg	charred hawthorn fruitstone	42mg	Mainly oak timber charcoal present, not recommended for C14 dating. Fruitstone has nibble mark (small mammal).
367	2031	large pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
368	2055	pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
369	2037	pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
370	1987	pit	-	-	-	-	Only tiny fragments of oak charcoal present.
371	1985	small pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
372	2045	pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
373	2005	-	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
374	2057	pit	-	-	-	-	Only tiny fragments of oak charcoal present.
375	2047	hearth pit	charred wheat grain	20mg	charred wheat grain	14mg	cf. emmer wheat abundant. Charcoal of oak, hazel and birch noted.
376	2041	pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
377	2017	pit	charred hazel nutshell	112mg	charred hazel nutshell	110mg	Oak and hazel charcoal noted.

* Maloideae (Hawthorn, whitebeams, apple)

Appendix 1: Data from palaeoenvironmental assessment

Sample		345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361
Context		**2009**	**1973**	**1983**	**1989**	**1997**	**1971**	**1975**	**2023**	**2053**	**2025**	**2035**	**1977**	**1995**	**2051**	**2039**	**2049**	**2033**
Feature		**pit**	**small pit**	**small pit**	**pit**	**pit**	**small pit**	**small pit**	**large pit**	**pit**	**large pit**	**pit**	**large pit**	**large pit**	**pit**	**pit**	**hearth pit**	**large pit**
Material available for radiocarbon dating		✓	-	-	-	-	✓	-	-	✓	✓	-	-	✓	-	-	✓	✓
Volume processed (l)		40	5	5	5	40	40	1	20	5	40	20	40	5	10	10	22	10
Volume of flot assessed (ml)		50	1	8	6	100	50	30	350	4	80	25	50	10	1	10	550	25
Flot matrix																		
Charcoal		+++	+	++	++	+++	+++	+++	+++	++	+++	++	+++	++	(+)	(+)	++++	++
Earthworm egg case		+	-	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-
Heather twig (charred)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
Insect/beetle		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roots (modern)		++	-	-	++	-	+	+	+	+	+	+	++	-	-	++	+	-
Uncharred seeds		++	+	+	+++	++	++	(+)	+	(+)	+	+	++	+	++	-	+	+
Charred remains (total count)																		
(c) Cerealia indeterminate	grain	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
(c) *Hordeum* spp (Barley species)	grain	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
(c) *Triticum* cf. *dicoccum* (cf. Emmer Wheat)	grain	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(r) *Galeopsis* sp (Hemp-nettle)	nutlet	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(r) *Galium aparine* (Cleavers)	seed	4	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
(t) *Corylus avellana* (Hazel)	nutshell frag.	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-
(t) *Crataegus monogyna* (Hawthorn)	fruitstone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(t) *Malus sylvestris* (Crab apple)	pip	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(w) *Carex* sp (Sedges)	biconvex nutlet	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16
(x) Indeterminate	monocot stem	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Indeterminate	tuber/rhizome	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Indeterminate	weed seed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Poaceae undifferentiated (Grass family)	<2mm caryopsis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
(x) *Rumex* sp (Docks)	nutlet	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) *Vicia* sp (Vetches)	seed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4

[c-cultivated; r-ruderal; t-woodland/scrub; w-wet ground; x-wide niche. (+): trace; +: rare; ++: occasional; +++: common; ++++: abundant]

Appendix 1: continued

Sample		362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377
Context		**2021**	**2059**	**1993**	**1969**	**2029**	**2031**	**2055**	**2037**	**1987**	**1985**	**2045**	**2005**	**2057**	**2047**	**2041**	**2017**
Feature		**pit**	**pit**	**pit**	**large pit**	**pit**	**large pit**	**pit**	**pit**	**pit**	**small pit**	**pit**	**-**	**pit**	**hearth pit**	**pit**	**pit**
Material available for radiocarbon dating		✓	-	✓	✓	✓	-	-	-	-	-	-	-	-	✓	-	✓
Volume processed (l)		25	5	15	40	12	40	2	10	10	5	10	5	1	40	1	-
Volume of flot assessed (ml)		150	5	15	2000	75	80	25	5	1	10	10	100	2	50	1	175
Flot matrix																	
Charcoal		+++	+	++	++++	+++	++	++	+	+	+	++	+++	+	++	+	+++
Earthworm egg case		-	-	-	-	-	+	-	(+)	(+)	-	-	-	-	-	-	-
Heather twig (charred)		-	-	-	-	-	-	(+)	-	-	-	-	-	-	-	-	-
Insect/beetle		-	(+)	-	-	-	-	-	-	-	-	-	-	-	-	-	(+)
Roots (modern)		-	(+)	-	-	-	-	-	-	(+)	-	-	-	-	+	-	(+)
Uncharred seeds		+	-	+	+	+	+	+	+	+	+	-	+	+	+	+	+
Charred remains (total count)																	
(c) Cerealia indeterminate	grain	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(c) *Hordeum* spp (Barley species)	grain	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(c) *Triticum* cf. *dicoccum* (cf. Emmer Wheat)	grain	-	-	-	-	-	-	-	-	-	-	-	-	-	>150	-	-
(r) *Galeopsis* sp (Hemp-nettle)	nutlet	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
(r) *Galium aparine* (Cleavers)	seed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10
(t) *Corylus avellana* (Hazel)	nutshell frag.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22
(t) *Crataegus monogyna* (Hawthorn)	fruitstone	-	-	-	-	2	-	-	-	-	-	-	-	-	1	-	-
(t) *Malus sylvestris* (Crab apple)	pip	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
(r) *Carex* sp (Sedges)	biconvex nutlet	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Indeterminate	monocot stem	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Indeterminate	tuber/rhizome	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Indeterminate	weed seed	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
(x) Poaceae undifferentiated (Grass family)	<2mm caryopsis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) *Rumex* sp (Docks)	nutlet	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
(x) *Vicia* sp (Vetches)	seed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

[c-cultivated; r-ruderal; t-woodland/scrub; w-wet ground; x-wide niche. (+): trace; +: rare; ++: occasional; +++: common; ++++: abundant]

Appendix 2: Material available for radiocarbon dating

Sample	Context	Context information	Single Entity 1	Weight	Single Entity 2	Weight	Notes
345	2009	pit	hazel charcoal	86mg	hazel charcoal	72mg	Weed seeds and indeterminate tubers present, are of insufficient weight and not recommended for dating. Mainly oak charcoal.
346	1973	small pit with burning	-	-	-	-	A few charcoal fragments present, too small to identify or to date.
347	1983	small pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
348	1989	pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
349	1997	pit	-	-	-	-	Oak timber charcoal fragments present, not recommended for C14 dating. Hazel 9mg too small for dating.
350	1971	small pit	hazel charcoal	77mg	hazel charcoal	70mg	Hazel roundwood charcoal present. Oak charcoal also noted. Grain & hazel nutshell of insufficient weight.
351	1975	small pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
352	2023	large pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
353	2053	pit	Maloideae charcoal	107mg	Maloideae charcoal	94mg	-
354	2025	large pit	hazel charcoal	133mg	hazel charcoal	90mg	Hazel nutshell (12mg) also included may be of insufficient weight. Oak charcoal also noted.
355	2035	pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
356	1977	large pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
357	1995	large pit	hazel charcoal	136mg	hazel charcoal	34mg	Indeterminate cereal grain of insufficient weight.
358	2051	pit	-	-	-	-	A few charcoal fragments present, too small to identify or to date.
359	2039	pit	-	-	-	-	Only tiny fragments of oak charcoal present.
360	2049	hearth pit	elm charcoal	125mg	elm charcoal	121mg	Roundwood of elm (small branchwood) present. Charred heather also noted.
361	2033	large pit	hazel charcoal	17mg	-	-	Mainly oak timber charcoal present, not recommended for C14 dating. Seeds are too small to date.
362	2021	pit	Maloideae charcoal	58mg	cherry family charcoal	71mg	Mainly oak timber charcoal present, not recommended for C14 dating. Cherry charcoal vitrified with radial cracks.
363	2059	pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
364	1993	pit	hazel charcoal	98mg	hazel charcoal	87mg	Mostly diffuse porous taxa noted. Roundwood hazel charcoal present.
365	1969	Very large pit	Maloideae charcoal	53mg	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating. Maloideae may be residual material (the only non-oak fragment from 204g of >4mm charcoal). (Fragment of oak charcoal 256mg is included).
366	2029	pit	Maloideae charcoal	52mg	charred hawthorn fruitstone	42mg	Mainly oak timber charcoal present, not recommended for C14 dating. Fruitstone has nibble mark (small mammal).
367	2031	large pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
368	2055	pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
369	2037	pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
370	1987	pit	-	-	-	-	Only tiny fragments of oak charcoal present.
371	1985	small pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
372	2045	pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
373	2005	-	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
374	2057	pit	-	-	-	-	Only tiny fragments of oak charcoal present.
375	2047	hearth pit	charred wheat grain	20mg	charred wheat grain	14mg	cf. emmer wheat abundant. Charcoal of oak, hazel and birch noted.
376	2041	pit	-	-	-	-	Only oak timber charcoal fragments present, not recommended for C14 dating.
377	2017	pit	charred hazel nutshell	112mg	charred hazel nutshell	110mg	Oak and hazel charcoal noted.

* Maloideae (Hawthorn, whitebeams, apple)

Appendix II

Harris Matrices