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ARO18: Pits with Precious Goods: ritual deposition in the early Neolithic, Snabe Quarry, Drumclog, South Lanarkshire, 2008-2012

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ARO18: Pits with Precious Goods: ritual deposition in the early Neolithic, Snabe Quarry, Drumclog, South Lanarkshire, 2008-2012

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The finds from the site have been declared to the Treasure Trove Unit and the site record will be lodged with the National Monuments Record, Historic Environment Scotland, Edinburgh.

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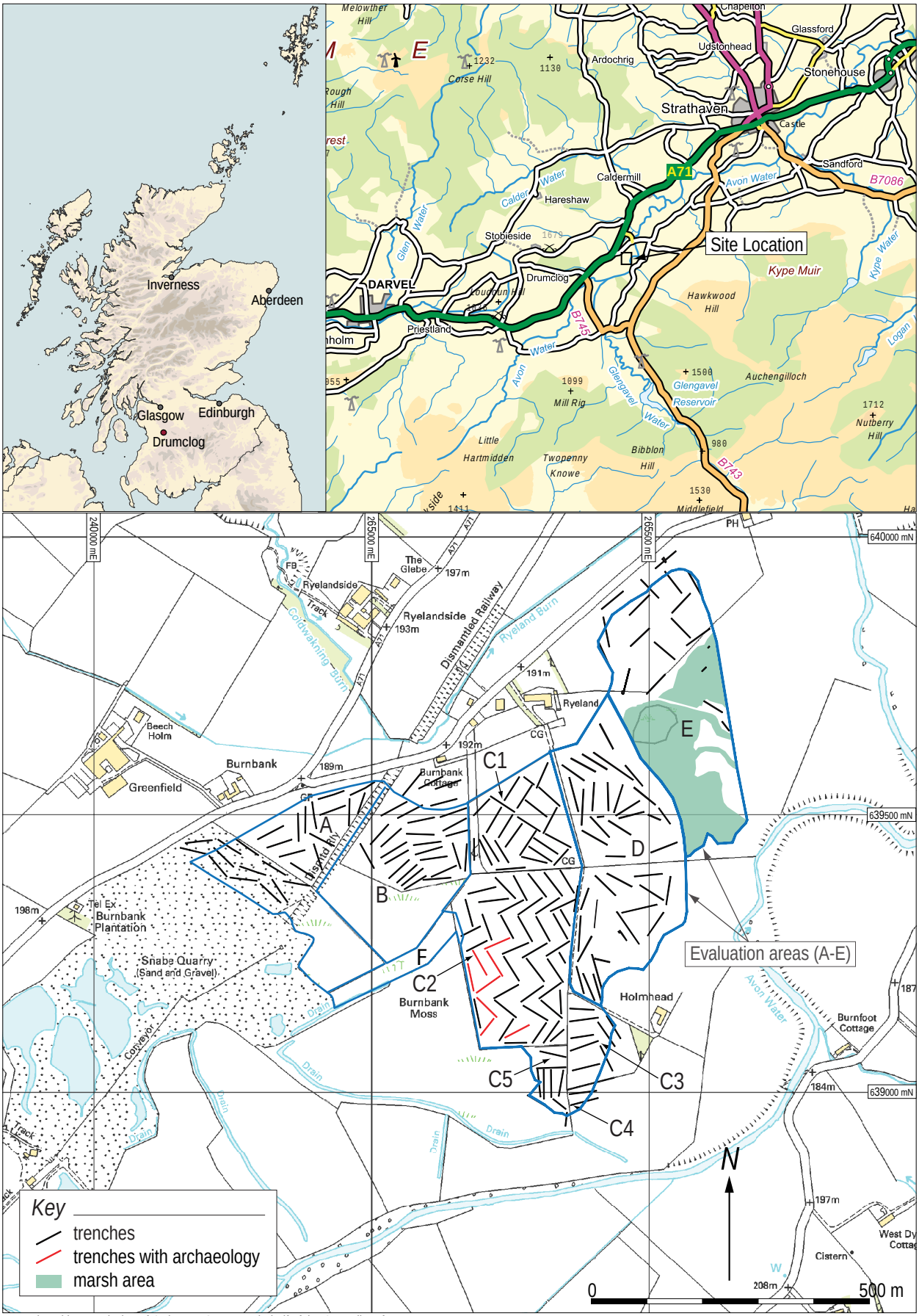

Figure 1: Site location.

Abstract

Between 2008 and 2012 archaeologists from Glasgow University Archaeological Research Division and later GUARD Archaeology Ltd conducted a series of evaluations at Snabe Quarry, Drumclog, South Lanarkshire, which uncovered prehistoric features including pits containing prehistoric pottery sherds. This was followed by a watching brief and excavation phases where further features were uncovered, including several pits that contained pottery sherds of the early Neolithic Carinated Bowl tradition, Arran pitchstone and a polished stone axe fragment. Radiocarbon dates were obtained from five features, which provided a focus of activity within the early fourth millennium BC, although two dates were also obtained from the late Mesolithic period. This present work adds to the corpus of early Scottish Neolithic-dated pits containing similar artefactual material which has been referred to as the 'Neolithic package'.

Introduction

Between 2008 and 2012 Glasgow University Archaeological Research Division and later GUARD Archaeology Ltd, were commissioned by Lafarge Tarmac Ltd to undertake a series of archaeological investigations that included assessments, evaluations, strip, map and sample excavations and watching briefs on an area of ground due to be included in the expansion of Snabe Quarry, near Drumclog, South Lanarkshire (Figure 1). This work was undertaken in several phases and revealed features of archaeological interest including pits, linear and curvilinear features and an enclosure of possible prehistoric date (Figure 2). Radiocarbon dates obtained from several of the features suggest that the main focus of activity was within the early Neolithic period (early fourth millennium BC) with two dates obtained from the late Mesolithic period (late fifth/early sixth millennium BC and the late seventh/early eighth millennium BC).

Site Location

Snabe Quarry lies 1.5 km SSW of the village of Drumclog in South Lanarkshire. The prehistoric remains found there were located at the top of a south-facing sand and gravel terrace situated to the north of the Avon Water, a tributary of the River Clyde, and south of the present A71 road. The remains were centred on NGR: NS 654 390 and at 190 m OD. The topography was gently rolling grass-covered fields which had recently been used as animal pasture. An area of fragmentary moss, known as Burnbank Moss, was located in the south-western area of the site and contained deep peat deposits. A previous phase of quarrying in the 1960s had levelled and lowered the ground to the south of the site. The surface geology comprises glaciofluvial sand and gravel deposits, while the solid geology consists of the Clyde plateau volcanic formation (British Geological Survey Digimap www.digimap.edina.ac.uk). The area under investigation was divided into five phases (Areas A to E) (Figure 1).

Archaeological Background

Although no evidence of archaeological activity was known at Snabe Quarry prior to investigative work commencing, prehistoric activity is recorded in the general vicinity. Along the banks of both the Avon and Glengavel Waters, which lie to the south of the site, numerous stone tools and lithic implements including a number of agate and jaspilite scrapers and microliths (WoSAS pin 12862), a flint core (NMRS No. NS63NW 34), a chert core and flint flake (NMRS No. NS63NW 35) and a polished stone axe (WoSAS pin 9127) have been found. No associated structural remains are known in the area, although five kilometres to the west is The Leven, a multi-phase double palisaded enclosure site where a pit, which included carinated bowl sherds, lithic material and Arran pitchstone, has been dated to the early Neolithic (Atkinson 2000). Slightly further to the west is Laigh Newton where several structures and pits dating from the early Neolithic to the Iron Age were located (Toolis 2011).

The present A71 road to the north of the site is thought to follow the alignment of the Castledykes to Loudon Hill Roman Road (WoSAS pin 12059), while the now destroyed Loudon Hill Roman Fort (WoSAS pin 9124) was located to the west of the site. To the east are the possible remains of High Cauldcoats Roman Marching Camp, which has been identified by aerial survey (Jones 2011). Other Roman finds include a Roman coin hoard (WoSAS pin 9125) and a single denarius coin (WoSAS pin 9130), which were both found at Drumclog.

More recent activity includes the site of the Battle of Drumclog, located to the north of the quarry (WoSAS pin 9150), fought on the 1 June 1679 between Covenanters and a troop of dragoons.

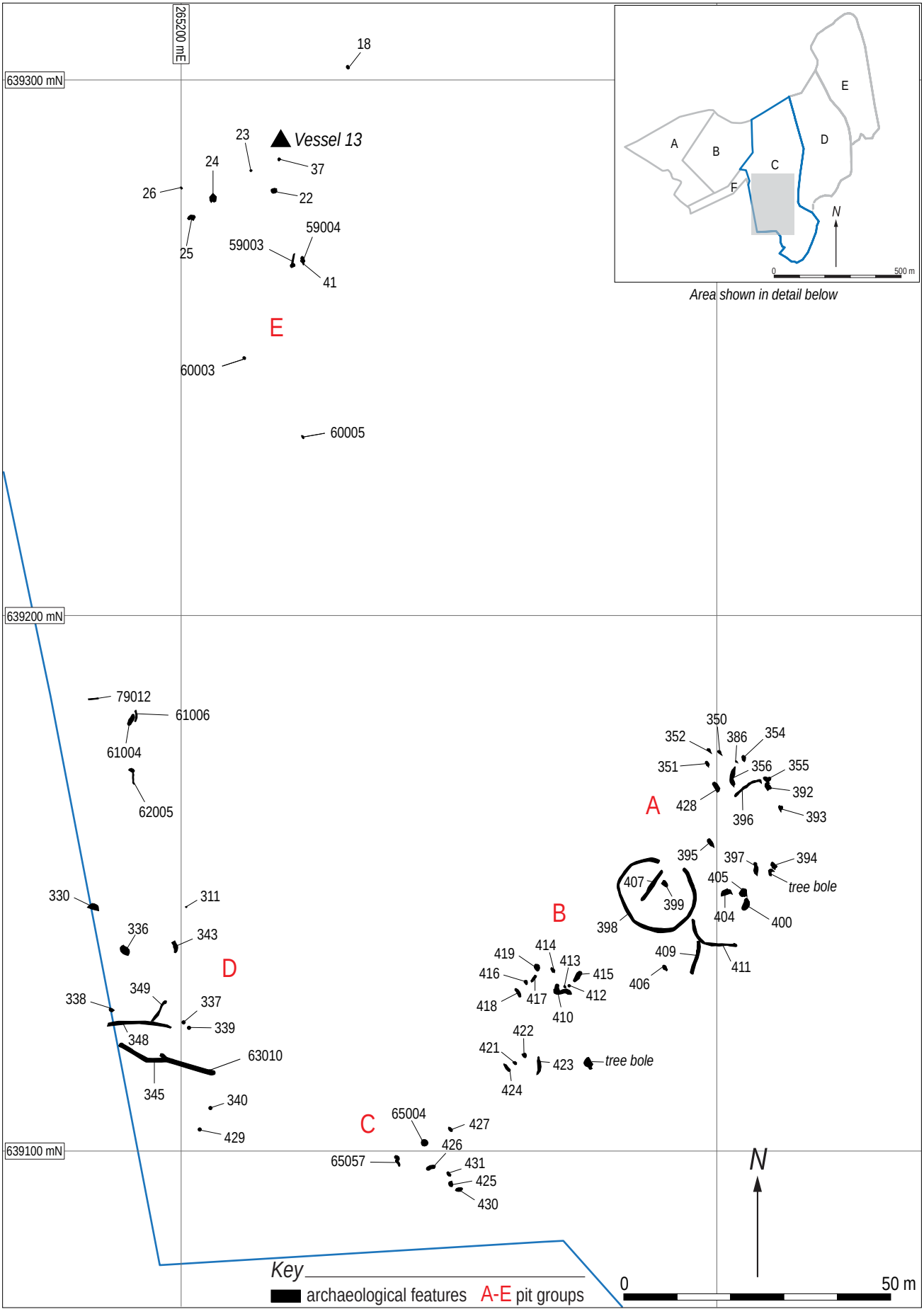

Figure 2: Location of key features.

Excavation

Areas A and B

Areas A and B were machine excavated in 2008 (Rennie 2008 and Kilpatrick 2008). Little of note was uncovered although the southern extent of Area B was dominated by the remnants of Burnbank Moss, which contained peat deposits ranging in depth between 0.5 m and 3 m.

Area C

In 2009 the evaluation of Area C revealed linear and curvilinear features and pits (Maguire 2009). This was followed in 2010 and 2011 by two phases of strip, map and sample excavations (Kilpatrick and Will 2010, Kilpatrick 2011). Several pits were revealed, with pit C65004 containing prehistoric pottery sherds. Many of the features identified in the subsoil were very ephemeral and subject to differential drying, which made their excavation and recording challenging. This was compounded by the poor weather conditions, which made many potential features only periodically visible on dry days. However, many of the features encountered appeared to form discrete clusters with several yielding artefactual and botanical material (Figure 2).

Structure 1

A badly truncated sub-circular enclosure, C398, with a possible NNE facing entranceway was located in the eastern half of the site (Figure 3). The feature was 0.6 m wide with depth of between 60 mm and 0.21 m and measured 13.5 m by 11.5 m. A linear feature, C407, and an off-centre pit, C399, were located within it and may represent contemporary internal partitioning. Unfortunately, few botanical remains or artefacts were recovered during soil analysis, except for a single undated agate chip (CAT 398). Multi-element XRF analysis of the soil from the internal area revealed an increase in several elements including manganese and strontium, suggesting occupation, although the activity could not be made more specific (MacLeod, see below).

Structures 2 and 3

Two linear features, C409 and C411, were located to the immediate south of enclosure C398 and one to the east, C396, and all measured between 4.9 m and 6 m in length. They had the same curvilinear shape as the enclosure and similarly little in the way of botanical remains. No artefacts were recovered and the features remain undated.

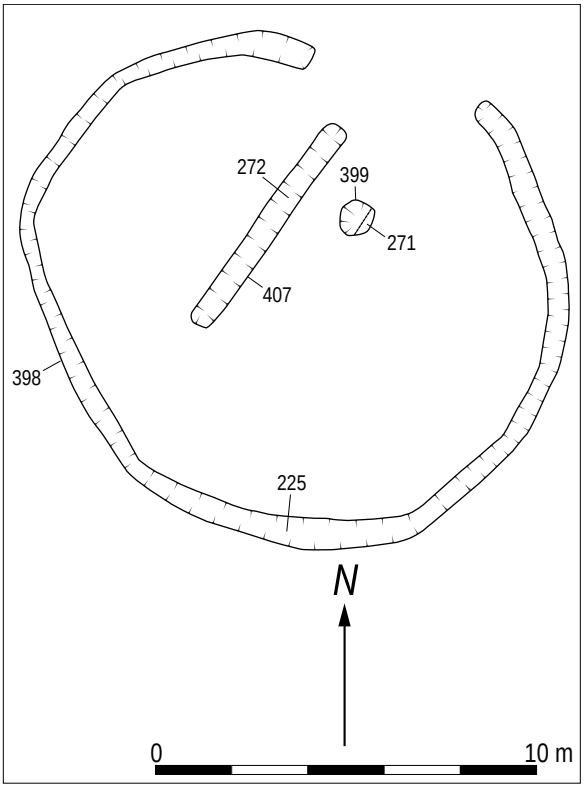

Figure 3: Sub-circular enclosure C398 and linear feature C407 and pit C399.

Structures 4 and 5

In the north-western area of the site a further two curvilinear features were located, C348 and C345. The former was similar to those in the western area of the site, but its length was greater at 14.2 m. A small linear feature, C349, 5 m in length abutted it. Linear feature C345 measured 12 m in length but no artefacts were recovered from its fill.

Pit Features

Cluster A *(Figure 4)*

Sixteen pits (C350-352, 354-356, 386, 392-395, 397, 400, 404, 405 and 428) were located to the east and south-east of enclosure C398. Except for pit C400 most contained homogenous fills with few botanical remains present. Birch, oak and hazel were the most common species identified, with hazelnut shell fragments also recovered from pits C355 and C403. The lack of weathering within the pits suggests they were probably rapidly back-filled following excavation. Pit C400 (Figure 4) differed from the other pits as it was re-cut. Its primary fill contained a botanical assemblage including traces of unidentified twigs

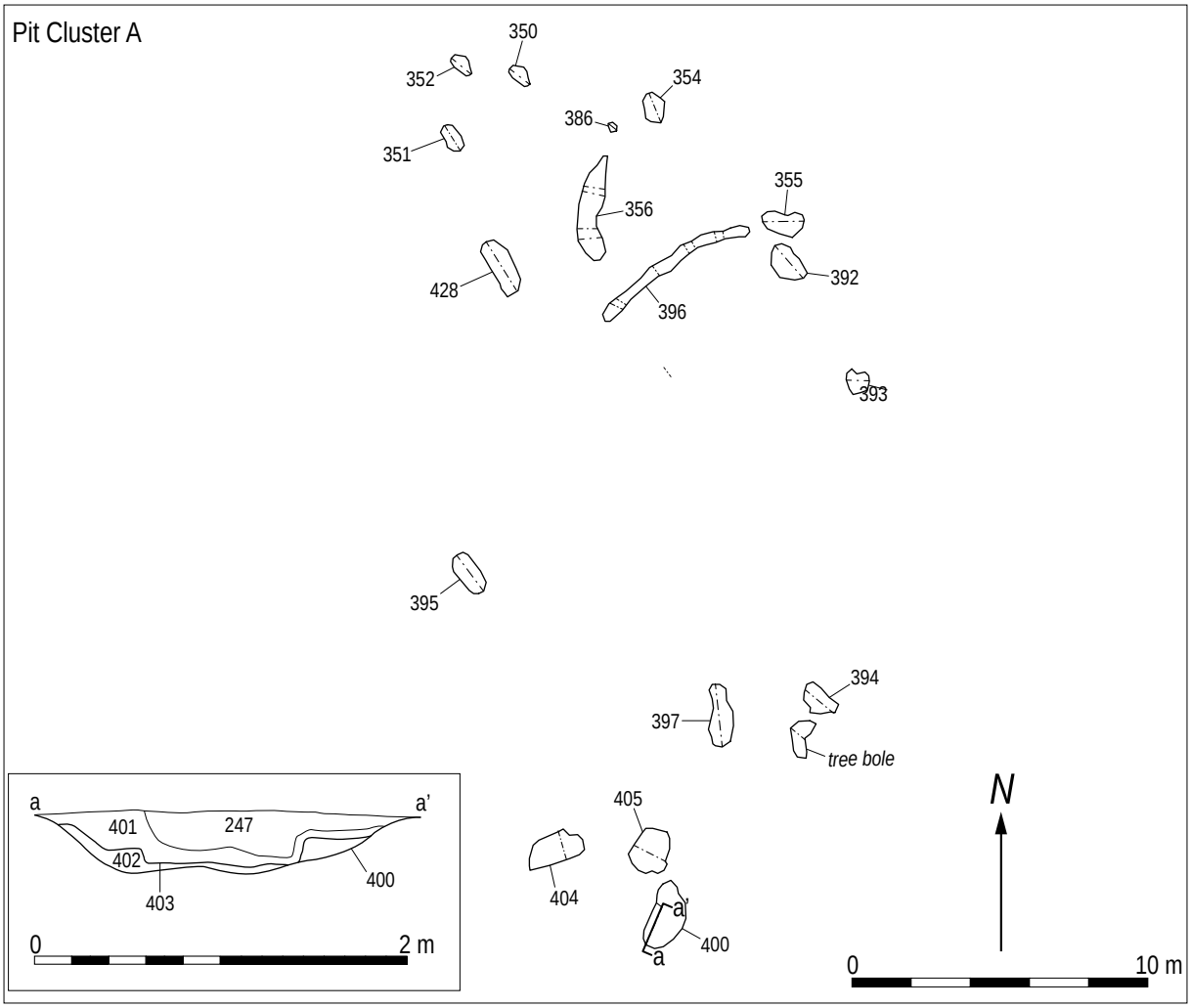

Figure 4: Pit Cluster A, plan of features of with a section through C400.

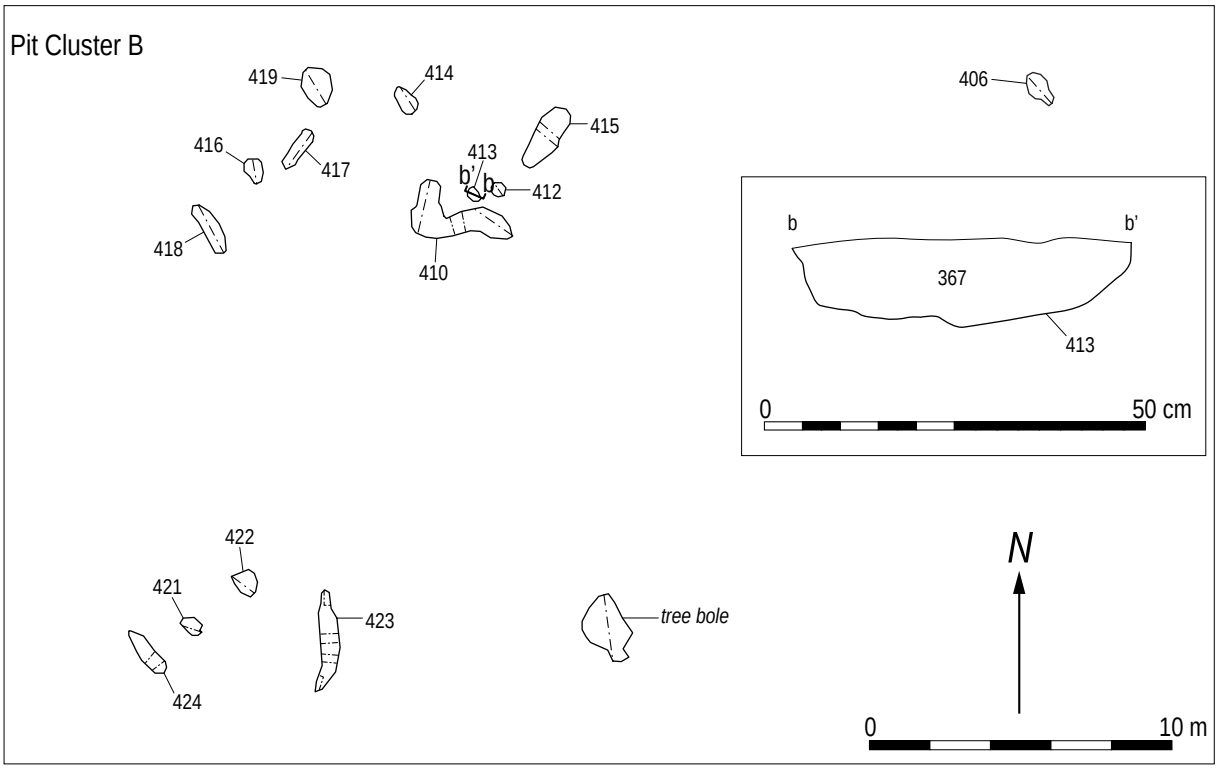

Figure 5: Pit Cluster B, plan of features with a section through C413.

and birch charcoal, which provided a radiocarbon date within the late Mesolithic period (5062-4837 cal BC). Only one pit, C356, contained any artefactual material, a chert chip (CAT32).

Cluster B

Fourteen pits (C406, 410, 412-418, 419, 421-424) similar in morphology as pit cluster A were found to the west of enclosure C398. Seven pits were investigated for botanical remains with five containing carbonised traces of species including birch, oak, hazel and hazelnut shells. Interestingly, pit C413 contained two uncarbonised fig pips and one grape pip (Figure 5). Only one pit, C419, contained artefactual material - a slightly rolled agate chip (CAT 34).

Cluster C

Seven pits (C65004, 65057, 425-427, 430 and 431) formed this small cluster (Figure 6). Three pits (C65004, C425 and C426) were investigated for botanical material and revealed a mixed charcoal assemblage including oak, birch, beech, hazel and willow species thought to be the remains of domestic/hearth waste, although the prevalence of hazel charcoal might suggest the remains of a wattle structure (see Ramsay below). Pit C426 contained not only beech charcoal but one uncarbonised grape pip. Radiocarbon dating of the beech charcoal provided dates within the late Mesolithic period of 7041-6754 cal BC clearly suggesting that the grape pip was an intrusive element.

Pit C65004 (Figure 6) measured 1.10 m by 1.20 m with steep, straight sides and a flattish base. It contained five fills with the main fill (C65003) containing 15 sherds from two early Neolithic carinated bowls, which had been used as cooking pots (Vessels 1 and 2, see Ballin Smith below). Fire-cracked stones (SFs 2 and 8) found within the pit suggest that it had been used as a fire-pit for heating and preparing food prior to its closure. The carbonised botanical remains recovered included hazel, willow, oak with hazelnut shell fragments, wheat and unidentified cereal grains. Unidentified small fragments of very weathered bone were also recovered. Radiocarbon dating of the hazel roundwood charcoal from the main fill provided a date of 3787-3643 cal BC consistent with the early Neolithic period. Due to the high level of hazel charcoal within the fill, Ramsay (below) suggests there could be the remains of a wattle structure within the fill.

Cluster D

Of the eight pits (C311, 330, 336-340 and 429) found in this area, four were investigated for botanical remains (C330, C336, C337 and C340). Charcoal from hazel, oak, birch and willow were retrieved, including a hazelnut shell fragments from pit C330 (Figure 7). This mixed assemblage was interpreted as the remains of scattered domestic hearth waste. No artefacts were recovered from any of the features except pit C337 which contained a fragment of prehistoric burnt flint (CAT 12) (see Ballin below).

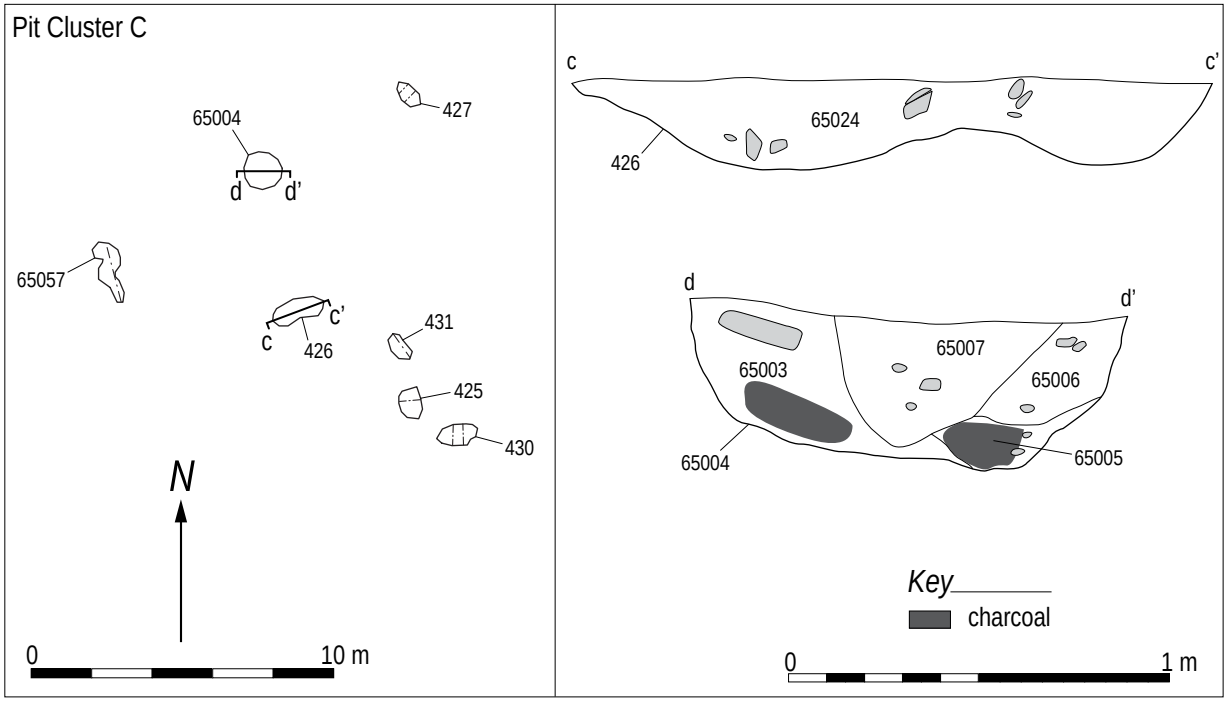

Figure 6: Pit Cluster C, plan of features with a section through C426 and C65004.

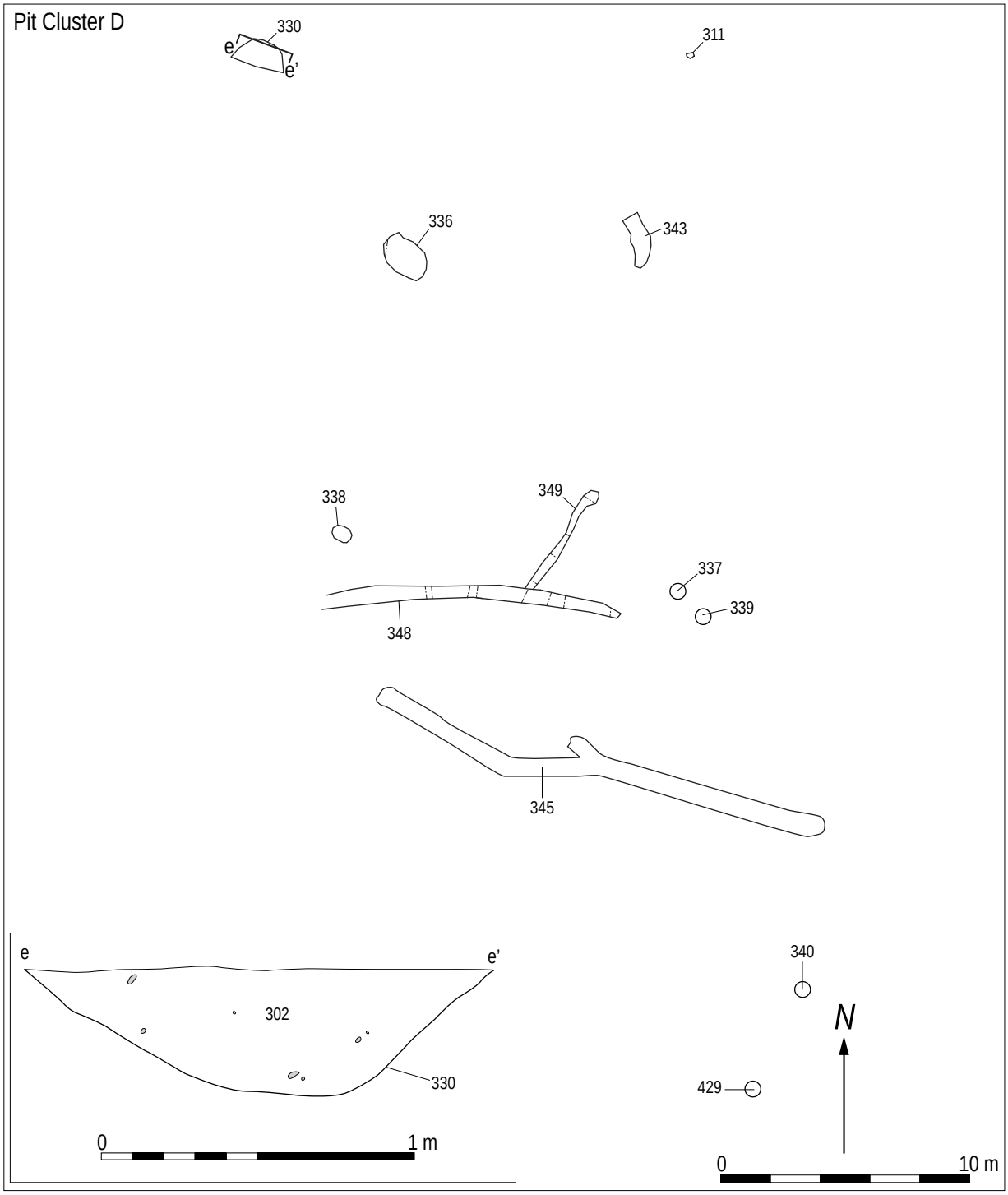

Figure 7: Pit Cluster D, plan of features with a section through C330.

Cluster E

This pit/posthole cluster was the most interesting encountered and comprised 15 single features (C59003, 59004, 60003, 60005, 61004, 61006, 79012, 018, 022-026, 037, 041) with most containing a single fill, except pits C022 (Figure 8) and C60005 (Figure 9), which contained two. Botanical remains were investigated in six pits and all produced varying amounts of tree species including oak, hazel, birch and willow, with a high number of hazelnut shell fragments encountered in pits C022, C037 and C60003 (Figure 10). These pits also contained carbonised cereal grains with C022 containing emmer/spelt wheat and wheat seeds, while pits C037 and C60003 produced only wheat seeds. Also retrieved from the lower fill of pit C022 was a whole hazelnut shell which may have been gnawed by a wood mouse (Plate 1, see Ramsay below).

Pit C022 was sub-rectangular in shape measuring

1.04 m by 0.83 m with a depth of 0.30 m. Ten carinated bowl fragments, eight in the lower fill (Vessels 3-10) and two in its upper fill (Vessels 11 and 12) were discovered. Although much of the pottery appeared indiscriminately scattered throughout both layers, sherds from Vessels 4 and 5 gave the impression of being deliberately placed, with Vessel 3 pressed against the eastern side of the pit and Vessel 4 centrally positioned in the base. A chipped sandstone block SF9 (Ballin Smith below), also appeared to be deliberately placed near to the base of the pit at a slight angle. Unlike pit 65004 (Area C) no fire-cracked or heat affected stones were found within its fill. Other finds included five flint chips (CAT24-26, 31 and 31), two flint microblades (CAT28 and 29), a flake of burnt pitchstone (CAT27), a retouched flake of Cumbrian tuff (CAT4) (see Ballin below) and very small fragments of weathered bone. Radiocarbon dating of carbonised hazelnut shells fragments from both fills provided dates within the early Neolithic period (3715-3631 cal BC and 3695-3520 cal BC).

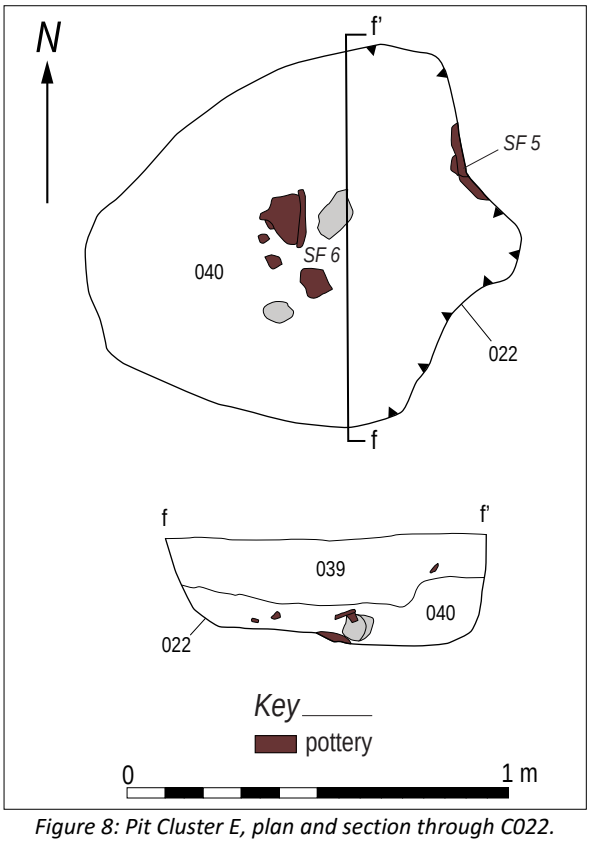

Figure 8: Pit Cluster E, plan and section through C022.

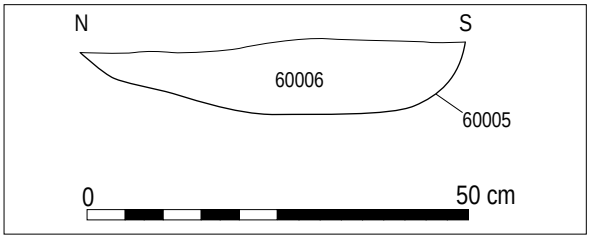

Figure 9: Pit Cluster E, section through C60005.

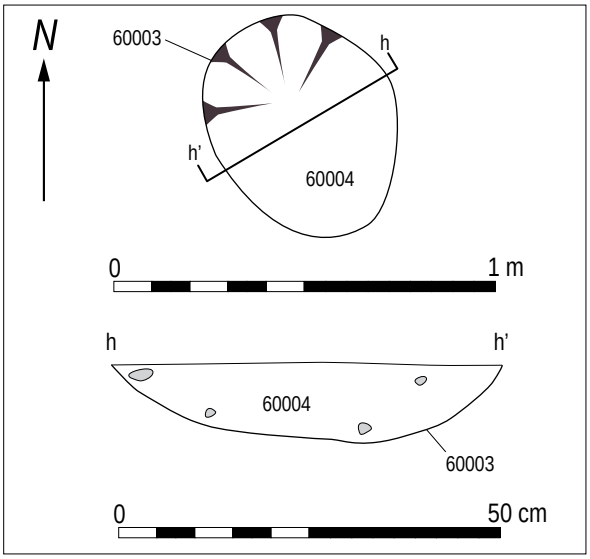

Figure 10: Pit Cluster E, plan and section through C60003.

Pit C60003 produced an unburnt flint flake (CAT21) and a burnt flint chip and flake (CAT17 and 20). Carbonized hazelnut shell fragments retrieved from the pit were radiocarbon dated to within the early Neolithic period (3715-3628 cal BC).

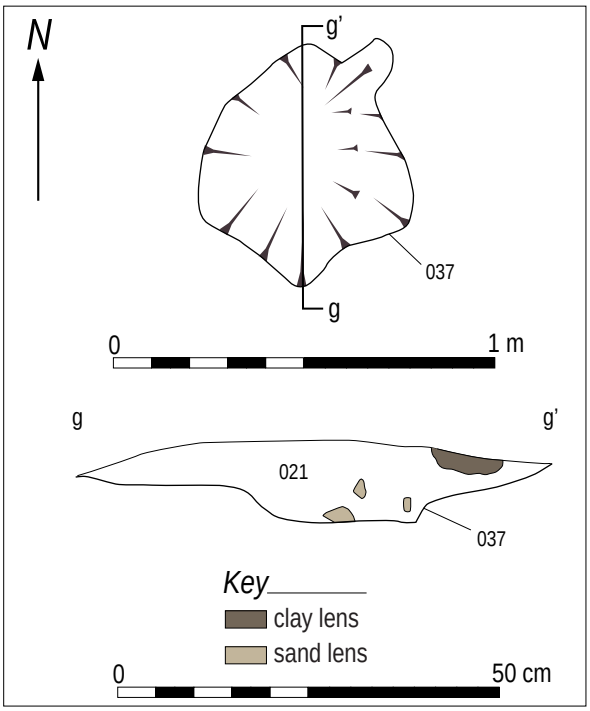

Figure 11: Pit Cluster E, plan and section through C037.

Pit C037 (Figure 11) was located to the north-east of pit C022 and was shallow but sub-oval in plan, measuring 0.72 m by 0.50 m. The fill contained a fragment of polished stone axe derived from Cumbrian tuff (CAT3) and charcoal fragments of hazel, which provided radiocarbon dates of 3766-3632 cal BC, consistent with the early Neolithic period. To the north-east of this pit and located

on the subsoil surface were several sherds of an early Neolithic carinated bowl, Vessel 13, (see Ballin Smith below).

Posthole C60005 (Figure 9) measured 0.50 m in diameter but was only 0.10 m deep. It also produced several finds including an agate chip (CAT18), rolled flint and a chert chip fragment (CAT22 and 23). Its carbonised assemblage comprised predominantly oak with traces of willow and hazelnuts, suggesting the post may have been burnt in situ. Posthole C026 was similar as it contained a carbonised assemblage of oak, again suggesting the in situ burning of a post.

Located on the subsoil surface were further fragments of flint, some were burnt and others were vitrified (CAT11, 14 and 16). These have been linked to later historic industrial processes (Ballin see below).

Areas D and E

Both of these areas were evaluated (Kilpatrick 2011, Hunter Blair 2012) with few features encountered (Figure 1). The most common were twentieth century field drains although several open drains were also noted in Area E. Several small features were also excavated in the northern part of Area E although their date and function remains unknown. These were not further investigated due to changes in site design.

Radiocarbon Dates

Seven radiocarbon dates were obtained from individual features across the site, predominantly those that contained artefacts such as pottery and lithic material, to aid their interpretation and their place within the local and wider trade networks of imported and locally sourced objects. They were submitted to the Scottish Universities Environmental Research Centre (SUERC) for AMS radiocarbon dating (Table 1). The dates revealed that activity on site was not continuous. It commenced in the late Mesolithic period (eighth millennium BC) and continuing intermittently until the early Neolithic period (fourth millennium BC) where there appeared to be a concentration of activity coinciding with the importation of 'exotic' items such as pitchstone from the Isle of Arran and Cumbrian tuff from north-west Cumbria.

The radiocarbon dating programme also highlighted the intrusive nature of some of the finds such as the grape pips and fig seeds which were found in pits that had radiocarbon dates much earlier than the finds would suggest, for example pit C426 (Area C) which was dated to the eighth millennium BC. It suggests some of the material may have gradually 'worked' its way in through natural processes such as bioturbation and/or the movement of water such as periodic flooding. All features were interpreted using dates at 2-sigma (95% probability) range due to its greater accuracy.

Sample	Material: all charcoal	Context	Description	Depositional Context	Uncalibrated date	Calibrated 1-sigma	Calibrated 2-sigma	δ13C relative to VPDB
SUERC-50155 (GU32476)	Corylus avellana nutshell	60004	Fill of pit 60003	Primary	4865+/-42	3697-3637 BC	3715-3628 BC	-22.8‰
SUERC-50159 (GU32477)	Corylus avellana roundwood 7 rings	65003	Fill of pit 65004	Primary	4926+/-42	3715-3652 BC	3787-3643 BC	-25.4‰
SUERC-50160 (GU32478)	Corylus avellana	21	Fill of pit 037	Primary	4880+/-42	3696-3641 BC	3766-3632 BC	-27.8‰
SUERC-50161 (GU32479)	Corylus avellana nutshell	39	Upper fill of pit 022	Secondary	4872+/-42	3696-3639 BC	3715-3631 BC	-24.0‰
SUERC-50162 (GU32480)	Corylus avellana nutshell	40	Lower fill of pit 022	Primary	4820+/-42	3581-3533 BC	3695-3520 BC	-25.1‰
SUERC-50163 (GU32481)	Betula	402	Lower fill of pit 400	Primary	6054+/-42	5010-4901 BC	5062-4837 BC	-25.0‰
SUERC-50650 (GU32482R)	Betula	65024	Fill of pit 426	Primary	7965+/-28	7028-6930 BC	7041-6754 BC	25.8‰

Table 1: Radiocarbon dates

Specialist Reports

The full details and catalogues of the specialist reports can be found in the site archive.

Prehistoric Pottery

By Beverley Ballin Smith

Introduction

A total of thirteen predominantly rolled rimmed, carinated, round bottomed vessels were identified from this assemblage dating from the first half of the fourth millennium BC. The evidence suggests that this assemblage is derived mainly from cooking vessels. One pot was perforated after firing, indicating a possible change in function. The vessels were located in two fire pits but the ten vessels placed in pit C 022 during a single or possibly two events are considered contemporary. Their disposal was a deliberate act to 'close' the pit and the activities associated with it.

Description of the assemblage

	Rims	Carina-tions	Decorated body sherds	Bodies	Crumbs	Total
Vessel 1	2		1?	3*		6
Vessel 2	3			6		9
Vessel 3	4			10		14
Vessel 4	2			8		10
Vessel 5	7	12		109		128
Vessel 6	2	2		16*		19
Vessel 7	3					3
Vessel 8	4			1		5
Vessel 9	2					2
Vessel 10	3			2		5
Vessel 11	2	2		37*		41
Vessel 12	1					1
Vessel 13	2			1		3
Others	6	4		62*		72
Totals	43	20	1?	255		318
Percentages	13.5	6.3	0.3	80.2		100

** includes crumbs*

Table 2: Sherd forms

This assemblage comprises 318 sherds with a higher percentage of surviving rim sherds than is normally expected from a prehistoric assemblage. The lack of bases and the paucity of decorated body sherds is common for an assemblage of early Neolithic date as this is. Most sherds were recovered by hand during the excavation of features, but additional small sherds and most of the crumbs or fragments (Others on Table 2) resulted from soil sieving and from surface collection. All the vessels identified were derived from the fills of features.

Clay and filler

The assemblage can be characterised by its almost near homogeneity of clay and filler mix (stone temper added by the potter). There are slight variations between pots and between sherds of the same vessel, but most of the pottery contains a wide variety of mainly coarse grains of local rock including quartz, coal or shale, rare slivers of flint, and occasional sandstone fragments. Most of the rocks used in the filler are unidentified to type, but are presumed to be igneous, and most are rounded in form. Occasional angular grit is noted.

It is likely that the potters found a good source of clay besides the Avon Water, which courses to the south and east of the site and through a wide variety of rock types. Grit from the river bed and its sides, as well as from the fluvial-glacial drift deposits across the area, would have provided the filler that was mixed with the clay to enhance the thermal qualities of vessels and their durability. The filler accounts for about 15-20% of the clay matrix.

Sherd thickness and weight

The thickness of sherds measured across their broken sections gives an indication of the lightness or heaviness of vessels and therefore is also an indication, to some extent, of their size and robustness (see Table 3). Vessel 8 produced the thickest sherds averaging 11.7 mm, while vessels 5, 10 and 12 are the thinnest, averaging between 6.3 and 6.7 mm. When combined with their average weight a comparison of the degree of fragmentation can be made. The total weight of the individual vessel sherds also allows comparison of their survival. For example, Vessel 1 is a thick-bodied pot but few sherds of it survive, in spite of the fact they have the largest average weight and are large sherds. Vessel 5 lies at the narrower end of sherd thickness but more sherds survive of it than other vessels because of its greater weight. However, the average weight of its sherds is low and therefore indicates that the pot is highly fragmented. A total of 128 sherds of this pot were identified (Table 1). In total, 3.26 kg of pottery was recovered.

	Average sherd thickness (mm)	Total weight (g)	Average sherd weight (g)
Vessel 1	10.1	242	40.3
Vessel 2	7.2	148	16.4
Vessel 3	9.1	163.9	11.7
Vessel 4	7.9	353.3	35.3
Vessel 5	6.5	1001.2	7.8
Vessel 6	9.7	400.3	21.1
Vessel 7	7.9	74.7	24.9
Vessel 8	11.7	88.8	17.8
Vessel 9	7	25.2	12.6
Vessel 10	6.3	50.4	10.1
Vessel 11	9.6	334.6	8.2
Vessel 12	6.7	15.1	15.1
Vessel 13	9	22.9	7.6
Others	n/a	339.3	4.7
Totals		3259.7	

Table 3: Sherd thickness and weight

Manufacture of the pottery

The pottery is all hand-built using coils. This is demonstrated by Vessel 5 where the rim and body have parted along the junction of two coils. In general, the pottery is well-made and smooth, except where abrasion of surfaces has taken place. Where it can be deduced, most of the vessels are round bottomed with rims which are predominantly everted. There is evidence to suggest that the manufacture of rims was either difficult or they were simply poorly moulded as the shape of a rim could vary around the vessel's circumference. Joins between the sherds of Vessel 5 indicate a notable distortion of the rim.

The necks of vessels are straight to slightly flaring with carinations between them and the lower portions of the pots. All the pots are plain, with one possible exception, and where evidence has survived they were burnished externally and smoothed internally. Decoration is restricted to one sherd of Vessel 1, which has five incised lines (see below). There are occasional fingertip impressions most notably below rims. Some finishing of the rim bevel has caused slight ridging on several vessels and this may be due to the use of a implement rather than the potter's fingers. It also indicates that Vessels 1, 6, 7 and 11 were finished using the same or similar techniques.

Soot and carbonised food residues are noticed on some sherds of most vessels, either externally or internally. None has significant food deposits surviving. One sherd from Vessel 5 was pierced after firing. The vessel may have later broken at the perforation, which was 6 mm in diameter and positioned c. 20 mm below the rim.

The pottery is relatively hard and well fired, with its colours varying between red, reddish brown to dark brown. It is quite noticeable that some of the most curved sherds from near the bases of vessels are thoroughly burnt through use.

The vessels

Vessel 1

Six sherds (SF 1.1, 1.2, 1.3, 10, 12 and 13) with a total weight of 242 g, comprise a cooking pot. They were found in the fill of an oval shaped pit (C65004), possibly a fire pit (Maguire 2009).

A rolled and slightly misshapen rim sherd, indicating a diameter of 230 mm, had broken off the neck of the vessel. During its manufacture it was burnished but also trimmed by a piece of wood or other implement that caused the bevel of the rim to become slightly ridged. The sherd has also faint traces of carbonised food residues adhering to its surfaces.

The other pieces include carinations and sherds that were close to the vessel's base, some again with both internal and external food residues. One sherd (SF 1.3) is a malformed carination which has a ledge formed by the meeting, rather than the overlapping of two coils, and which was not removed during the finishing of the vessel. Another fragment of carination (SF 1.4) also shows a clear coil join. SF 12 is a burnt sherd from close to the base of the pot. It also has five scratches on its external surface, which are likely to be accidental rather than deliberate in design (Figure 12). The colour of the vessel varies from red to reddish brown and brown.

Vessel 2

The nine sherds from this vessel (SF 5, 9, 11.1, 11.2, 11.3, 11.4, 11.5 and 11.6) weigh a total of 148 g. All were found in the fill of pit (C65004), with Vessel 2. In addition, SF 9 a rim came from a disturbance (C65007) within the pit fill by either the insertion of a post or by animal burrowing (Kilpatrick and Will 2013).

This vessel that is c. 7 mm in thickness and its sherds are relatively light in weight (see Table 3). Its three rim fragments are rolled and everted, but

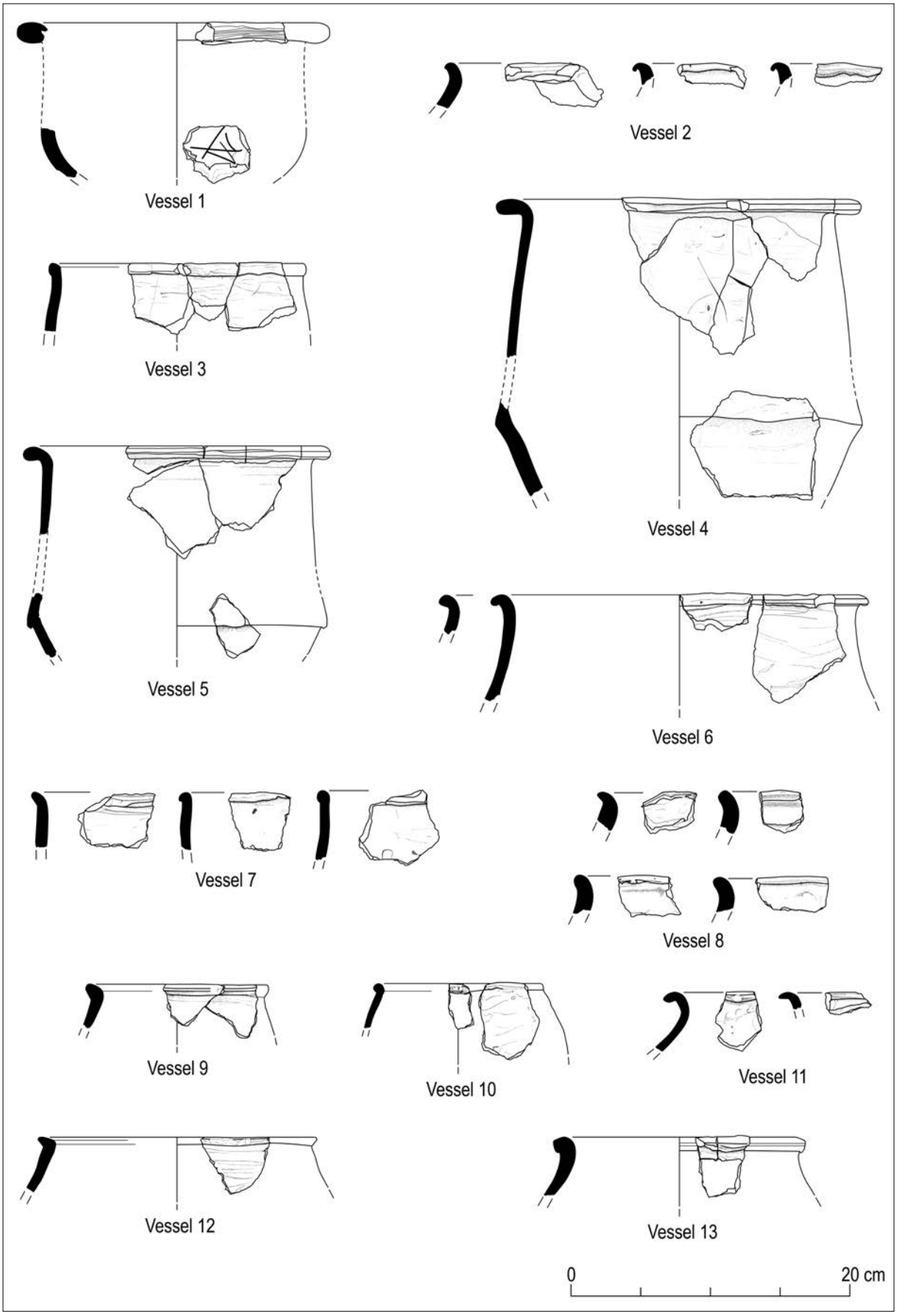

Figure 12: Pottery vessels 1-13.

their moulding is irregular and poorly executed, and they are only weakly joined to the neck of the vessel. One body sherd (SF 11.1) conjoins with one of the rims (SF 5), but the rim has broken off along the join. Body sherd SF 11.3 also has visible coil joins, which also indicates that this pot was generally not well made. There are no surviving sherds with a carination to aid the determination of the shape of the vessel, and the rim sherds are too irregular to measure.

The vessel was smoothed and burnished before firing and some evidence survives of its use. Traces of carbonised food residues have been found on most of the body sherds both internally and on their external surfaces, indicating that this was most likely a cooking pot.

The remainder of the vessels (Vessels 3-12), except Vessel 13, were found in Area C in pit C 022. Vessels 3 to 10 were found in the lower fill of it and Vessels 11 and 12 in its upper fill. It is likely that the pit was initially used as a fire pit.

Vessel 3

This vessel comprising 14 sherds in total (SF 5.1, 5.2, 5.3, 5.4 and 5.5) was located on the eastern side of the pit in which it was found. The sherds weigh 163.9 g and include four rims.

This is a well-made vessel and its rim sherds, three of which conjoin, would have formed a vessel with a diameter of c. 180 mm with a straight neck. The rim is slightly everted, rolled over and somewhat flattened with some evidence of soot on its bevel. Faint lines on the interior of the vessel indicated that it was smoothed prior to firing or that the smoothing derived from its use. The pot was burnished externally although not all sherds indicate this. Some have lost their surface finish or surface. There is also some discolouration of SF 5.5, which includes body sherds from the lower half of the pot. Loss of surface and discolouration are likely to be due to its use on the hearth, as the pot is quite red in colour.

The form and use of the pot is uncertain due to the lack of surface residues and also carinations. However, its reddening and heat spalling may indicate this was a cooking pot.

Vessel 4

This pot, presumably a cooking pot, comprises 10 large sherds (SF 6.1, 6.2, 6.3, 6.4, 6.5, 6.6 and 6.7) weighing in total 353.3 g, was placed in the centre of the base of the pit. Its two rim sherds (SF 6.6 and 6.7) join with each other and a body sherd to indicate a wide, everted-mouthed vessel of 260 mm diameter and with a long straight or slightly curved neck. SF 6.2, a slightly heavier and thicker sherd, has a carination. Although the rim is missing from this sherd, it suggests a neck of over 55 mm in depth.

All sherds are smoothed and were presumably burnished. SF 6.2 indicates that the coil joins were N-shaped[1] rather than H-shaped in section, and it has grass marks on its external surface. SF 6.4 has a large amount of external carbonised food residues. The vessel varies in colour from red, yellowish red to reddish brown and this could be a result of firing and burial conditions as well as use.

Vessel 5

All the sherds of this vessel (SF 7.1, 7.2, 7.3 and 7.4) were found in the lower fill of the pit. At just over 1 kg in weight, this was a large vessel with a rim diameter of c. 220 mm. It also had the largest number of sherds (109) of any vessel in this assemblage. For its size it was a relatively thin pot (see Table 2) but it was well manufactured and burnished before firing. Several rim sherds and carination fragments were identified (Table 1) to indicate this was an open mouthed vessel. Distinctly curved body sherds indicate it also had a rounded base.

The rim (SF 7.1) is slightly everted and rolled but it had broken away from the neck at the junction of the coils. All the sherds display variation in rim moulding: some are more everted than others while others are distorted and malformed. However, there are several joins between them. This vessel was pierced by a c. 6 mm diameter hole approximately 20 mm below the rim, a feature not seen in the other pots. The hole was made through the pot after firing and presumably was not the only one around the circumference of the vessel, but evidence of other perforations was not found.

1 *N-shaped sections are where the clay on the outside of the vessel is smoothed downwards, but upwards on the inside of the vessel. An H-shaped section indicates the clay of the join is smoothed in the same direction both internally and externally.*

The carinations provide other detail: one has internal food residues and another has a poor join. They indicate quite a gentle change in angle from the body to the neck of the vessel. Occasionally rare seed or grass impressions are noted on sherd surfaces.

Vessel 6

This vessel comprising 19 sherds (SF 7.5, 7.6, 7.7 and 7.8) was again found in the lower fill of the pit and weighed a total of 403 g. It is a slightly thicker pot than Vessel 5 although the thickness of its sherds varies.

Two rims indicate that that vessel had a mouth of c. 270 mm diameter. SF 7.7 is two small everted, almost rolled-over rims but the neck of the vessel is slightly curved to the carination. The distance between the base of the rim and the carination is 60 mm. The visual appearance of the rims is poor, and one especially is malformed. However, both are slightly ridged on their bevel where the rim and neck coils join, which is most likely the result of how the finishing of the pot was carried out. There is evidence of burnishing and smoothing on the surfaces of body sherds and burnt food residues adhere to others. A deep grass impression is noted on the external surface of the largest rim sherd (SF 7.7). Some of the body sherds are clearly from near the base of the vessel as they are burnt and have lost part of their outer surface through heat erosion. This pot is red to reddish brown in colour and had probably functioned as a cooking pot.

Vessel 7

SF 7.9, comprising three rims sherds, is a vessel with a diameter of c. 280 mm from the same pit. Two rims are definitely from the same vessel and the third is likely to be. They are formed by folded clay rather than rolled, and were flattened on top. As in Vessel 6 some ridging is noted on the rim bevel. There are also slight differences in the neck shape, but that is inevitable in a hand-built vessel of this period. Burnishing survives on two of the rims but all have worn internal surfaces. In one example, the filler shows through the clay where the surface has worn away. There are also soot or food residues.

Vessel 8

The four rim sherds and one body sherd (SF 7.10) comprising this vessel, were again found in the lower pit fill. The sherds are the thickest in the assemblage averaging 11.7 mm (Table 3) and weigh a total of 88.8 g. The rims, which do not join, are rounded and everted but are poorly formed and finished. Although some finger marks are present, the evidence of the surface finishing of the vessel is lost.

Vessel 9

This vessel comprises two rims (SF 7.11) weighing 25.2 g, with rolled over and everted forms. The rims are small and the moulding is slightly different in each. Both are worn sherds and the surface finishing is lost.

Vessel 10

This vessel, comprising three rim and two body sherds (SF 7.12) is from the lowest of the two pit fills (C040). It is also the thinnest pot of the assemblage with an average thickness of 6.3 mm and a total weight of 50.4 g. The rims are small and slightly everted with finger moulding marks visible on a slightly curved neck. All the sherds are abraded: their surface finishing is lost and their edges are rounded.

Vessel 11

These 41 sherds (SF 8.1, 8.2, 8.3, 8.4, 8.5, 8.6, 8.7, 8.8 and 8.9) were found in the upper fill of the pit and weigh 334.6 g. The average sherd weight is only 8.2 g indicating a higher degree of fragmentation for this vessel than the majority of the assemblage. It has several similarities with Vessel 5, from the lower fill of the pit, including its fragmentation.

The best preserved rim sherd (SF 8.1) is rolled over, widely everted and well burnished, and is similar to those from Vessel 5, but the gap between the edge of the rim and the neck is almost 10 mm. The neck is curved and the bevel is slightly ridged as other examples in this assemblage.

There are two carinations (SF 8.2 and 8.5) and both they and the surviving body sherds are smoothed and burnished. There is some abrasion of the internal surface of SF 8.5 and it is slightly darker in colour. Thicker body sherds with some larger-sized filler (SF 8.6- 8.8) may suggest that they are from the rounded base of the vessel. They are better preserved internally than externally, which suggests that they have sat on the hearth. Several sherds have internal food residues.

Vessel 12

This single rim (SF 8.10) from the upper pit fill weighs 15.1 g. It is a coarse textured flat but everted rim with a fine edge. The poorly made join with the neck is visible on the internal surface of the sherd. The piece has been smoothed but all signs of burnishing are lost. Discolouration is due to external sooting or carbonised food residues.

Vessel 13

This two rim sherds and one body sherd (SF 2) of this vessel were recovered from the surface of the subsoil (C2002). Together they weigh 22.9 g. The rim is rolled and the surface finishing of the vessel was smoothed and burnished. Carbonised food residues adhere to its external surface.

Discussion

Form and function of vessels

The main characteristics of these vessels are everted, curved and straight rims, the presence of carinations, the total absence of flat base sherds, and the near absence of decoration, Together these indicate that this assemblage mainly comprises carinated bowls - a type of pottery commonly found on early Neolithic domestic sites across Scotland and the British Isles in general. Assemblages of similar vessels were found on various sites in East Lothian during archaeological works along the A1 trunk road (Sheridan 2007, 213).

The burnt and curved sherds from Snabe are probably evidence of the round bases of vessels, and although the shape and moulding of the rims varies considerably, they are nearly all of the same general style. The bowls were predominantly plain but were mostly burnished to a fine smooth and shiny finish. Evidence of this has survived their use and the conditions of burial. One anomaly is the base sherd from Vessel 1 which carries a group of scratches on its external surface. However, their location, irregularity, their ill-defined edges and lack of form indicates they were probably produced by the vessel being set on or in the ground. They are not considered formal or deliberately executed decoration.

All the identified vessels with the exception of Vessels 8, 9 and 10, which are less well-preserved with worn or lost surfaces, display soot and carbonised food residues on one or more surfaces. Together with the presence of burnt base sherds, it is likely the majority of vessels were used on the hearth as cooking vessels. The rims of the bowls range in diameter from 180 mm to 280 mm indicating that they were of varying sizes and capacities.

It is conceivable during the early Neolithic that individual vessels were made for specific purposes such as food storage, but during their lifespan their function could have changed. The last use of these pots was for food processing or cooking. The heat of a fire or ashes burnt and sooted the vessels: their contents partly burnt inside them, and spills of food burnt onto their outer surfaces.

The only notable feature that indicates a change in function of one vessel is the piercing of Vessel 5 after firing. This may be a significant fact, as the pot is one of the thinnest in the assemblage. It may not have functioned well on the hearth simply cracked during use. The perforation below the rim suggests it may have been repaired it was required as a hanging vessel for storage, in spite of carbonised food residues noted on one sherd. The evidence indicates that no soot or residues accumulated in the hole suggesting it was not used as a cooking pot after the vessel was perforated.

Approximately half of the vessels were not particularly well-made, or well finished, although burnishing was obviously an important aspect of their manufacture. However, with malformed rims, poorly moulded carinations and insecure coil joins (Vessels 1, 2, 5, 6, 7, 8 and 12) the pots may not have been in use very long. This could be the result of poor or inexperienced craftsmanship or the speed of delivery. Perhaps the manufacture did not matter too much to the user, especially if the vessel was to function as a cooking pot. The appearance of vessels was possibly secondary to their function at this site, as long as they fulfilled the requirements of the pottery tradition.

Vessel distribution, deposition and dating

The distribution of the vessels is interesting (Table 4). All but one of them was found in two pits in different parts of the project area. The oval-shaped pit (C65004) contained two vessels, the lower fill of the sub-rectangular pit (C022) contained fragments of eight and its upper fill,

two. Both pits are likely to have been fire-pits used during communal eating, feasting and perhaps ceremonial events. Vessel 13 was unstratified.

Vessel No	Location
1 and 2	The fill of an oval-shaped pit, possibly a fire pit C65004
3 to 10	The lower fill of a sub-rectangular pit C022
11 and 12	The upper fill of a sub-rectangular pit C022
13	The surface of the subsoil

Table 4: Location of vessels

The placing or disposal of vessels in pits is an action which may have direct association with the activities that took place there. It could be argued that some or all of these of these vessels were hurriedly made to be specifically used for cooking in the fire pits, accounting for their poor manufacture, and possibly their limited use. Vessel 5, which was perhaps not used long for cooking, was adapted, possibly repaired and then reused. After the events that took place around the pits, the pots were most likely intentionally broken and paced inside them. In both pits, rim sherds or sides of pots may have been purposefully chosen for burial as there are approximately 50% more rims (at 13.2%)[2] than is normally expected to be found in prehistoric assemblages. It is doubtful that pots were discarded whole as their weights and the joins among sherds is low. The distribution of pots, their breakage, and the possible selection of pieces to be deposited in the pits appears to have been deliberate. At Snabe, vessels were not simply discarded. They were an integral part of the act of closure of the pits and the activities associated with them. Pit (C022) was certainly used again, but the pottery found in its upper fill may have been disturbed from its earlier use as the poorer condition of the sherds indicates. In this example, pottery may not have been associated with the use and closure of the later use of the pit.

The location of the vessels in the sub-rectangular pit (C022) is also interesting. Vessel 3 was placed against the eastern side of the pit, and Vessel 4 in the centre of the pit bottom, suggesting that their deposition was arranged or planned but other vessels may have been randomly distributed. What was the significance of this? Was there a hierarchy of vessels or vessel pieces representing that of the vessel's owner?

2 *At 13.2% this is double the percentage of rims found for example at Midross, Loch Lomond (Ballin Smith forthcoming) even though that assemblage has twice the number of pottery sherds and covers a wider time period.*

Comparison of the Snabe assemblage can be made with that from Laigh Newton, East Ayrshire, also found during archaeological works in association with the expansion of a sand and gravel quarry. A wide range of prehistoric pottery, mostly single sherds, but including carinated early Neolithic bowls, was located in a number of pits across the site (Ballin Smith 2011, 23). However, the collection of mostly single sherds of pottery and carbonised organic material was interpreted as 'the accidental accumulation of domestic debris... rather than structured deposition' (Toolis 2011, 41), as is argued occurred at Snabe.

Three radiocarbon dates (see Table 1) are relevant to the dating of the pottery. From the evidence, it is possible that activities at pit C65004 and the lower fill and therefore use of pit C022 are contemporary with date ranges from 3787 to 3631 cal BC at two sigma. Although there is a slight overlap of dates with the later use of pit 022, 3695 to 3520 cal BC at two sigma, there is sufficient evidence to indicate that the later event could have occurred as much as a century later.

Fire pits were important at Monkton, South Ayrshire for the deposition of a range of pottery from the early Neolithic through the late Neolithic and into the Bronze Age (Ballin Smith 2012a). The early Neolithic was dated to 3637-3510 cal BC at two sigma (SUERC-44640 (GU29596) 4750±29). The inclusion of pieces of pottery in the fills of pits at Monkton seemed to have been a regular occurrence, and the evidence indicated that pits were reused at more than one event. This contrasts with the evidence from Snabe, where although pit (context 002) was reused, it occurred possibly within a short time frame. There was no evidence to suggest the longevity of pits and especially not the long time frame apparent at Monkton.

Two early Neolithic vessels with thin fabrics, rolled rims and burnished surfaces were found at Douglasmuir, East Dunbartonshire, associated with pits and a possible structure (Ballin Smith 2012b). In 1993, Cowie surveyed and catalogued known occurrences of Neolithic pottery across central and eastern Scotland, which were mostly small assemblages. Sherds were often found in pits and he discussed the activities associated with the pottery and its date. He inferred that it was generally in use during the first half of the fourth millennium cal BC (Cowie 1993, 18-19).

A significant assemblage of early Neolithic pottery was found at Midross, Loch Lomond between 2003 and 2005. It included plain bowls, an almost complete but flattened, burnished carinated bowl and other vessels (Ballin Smith forthcoming). The pottery did not only occur in pits but also in features associated with a Neolithic round building. The radiocarbon dates of the early Neolithic pottery from Midross indicate it was in currency during the first half and middle of the fourth millennium cal BC (Becket et al, forthcoming).

Recent work at Cambuslang, South Lanarkshire produced carinated bowls from shallow pits, which were dated to 3700 to 3360 cal BC (MacSween in O'Brien 2009, 10-12). MacSween discussed the abrasion of sherds, suggesting that many vessels were broken before their deposition in pits, which were often recut or reused. As discussed above, few sherds or vessels from Snabe were abraded, and those that were derived from the upper fill of pit C022 or from below the topsoil, where disturbance by mechanical abrasion or bioturbation was most likely. The vast majority of sherds lay undisturbed, deep in their burial contexts in the bottom of pits.

The lithic assemblage found in pit C022 is also considered to be early Neolithic in date and includes pitchstone, Cumbrian tuff as well as flint (Ballin, below). The author also considered the activities associated with this particular pit to be 'special' to include exotic materials from as far away as Arran and Cumbria (see also pit with pot and lithics from a pit at Carzield, Dumfriesshire - Sheridan in Maynard 1993).

Conclusions

The assemblage of thirteen vessels from Snabe, all of which are stylistically early Neolithic add considerably to the number of archaeological sites in Scotland, which have over recent years produced pottery of this type. The radiocarbon dates from the pits, in which the majority of pots were found, aids our understanding of the date of carinated bowls and their function in the region as the Snabe assemblage fits well within the date range for other other similar pottery assemblages.

It is clear from recent comparisons that there is a range of activities associated with the disposal of pottery in pits, some of which were reused over a long period of time. At Snabe this was not the case. The assemblage from pit C022 indicates that vessels were contemporary in their use but also possibly in their manufacture - there are enough common traits to indicate this is a distinct possibility. The vessels were made, used and broken with selected pieces placed deliberately in pits before they were filled in. Further discussion and research may be needed to understand these actions in a local as well as a regional and national context.

Lithics Artefacts

by Torben Bjarke Ballin

A total of 34 lithic artefacts were recovered during the work at Snabe Quarry; all were found in Area C. A fragment of polished stone axe was recovered from a pit. As shown in Table 5, the assemblage includes 22 pieces of flint, three pieces of chert, six pieces of chalcedony/agate, one piece of pitchstone, and two pieces of Cumbrian tuff (Group VI; Clough 1988, Table 3). The artefacts are referred to by their catalogue number (CAT no.).

	Flint	Chert	Chal-cedony/ Agate	Pitch-stone	Cumbrian tuff	Total
Chips	7	2	4			13
Flakes	2	1	1	1		5
Microblades	2					2
Indeterminate pieces			1			1
Heavily burnt/ vitrified flakes	3					3
Heavily burnt/ vitrified in-determinate pieces	8					8
Polished axehead flakes					1	1
Pieces with edge-retouch					1	1
Total	22	3	6	1	2	34

Table 5. General artefact list.

The flint artefacts embrace seven chips, two flakes, two microblades, and 11 heavily burnt flakes and indeterminate pieces; the chert objects are two chips and one flake; the chalcedony/agate finds include four chips, one flake, and one indeterminate piece; the site's solitary pitchstone artefact

is a small flake fragment; and two pieces in Cumbrian tuff are one flake struck off the lateral side of a polished stone axehead and one flake with edge-retouch.

The flint may have derived from two sources. The prehistoric pieces are probably based on local flint, imported from the coastal deposits of southern Scotland. The pieces are generally too small to be characterized in greater detail, and it is therefore not possible to determine whether they may derive from the region's east or west coasts (Smith 1880). The many burnt pieces collected from the site's subsoil are generally discoloured by their exposure to fire, but the fact that they are somewhat larger than the site's other flint artefacts, and that their cortex seems to be almost fresh (e.g. CAT 9, 10), suggests that these pieces may have been imported into the area from regions with primary flint deposits, such as north-east or south-east England (e.g. Henson 1982).

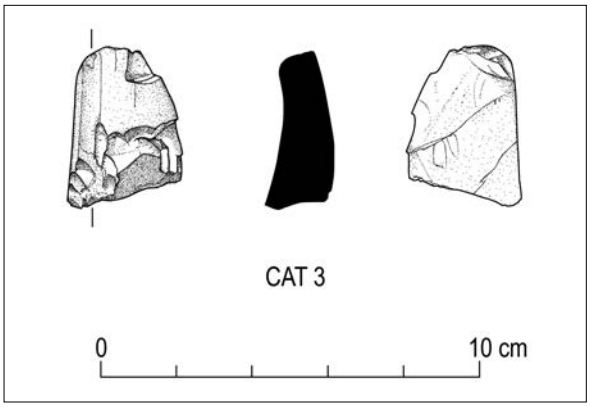

Figure 13: Axehead fragment (CAT 3) of Cumbrian tuff.

Snabe's only pitchstone artefact is of high quality with good flaking properties. It was imported into southern Scotland from the Isle of Arran (Ballin 2009). The fact that the piece is lightly porphyritic indicates that it may have been procured from parts of Arran outside the well-known Corriegills/ Monamore area, where almost all aphyric pitchstone comes from. It may, for example, have been quarried or collected at Tormore on the island's west-coast, where the porphyritic sources contain layers or lenses of pitchstone with almost no phenocrysts or very small ones (Ballin and Faithful 2009). The Cumbrian tuff was almost certainly procured from Great Langdale in the Lake District (Bradley and Edmonds 1993). The original axehead (CAT 3) (Figure 13) was probably imported as a finished implement, but the rough surface of the edge-retouched flake (CAT 4) suggests that some simpler flake tools may also have been imported, or even some raw blocks. The chert was probably procured from local sources and either quarried in pits or collected from pebble sources (Ballin and Ward 2013). Chalcedony and agate (stripy chalcedony; Pellant 1992, 88) is available in the local area in the form of erratics and pebbles in streams, but this raw material could also have been procured from primary sources near the region's extinct volcanoes (Woodland 1979).

A small number of artefacts are rolled (naturally abraded), such as CAT nos 1, 2, 13, 22, 23 and 34. It is presently uncertain why this is the case. Parts of the site could have been flooded at some stage in the past, as it borders the Avon Water and its floodplain. A small number of prehistoric pieces are burnt (CAT 12, 17, 20, 24), and it is thought that they may have fallen into domestic hearths in connection with the production, use or maintenance of lithic implements. They were all recovered from pits, and as they are generally very small fragments, it is more likely that they entered the features with the backfill than that they were deliberately deposited. Most of the burnt pieces, however, derive from the subsoil, and the fact that they are not only burnt, but in many cases vitrified (i.e. superficially melted as CAT 11, with slag adhering to it) suggests that they may have been burnt in connection with relatively recent industrial processes. Vitrification and the formation of glassy slag may be associated with, for example, metal working, ceramic production, or lime production. Vitrification is occasionally experienced in connection with prehistoric cremations, when lithics followed the deceased onto the funeral pyre (Ballin 2012, 24), but the pieces from this site appear generally not to have been flaked, but crushed.

In terms of the finds' on-site distribution (Table 6), six pieces were recovered from postholes C60003 and C60004; nine were found in pit C022; one in pit C037; one in pit C337; one in pit 356; one in pit C419; one in enclosure C398 and 12 were retrieved from the subsoil. Two pieces are unstratified. Most of the tiny chips and flakes probably entered these features with the backfill, and they do not add anything to the understanding of the site. A number of features and contexts deserve more detailed attention such as pit C022, pit C037 and the subsoil (C002/202).

	C60003/5	C022	C037	C337	C356	C419	C398	C002/202	Unstratified	Total
	Postholes	Pit	Pit	Pit	Pit	Pit	Enclosure	Subsoil		
Chips, flint	2	5								7
Chips, chert	1				1					2
Chips, agate	1					1	1		1	4
Flakes, flint	2									2
Flakes, chert								1		1
Flakes, agate				1						1
Flakes, pitchstone		1								1
Microblades, flint		2								2
Indeterminate pieces, chalcedony/ agate									1	1
Heavily burnt/ vitrified flakes, flint								3		3
Heavily burnt/ vitrified indet pieces, flint								8		8
Polished axehead flakes, Cumbrian tuff			1							1
Pieces w edge-retouch, Cumbrian tuff		1								1
Total	6	9	1	1	1	1	1	12	2	34

Table 6: General distribution of the lithic artefacts

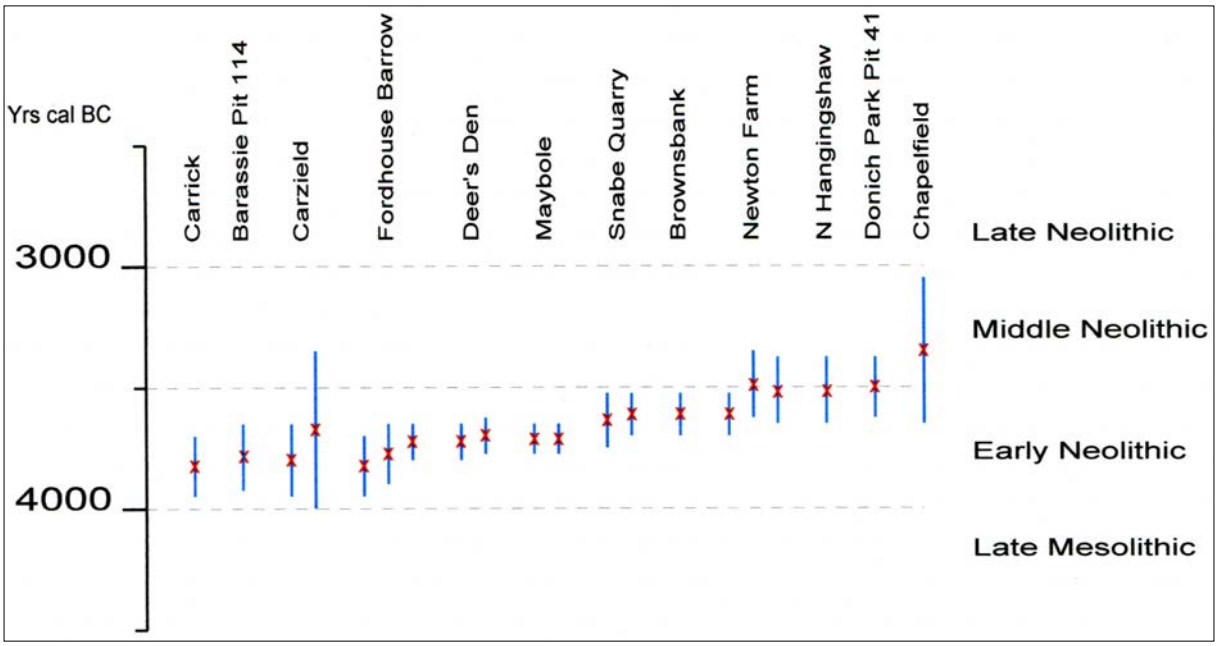

Figure 14: Radiocarbon-dated pitchstone artefacts from pits. (Years cal BC).

The assemblage from pit C022 includes five chips in flint, but also one pitchstone flake, two soft-percussion microblades in flint, and one edge-retouched piece in Cumbrian tuff. In addition, the pit contained sherds of early Neolithic pottery (Ballin Smith above). Investigations in the Biggar area, South Lanarkshire, have shown that Arran pitchstone, Cumbrian tuff and carinated pottery frequently occur together, and this artefactual combination could possibly be referred to as an early Neolithic 'package' (Ballin and Ward 2008; Ballin 2009). Figure 14 gives an overview

of radiocarbon-dated archaeological pitchstone from pits (Ballin 2015), and on the basis of this evidence and the presence of carinated pottery, it is almost certain that the finds from pit C022 date to the early Neolithic period. This was confirmed by radiocarbon dating of the pit's botanical assemblage (Table 1).

A pit from Carzield in Dumfries & Galloway (Maynard 1993) represents a close parallel to pit C022, as it contained two small pitchstone bladelets, sherds of carinated pottery and flakes from a polished stone axehead, the raw material of which macroscopically matches Group VI tuff from Great Langdale in Cumbria.

Pit C037, which was situated a few metres from pit C022 and probably formed part of the same pit cluster, contained the flake from a cannibalised polished stone axehead in Cumbrian tuff. Based on the presence of Cumbrian tuff, the pit's location near pit C022, and the fact that carinated pottery was recovered from the subsoil immediately north of this feature, this pit and its lithic content therefore probably also date to the early Neolithic period.

It is presently uncertain whether the two pits, C022 and 037, are burial pits for example (see Bone below), or whether they represent other forms of ritual activities. It is, however, almost certain that the two pit depositions represent some form of 'special' activities, as the lithic assemblages includes exotic material like Arran pitchstone and Cumbrian tuff. In Ballin (2009) the effect of distance on object value was discussed and the following was concluded:

Firstly, a commodity (for example a raw material) must be appreciated for its functionality, its striking appearance, and/or its association with parts of tribal mythology; and secondly, distance – more or less automatically – adds a premium to the value as a consequence of the time/labour invested in acquiring it, combined with a less measurable extra value determined by rarity in itself (an added 'mysterious' aspect) (Beck and Shennan 1991, 138).

As mentioned above, some of the burnt flint from the subsoil is vitrified, and one piece has glassy slag adhering to it. The character of the flint suggests importation from primary sources, either from north-east England or from the south-east. Although the find contexts do not allow dating, the secondary alteration of the flint indicates that these pieces were burnt in connection with industrial processes, possibly in historic times. Vitrification and the formation of glassy slag are effects associated with, for example, metal-working, ceramic production and lime production.

Worked Stone

by Beverley Ballin Smith

The rocks and stones retrieved from features on the site comprised an assortment of different rock types from sedimentary, igneous to metamorphic, found across the area. None of the stones have been imported from other geological regions.

The most interesting groups are those found within fire pits C65004 and 022, where pottery and lithic artefacts date to the early Neolithic period.

Fire pit C65004, the larger of the two pits, contained a number of different finds including fire-cracked stones (SF No 2 and 8), and two other unworked stones: cobble SF 3, and slab SF 7. The presence of burnt rhyolite, split sandstone cobbles and one of quartz within the pit reinforces the utilisation, firstly of the pit as a fire pit, and secondly of round and hand-sized stones for containing the fire or for heating liquids. The presence of two early Neolithic pottery vessels (Vessels 1 and 2) (see Ballin Smith above), which have been identified as cooking pots, suggests that the fire-cracked stones were used to heat their contents or that of some other vessel, such as a leather container. The cracking of the stones is due to heating them and placing the hot, dry stone in a cooler, liquid environment. The thermal shock would have eventually led to their disintegration (Jackson 1998). Stones would have been reused until they cracked and fragmented.

The fills of the fire pit C022, contained eight early Neolithic vessels as well as flint, pitchstone and Cumbrian tuff lithic artefacts. Additionally, there was a split micaceous sandstone block SF 9, which is chipped at one end, but is otherwise unworked. A piece of split and chipped shale (Sample 13) was also found in the fill. Unlike pit C65004, fire-cracked stones did not form part of the artefacts and stones retrieved from it. This

suggests that the pit may have been cleared of some fire debris, including stones, before pots and lithic artefacts were placed in it. The shale (Sample 13) may have been an accidental inclusion but the sandstone block SF 9 is likely to have been deliberately incorporated. It may have been a stone that broke the vessels, or had some other significance.

Botanical Remains

by Susan Ramsay

The carbonised remains from Snabe Quarry are consistent with prehistoric activity on the site. The charcoal assemblages are dominated by hazel and oak, suggesting that there may be a structural component to the assemblages as well as hearth and/or midden waste. Large quantities of hazel nutshell, together with carbonised grains of wheat suggest that the age of the site could be narrowed further to the Neolithic period.

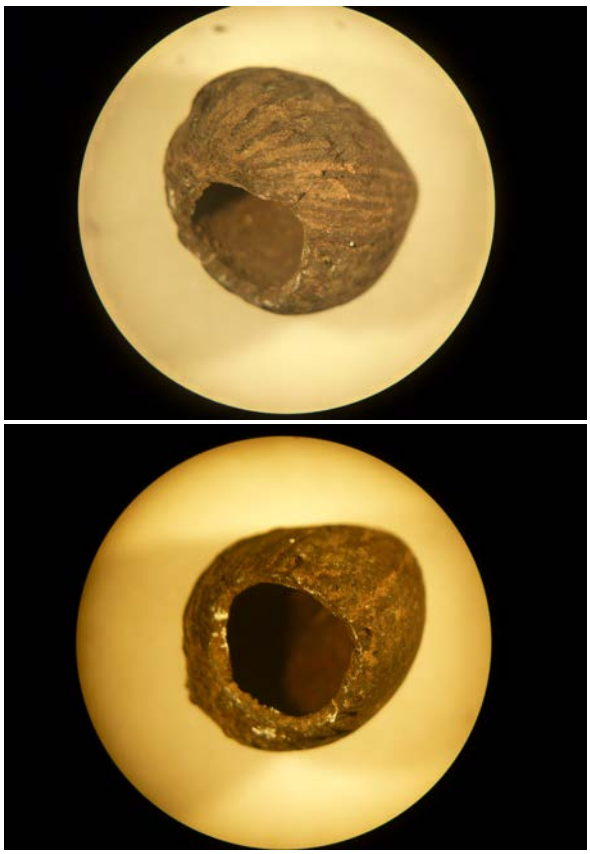

Plate 1: Hazelnut from lower fill of pit 022, possibly eaten by wood mouse.

The carbonised botanical assemblages recovered from the pits and postholes are generally very similar. The charcoal is dominated by oak and hazel, suggesting that there may be some structural elements within the carbonised assemblages, e.g. the remains of oak posts supporting hazel wattle panels. However, it is not possible to rule out the possibility that oak and hazel were simply used for fuel as they may have been the commonest types present in the local woodlands at that time.

Large quantities of carbonised hazel nutshell were also present in several contexts indicating that hearth or midden waste must also be present. The find of a carbonised hazel nutshell in pit C040 with a hole made by a wood mouse is particularly interesting as this might indicate storage of hazelnuts on the site, for later consumption (Plate 2). Carbonised cereal grains were generally relatively scarce but those that were identifiable were all wheat (C60003, 65004, 037) including a few that were further identifiable to emmer/spelt type (C022). The combination of large quantities of hazel nutshell (C60003, 60005, 65004, 65007, 037, 022), together with carbonised wheat grains is suggestive of a Neolithic date for this site, since barley generally becomes the dominant cereal type on Scottish sites from the Bronze Age until the medieval period (Dickson and Dickson 2000).

Particularly unusual finds from this site were a few uncarbonised fig (C413) and grape pips (C413 and 65024). When dealing with sites such as Snabe Quarry, where there is no evidence for preservation by waterlogging, it is usual to ignore any uncarbonised seeds within the assemblage as they are likely to be relatively modern contaminants. However, it is difficult to explain how these food types would have contaminated the site in recent times and it is therefore possible that they are from Roman, or more likely, medieval deposits. In Scottish archaeology, figs and grapes are generally linked to Roman or medieval cess deposits, especially in more urban areas (Dickson and Dickson 2000). No other archaeological evidence was recorded from Snabe Quarry that would suggest the presence of Roman or medieval deposits so it is difficult to reconcile the fig and grape pips on the site.

Multi-element Soil Analysis

By George MacLeod

The multi-element analysis of the control samples provided a chemical signature with which to compare the enclosure soil samples. This

analysis shows that there is an overall increase in elemental concentration in the enclosure samples compared to the controls. The results showed that there was a clear enhancement of Strontium (Sr), Manganese (Mn), Calcium (Ca) and Magnesium (Mg). The higher concentrations of these particular elements could indicate evidence of settlement (Entwistle et al 1998). This was not confirmed by the analysis of Phosphorus (P), which is commonly employed to determine evidence of human settlement through the disposal of waste and agricultural activity, as there was little difference between the control and enclosure samples (Sarris et al 2004). The mean concentrations of Phosphorus (P) in the controls were similar to the levels of Phosphorus (P) in the enclosure.

Statistical analysis determined that there was a significant difference in the concentrations of Strontium (Sr), Manganese (Mn), Calcium (Ca) and Magnesium (Mg) from that of the control samples. However, the statistical analysis of Rubidium (Rb), Zinc (Zn), Iron (Fe), Vanadium (V), Potassium (K), Barium (Ba) and Phosphorus (P) found that there was no significant difference in the elemental concentrations of them across all the samples. This suggested there was only limited evidence for the occupation of the enclosure.

Conclusion

The aim of the analysis was to determine the past function of the enclosure discovered at Snabe Quarry. Based on the multi-element analysis of soil grab-samples collected from the enclosure (398) of Area C and further control samples from the surrounding site, it is concluded that there is an enhancement of elements that may suggest there was human activity in the enclosure. It is also concluded that the past function of the enclosure at Snabe cannot be pinpointed to specific human activity.

Weathered Bone

By Maureen C. Kilpatrick

Very small fragments of bone with weathered, chalky surfaces were recovered from pits C60004 and 022. Unfortunately they could not be identified to species although several fragments were of possible animal origin.

Discussion

The main focus of occupation at Snabe Quarry is during the period of the early Neolithic where pit digging, use and subsequent deposition appears to be some of the activities. Little in the way of structural elements was uncovered, except an elusive enclosure whose function and date remain unknown, and several badly truncated postholes. However, the discovery of cereal grains in several of the excavated features would suggest that settlement was present in the surrounding area.

Both Ballin and Ballin Smith have discussed the 'special' nature of these early pits (C022, 037 and 65004) and their contents, which are often found in close association during this early period across a number of excavated sites, for example Maybole in South Ayrshire and the Carrick at Girvan (Becket and MacGregor 2009, 2012), and to which Sheridan (2007) has referred to as the 'Carinated Bowl Neolithic'. The function of pit deposition has generated much debate with two contrasting schools of thought that pits are either functional for the dumping of domestic waste (Connolly and MacSween 2003, 43; Toolis, 2011) or repositories which have been imbued with ritualistic meaning (Cook 2000, 108; Pollard 2001). However, more recently it has been suggested that even domestic actions can have ritualistic connotations (Brophy 2006, 19; Brophy and Noble 2012, 63) and that their use can be interpreted as "neither wholly ceremonial not completely mundane" (ibid). Indeed, at the Lambs Nursery site in Dalkieth, Cook (2000, 108) suggested that the deposition of more than one vessel sherd implied deliberate intention rather than accident.

However, Becket and MacGregor (2012, 58) recommend caution when interpreting function to depositional materials as attention can often focus on those artefacts deemed exotic to an area, for example, Arran pitchstone and Cumbrian stone tools. However, the presence of non-local items within the assemblages does suggest the presence of wide trade networks including the Firth of Forth and the Irish Sea region. Recent work by Ballin (2015) has revealed that the export of Arran pitchstone during the early Neolithic was throughout Scotland, except Shetland, and the north of England. However, many of the materials found on site were also locally sourced including

those used in the production of the ceramic vessels and many of the stone and lithic artefacts (Ballin and Ballin Smith above), suggesting the utilization and exploitation of local resources was also important and essential for communities.

Many of the features excavated at Snabe Quarry remain undated due to the near sterile nature of many of the pit fills and the resulting paucity of carbonised material required for radiocarbon dating. This situation is compounded by the small number of artefacts retrieved negating comparison studies. The lack of material finds is not unusual in prehistoric contexts and many pits and features exist on archaeological sites where dating has not been possible and the nature and function of the features remain unknown. During the excavation of early Neolithic dated pits at Balfarg/Balbirne Ceremonial Complex, Glenrothes in Fife (Barclay and Russell-White 1993, 60) the authors stated that due to the natural looking fills it would have been "relatively easy to assign a natural origin to them if they had not produced artefacts", and concluded this was the result of natural changes in soil morphology. Despite the number of pits excavated at Snabe Quarry it was not possible to discern any pattern to their placement although they did appear to be located in distinct clusters (Figure 2). However, pit C426 provided the earliest date obtained from site of 7041-6754 cal BC (2 sigma) suggesting that the primary activity at Snabe commenced in the late Mesolithic period. Unfortunately, no artefacts associated with this activity were recovered in contrast with the multi-period site of Laigh Newton, which produced not only a radiocarbon date as early as the seventh millennium BC but also lithic artefacts associated with late Mesolithic/early Neolithic activity (Toolis 2011, 37). However, the similarity in morphology of many of the surrounding features to pit C426 could suggest that they are of similar early date. This is also implied by the layout of the features, there being no over-lapping cuts suggesting that they were excavated at a similar time or were at least still visible when those nearby were excavated.

The dating of the enclosure (C398) is also problematic although it is tempting to suggest that structures 1 and 2 may have been of comparable date due to the similarities in shape and form. However, the lack of datable evidence prevents further research in this area. The function of the enclosure also remains unknown although the lack of an internal posthole arrangement could suggest that it was an unroofed structure. The paucity of any occupation deposits and the truncation of the ditch/gully is probably the result of later site disturbance such as agricultural ploughing and drainage improvements.

Conclusion

The excavation and post-excavation work at Snabe Quarry has added to the corpus of work already collected within the Clyde valley of its early prehistoric past. It has supplemented the growing list of sites whose assemblages contain similarly associated material which can only aid interpretation and understanding of those sites in the wider region.

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