



**ARO69: The Road to Bannockburn House;
excavations at Croftside Farm, Stirling**

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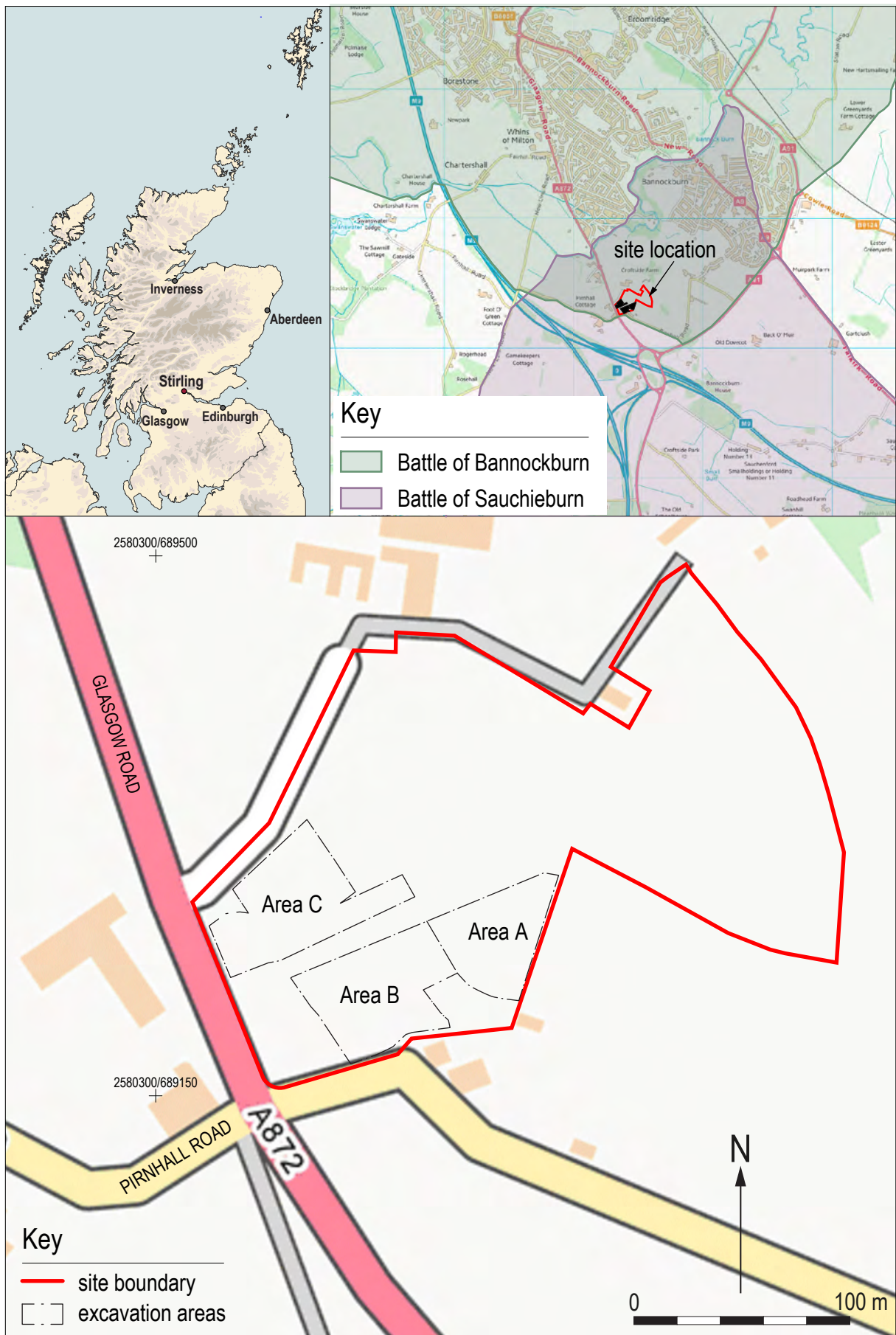
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Summary

Archaeological work carried out by GUARD Archaeology Ltd at Croftside Farm revealed a well-constructed road that led south-east to Bannockburn House.

Either side of this road were revealed shallow linear features that date to the post-medieval period, the remnants of broad rig cultivation marks. A number of pits suggest post-medieval industry while other pits yielded evidence of transient Mesolithic, Neolithic and Bronze Age activity.

The results of the project indicated a long history of intermittent use of the landscape throughout early prehistory until the post-medieval period.



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Figure 1: Site location.

Introduction

This report includes the results of archaeological interventions undertaken by GUARD Archaeology, on behalf of Bellway Homes Ltd (Scotland) at Croftside Farm, Stirling (Figure 1).

The development area at Croftside Farm, Whins of Milton, Stirling (NGR: centred at NS 80493 89382) comprised a 34,163 m² area that covered two irregularly shaped fields. The area is bordered to the west by the A872, to the north by the access road to Cat Craig, to the east by the former Brucefield Family Golfing Centre, and to the south by Hillhead Farm Steading. The fields, both of which were gently undulating, had no discernible topographic features. The eastern field had a central levelled area from which the land sloped gently down to the south, east, and west.

The underlying drift geology consists of Devensian Diamicton tills, while the solid geology consists of Limestone Coal Formation (BGS 2026 Geology Viewer).

Archaeological and Historical Background

The archaeological desk-based assessment of the development area carried out by GUARD Archaeology prior to any fieldwork commencing included a walkover survey (Rennie and Shaw, 2017). The assessment indicated that the development area is located within the Inventory boundary of two medieval battlefields: the Battle of Bannockburn and the Battle of Sauchieburn, both of which are of national significance (HES n/d). The Battle of Bannockburn (HES 2026 Inventory No. BLT4) is one of the most significant and influential events in Scottish history and was fought between the armies of Robert the Bruce and Edward II between the 23rd and 24th June

1314 (Figure 1). While various historians have suggested at least five different locations, recent archaeological research by GUARD Archaeology has revealed that the most likely location of the battle was to the north of the proposed development area, around Balquidderock Wood (Pollard and Oliver 2003; Sneddon 2006; Robertson 2006, Banks et al. 2011; Bailie 2011; 2012a, 2012b and 2015; Bailie and Ferguson 2025). Another key area of the battle was the large ditch of the Bannock Burn, where the fleeing English army was routed and many drowned in the water (Foard and Partida 2005).

The excavated area also lies within the northern area of the Battle of Sauchieburn (see HES 2006 Inventory No. BLT38), which took place in 1488 when a number of Scottish Lords, including the King's son James, Duke of Rothesay, rose up against James III. The two sides met in battle to the south of Stirling. James III's army is said to have had up to 30,000 men, while the rebels who were led by James, Duke of Rothesay, are thought to have been 18,000 strong. James III is purported to have been murdered by a priest in the nearby Beaton's Mill as he lay injured from a fall from his horse. It is said that the rebel lords arranged a grand funeral for James III, burying him at Cambuskenneth Abbey, to the north-east of Stirling.

Surrounding the development area are a potential prehistoric crop mark and pits at Pirnhill (NS88NW 28) c. 250 m to the west, while from the 17th or early 18th century, gate piers for Bannockburn House, a category B listed building, are located to the south-east (see Ordnance Survey 6" and 25" series 1865, and NMRS NS88NW 1.02). To the west of the development, running parallel with the A872, lies the putative line of a Roman road, orientated in a NW/SE direction (NMRS NS78NE 28 and NS88NW 42.01) that formed part of the Camelton - Ardoch - Strageath - Cargill Roman Road which linked the Antonine Wall with the fort at Ardoch.

Metal Detecting Survey Results

The archaeological metal detecting survey was undertaken primarily to recover any items associated with the battles of Bannockburn or Sauchieburn and was carried out across both fields comprising the proposed development site (Figure 2). Approximately 60 modern objects, such as wire, iron bolts and agricultural machinery fragments were recovered but with no particular concentration evident. They were photographed but not retained as they were of minor interest.

The majority of six horseshoes or horseshoe fragments recovered during the survey were found towards the eastern end of the eastern field. Two complete horseshoes were for a standard sized and a large draught horse and both had toe

clips, which were not introduced until the mid-1800s. The remaining four horseshoe fragments were either too fragmented or corroded to date.

Two buckles were recovered during the survey. Both were found towards the eastern side of the development area. One (SF 2013) was an oval-shaped halter buckle with a deep recessed crossbar and its steel hinge pin (Figure 3). It was made from copper alloy sheet hammered onto an iron base and may be associated with horse bridle wear. The second buckle (SF 4011) was made of copper alloy and was a belt or strap slider adjuster.

One coin and two coins or tokens were recovered: (SF 2005) was a copper alloy coin dated 1902; both (SF 2012) of copper alloy and (SF 4001) of undetermined metal, were too corroded to determine their date and whether they were coins or tokens.

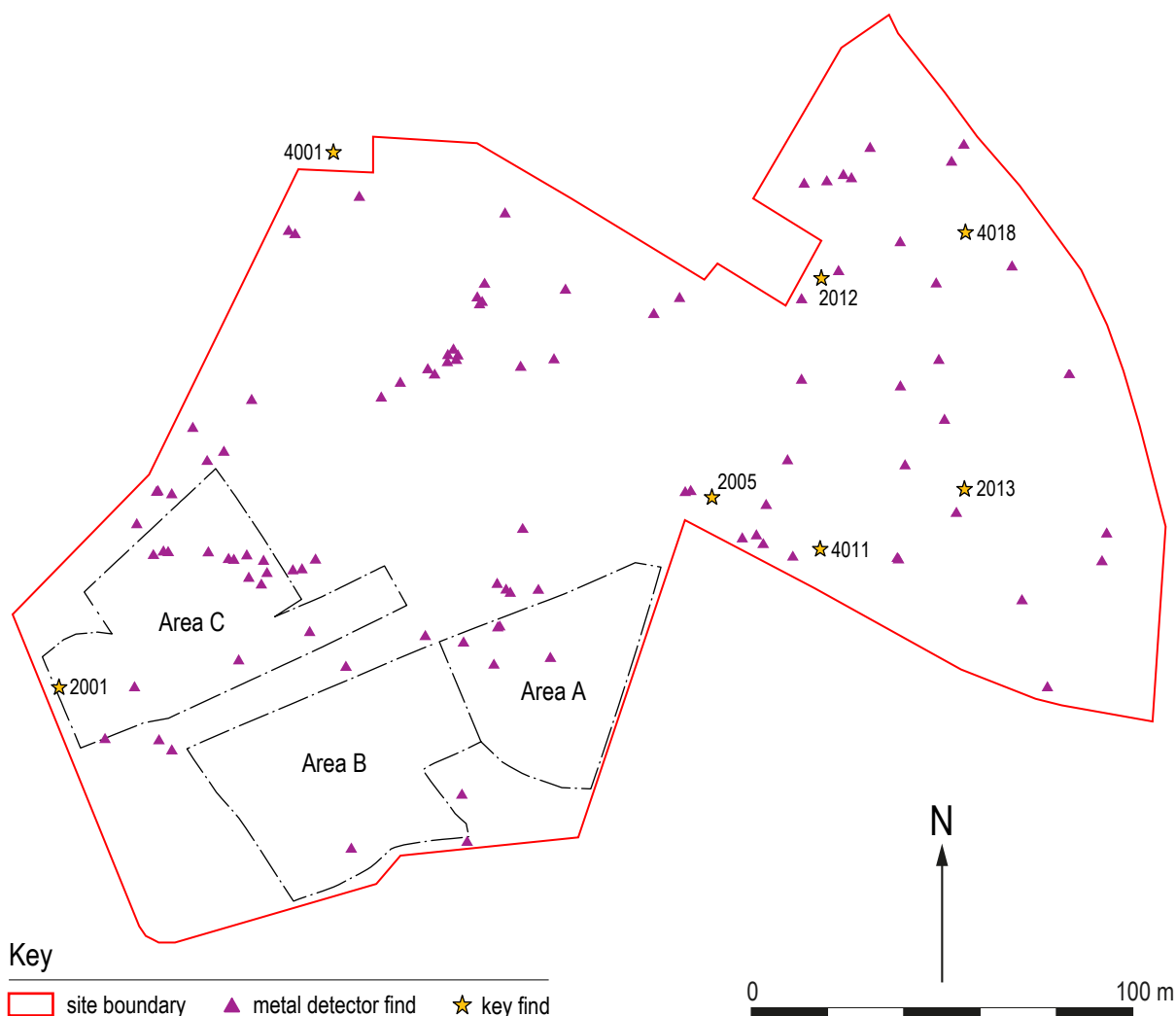


Figure 2: Metal detecting find spots.



Figure 3: SF 2013 buckle.

A copper alloy tombac button (SF 2001) and lead sack seal (SF 4018) are both post-medieval in age, most likely dating to the 18th century when such metal items were more commonly mass-produced. Seals were commonly used to label and secure sacks of fertiliser, seeds or other substances and are common topsoil finds.

Results of the Excavation

The excavation across the development area initially comprised areas, A, B and C, opened in the south-western field to investigate features of archaeological potential identified during the 2017 evaluation. Further expansion of Areas A and B merged these two areas into a single open area (Figure 4).

Topsoil (001) averaged c. 0.3 m in thickness across the site and overlay the natural reddish/brown sand and gravel subsoil (002), which also contained cobbles and the occasional stones and boulders. Parts of the subsoil across Area B east of the road and Area A was grey or orange brown sandy clay (002) with tile and rubble field drains visible. An intermediate silty sand subsoil layer (013), up to 0.7 m thick that contained frequent stones, coal and coke fragments was encountered towards the south-west end of the excavated area. This lay beneath the topsoil and overlay orange/brown silty sand (092) forming an interface layer with the natural subsoil (002).



Figure 4: Site plan.

The ephemeral remnants of rig and furrow cultivation (010) were visible aligned NE/SW across the site (Figure 4). Their maximum measurements were 57 m in length, 1.8 m in width, by 0.1 m in depth and they were spaced c. 3 m apart. A glazed pottery sherd (SF 007) was recovered from the silty sand fill of one of the furrows (011).

Area A

Three pits were excavated in Area A along with amorphous cobble deposits at the south-east end of site (Figure 5).

The largest pit (056) (Figure 6) was c. 5 m in diameter with a depth of 0.70 m - 0.85 m. Its fill was loose rubble with coal fragments and post-medieval pottery sherds, and was considered a possible infilled mine shaft. Its hand excavation was halted for health and safety reasons. A machine excavated slot was subsequently excavated across it.

The pit was abutted to the west by a layer of cobbles (062) (Figure 7). Numerous Medieval and post-Medieval pottery sherds were recovered from between them during excavation. Small fragments of coal were also visible compacted

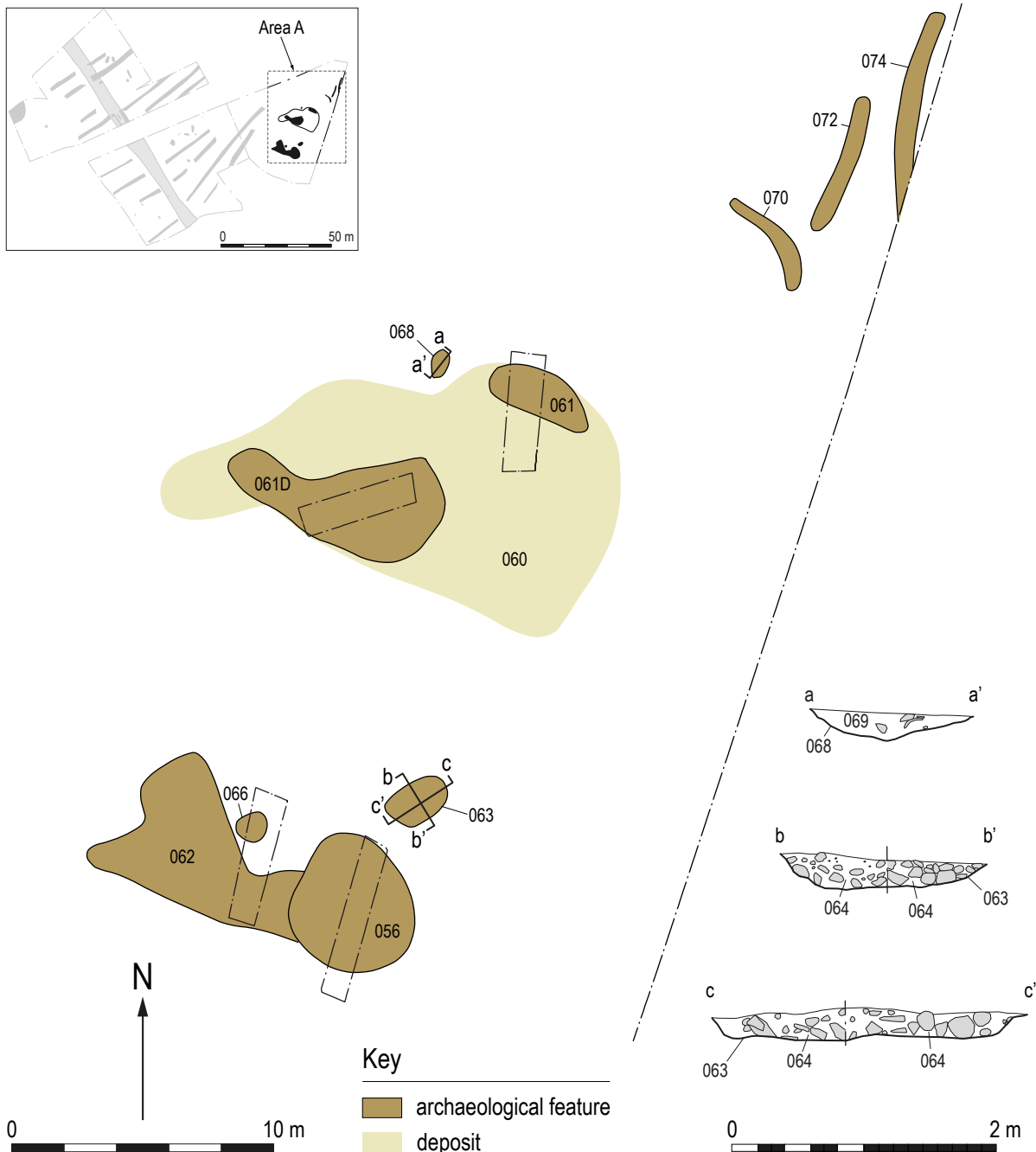


Figure 5: Plan of Area A.



Figure 6: Pit (056) with rubble upper fill (057), from the north.



Figure 7: Cobbles (062) to the west of pit (056), from the ESE.

into the silty sand forming part of the cobble layer. A layer of smaller cobbles (065) was recorded beneath the larger cobbles (062). Numerous Scottish post-Medieval sherds (SF 51) all from the same vessel, along with a pre-1740 green glass bottle fragment (SF 50) were recovered during excavation of this layer.

A further smaller stone-filled pit (063) was recorded to the north of the cobbles and a fragment of industrial waste was recovered during the excavation of its stony fill (Figure 8).

North of this, a sub-oval area (060) initially perceived as a large feature, 16.8 m long and 9.3 m wide, possibly associated with mining related activity (Figure 9). It contained discrete deposits of unstructured rubble (061) (Figure 10) and (061D), and discrete areas of orange/brown/grey clay (061B). A rubble deposit with coal fragments (061) was also recorded towards the north part area (060). It contained over 60 Medieval and post-Medieval pottery sherds (SF 37) and a hooked-shaped iron piece (SF 38). The pottery sherds included a large part of a Scottish

post-Medieval red ware jug (SF 36), which had an olive/brown green glaze and incised wavy decoration (see *Medieval and post-Medieval pottery*).

A further irregular area of cobbles with occasional coal fragments (061D) (Figure 5) was recorded to the south-west of rubble deposit (061).

A further small shallow oval pit (068) (Figure 11) was recorded to the west of rubble deposit (061). Its fill (069) contained frequent coal fragments and burnt shale, two iron nails and a blue glass bottle fragment. A large rim sherd of post-Medieval pottery (SF 49) was also identified in the section through the pit fill (see *Medieval and post-Medieval pottery*).

Three shallow linear features were recorded in the north-east part of Area A (Figure 5), all were slightly curvilinear in plan with (074) continuing beyond the limit of excavation to the south. No artefacts were recovered from the fills of these features during their excavation.



Figure 8: Pit (063) showing its stony fill (064), from the north-east.



Figure 9: Rubble deposit (061) beyond ranging rod with deposit 061D enclosed by blue flags centre left of frame, from the south.



Figure 10: Rubble deposit (061), from the south.



Figure 11: Pit (068) during excavation and its north-west facing section.

Area B

Pits

Eleven pits were recorded in this area see (Figure 13). Eight were recorded on the east side of a well-constructed road (003), seven of which lay in a general WSW/ENE distribution towards the north edge of Area B. A further three pits were widely dispersed towards the south-west corner of the area on the west side of the road (003). No artefacts were recovered during the excavation but several had sufficient quantities of charcoal in their fills to suggest they were associated with episodes of burning.

The most southerly of the pits located on the east side of the road was sub-oval in plan (014). Its sandy silty fill (015) contained frequent lenses of a dark ashy residue along with medium to large cobbles and charcoal flecks.

The seven pits lay close to the north edge of Area B (Figure 13). Pit (022) was amorphous in shape but pits (016, 020, 026, 038 and 048) were sub-oval in plan, and pit (054) was an elongated oval. The majority were filled with silty-sand; either mottled or dark grey-brown in colour; but sandy clay was found in pits (016 and 020). All contained cobbles or angular stones and charcoal flecks. Higher concentrations of charcoal were found in pit (054) and burnt bone in pit (016), but no artefacts were recovered from them. Pit (022) returned a late Neolithic radiocarbon date of 2905 – 2675 cal BC (UBA-52857).

On the west side of the road were three sub-oval shaped pits (024, 052 and 058). They were filled with brownish sandy clay, some sub-angular stones, cobbles and charcoal flecks (Figures 12 and 13). Charcoal from pit (024) was dated to the late Mesolithic period of 5717 – 5561 cal BC (UBA-52858).



Figure 12: Pit (024) during excavation, from the east.

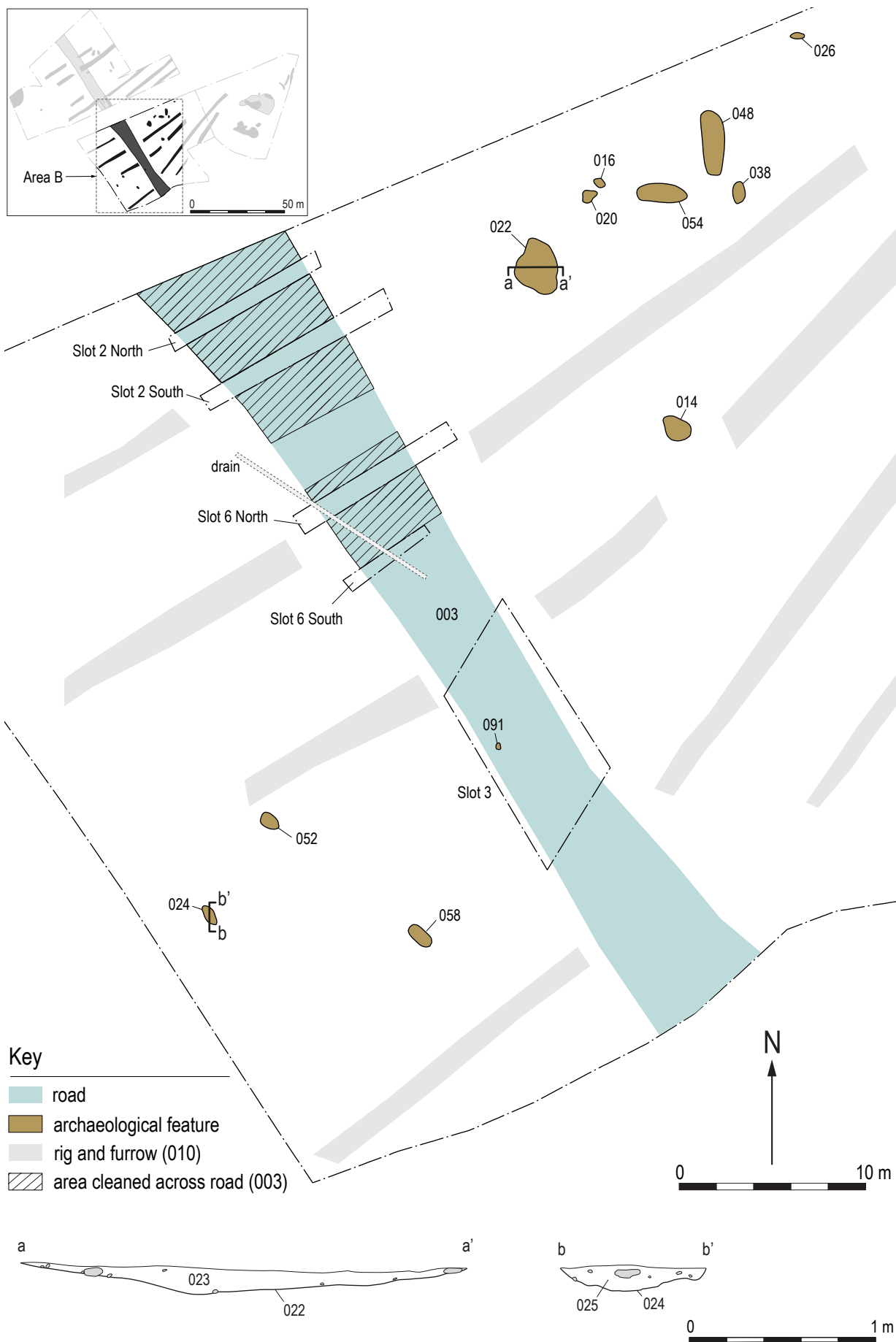


Figure 13: Plan of Area B.

Area B and C

The road

The road (003) that traversed Areas B and C survived a length of 105 m by 4.5 m to 6.5 m in width and was first identified during topsoil stripping in Area B. The northern part of the road was cleaned before a series of eight slot trenches, all c. 1 m in width were excavated through it to determine the method and materials used in its construction (Figure 13).

Slot trenches 1, 4, 5 and 7 were excavated across the road in Area C (Figure 14) but there it amounted to little more than a shallow hollow-way with only its edges surviving in Slot 1. Slots 2, 3 and 6 were located in Area B (Figure 13) with two trenches excavated in Slot 2 and two trenches excavated in Slot 6. A single investigative trench was excavated and subsequently enlarged across Slot 3 to completely remove the road due to the housing development plan (Figure 15). Tile field drains had been dug through the road in Slots 3, 4, 5 and 6.

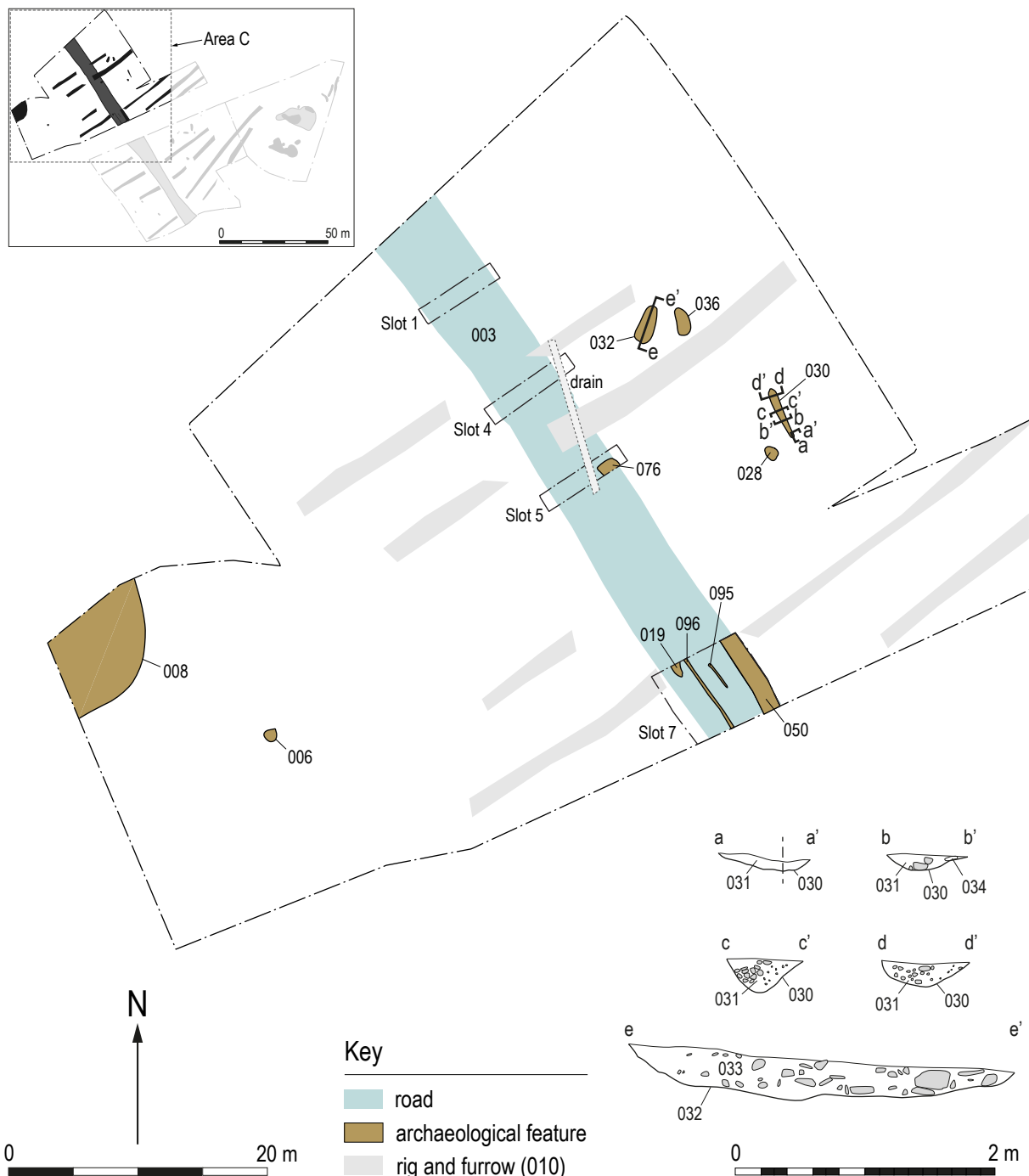


Figure 14: Plan of Area C.



Figure 15: Slot 3 after removal of road (003) along the course of the proposed housing development's spinal road, from the south-west.

The road (003) was well constructed in parts particularly towards the north end of Area B in Slots 2 and 6 (Figures 16 and 17) where it covered an area of buried agricultural silty/sandy soil (051) that had small stones and coal and coke fragments within it. A similar soil (013), comparable to (051), was visible across other parts of the excavated area, and an agricultural deposit (092) with significantly fewer coal fragments was recorded below deposit (051) in Slot 2. This agricultural soil was radiocarbon dated to the medieval period 1296 – 1396 cal AD (UBA-52862).

Evidence of a construction trench (093) for the core of the road dug into the agricultural soil (051), was visible in Slot 6 north (Figures 17 and 18). It was aligned NW/SE, measured 1.5 m in width, 0.3 m in depth and was excavated over a distance of 1.1 m. A discontinuous but compact foundation layer of gravel, flattish stones and sand (046) formed the basal course of the road. It was visible in places up to 2.1 m in width and 0.5 m in depth.

In Slot 6 north, the basal layer (086) also contained coal and coke fragments with metal objects (SF 83), slag (SFs 93 and 125), a clay pipe fragment (SF 99) and pottery sherds (SFs 100, 127 and 136). This material was also visible in Slot 2 south, above the foundation layer (046) for the road. Above the latter was a layer of cobbles (040) in silty sand (041), which formed a deposit 2 m wide and 0.25 m in thickness (Figures 16 and 19).

In Slot 6 large stones (094) were incorporated into the road's construction at this level. Overlying the large cobbles was a 0.12 m thick layer of smaller cobbles (005) set in gravel (012). Above (005/012), the road surface comprised sandy gravel (004) with small cobbles, sub-angular stones and occasional coal flecks. Two kerbs (042 and 043), respectively along the west and east sides of the road in Slots 2 and 6 were built with large cobbles and occasional other stones. The kerbs were faced along their internal edges and bound by sand (Figures 19 and 20). A bedding layer of silty sand (044 and 045) had

been laid between the kerb stones and the main carriageway (040/041). It was up to 0.46 m in width and 0.26 m in depth. A layer of medium sized angular stones and cobbles (047) formed the east side of the road that was embedded in dark sandy silt (050), whose purpose was to widen the road. In Slot 2 this material was recorded over a distance of 5.1 m along the road edge, and was 1.1 m in width and 0.15 m in thickness.

In Slot 7 in Area C this same layer (050) was recorded over 6.5 m along the road and was 1.44 m wide along the east side of it (Figures 14, 21 and 22). Also, parallel wheel ruts (097 and 098) 1.41 m apart were visible in the centre of

the road's surface. A possible ditch (085) was identified during the excavation of Slot 2 which was filled by sandy silt (050), and a further possible linear feature (079/080) was identified during excavation of the road in Slot 5. Both were discontinuous, and were only visible in the south-facing sections of the slot trenches, suggesting they may have been shallow undulations in the natural subsoil. Possible trample layers were recorded below the top surface (004) of the road and above the gravel cobble layer (005/012). These were recorded as (019) in Slot 1, (088) in Slot 3 and (076) in Slot 5, and consisted of shallow, discontinuous patches of dark greasy sandy silt with small stones.



Figure 16: Plan of Slot 2 through road (003) with south-east facing section from Slot 2 north.

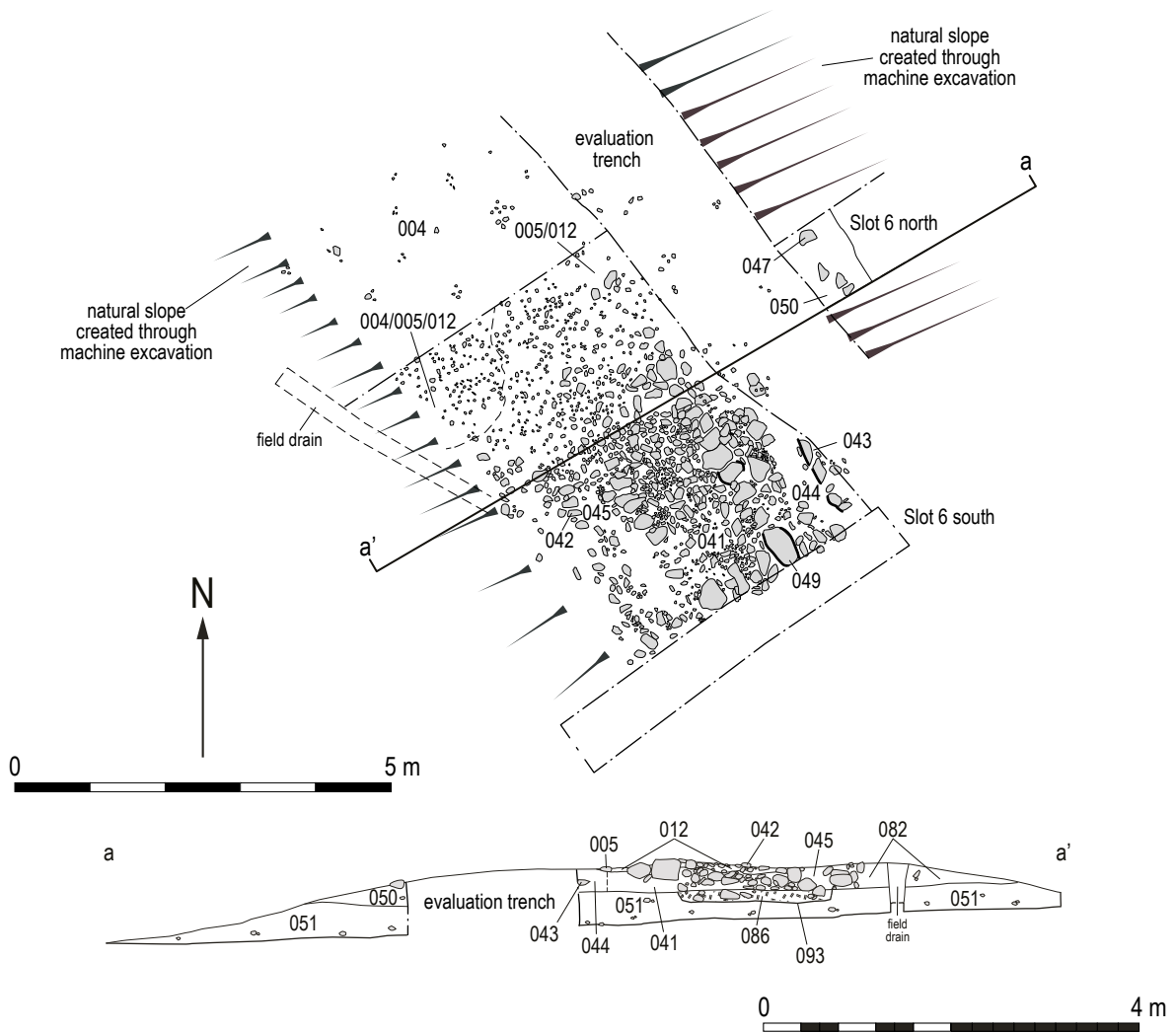


Figure 17: Plan of Slot 6 South through road (003) with north-west facing section.



Figure 18: Slot 6 through road (003) showing construction trench (093) below with the industrial deposit (086), from north-east.

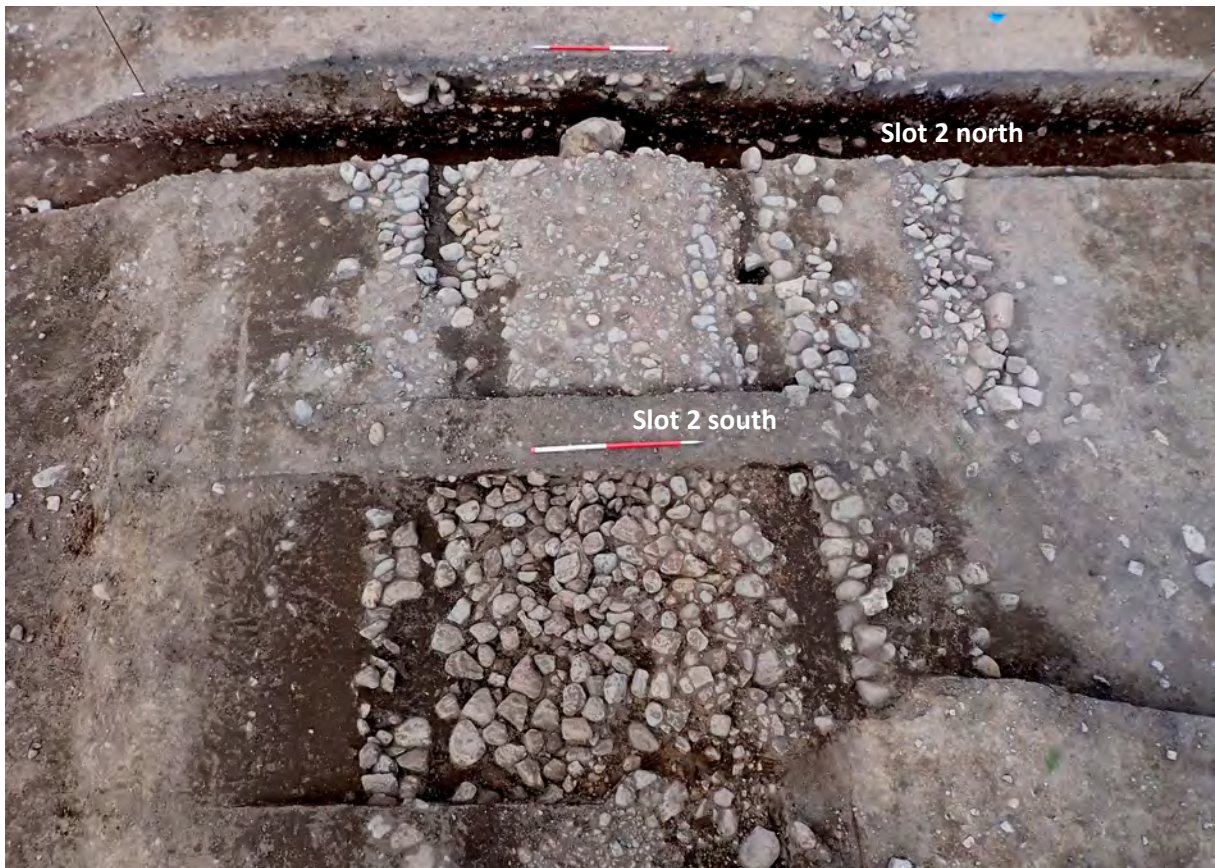


Figure 19: Slot 2 north and Slot 2 south during excavation, both ranging rods resting on (004) the top layer of the road. Cobbles (005) bound by gravel (012) above lower ranging rod, larger cobbles (040) bound by sand (041) towards bottom of frame. Kerb (042) left (west) side of road, Kerb (043) right (east) side of the road, from the south.



Figure 20: Slot 6 showing large stones (094) forming the east side of the road (003) after removal of the top layer (004) and the majority of cobbles (005) bound by gravel (012), from the north-east.

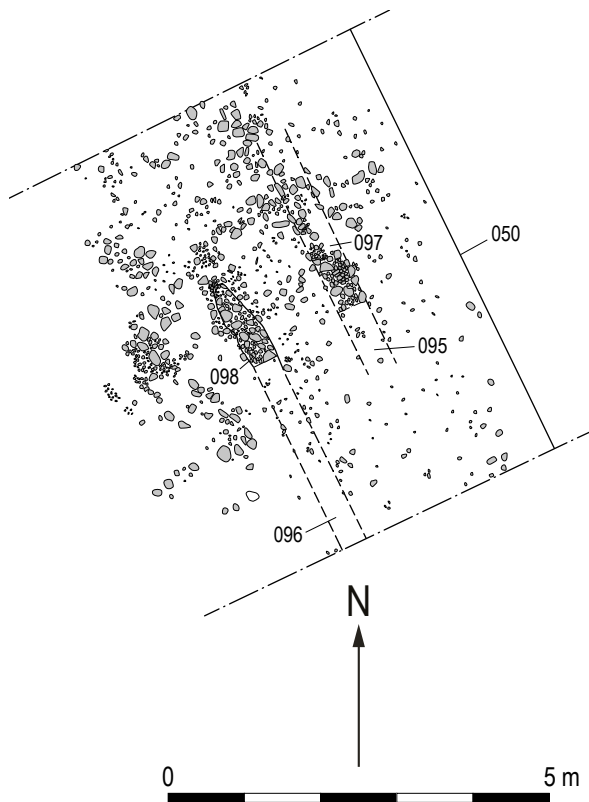


Figure 21: Plan of Slot 7 across road (003).



Figure 22: Slot 7 across road (003) showing wheel ruts (097) and (098) centred at the top of the main carriageway, from the north-west.

Area C

Pits

Along with the road (003) described above in Area B, six pits were excavated in Area C (Figure 14); Pit (006) was previously recorded during the 2017 evaluation but further excavation revealed samples of burnt clay and fired. Pits (008), (028/029), (032/033) and (036/037) were sub-circular or sub-oval in plan, pit (030/031)

was linear, but all and were filled with brown or reddish brown sandy silt, cobbles, other stones or gravel, some charcoal flecks and occasional coal and coke fragments (Figure 23).

Two pits were radiocarbon dated. The fill of pit (030) returned an early Bronze Age date range of 2136 – 1940 cal BC (UBA-52859), and that of pit (032) was dated to the middle to later Bronze Age 1376 – 1120 cal BC (UBA-52861).



Figure 23: East facing section across pit (032).

Results of the post-Excavation Analysis

Carbonised Plant Macrofossils and Charcoal

Radiocarbon Dates

Although many of the features investigated on site related to the post-Medieval period there were several pits in Areas B and C that appeared to be potentially prehistoric in origin. Their early dates from the late Mesolithic, through the late Neolithic, the early Bronze Age and into the middle to later Bronze Age revealed they were the result of peoples passing through the area at these times. Although no artefacts were recovered from them these generally shallow pits possibly represent fire-pits from small groups of people camping whilst hunting or travelling (Table 1).

The road itself is not dated but the agricultural deposits or soils beneath it returned one date. This suggested that the soil dated to the Medieval period between 1296 – 1396 cal AD (UBA-52862), and therefore that the road is somewhat later.

By Diane Alldritt

Introduction

A total 57 environmental samples taken during the archaeological excavations on land at Croftside Farm, Stirling, were fully analysed for carbonised plant macrofossils and charcoal. Material sorted from 44 of the sample retents was also examined and included fragments of charcoal, clinker including coke, and geological remains. Samples were taken from three excavation Areas, A, B and C, with A and B subsequently expanded into a single open area. These included deposits from a number of pits as well as structural elements and trample from a pre-modern road (003).

The samples from the pits produced finds of charcoal along with trace quantities of hazel nutshell suggesting some of the pits were probably areas of isolated prehistoric burning activity, whilst others containing clinker or coke were likely to be more recent and associated with

UB No.	Sample No.	Context	Material	Radiocarbon Age BP	Calibrated 1-sigma (68.3% probability)	Calibrated 2-sigma (95.4% probability)	Period
UBA-52857	07	(023) fill of pit (022)	Betula charcoal	4219 ± 32	2894 – 2866 cal BC 2803 – 2767 cal BC 2717 – 2706 cal BC	2905 – 2847 cal BC 2812 – 2743 cal BC 2730 – 2693 cal BC 2687 – 2675 cal BC	LN
UBA-52858	06	(025) fill of pit (024)	Salix/ Populus charcoal	6719 ± 39	5666 – 5618 cal BC 5584 – 5568 cal BC	5717 – 5611 cal BC 5593 – 5561 cal BC	Mesolithic
UBA-52859	10	(031) fill of linear feature (030)	Betula charcoal	3652 ± 29	2124 – 2094 cal BC 2039 – 2008 cal BC 2003 – 1971 cal BC 1967 – 1959 cal BC	2136 – 2077 cal BC 2067 – 1940 cal BC	EBA
UBA-52861	16	(033) fill of pit (032)	Corylus charcoal	2989 ± 29	1267 – 1194 cal BC 1175 – 1161 cal BC 1144 – 1129 cal BC	1376 – 1351 cal BC 1301 – 1120 cal BC	MBA to LBA
UBA-52862	59	(092) deposit below agricultural soil (051)	Avena sp charcoal	628 ± 24	cal AD 1302 – 1323 cal AD 1356 – 1368 cal AD 1379 – 1392	cal AD 1296 – 1329 cal AD 1334 – 1396	Medieval

Table 1: Radiocarbon dates.

the road construction. The road (003) consisted of substantial deposits of clinker including coke, particularly in the re-surfacing or levelling and basal layers, with coal and geological material also present, indicating mixtures of industrial waste and natural materials being used both in the original construction and later repair. Below the road, samples taken from an old land or agricultural surface produced small quantities of cereal grain, which were radiocarbon dated to the Medieval period and indicated earlier agricultural land use prior to the road's insertion.

Methodology

Bulk environmental samples were processed by GUARD Archaeology using a Siraf style water flotation system (French 1971). The samples

were from 0.2 litres up to 17 litres in volume. The flots were dried before examination under a low power binocular microscope typically at x 10 magnification. All identified plant remains including charcoal were removed and bagged separately by type.

Wood charcoal was examined using a high powered Vickers M10 metallurgical microscope at magnifications up to x 200. The reference photographs of Schweingruber (1990) were consulted for charcoal identification. Plant nomenclature utilised in the text follows Stace (1997) for all vascular plants apart from cereals, which follow Zohary and Hopf (2000). The term 'seed' is used in the broadest sense to include achenes, nutlets and so forth. The results can be found in Table 2.

Context (Fill)	Feature	Context	Area	Sample	Volume (litres)	Flot CV / Mod	Species ID	Common Name	Plant Part	Quantity	Radio-carbon Y/N
4	road, upper surface	-3	B, C	38	12	0 / 30ml	Sterile				N
7	possible pit	-6	B	1	5	<2.5ml / 30ml	Corylus avellana	hazel	nutshell	2 (0.03g)	N
15	notional cut (shallow)	-14	B	3	5	70ml / 20ml	Corylus avellana	hazel	nutshell	1 (0.02g)	N
							Coniferous type	Conifer	charcoal	1 (0.12g)	Y
							Indeterminate	not id	charcoal	2 (0.87g)	N
12	compact gravel layer road (003)	deposit	B	12	11.75	0 / 50ml	Sterile				N
12	compact gravel layer road (003)	deposit	B	13	12	0 / <2.5ml	Sterile				N
17	poss PH / small pit	-16	B	4	4	20ml / <2.5ml	Quercus	oak	charcoal	7 (0.50g)	N
19	trampled deposit W side road (003)	deposit	C	11	6	0 / 20ml	Sterile				N
21	pit	-20	B	5	1	<2.5ml / <2.5ml	Quercus	oak	charcoal	2 (0.15g)	N
23	notional cut	-22	B	7	6	100ml / <2.5ml	Betula	birch	charcoal	1 (0.66g)	Y
							Indeterminate	not id	charcoal	2 (1.29g)	N
25	notional cut (shallow)	-24	B	6	5	60ml / 25ml	Corylus avellana	hazel	nutshell	1 (0.02g)	N

Table 2: Plant remains.

Context (Fill)	Feature	Context	Area	Sample	Volume (litres)	Flot CV / Mod	Species ID	Common Name	Plant Part	Quantity	Radio-carbon Y/N
							Salix / Populus	willow / poplar	charcoal	3 (0.54g)	Y
27	pit	-26	B	8	7	140ml / 10ml	Corylus avellana	hazel	nutshell	3 (0.07g)	N
							Indeterminate	not id	charcoal	2 (0.90g)	N
29	pit	-28	C	9	17	25ml / 20ml	Quercus	oak	charcoal	2 (0.08g)	N
31	linear	-30	C	10	16	25ml / 10ml	Corylus avellana	hazel	nutshell	1 (0.01g)	N
							Betula	birch	charcoal	2 (0.47g)	Y
31	linear	-30	C	14	6	<2.5ml / 5ml	No Id				N
33	pit	-32	C	16	6	5ml / 5ml	Corylus avellana	hazel	nutshell	2 (0.02g)	N
							Corylus	hazel	charcoal	1 (0.12g)	Y
							Quercus	oak	charcoal	2 (0.18g)	N
34	small clay deposit in linear	-30	C	15	0.5	5ml / <2.5ml	Corylus	hazel	charcoal	1 (0.16g)	Y
35	sand lenses above road	deposit	B	19	12.5	0 / 50ml	Sterile				N
37	pit	-36	C	18	7	30ml / <2.5ml	Quercus	oak	charcoal	6 (0.35g)	N
39	pit	-38	B	20	6	5ml / 5ml	Corylus avellana	hazel	nutshell	1 (0.04g)	Y
							Quercus	oak	charcoal	1 (0.23g)	N
41	deposit binding large stones (040)	deposit	B	22	11	<2.5ml / 20ml	No Id				N
41	deposit binding large stones (040)	deposit	B	46	8	0 / 5ml	Sterile				N
44	deposit E edge of road (003)	deposit	B	44	7	0 / 100ml	Sterile				N
45	deposit W edge road (003)	deposit	B	24	7	0 / 20ml	Sterile				N
45	deposit W edge road (003)	deposit	B	45	5.5	0 / 50ml	Sterile				N
46	structure: metallated surface road	-3	B	23	6.5	0 / 5ml	Sterile				N
46	structure: metallated surface road	-3	B	51	6.5	0 / <2.5ml	Sterile				N

Table 2 (continued): Plant remains.

Context (Fill)	Feature	Context	Area	Sample	Volume (litres)	Flot CV / Mod	Species ID	Common Name	Plant Part	Quantity	Radio-carbon Y/N
49	pit	-48	B	25	5	5ml / 5ml	Corylus avellana	hazel	nutshell	2 (<0.01g)	N
50	later widening of road (003)	deposit	B	2	5	0 / 20ml	Sterile				N
51	agric layer below road (003)	deposit	B	37	15	<2.5ml / 5ml	Avena sp.	oat	cereal grain	1	N
51	agric layer below road (003)	deposit	B	43	0.2	<2.5ml / <2.5ml	No Id				N
51	agric layer below road (003)	deposit	B	53	6.5	0 / 30ml	Sterile				N
51	agric layer below road (003)	deposit	B	55	14	<2.5ml / <2.5ml	Corylus avellana	hazel	nutshell	4 (0.06g)	Y
							Avena sp.	oat	cereal grain	3	N
53	pit	-52	B	26	12	5ml / 30ml	No Id				N
55	pit	-54	B	27	12	220ml / 20ml	Quercus	oak	charcoal	10 (4.02g)	N
							Quercus	oak	acorn cupule	1	N
57	poss mining pit	-56	A	30	8	<2.5ml / 10ml	No Id				N
59	pit	-58	B	28	13.5	125ml / 40ml	Pinus sylvestris	Scots pine	charcoal	2 (1.44g)	Y
61	un-structured rubble within (060)	deposit	A	31	7.5	0 / 30ml	Sterile				N
62	waste dump to W of pit (056)	deposit	A	33	17	<2.5ml / 30ml	No Id				N
64	pit	-63	A	29	6	0 / 10ml	Sterile				N
69	pit	-68	A	32	13	<2.5ml / 50ml	No Id				N
71	curvilinear feature	-70	A	34	6	<2.5ml / 5ml	Indeterminate	not id	charcoal	1 (0.08g)	N
73	linear	-72	A	36	8	<2.5ml / 5ml	No Id				N
75	linear	-74	A	35	7	<2.5ml / 10ml	Hordeum vulgare var. vulgare	six row hulled barley	cereal grain	1	N
76	trampled deposit E side road (003)	deposit	C	40	7	<2.5ml / 5ml	No Id				N
78	linear	-77	C	39	6.5	0 / 100ml	Sterile				N

Table 2 (continued): Plant remains.

Context (Fill)	Feature	Context	Area	Sample	Volume (litres)	Flot CV / Mod	Species ID	Common Name	Plant Part	Quantity	Radio-carbon Y/N
80	linear	-79	C	42	6	<2.5ml / 5ml	No Id				N
81	deposit E side slot 5 road (003)	deposit	C	41	5	<2.5ml / <2.5ml	No Id				N
86	ind waste base / core of road (003)	deposit	B	47	5.5	0 / 10ml	Sterile				N
86	deposit ind waste base of road (003)	deposit	B	50	3.5	0 / <2.5ml	Sterile				N
86	deposit ind waste base of road (003)	deposit	B	58	12.5	0 / <2.5ml	Sterile				N
87	deposit below road (003)	deposit	B	48	7.5	0 / 5ml	Sterile				N
88	trampled layer E side road (003)	deposit	B	49	6	0 / 30ml	Sterile				N
91	poss small repair to road (003)	deposit	B	56	1	<2.5ml / <2.5ml	No Id				N
92	agric deposit below 051, in slot 2	deposit	B	59	14	5ml / <2.5ml	Avena sp.	oat	cereal grain	9	Y
95	deposit in wheel rut (097) in road	deposit	C	60	5.5	0 / 30ml	Sterile				N
96	deposit in wheel rut (098) in road	deposit	C	61	6.25	0 / 20ml	Sterile				N

Table 2 (continued): Plant remains.

Results

The environmental samples produced small to moderate amounts of carbonised material <2.5 ml up to 220 ml in volume with the majority of recovery at the lower end. The remains included charcoal fragments <5 mm up to 20 mm in size together with trace finds of degraded hazel nutshell in amongst a general background matrix of crushed charred detritus below the level of identification. Small amounts of cereal grain were preserved in good condition mostly from

the deposits below road (003). Twenty-three of the samples were sterile. Modern material was present <2.5 ml to 100 ml mainly root detritus with occasional finds of modern seeds and earthworm egg capsules indicating bioturbation had occurred. Clinker and coal were present in 36 samples and particularly abundant in the bedding core layers (086) and (087) of road (003), where most of the clinker remains were probably coke. Five samples were submitted for radiocarbon dating and the results of this analysis (Table 1) are quoted here at the 95.4 % probability (2-sigma calibration) level.

Discussion

The agricultural economy

Curvilinear feature (070/071) in Area A had a single fragment of indeterminate charcoal, highly degraded and likely to be residual in the deposit. Linear feature (074/075) contained one large grain of *Hordeum vulgare var. vulgare* (six row hulled barley), probably Medieval/post-Medieval in origin.

The features in Area A were probably post-medieval or modern and related to the construction of road (003) or more recent activity. The discovery of an old land surface or agricultural layer below the road (003) in Area B produced discrete caches of well-preserved carbonised cereal grain, radiocarbon dated to the Medieval period. These burnt layers suggested field clearance work, perhaps stubble burning during farming activity or deliberate crop burning, rather than domestic deposits such as a corn drier or hearth waste. Layers (051 and 092) produced small deposits of *Avena* sp. (oat) cereal grain, with the grains found in (092) in better condition than those in (051). The oat cereal grain from layer (092) was dated to cal AD 1296 – 1396 (UBA-52862). Layer (051) contained degraded oat grains and hazel nutshell mixed with clinker or coke, probably mixtures of remains compacted in during the road bedding construction.

Pits (056/057) and (068/069), linear feature (072/073) and dumped deposit (062) contained trace charred detritus mixed with clinker and coal. Pit (063/064) and rubble deposit (061) were sterile with only clinker, coal and modern seeds recorded.

Woodland resources

A series of pits excavated in Area B produced small deposits of charcoal, including *Quercus* (oak), *Betula* (birch) and *Salix/Populus* (willow/poplar) types together with trace finds of degraded *Corylus avellana* (hazel) nutshell. Radiocarbon dating of the charcoal indicated sporadic episodes of prehistoric burning activity taking place encompassing late Mesolithic and late Neolithic activity. The nutshell fragments were mostly poorly preserved, suggesting possible residual remains and none of this material was suitable for dating.

Pit (054/055) produced a concentrated deposit of oak charcoal suggesting this was probably a fire- or waste-pit, likely to be prehistoric in date. Pit (038/039) was similar as it contained a smaller quantity of oak charcoal along with a single fragment of hazel nutshell suggesting this may have been a truncated prehistoric fire-pit. Pits (016/017 and 020/021) also had small deposits of oak charcoal, whilst possible pit (022/023) had birch and indeterminate charcoal, all was heavily degraded. The birch from (022) was radiocarbon dated as broadly late Neolithic (UBA-52857), but may have been residual given its poor condition.

Other features showed sparser recovery – notional pits (006/007, 014/015, 024/025, 026/027 and 048/049) contained trace quantities of hazel nutshell in poor condition, likely to be residual remains. Feature (014/015) had a few fragments of degraded conifer as well as indeterminate charcoal, (024/025) had a small amount of willow/poplar. The willow/poplar charcoal from possible pit (024) was dated to the late Mesolithic at 5717 – 5561 cal BC (UBA-52858), and possibly represented an early deposit of burnt waste, perhaps from scrub clearance. Pit (058/059) had two fragments of *Pinus sylvestris* (Scots pine) and this latter feature was possibly more recent and related to the road construction.

In Area C pits (028/029, 032/033 and 036/037) contained small deposits of oak charcoal that perhaps representing discrete areas of isolated prehistoric burning activity or waste deposition. Pit (032) also contained *Corylus* (hazel) charcoal, and this was radiocarbon dated to the middle to late Bronze Age 1376 – 1120 cal BC (UBA-52861), together with a few degraded fragments of hazel nutshell.

The main fill (031) of linear feature (030) had a few fragments of birch charcoal together with a single piece of hazel nutshell. The birch charcoal from (030) was dated to the early Bronze Age 2136 – 1940 cal BC (UBA-52859). Clay deposit (034) had a single fragment of hazel charcoal, perhaps waste sweepings or mixed trampled material. Linear feature (077/078) produced a large deposit of clinker, perhaps a waste dump. Linear feature (079/080) contained identifiable trace charred detritus.

The upper surface (004) of the road (003) and deposits (035, 044, 045, 046, 050, 088, 095 and 096) were sterile with only clinker and coal present, whilst deposits (041) contained trace quantities of crushed charcoal, all likely to be construction elements, such as deposits of levelling material, road make-up and compacted trample. At the base of the road foundation/core deposits (086 and 087) produced abundant clinker fragments, likely to be coke derived from burning coal, and laid down as hardcore for the road.

Industrial

More recent industrial activity was reflected in the samples containing clinker and coal that was mixed through some of the deposits, in particular the road gravel layer (012) and trampled deposits (019, 076 and 081) that were largely sterile with mixtures of clinker, coal, modern seeds, earthworm egg capsules and geological remains recovered. The upper road surface (004) was sterile with clinker and geological remains present.

Conclusion

The environmental samples from Croftside Farm were largely dominated by material used in the construction of the road (003), consisting of mixtures of clinker, including coke derived from coal burning, as well as unburnt coal fragments and geological remains. The use of industrial waste material such as coke for levelling and re-surfacing indicated the road was probably post-Medieval/ pre-modern in date. Deposits (051 and 092) below the road surface produced evidence for Medieval farming activities through dating of the carbonised oat cereal grain.

Evidence for sporadic episodes of prehistoric burning activity was recovered from some of the pits in Areas B and C. Trace finds of hazel nutshell from pits (006, 014, 024, 026, 032, 038 and 048), provided ephemeral evidence for processing of hazel nuts for food, with some of the remains probably residual. Pit (054) contained a concentrated deposit of oak charcoal and was probably a fire-pit. Charcoal samples from Area B returned two different radiocarbon dates, with late Neolithic activity suggested by the birch charcoal in pit (022), and late Mesolithic burning indicated by willow/poplar charcoal in pit (024). In contrast, Area C produced Bronze Age dates from pit (032) and linear feature (030).

Pollen Report

By Susan Ramsay

Introduction

The following report details the processing, analysis and interpretation of pollen recovered from two monolith samples taken during the excavation at Croftside Farm between June and October 2022. The monolith samples were recovered from below the road (003).

Methodology

Pollen analysis was undertaken on two monolith tins, from a single section within Area B, Slot 2. These tins overlapped within the section, providing a single sequence for analysis. The monolith tins covered contexts (050, 051, 092 and 002) and were both given sample number (057) but labelled Tin A (upper) and Tin B (lower). Each tin measured 25 cm in length, with an overlap of approximately 6 cm between the two tins in the section. Pollen samples were selected from depths 0-1 cm, 5-6 cm, 10-11 cm, 15-16 cm, 20-21 cm, 25-26 cm, 30-31 cm, 35-36 cm, 40-41 cm and 45-46 cm, giving 10 samples in total and covering the entire 46 cm depth of the monolith tin sequence. The pollen samples were prepared for analysis by the University of Reading, using standard methodologies with sodium polytungstate heavy liquid separation to remove the mineral component and final mounting of the samples in glycerine jelly stained with safranin.

Pollen identification and nomenclature follows Moore et al. (1991), whilst vascular plant nomenclature follows Stace (1997). For all samples it was possible to count the minimum standard of 500 total land pollen grains (TLP). A pollen sum of Total Land Pollen (TLP) was used for all trees, tall shrubs, heaths, grasses, sedges and other herbaceous pollen. Spores from ferns and mosses were expressed using a pollen sum of TLP + fern + moss.

Results and discussion

The full pollen counts are given in Table 3, and percentages are given in Table 4. The pollen diagram is shown in Figure 24. With respect to the pollen diagram, pollen percentages <1%

	Depth / cm	0 - 1	5 - 6	10 - 11	15 - 16	20 - 21	25 - 26	30 - 31	35 - 36	40 - 41	45 - 46
Pollen taxa	Context	050			051			092			002
Trees & Tall Shrubs	Common name										
Alnus	alder	6.8	15.9	2.2	6.9	11.2	9.1	12.5	12.2	25.9	34.0
Betula	birch	3.6	10.0	1.4	6.2	4.2	1.4	2.5	1.0	2.2	1.5
Coryloid	hazel / bog myrtle	11.9	22.5	20.5	26.3	18.1	11.9	20.6	28.3	53.8	57.8
Fagus	beech	-	-	-	-	-	-	-	0.2	-	-
Pinus	pine	0.2	11.4	4.4	0.4	-	-	-	0.2	-	-
Quercus	oak	-	0.4	0.8	2.1	-	0.4	0.2	0.2	0.8	0.4
Salix	willow	-	0.4	0.8	0.8	1.2	-	-	-	-	-
Tilia	lime	0.2	-	-	-	-	-	-	-	0.2	-
Ulmus	elm	-	0.4	-	-	-	-	-	-	-	-
Heaths											
Calluna	heather	17.1	17.5	16.9	18.7	15.4	18.2	19.2	14.6	4.7	0.6
Grasses											
Poaceae	grass	24.3	9.2	28.0	18.3	21.2	29.1	17.6	16.6	4.5	2.3
Cereal type	cereals	3.6	0.4	2.2	0.8	1.2	1.4	3.3	2.6	0.2	0.2
Sedges											
Cyperaceae	sedge	1.0	-	0.8	-	-	-	0.2	0.8	-	-
Herbs											
Anthemis type	chamomile type	6.8	1.2	2.2	1.5	3.5	1.8	2.2	2.2	1.0	-
Aster type	daisy type	2.6	0.8	0.8	0.8	1.5	1.0	0.6	0.6	-	-
Caryophyllaceae	pink family	2.6	0.4	0.8	1.2	4.2	4.2	2.9	2.4	0.2	0.2
Centaurea nigra	knapweed	-	-	0.8	-	-	-	0.2	-	-	-
Chenopodiaceae	goosefoot family	1.6	-	-	0.4	0.4	1.0	0.4	0.4	-	0.4
Cirsium	thistle	-	-	0.8	0.4	0.4	1.0	0.2	0.4	0.2	-
Filipendula	meadowweet	0.6	-	-	0.4	-	-	-	0.4	-	-
Lactuceae	dandelion type	11.9	8.0	9.1	8.1	6.9	5.5	2.0	2.0	0.4	0.6
Plantago lanceolata	ribwort plantain	-	0.4	-	-	0.4	1.0	1.0	2.0	-	-
Plantago major/media	greater/hoary plantain	0.6	-	-	-	1.2	1.0	1.8	0.6	0.4	-

Table 3: Pollen counts.

	Depth / cm	0 - 1	5 - 6	10 - 11	15 - 16	20 - 21	25 - 26	30 - 31	35 - 36	40 - 41	45 - 46
Polygonum aviculare	knotgrass	-	-	-	0.4	1.2	1.4	1.6	0.8	-	-
Potentilla type	cinquefoil	0.6	-	-	-	-	0.4	-	0.2	-	-
Ranunculus acris group	meadow buttercup type	1.6	-	3.8	3.3	1.9	1.0	2.7	3.6	2.4	1.3
Rumex acetosa type	common sorrel type	-	-	-	-	-	-	-	0.2	-	-
Stellaria holostea	greater stitchwort	-	-	-	-	-	0.4	-	0.2	0.4	0.2
Succisa pratensis	devil's bit scabious	1.0	1.2	3.8	2.9	5.8	8.1	8.2	7.0	2.8	0.4
Trifolium type	clover type	1.0	-	-	-	-	-	-	-	-	-
Veronica type	speedwell	0.6	-	-	0.4	0.4	1.0	-	0.4	-	0.2
Ferns											
Filicales	ferns	20.1	28.6	11.0	22.9	23.6	26.4	21.1	34.0	46.0	33.7
Polypodium	polypody fern	8.6	15.9	13.2	31.0	36.5	26.4	25.4	13.5	13.4	11.1
Pteridium	bracken	-	-	-	-	-	0.2	0.2	0.1	0.2	-
Moss											
Sphagnum	bog moss	4.5	5.0	1.8	3.4	2.7	2.5	2.2	1.7	-	0.2

Table 3 (continued): Pollen counts.

	Depth / cm	0 - 1	5 - 6	10 - 11	15 - 16	20 - 21	25 - 26	30 - 31	35 - 36	40 - 41	45 - 46
Pollen taxa	Context	050			051			092			002
Trees & Tall Shrubs	Common name										
Alnus	alder	6.8	15.9	2.2	6.9	11.2	9.1	12.5	12.2	25.9	34.0
Betula	birch	3.6	10.0	1.4	6.2	4.2	1.4	2.5	1.0	2.2	1.5
Coryloid	hazel / bog myrtle	11.9	22.5	20.5	26.3	18.1	11.9	20.6	28.3	53.8	57.8
Fagus	beech	-	-	-	-	-	-	-	0.2	-	-
Pinus	pine	0.2	11.4	4.4	0.4	-	-	-	0.2	-	-
Quercus	oak	-	0.4	0.8	2.1	-	0.4	0.2	0.2	0.8	0.4
Salix	willow	-	0.4	0.8	0.8	1.2	-	-	-	-	-
Tilia	lime	0.2	-	-	-	-	-	-	-	0.2	-
Ulmus	elm	-	0.4	-	-	-	-	-	-	-	-
Heaths											
Calluna	heather	17.1	17.5	16.9	18.7	15.4	18.2	19.2	14.6	4.7	0.6
Grasses											
Poaceae	grass	24.3	9.2	28.0	18.3	21.2	29.1	17.6	16.6	4.5	2.3
Cereal type	cereals	3.6	0.4	2.2	0.8	1.2	1.4	3.3	2.6	0.2	0.2
Sedges											
Cyperaceae	sedge	1.0	-	0.8	-	-	-	0.2	0.8	-	-
Herbs											
Anthemis type	chamomile type	6.8	1.2	2.2	1.5	3.5	1.8	2.2	2.2	1.0	-
Aster type	daisy type	2.6	0.8	0.8	0.8	1.5	1.0	0.6	0.6	-	-
Caryophyllaceae	pink family	2.6	0.4	0.8	1.2	4.2	4.2	2.9	2.4	0.2	0.2
Centaurea nigra	knapweed	-	-	0.8	-	-	-	0.2	-	-	-
Chenopodiaceae	goosefoot family	1.6	-	-	0.4	0.4	1.0	0.4	0.4	-	0.4
Cirsium	thistle	-	-	0.8	0.4	0.4	1.0	0.2	0.4	0.2	-
Filipendula	meadowweet	0.6	-	-	0.4	-	-	-	0.4	-	-
Lactuceae	dandelion type	11.9	8.0	9.1	8.1	6.9	5.5	2.0	2.0	0.4	0.6
Plantago lanceolata	ribwort plantain	-	0.4	-	-	0.4	1.0	1.0	2.0	-	-
Plantago major/media	greater/hoary plantain	0.6	-	-	-	1.2	1.0	1.8	0.6	0.4	-

Table 4: Pollen percentages.

	Depth / cm	0 - 1	5 - 6	10 - 11	15 - 16	20 - 21	25 - 26	30 - 31	35 - 36	40 - 41	45 - 46
Polygonum aviculare	knotgrass	-	-	-	0.4	1.2	1.4	1.6	0.8	-	-
Potentilla type	cinquefoil	0.6	-	-	-	-	0.4	-	0.2	-	-
Ranunculus acris group	meadow buttercup type	1.6	-	3.8	3.3	1.9	1.0	2.7	3.6	2.4	1.3
Rumex acetosa type	common sorrel type	-	-	-	-	-	-	-	0.2	-	-
Stellaria holostea	greater stitchwort	-	-	-	-	-	0.4	-	0.2	0.4	0.2
Succisa pratensis	devil's bit scabious	1.0	1.2	3.8	2.9	5.8	8.1	8.2	7.0	2.8	0.4
Trifolium type	clover type	1.0	-	-	-	-	-	-	-	-	-
Veronica type	speedwell	0.6	-	-	0.4	0.4	1.0	-	0.4	-	0.2
Ferns											
Filicales	ferns	20.1	28.6	11.0	22.9	23.6	26.4	21.1	34.0	46.0	33.7
Polypodium	polypody fern	8.6	15.9	13.2	31.0	36.5	26.4	25.4	13.5	13.4	11.1
Pteridium	bracken	-	-	-	-	-	0.2	0.2	0.1	0.2	-
Moss											
Sphagnum	bog moss	4.5	5.0	1.8	3.4	2.7	2.5	2.2	1.7	-	0.2

Table 4 (continued): Pollen percentages.

are shown using crosses to represent individual grains. The pollen sequence from monolith tins A and B covers a depth of 46 cm, and contexts (050), (051), (092) and (002), which were located alongside or beneath the level of the road (003).

The uppermost context (050), may be the fill of a ditch (085) running along the east side of the road, that may represent a later widening of it. The uppermost sample 0-1 cm, was dominated by grasses, sedges and herbs (60% TLP) suggesting a very open landscape with areas of heathland (17% TLP). The commonest herbaceous types included dandelion type (Lactuceae), chamomile type (*Anthemis* type), daisy type (*Aster* type), pink family (Caryophyllaceae) and goosefoot (Chenopodiaceae). This range of types would be consistent with open agricultural land. Cereal type pollen was also at its highest (3.6% TLP) at this level suggesting that arable agriculture was being practiced nearby. Trees and tall shrubs were present at approximately 23% TLP with hazel (Coryloid), alder (*Alnus*) and birch (*Betula*) the main types present but pine (*Pinus*) and lime (*Tilia*) recorded in trace amounts.

Level 5-6 cm, also just within context (050), showed a very different pollen assemblage, with grasses, sedges and herbs having fallen from approximately 60% TLP in the topmost level to only 22%, although heathland pollen was consistent at around 17% TLP. The pollen of both trees and tall shrubs increased significantly to a total of 61% TLP, with hazel, alder and birch still the main taxa present but with significant amounts of pine also recorded. The high levels of pine could indicate an area of coniferous plantation growing nearby. Traces of oak (*Quercus*), willow (*Salix*) and elm (*Ulmus*) pollen were also noted at this level.

Context (051) was an agricultural layer beneath the road (003) that contained frequent coal fragments and sherds of medieval and post-medieval pottery. Context (051) covered pollen levels 10-11 cm, 15-16 cm, 20-21 cm and 25-26 cm. There were some significant fluctuations in the pollen assemblages from these levels, suggesting that these deposits may not have built up gradually over time. The pollen spectra from the pollen samples taken from (051) are more similar to the pollen spectrum seen in level 0-1 cm than in 5-6 cm, again suggesting some

redeposition or mixing may have occurred. The pollen spectra from (051) are generally higher in taxa belonging to grasses, sedges and herbs than trees and tall shrubs, with heathland remaining relatively constant at 15-19%. However, the types of trees and tall shrubs do differ between levels, with alder becoming more common towards the bottom of this part of the sequence and hazel becoming less common. Pine is relatively abundant at the top of this part of the sequence but is absent from the earliest level. Grasses are particularly high at the top and bottom of this part of the sequence and cereal pollen is present above trace levels throughout. This is consistent with the results from the macrobotanical analysis (see *Carbonised plant macrofossils and charcoal*, above) which found evidence for carbonised grains of oats from this context and suggested this might be evidence for post-medieval stubble burning and field clearance prior to the construction of the road. The herbaceous types that are most common include dandelion type, meadow buttercup type (*Ranunculus acris* type), devil's bit scabious (*Succisa pratensis*), chamomile type and pink family. These would be consistent with a largely agricultural landscape.

Below agricultural layer (051), was a further agricultural deposit (092), that was similar in nature to (051) but with significantly fewer coal fragments. The upper two levels, 30-31 cm and 35-36 cm, covered by this context had tree and tall shrub pollen ranging from 36-42% and grasses, sedges and herbs ranging from 43-45%. The tree and tall shrub pollen is dominated by alder and hazel pollen with smaller amounts of birch and traces of beech (*Fagus*), pine and oak. Grass is around 17% and cereal pollen is still consistently present above trace levels. The herbaceous types are similar to those seen in (051) with level 35-36 cm showing a particularly diverse range of herbaceous types, perhaps related to diverse agricultural practices at the time. However, one of the commonest herbaceous types was Devil's bit scabious, which is a species that grows in grassland or heathland habitats, rather than habitats that are directly associated with human habitation. Heathland pollen is again consistent between 15-19%. This consistency of heathland pollen suggests a specific area of heathland in the area that was relatively unchanged over a significant period of time.

The lowest pollen level, 40-41 cm, in (092) produced a similar pollen spectrum to that from 45-46 cm from the lowest context (002) and so they will be discussed together. Basal context (002) represented the natural sandy clay but there was evidence for field drains at the surface of this deposit. The basal two pollen spectra produced very high levels of tree and tall shrub pollen (83-94%) with hazel being the commonest type along with alder. Birch, oak and traces of lime were also recorded. A particularly notable difference in these lower levels was a significant reduction in the amount of heathland pollen, which drops to 1-5% from a relatively consistent 15-19% in the levels above. This suggests that woodland that was present in the area during the early part of the sequence was cleared and became heathland and grassland later in the sequence. Heathland may have developed on areas of cleared woodland that were wetter and less suitable for agriculture. Grasses, sedge and herbs are much less significant (6-12 %) in this lowest part of the sequence and the diversity of herbaceous types declines as well, possibly because there are fewer habitat types present. In particular, dandelion type, chamomile type and daisy type declined significantly. Context (092) was dated to cal AD 1296 – 1396 (UBA-52862).

Micromorphology

By Carol Lang¹

Introduction

This report summarises the findings arising out of the micromorphological analysis of undisturbed sediment samples collected from the archaeological investigation from Slot 2, Area A (Figure 16 section) (see Fig 25 for location) by GUARD Archaeology at Croftside Farm. Micromorphological investigation of the soil thin sections provided high resolution analysis of the pedological features and determined: 1) soil development processes 2) understanding of the depositional processes in the sample locations and, 3) determined if there is/what type of evidence can be identified to indicate anthropogenic activity

Geoarchaeological and archaeological significance

The application of micromorphological techniques to the Croftside Farm samples - the microscopic analysis of soil/sediment thin sections - can play a significant role in archaeological and palaeoenvironmental investigation particularly when carried out with a methodical approach to observations and their interpretation.

Soil/sediment properties reflect the environment in which they have been formed, and so the recovery of known anthropic sediments from archaeological contexts has the potential to assist archaeologists to understand complex site formation processes related to past land use and the palaeo-environment. By applying micromorphological investigation to undisturbed soils it enables soil development properties to be examined: thickness, bedding, particle size, sorting, coarse to fine ratios, composition of the fine material, groundmass, colour, related distribution, microstructure, and distribution of inclusions, the shape of inclusions, and finally the inclusions to be identified and quantified. Additionally, these analyses can provide details of micro-artefacts, not seen by the naked eye during macromorphological analysis.

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Methodology

The two undisturbed sediment samples were collected from Croftside Farm (Figure 25). The sample was dried and then impregnated using an epoxy-based resin under vacuum. The impregnated soils were cured, and then sliced, bonded to glass slides and precision lapped to 30µm thickness to produce soil thin sections.

By following procedures laid out in the International Handbook for Thin Section Description (Bullock et al. 1985) and Guidelines to Analysis and Description of Soil Regolith Thin Sections (Stoops 2003) soil properties were recorded semi-quantitatively and adapted specifically for the Croftside Farm samples. The thin sections were analysed using an Olympus polarizing microscope at a range of magnifications (x10 - x400) and under Plane Polarized Light (PPL), Crossed Polarized Light (XPL) and where applicable Oblique Incident Light (OIL). Each light source allowed identification of specific microscopic features, such as, mineral and organic components, pedology and feature classification. All features observed were recorded on an Excel spread sheet with the limit of the coarse to fine material being 20µm (c/f20µm).

Results and Interpretation

The following sections show the characterisation and interpretations of the two micromorphological thin sections (TS_052.1 and TS_052.2) (Figure 26) with a summary of the frequency and type of pedofeatures in each thin section recorded in a supplementary table (Table 5).

The coarse mineral and rock materials observed in both samples (TS_052.1 and TS_052.2) from Croftside Farm comprised mainly weathered sub-rounded and rounded fractured quartz (~40-60%), basalt (~10%) and infrequent fragments of feldspar (~2). The coarse to fine material (c/f) distribution varied across the samples, with sample TS_52.1 having a 2:3 c/f ratio across the sample, with the laminated area at the top of the thin section having a 1:9 c/f ratio. Sample TS_52.2 showed the greatest variability in the c/f ratio with a 1:9 ratio in Region 1, Region 3 and Region 4, while Region 2 had a 2:3 c/f ratio. The inclusion of material in Region 1 of TS_52.2 had a similar c/f ratio as Region 2 (c/f 2:3).



Figure 25: Location of the micromorphological samples.

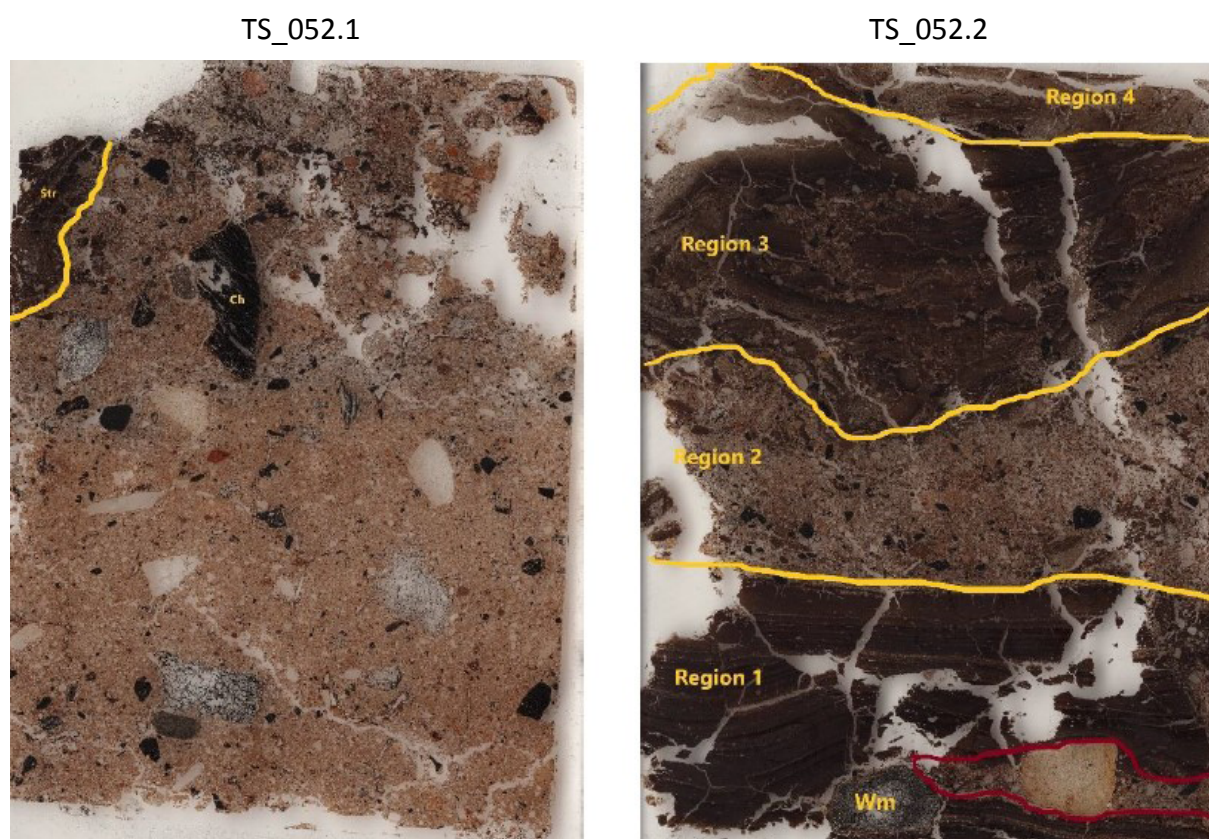


Figure 26: Annotated thin sections of the samples from Croftside. Sample TS_052.1 displays a small area at the upper part of the sample containing laminated material (Str) and there is visible evidence of charcoal inclusions (Ch). Sample TS_052.2 displays four distinct Regions, Region 1, Region 3 and Region 4 all displaying laminated deposits with Region 2 exhibiting a homogenised matrix of coarse and fine material. The area delineated in red in Region 1 being an inclusion of the material identified in Region 2

The between and in each sample variability in the related distribution was exhibited, this is derived from the distance between the coarse and fine units (Stoops 2003); see Table 5. The limpidity of the groundmass in PPL illumination was similar with sample TS_52.1 and Region 2 of TS_052.2, both having a dotted appearance due to the presence of dark micro-fragments (>20 µm) of charcoal and/or degraded wood and redoximorphic nodules (<20 µm) (Bullock et al. 1985; Stoops 2003). Region 1, Region 3 and Region 4 together with the small area at the top of sample TS_052.1 all displayed a speckled appearance as a result of the fine clays and silt particles (Stoops 2003). The b-fabric was speckled in both of the samples and this is from the clay colloids in the fine matrix.

The lamination identified in the regions of sample TS_052.2 and also in the upper corner of sample TS_052.1, varied in their thickness and in their composition of silts and clays, thus displaying banding. Within the bands in the samples were micro fragments (<20 µm) of charcoal and woody

like material. Visibly abrupt boundaries can be seen between the darker and lighter laminations and this can also be observed between Region 1 and the bottom of Region 2 and also between the top of Region 2 and the bottom of Region 3 (TS_052.2). Charcoal (>20 µm) was also identified in both samples using OIL, TS_052.1 displaying large inclusions (>2500 µm) of both charcoal and woody like material. Sample TS_052.1 exhibited inclusions of bone and burnt bone (20->2500 µm), the latter in the lower part of the sample (Figure 27). Small inclusions of rubified clay (OIL) were exhibited in sample TS_052.1 and also Region 2 of sample TS_052.2.

The microstructure in sample TS_052.1 was moderately developed and displayed a sub-angular blocky nature. The peds being delineated by partially accommodated interpedal channel, with intrapedal chambers and vughs exhibited within the peds. Sample TS_052.2 displayed a weak sub-angular blocky microstructure in Regions 1, 3 and 4, the peds being separated by accommodated channel voids, while Region 2

Thin Section No	Region	Related Distribution	c/f (20µm) distribution (ratio)	Course Material							Groundmass					Pedofeatures		
				Rock/Mineral				Organic			PPL	XPL	Peds	Voids	Development	Redoximorphic Nodules	Dusty Coating	Dusty Infilling
				Quartz	Basalt	Feldspar	Rubified Clay	Charcoal	Bone/Burnt Bone	Woody-like material								
TS052.1		Equal enaulic	2:3	****	**	*	**	****	***	***	Dotted	Speckled	SA-B	Channels, Chambers, Vughs	Moderate	****	***	**
TS052.2	1	Fine enaulic	1:9	**	*	*		*		*	Speckled	Speckled	SA-B	Channels, Chambers	Weak	*		
	2	Equal enaulic	2:3	****	**	*	*	**	*		Dotted	Speckled	SA-B	Channels, Chambers, Vughs	Moderate	***	**	
	3	Fine enaulic	1:9	**	*	*		*		*	Speckled	Speckled	SA-B	Channels, Vughs	Weak	*		
	4	Fine enaulic	1:9	**	*	*		*		*	Speckled	Speckled	SA-B	Channels, Chambers	Weak	*		
	5	Fine enaulic	1:9	**	*	*		*		*	Speckled	Speckled	SA-B	Channels, Chambers	Weak	*		

#All measurements indicated are semi quantitative

Key : Peds: SA-B-Sub-angular blocky; Frequency: * Infrequent (<2%); **Low (2-5%); ***Moderate (5-10%); **** High (10-20%); *****Very High (>20); N/A: Not applicable

Table 5: Micromorph.

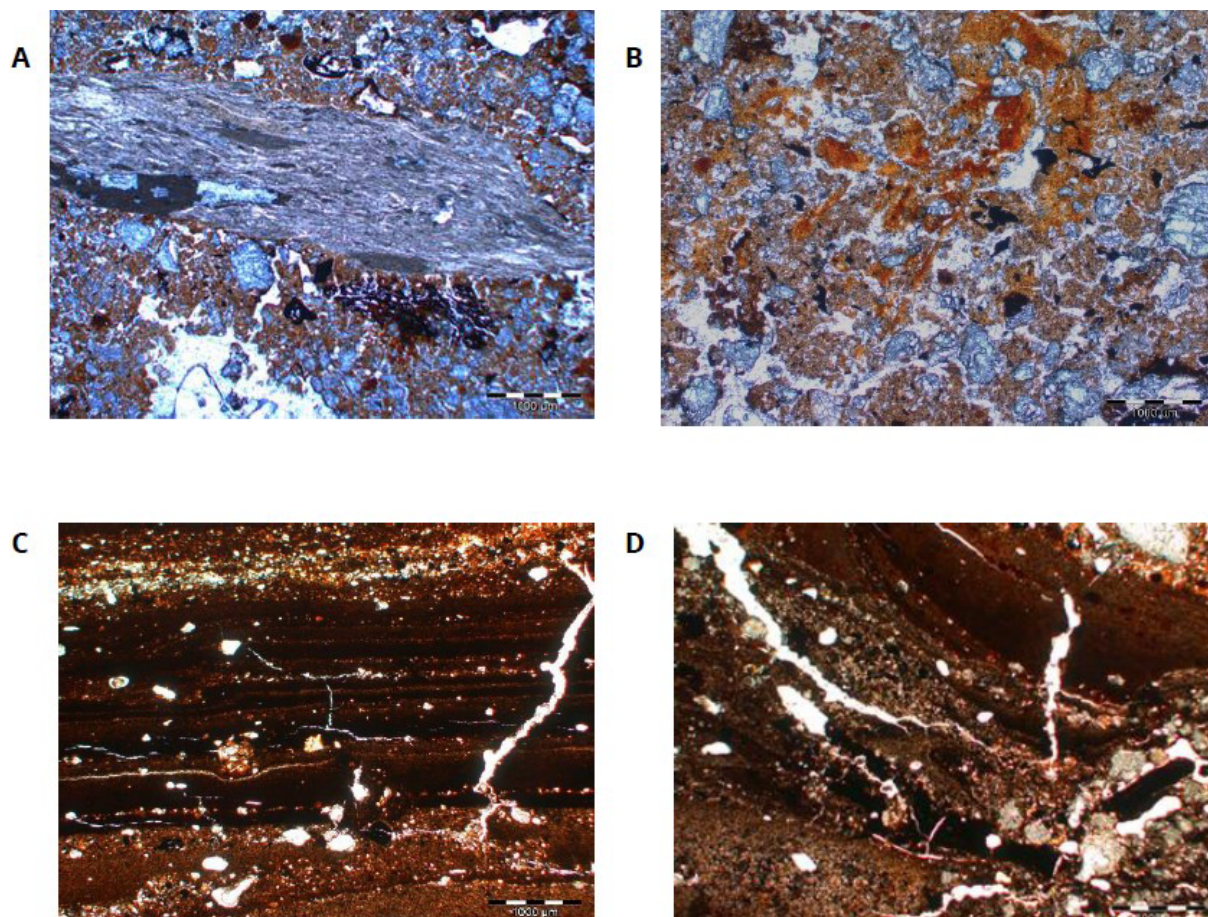


Figure 27: A. A large fragment of burnt bone in the fine matrix of sample TS_052.1 (PPL); B. Fe (Iron) accumulation in the fine matrix of sample TS_052.1 (PPL); C. Fine laminations in Region1 of sample TS_052.2 (PPL); D. Fragmented silt and fine clay laminations in Region3 of sample TS_052.2.

was similar in development in sample TS_052.1. A moderately developed sub-angular blocky microstructure was identified in Region 2 of sample TS-052.2, where the peds were separated by partially accommodated interpedal channels and contained intrapedal chambers and vughs.

Redoximorphic nodules were displayed in both samples, with TS_052.1 exhibiting them across the sample, except in the laminated corner area, while these pedofeatures were evident in Region 2 of sample TS_052.2. Dusty clay coatings had formed on the charcoal and coarse mineral/rock fractions of sample TS_052.1, with dusty clay infillings displayed in the matrix.

Discussion

Micromorphological investigation determined that the composition of the coarse rock and mineral inclusions in samples was derived from the same source; predominantly comprising quartz, basalt and feldspar. The pattern of the

mineral deposition in the fine material was also similar in all the samples, indicating that there had been similar sediment composition deposited in the area.

The microstructure of each sample was variable with sample TS_052.1 and Region 2 of sample TS_052.2 both displayed similar pedogenic features, an equal enaulic distribution pattern and also a similar *c/f* ratio; these areas both exhibited moderate development. In comparison, Regions 1, 3, and 4 in TS_052.2 and the upper corner of sample TS_052.1 all displayed a fine enaulic distribution pattern and a weakly developed microstructure. The difference in the development of the regions within and between the samples suggests that they contain different properties. The moderately developed microstructure in sample TS_052.1 and Region 2 of TS_052.2 would suggest that there was a higher level of aggregation, this supported by the presence of vughs. Increased aggregation can be caused by several factors:

an increase in the level of clay content, and/or a higher degree of organic matter in the deposits (Babel 1975; Oades 1984). It is evident from micromorphological investigation that there is a higher level of charcoal and woody-like material in sample TS_052.1 compared to the laminated regions of sample TS_052.2 that points to this being the main factor for the increased level of aggregation.

Woody like material and charcoal were identified throughout sample TS_052.1, and also Region 2 of TS_052.2, the high frequency of charcoal would indicate that there was burning in the surrounding locale (Adderley et al. 2010) during the deposition of the sediments that were in the soil. Additionally, there was also a high frequency of woody like material in the sample, its morphology of and the processes of its decomposition exhibited would suggest that there was root and also small wood fragments incorporated. There is, however, no evidence to indicate the process that incorporated the woody fragments into the samples.

Small fragments of partially degraded bone were displayed in the fine matrix of sample TS_052.1, while there was also a large inclusion of burnt bone also identified (Figure 27). Similarly, rubified clay was also displayed in these sample locations. The identification of anthropogenic activity in the form of burning and the accumulation of both burnt bone and burnt, rubified, clay would indicate settlement activity in the local environment (Macphail and Goldberg 2010).

The fine laminations observed in both sample TS_052.2 and also at the edge of TS_052.1 are derived from a build-up of fine silt and clay particles being deposited within the depression the samples were collected from. The fine banding of the laminations and the variability in their composition indicates that fine silts/clays and fine rock/mineral fractions were deposited in an episodic manner. The difference in the size of the silt/clay deposits are due to the velocity of deposition (Sunborg 1956), with the finer material being either carried via aeolian, colluvial or anthropogenic means into the depression, while the laminations containing larger fractions

have been washed into the depression (Fedoroff et al. 2018). The presence of infrequent coarse fragments in the fine laminations would point to the fine material being swept or rolling into the depression. The dark colouration identified in all the areas displaying laminations suggests that there is a higher level of fine organic matter contained within the silty/clay sediment that was laid down (Kuhn et al. 2010). This could relate back to the evidence of burnt bone, a high frequency of charcoal and evidence of rubified clay suggesting food preparation in the locale (Macphail and Goldberg 2010). The deposits exhibit some crusting and abrupt boundaries between darker and lighter layers indicating a hiatus between deposition events. The coarser inclusions identified in Region 1 of sample TS_052.2 points to variability in the source of deposited material, but being from the same source as that in Region 2. The homogeneity of these deposits indicated their deposition in single events.

Textural pedofeatures were identified in both samples, with redoximorphic nodules, Fe accumulations and dusty clay coatings all exhibited in sample TS_052.1. The development of the dusty clay coatings indicated that there had been disturbance of the upper soil horizon or surface soil, either from movement within the soil, or movement on the soil's surface. This allowed for the disaggregation of clay colloids and silt particles to percolate through the profile within soil water (Kuhn et al. 2010; Usai 2001). The suspended particles were deposited into voids and onto large organic and rock/mineral inclusions within the soil matrix. The development of these pedofeatures in TS_052.1 and in Region 2 of TS_052.2 indicates that once this deposit had been laid down there had been some form of soil disturbance that allowed their formation. The soil water that provided the percolation mechanism for the dusty clay coating can also be identified in the formation of redoximorphic features: nodules and Fe accumulations. The soil water forming areas of localised waterlogging, permitted the reduction, translocation and dissolution of Fe from a low to a high concentration (Lindbo et al. 2010; USDA-NRCS 2010).

Conclusions

Undisturbed soil samples collected from the site from the site provided evidence through soil micromorphology to indicate that both samples were derived from similar localised parent material. The development of the soil indicated that there was surface disturbance, with the formation of textural pedofeatures, while localised waterlogging provided the mechanism for the formation of redoximorphic features

The deposition of fine silty clays and fine rock/minerals in the laminations identified in both samples was derived from episodic deposition by anthropogenic, colluvial and alluvial processes, the coarser material with larger fractions occurring via the latter process. The coarser Regions were deposited in a single event due to their homogeneity.

The dark colouration of the laminations is indicative of a high level of organic matter. The boundaries between the darker and finer episodic events displayed abrupt boundaries indicating a hiatus between deposits. This was also identified in the upper and lower boundary of the coarser matrix of Region 2 of sample TS_052.2, indicating crusting prior to, and after, the coarse Region was deposited.

It is apparent that there is evidence of anthropogenic activity in the locale close to the sample site, this was confirmed by the presence of rubified clay and a high frequency of charcoal (TS_052.1). The high frequency of these micro-artefacts indicates localised burning. Additionally, the presence of burnt and fragmented bone, within the coarse matrix of sample TS_052.1, signifies food preparation or/and cooking in the area local to the deposits.

Micromorphological investigation has determined that there were three different depositional processes occurring in the sample location. Evidence was exhibited to indicate a hiatus had occurred between deposition events indicated by the presence of crusting. Micro-artefacts determined that anthropogenic activity in the form of food processing/cooking was taking place locally.

The Animal Bone

By Catherine Smith

Introduction and condition of the assemblage

Small fragments of mammal and fish bone, almost all of it burnt or calcined by exposure to a high temperature, were recovered from the evaluation and topsoil stripping at Croftside Farm. Bone fragments were retrieved both during the field evaluation and by sieving soil samples during post-excavation. The identification rate was poor. This is not surprising given the small size of the fragments and the almost universal burning and poor condition of the surviving bone.

Species present

A catalogue of fragments by context and associated small find number (SF) or bulk sample number (BS) is appended (Table 6). Degraded molar tooth fragments recovered as small finds (SF) could be categorised as cattle, or more loosely as either cf cattle, or ungulate cf cattle (SF 064; SF 107; SF 110). Bone fragments were either categorised as large mammal, or indeterminate mammal (SF 010). Large mammal fragments were recognisable as long bone shafts (SF 055 and SF 072) quite likely to be cattle, but not further identifiable.

Bulk sampling and processing allowed further small, mainly burnt or calcined fragments of mammal and fish bone to be recovered from 12 soil samples (see Table 6). The size of the fragments reflects the mesh size of the sieves used to retrieve them: bones ranged in length from about 2.5 mm to 23 mm, although most were in the lower part of this range. The majority of the fragments could only be categorised as indeterminate mammal. Exceptions were the fragments from BS sample (032), context (069) in Area A, of which one was the unfused proximal epiphysis from a second phalanx of sheep/goat, two were shaft fragments from small ungulate, six were from fish (of which five were vertebral centra) and about 130 were small indeterminate mammal fragments. All fragments from BS sample (032) were calcined by heat.

SF	BS No	Context	Area	Wt (g)	No. of fragments	Species	Bone	Details	Burnt/unburnt
010		001	B		2	indeterminate mammal	fragment	abraded	unburnt
055		075	A		1	large mammal	long bone shaft fragment	fairly thick shaft wall	calcined
064		004	C		4	cattle	tooth	molar; in 4 pieces	burnt?
107		051	B		12	ungulate cf cattle	tooth	molar enamel; prob from 1 tooth	burnt?
072		051	B		1	large mammal	long bone shaft fragment	fairly thick shaft wall	calcined
110		087	B		5	cf cattle	tooth	molar enamel fragments x 5	burnt?
	038	004	C	0.3	6	indeterminate mammal	fragment	size 3mm-10.8mm	calcined
	007	023	B	<0.1	3	indeterminate mammal	fragment	size 3mm-5.5mm	calcined
	009	029	C	<0.1	1	indeterminate mammal	fragment	size 4.4mm	calcined
	010	031	C	<0.1	1	indeterminate mammal	fragment	size 4.5mm	calcined
	014	031	C	<0.1	3	indeterminate mammal	fragment	size 2.5mm-4.3mm	calcined
	022	041	B	<0.1	1	indeterminate mammal	fragment	size 4.2mm	calcined
	046	041	B	0.3	5	indeterminate mammal	fragment	size 4.6mm-14.2mm	calcined
	021	044	B	0.1	5	indeterminate mammal	fragment	size 3mm-7.2mm	calcined
	044	044	B	<0.1	1	indeterminate mammal	fragment	size 4.8mm	calcined
	002	050	B		4	indeterminate mammal	fragment	size 3.2mm-6.4mm	burnt
	053	051	B	<0.1	1	indeterminate mammal	fragment	size 5.3mm	calcined
	055	051	B	0.1	8	indeterminate mammal	fragment	size 3.1mm-9.4mm	calcined
	027	055	B	<0.1	1	indeterminate mammal	fragment	size 5.7mm	calcined
	031	061	A	0.2	1	indeterminate mammal	fragment	size 8.0mm	calcined
	033	062	A	0.2	7	indeterminate mammal	fragment	size 3.5mm-9.8mm	calcined
	032	069	A	5.5	130	indeterminate mammal	fragment	size 2.0mm-23.0mm	calcined
	032	069	A		1	sheep/goat	phalanx 2	proximal epiphysis	calcined
	032	069	A		3	cf small ungulate	long bone shaft fragment		calcined
	032	069	A		6	fish	vertebra	centrum	calcined
	032	069	A		1	fish	fragment		calcined
	034	071	A		1	indeterminate mammal	fragment	size 3.4mm	calcined
	050	086	B		3	indeterminate mammal	fragment	size 4mm-7.6mm	calcined
	058	086	B	<0.1	1	indeterminate mammal	fragment	size 8.9mm	burnt
	049	088	B	<0.1	4	indeterminate mammal	fragment	size 3mm-7.8mm	calcined
	059	092	B	<0.1	1	indeterminate mammal	fragment	size 6.6mm	burnt
	060	095	C	0.2	1	indeterminate mammal	fragment	crumbly	?unburnt

Table 6: Animal Bone catalogue.

Distribution of bone over the site

Much of the faunal material recovered as small finds came from features associated with road (003) in Area B. Cattle/cf cattle tooth fragments were found in the upper surface of the road (SF 064, context 004), and deposits (SF 110, context 087) or agricultural layers beneath the road (SF 107, context 051).

In Area A, the fill of linear feature (074) contained only a calcined large mammal shaft fragment (SF 055).

The bulk samples derived from fills of pits and other features of which only the fill of pit (068) in Area A (BS 032, context 069) contained material identifiable as sheep/goat, fish and small ungulate. This pit also contained green-glazed grey ware pottery of a late medieval date (see *Medieval and later pottery*) with which the bones may possibly be contemporary. All other bulk samples in Areas A, B and C were identifiable only as indeterminate mammal.

Discussion

Although dating evidence for the Croftside bone assemblage is lacking, it can be noted that sites dating to the Roman period in the Stirling area include Camelon, Falkirk, where the faunal assemblage consisted in great part of calcined and disintegrated cattle teeth (Smith 1981),

to which the present assemblage might be compared. However, unburnt, better preserved animal bones were recovered from Carriden bathhouse, a site of Roman date also located in the Falkirk area, where a small assemblage included recognisable bones of cattle, sheep/goat, horse, pig and guillemot (Smith 2009).

In Stirling itself, Medieval deposits at the Tolbooth yielded a well-preserved and typically urban animal bone assemblage of 1128 fragments, including cattle, sheep/goat, pig, horse, cat, rabbit and bird species (Smith 2001). A similar range of mammalian species, with the addition of dog, dog/fox, red deer, roe deer and hare was recovered from Medieval Blackfriars, Goosecroft Road (Smith 2018).

As there was no evidence of the likely date of the animal bone fragments from Croftside other than the accompanying late medieval/early post-medieval pottery, the origin of the current bone assemblage found either within or below the road is unclear in spite of radiocarbon date of cal AD 1296 – 1396 (UBA-52862) from context (092) below the agricultural soil (051). However one explanation may be that bones had been included in manure or night soil used to fertilize agricultural fields. Fragments within the road itself were possibly trampled into the surface from discarded rubbish. Bones within pit (068) may represent such detritus.

Medieval and post-Medieval Pottery

By Bob Will

Introduction

The assemblage of pottery recovered from the archaeological investigations at Croftside, Stirling consisted of 743 sherds (8655.8 g) and includes material from the late medieval and post-medieval periods but also included a few sherds of modern factory produced wares and brick or tile (Table 7, Appendix). The sherds were recovered from 21 contexts with the greatest number of sherds coming from contexts (51) 72 sherds, (61) 188 sherds and (62) 125 sherds, although these sherds are probably from the same vessels there were few joins and no profiles could be reconstructed.

The Scottish Post-Medieval fabrics (SPMOW and SPMRW) account for 85% of the assemblage by weight and 83% by sherd count. The largest group of pottery in the assemblage dates to the post-Medieval period and represents the main post-Medieval pottery fabrics found in central Scotland.

All the sherds were examined, weighed and recorded according to guidelines and standards produced by the Medieval Pottery Research Group (MPRG 1998 and 2001). No scientific

analysis was undertaken. The assemblage includes material from the evaluation, excavation and sherds recovered from environmental samples. Most of the sherds were quite small and abraded and many of the sherds had split or were spalls where flakes of pottery had broken off the main sherd, this is often caused by frost cracking once the pot has been discarded.

Medieval Fabrics

Scottish White Gritty Ware

Only 11 sherds (41.5 g) were recovered in Scottish White Gritty Ware fabrics. These fabrics are found throughout Scotland particularly from east coast towns and in the Central Belt where they have been recovered from excavations in large quantities. They are also found on excavations across the country and it is one of the main pottery fabrics found in Medieval Scotland. White gritty wares first appeared in the late 12th century but the tradition lasted into the late 15th century. So far, the only published kiln site is at Colstoun in East Lothian but it is likely that a number of other kilns were in production throughout Scotland (Jones et al. 2003). Scottish White Gritty Wares have been recovered from excavations in Stirling and also at Stirling Castle where they are usually found in smaller numbers than Scottish Medieval Redwares. This may reflect the early dates of the sites excavated and the ready access to locally produced redware vessels.

Fabric	Description	Numbers	Weight	Rims	Bases	Handles	Body sherds
SWGW	Scottish White Gritty Ware (Medieval)	11	41.5				11
SMR	Scottish Medieval Redware	31	167.8	0	3	1	27
SPMRW	Scottish Post-Medieval Reduced Ware	312	3409	5	5	3	209
SPMOW	Scottish Post-Medieval Oxidised Ware	303	3969.1	19	35	8	241
Post med/modern		1	1	0	0	0	1
Mod white	Modern white earthenware	44	141.9	9	6	2	27
Mod red	Modern red earthenware	16	167.4	1	1	0	14
Mod stoneware	Modern industrial stoneware	1	17	0	0	0	1
Brick/tile		24	741.1	0	0	0	24
	Totals	743	8655.8	34	50	14	555

Table 7: Pottery numbers and weight by fabric.

The Scottish White Gritty Ware sherds from Croftside are all quite small, abraded, mainly reduced and have a green glaze. They probably date to the later 14th or 15th centuries. One body sherd has the scar for a handle terminal as well as green glaze and is probably from a jug. Four of the sherds are undecorated and could be from storage jars, one of these has some fuming on the exterior which may indicate that it is from a cooking pot.

Scottish Medieval Redwares

A total of 31 sherds (167.8 g) were recovered in Scottish Medieval Redware fabrics, this type of pottery is found across most of Scotland and has recently been the subject of an extensive research programme funded by Historic Environment Scotland (Haggarty et al. 2011). The largest assemblages of Scottish Medieval Redwares have been recovered from excavations in Aberdeen and Perth. Two kiln sites are known: one at Rattray near Peterhead that produced wheel-thrown and hand-made vessels, and the other at Stenhouse near Falkirk. These fabrics are thought to date from the 13th to the 15th centuries, although the publication of the Perth High Street excavations has identified Scottish redware fabrics from the mid to late 12th century (Hall et al. 2012, 3-11, 27-33). The firing conditions varied from oxidised to reduced, or partly reduced, with the majority of the sherds reduced. These variations may reflect different kilns or manufacturing sites, or chronological differences.

The sherds from Croftside generally have reduced cores with green glaze and like the White Gritty Wares are often abraded. One grooved strap handle with light green glaze was recovered.

Post-Medieval Fabrics

Scottish Post-Medieval Reduced Wares (SPMRW) and Oxidised Wares (SPMOW)

Post-Medieval fabrics comprise the largest group within the assemblage, 83% by sherd count and 85% by weight and suggest a post-Medieval date for the main use of the site. Scottish post-Medieval Reduced Wares (312 sherds, 3409 g) and Scottish post-Medieval Oxidised Wares (303 sherds, 3969.1 g) were first classified at Stirling Castle (Haggarty 1980) and the pottery dates from the late 15th to 18th centuries. The only

published kiln site for these wares in Scotland is at Throsk on the southern bank of the Forth just to the east of Stirling (Caldwell and Dean 1992) but other kiln sites making similar vessels are likely to have been in operation across Scotland. Historical research at Throsk has uncovered details about the potters, their families and links to other parts of Scotland (Harrison 2002). It has been suggested that it was the draining of the carse that led to the development of pottery production as the carse clays became more easily accessible (Haggarty and Lawson 2013). The best range of vessels so far recovered comes from the limited excavation at Throsk and the extensive excavations at Stirling Castle, where platters, bowls, skillets, fish dishes and money boxes or *pirlie pigs* as well as the more common jugs have been recovered. Many of the sherds recovered from Croftside had cracked, split or were spalls.

Scottish Post-Medieval Reduced Wares tend to be thick-walled and the fabric is usually heavily reduced to grey or black with few inclusions and a thick dark green glaze. The oxidised wares are very similar except they tend to be thinner walled, better made and tend to be found in a wider range of vessels. For the oxidised wares the fabric is reddish/orange or more commonly partially oxidised or partially reduced, these variations are the result of firing conditions in the kiln.

The reduced wares recovered from Croftside are quite typical and consist of sherds from mainly jugs with grooved strap handles, thick walls, short necks and with a cordon below the rim. The jugs have a full green glaze and sherds were recovered with an incised wave decoration (Figures 28 to 30, see also Figure 11). Some of the base sherds have evidence for knife trimming round the base edge.

With many of the oxidised wares the fabric appears to be softer and not so highly fired, which has meant that the sherds are more abraded with flaking glaze.

Modern

A small number of modern factory produced industrial ceramics were retained. These comprise white earthenware (44 sherds, 141.9 g), red earthenware (16 sherds, 141.9 g) and modern stoneware (1 sherd, 17 g). The white



Figure 28: Part of the large Scottish post-medieval red ware jug with wavy decoration SF 36, found adjacent to rubble deposit (061).



Figure 29: SF 042 complete ridged strap handle with incised wavy decoration.

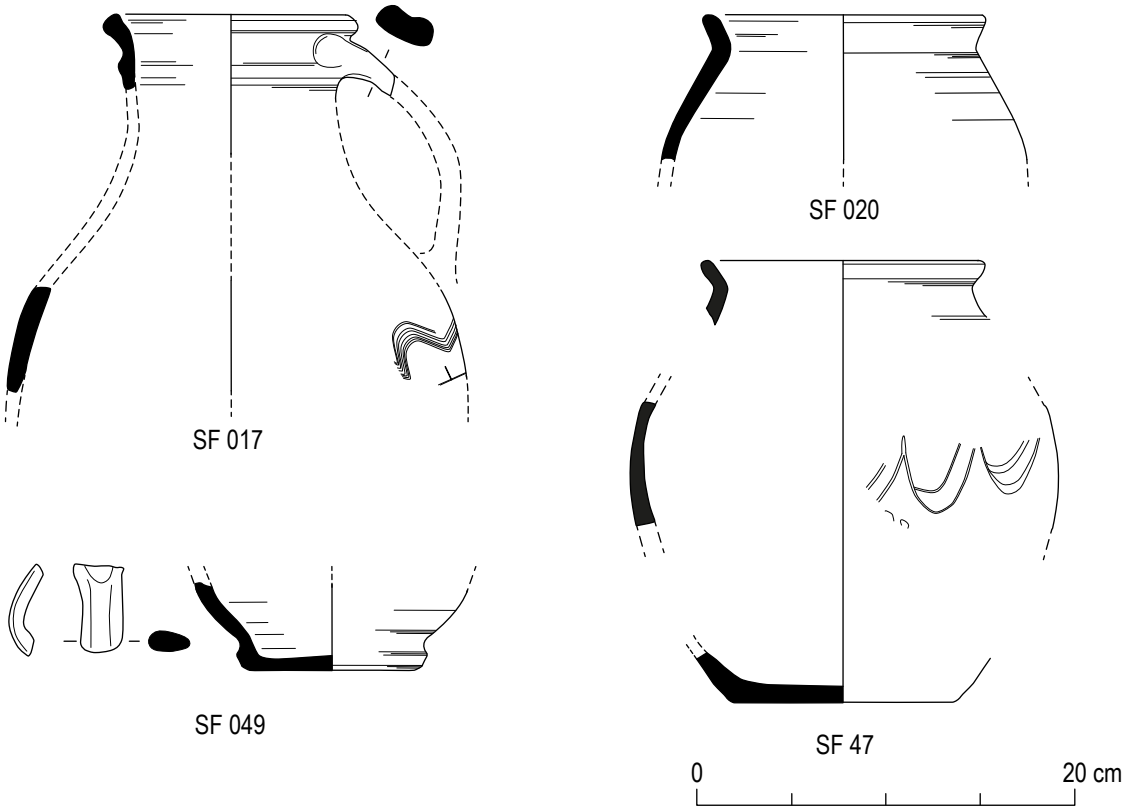


Figure 30: Medieval pottery illustrations SF 017, SF 020, SF 049 and SF 047.

earthenwares were mainly table wares and were decorated with blue transfer printed designs, hand-painted bands and sponge printed designs. The white earthenwares would date to the late 19th century. One thin rim sherd had a blue and white hand painted design that was flaking off. It may be earlier in date and could represent tin-glazed earthenware from the late 18th or early 19th century. The red earthenwares are more utilitarian wares, storage jars and bowls with brown glaze on the exterior. Some of the bowls have cream/white coloured slip-lined decoration on the interior and could be from dairy bowls that would date to the 19th century. One sherd of industrial stoneware with brown glaze was recovered and could be from a large storage jar or flagon and again this would date to the late 19th century.

Brick and Tile

A total of 24 fragments of brick, drainage pipes and roof tile were recovered weighing 741.11 g. The largest group (14 fragments) consisted of pantiles or roofing tiles in an orange/red fabric. Pantiles are found extensively along the east coast of the UK and were originally thought to have been brought from the Netherlands as ballast in the 17th century, but they remain popular today and were made in large quantities in Scotland.

Discussion

While the assemblage covers a wide date range from the medieval to modern period, the bulk of the sherds date to the late medieval and early post-medieval period (1450 – 1650 AD). The different fabrics are very similar in that they are predominantly reduced to a grey or black colour with green glaze, and the fabrics have been divided by small differences in the fabric colour. Jugs are the predominant vessel type although cooking pots/storage jars and bowls are also represented. Surprisingly no imported sherds were recovered from the investigations. This may reflect the rural nature of the site and the availability of a range of local produced vessels from Throsk and other local potteries.

Burnt Clay

By Beverley Ballin Smith

A total of four samples and one small find of burnt clay with related materials were found predominantly in Area C during the excavation at Croftside Farm. Their total weight was 360.2 g and all the pieces are abraded (Table 8). None of the samples came from dated contexts.

Their description and identification is as follows:

SF 004 weighs 331.8 g and comprises 1 large and three smaller pieces, the remainder being uncounted fragments and dust. It was found within the fill (007) of pit (006) in Area C. The material contains no organic material but resembles decayed stone, with the largest piece possibly burnt. Further examination and investigation using the BGS online Geology Viewer 2026 identified it as Diamicton, a natural deposit formed during the Devensian period. It is poorly sorted and contains much clay and mud with also evidence of fossil shells. It is local to the area.

Sample 5 comprises three clay pieces from context (007), the fill of a pit (006) in Area C. The largest piece weighs 13.7 g and measures 59.2 mm by 35.5 mm by 22.2 mm. The pieces have sparse mineral content and are burnt but have no noticeable organic material. They possibly represent a pocket of natural clay in the side of the pit.

Sample 12 comprises four small irregular but rounded clay pebbles from context (012), a gravel deposit in Area C. One of the pebbles has a flattish surface but all have noticeable vesicles from lost organic material. There are very few stone or mineral inclusions. The pieces are light in weight and are likely to have been burnt.

Sample 38 is from Area C, context (004) the upper surface of the road (003). Although there is sparse organic material noted in the matrix of the four pieces recovered, there does not appear to be any mineral or stone inclusions. It is suggested that this sample is burnt soil/clay/silt.

Sample 58 from Area B was from the core (86) at the bottom of the road (003). The sample was a single piece, 3.3 g in weight. Most of its matrix

is slag but with a partial outer layer of burnt vesicular clay, that contains the rare tiny quartz grain and small stone pieces. Organic material is sparse.

Three out of the five samples analysed are considered to be natural (SF 004, Sample 5 and Sample 38), that have been accidentally burnt.

Sample 12 is likely to have come from a clay-lined furnace or from the area of a furnace, where there was clay in the subsoil. Sample 58 may in fact be small fragments of burnt clay or daub. The sample is small and the pebbles are heavily abraded and without any diagnostic impressions of roundwood, but they are likely to have derived from the archaeological features in Area B.

SFNr / sample	Area	Context	Total Nr pieces	Total Weight g	Length	Width	Thickness	Description of pieces	Stone/ Mineral	Organic matter	Abraded	Comment
58	B	86	1	3.3	22.8	15.6	8.6	Predominant slaggy, with burnt vesicular clay adhering	Some quartz and stone	Some	✓	Burnt clay adhering to slag. Road core
12	C	12	4	4.6	23.3	16.5	11	Irregular but rounded pebbles with one flattish surface. With many vesicles. Light-weight pieces. Lightly burnt?	Very little	Much	✓	Found in gravel deposit
38	C	4	4	6.8	31	22.6	18.3	Some organic matter but possibly burnt soil	N	Very little	✓	Upper surface of road 003
5	C	7	3	13.7	59.2	35.5	22.2	Has some mineral content, no noticeable organic matter, burnt, possibly natural clay from the side of the pit	Very little	Very little	✓	Burnt from side of pit, in fill of pit 006
4	C	7	4 large	331.8	n/m	n/m	n/m	Burnt Diamicton, a deposit formed naturally during the Devensian period. It is poorly sorted and contains much clay and mud with evidence of fossil shells.	n/a	n/a	n/a	Within fill of pit 006
			16	360.2								

Table 8: Daub fragments.

The Glass

By Robin Murdoch

The content of this assemblage is very typical of the glass items recovered regularly from Scottish rural sites. It consists mainly of wine bottle shards of early 18th through to early

19th century with no substantial shards of finer tablewares except possibly tiny fragments in the bulk samples. In addition to the wine bottle shards, which of course would undoubtedly have been repurposed for other liquids, there are also shards from later 19th century utilitarian bottles. Two small window glass shards were also present in the assemblage (Table 9: Glass catalogue).

Site Code	Small Find No.	Bulk sample	Quantity	Context	Description
4487	006		1	2103	Base shard wine bottle mostly firebright, very dark green (black!), belling, kick 32 mm, moderate to heavy base ring wear, dating to the last quarter 18th /first quarter of the 19th century.
4487	008		2	Tr 21	Shard window glass, firebright pale dull green tinge, 1.4mm thick. Glazing score plus some evidence of grozing, from square/rectangular pane and a shatter shard from wine bottle kick, dark green, probably second half of the 18th century
4771	008		6	001	Complete lip and part neck from probable small condiment bottle in firebright greenish aqua. Second half of the 19th century. Second shard probably from same. Two shards from square section bottle in pale blue aqua, probably second half of the 19th century. Neck shard bottle, mainly firebright black with vertical striations, 19th century possibly first half. Small shard probable wine bottle, dull mid greyish green, corroded, small seed, probably 18th century.
4771	011		1	004	Rounded shard, blue aqua, looks fire damaged.
4771	019		1	001	Part wine bottle base, dull green, dulled (light corrosion), original diameter 130 mm, kick 43 mm+. Two huge gas bubbles plus small seed, moderate base ring curve, heavy base ring wear. Late first quarter to early second quarter 18th century.
4771	021		1	001	Part wine bottle? Base in firebright black, original diameter c. 90 mm, mould blown, slight belling. Shallow 18 mm kick, sharp base ring curve, medium base ring wear. Probably first quarter 19th century.
4771	042c		3	062	Two shards bottle, firebright olive green, small seed. Shard window glass? Slightly curved, firebright pale olive tinge, curved striation.

Abbreviations:

BR: Base ring

FB: Firebright, surface shiny as first made.

SR: String ring, added below rim originally to affix closure.

WB: Wine bottle

WG: Window glass

Table 9: Glass catalogue.

Site Code	Small Find No.	Bulk sample	Quantity	Context	Description
4771	045		6	157	Six shards all from same wine bottle, firebright 'black' glass, includes base shard c. 90 mm original diameter, slight bellling, probably first quarter 19th century. Body shard from same with slight 'orange peel'. Neck shard again from above, applied flat-section string ring and neatly finished plain lip.
4771	050		1	065	Shoulder/neck shard wine bottle, firebright palish dull green, gentle curve so probably pre-1740, possibly early 18th century.
4771	052		1	069	Part base wine bottle, blue glassgall colour from too much nitrate, dulled (light corrosion), diameter c. 90 mm, medium kick, moderate base ring curve. diameter c. 90 mm, medium kick, moderate base ring curve. Third quarter 18th century, possibly late second quarter.
4771	054		1	u/s	Unstratified shard wine bottle neck, dark brownish green, mainly firebright, nipped in at top. Last quarter 18th century just possibly first quarter 19th century.
4771	122		5	044	Five shards all from same wine bottle, firebright dark brownish green, bellling. Late 18th-first quarter 19th century.
4771		4		017	Tiny clear shard 3.4 by 2.5 mm.
4771		12		012	3 x 5 mm thick shards, dark glass, corroded, WB?
4771					9 small mostly shatter shards.
4771		13		012	Small shatter shard, greyish tinge, slight glassgall.
4771		19		035	3 small shards, pale greyish tinge, one with two, possibly three small knobbls on the surface. Largest 6 by 3.2 mm.
4771		33		062	Very small shard, greyish tinge similar to above? 6.2 by 3 mm.
4771		40		076	Tiny shard, pale grey tinge, 3.1 by 2.8 mm.
4771		45		045	3 tiny shards, clear, 3.7 x 2.6mm.
4771		46		041	Small shard WB, mid dull green, corroded, probably 18th century.
4771		58		086	Small shard clear, possibly from lower bowl wine glass.
					Small shard greenish tinge, smooth inner, outer appears to be two flats at 100-110 degree angle.
					Very small shard clear, slightly greenish tinge, 5.9 by 4.6 mm.

Abbreviations:

BR: Base ring

FB: Firebright, surface shiny as first made.

SR: String ring, added below rim originally to affix closure.

WB: Wine bottle

WG: Window glass

Table 9 (continued): Glass catalogue.

Clay Tobacco Pipes

By Rachel Buckley

A total of 13 clay pipe stem fragments (Table 10) were found mostly in topsoil across the excavated area. Two pieces were found in the upper surface (004) of the road (003); two were found in the agricultural soil (051) below the road; and one plain fragment was found in the road foundation deposits (086). None were datable.

Only SF 001 from topsoil has a local maker's mark. The fragment of stem is a thin piece decorated and stamped ALLOA on one side and (T?).HALL on the other (Figure 31). The decoration is worn.



Figure 31: SF 001 clay tobacco pipe stem fragment stamped ALLOA on one side and (T?).HALL on the other.

Catalogue No.	SF No.	Context No.	Area	No. of Pieces	Description	Length (mm)	Diameter (mm) min to max	Weight
1	15	001	A	1	Stem fragment, thick rounded plain.	53	10 - 11	6.9
2	18	001	A N-corner	1	Broken stem fragment, plain, no inner residue.	32	10	2.6
3	30	001	B	1	Fine, clean, plain stem fragments	24	6	1.4
4	30	001	B	1	Stem, thin slightly abraded mouthpiece with some staining.	25	6, 7 with lip	1.2
5	68	051	B	1	Clay pipe stem fragment, plain with some staining.	18	7	0.6
6	77	004	B	1	Fine, thin, tapered and plain stem fragment.	25	6 to 4	0.8
7	77	004	B	1	Fine thin and plain stem fragment.	23	6	1.2
8	99	086	B	1	Thick stem fragment with beginning of bowl and heel, darkened inner residu	31	10	4.7
9	128	051	B	1	Clay pipe stem fragment has inner dark residue, plain, very small portion abraded	27	9	2.7
10	143	u/s	A	1	Thick stem fragment abraded at one end, no inner residue, plain.	34	8.5	2.9
11	144	u/s	B	1	Thick stem fragment no inner residue, plain.	33	9	3.3
12	1	001	Evaluation Tr 16	1	Thin, slightly tapered, decorated stem fragment & stamped ALLOA / (T?).HALL	49	6 to 8	4.1
13	7	2102	Evaluation Tr 21	1	Thick, rounded and plain stem fragment.	38	7 to 9	2.8

Table 10: Clay pipe catalogue.

Metalwork

By Gemma Cruickshanks

Discussion

Five metal objects were retrieved: four copper alloy (SF 082, SF 089, SF 126 and SF 2001) and one lead (SF 4018). A copper alloy tombac button (SF 2001) and lead sack seal (SF 4018) are both post-medieval in age, most likely dating to the 18th century when such metal items were more commonly mass-produced. Seals such as these were commonly used to label and secure sacks of fertiliser, seeds or other substances and are common topsoil finds. SF 126 is a piece of nodular casting waste retrieved from a deposit interpreted as a bedding or core layer at the base of the road (086) where around half of the ironworking debris assemblage was also retrieved, suggesting debris deposited there originated from a mix of ferrous and non-ferrous metalworking. A post-medieval date is also therefore likely for the casting waste given the proposed historical age of the road. The function and age of a tiny fragment (SF 082) and a broken plate fragment (SF 089) are unknown.

Catalogue

SF 082 A very small fragment of copper-alloy sheet or copper-alloy-stained material. Origins unclear. 10 mm by 7 mm by 1.5 mm. Context (041) Area B, Slot 2 south.

SF 089 Sub-oval, dished copper alloy sheet fragment with rectangular perforation in centre and outer edge entirely broken. Function and age unclear. L 36 mm, W 28.5 mm, T 2 mm; peroration 8 mm by 5 mm (Area B west side of road, unstratified).

SF 126 Nodular copper alloy casting waste. Age unknown. 19 mm by 14 mm by 8 mm; 6 g. Context (086) at base of road (003).

SF 2001 Large copper-alloy, tombac-style, disc button with slight damage to the edges and squashed loop on the back. Hints of decoration on the front, comprising an incised or stamped circumferential line near the edge and a possible ring of raised decoration around half-way between the edge and the centre. Post-medieval,

most likely eighteenth or nineteenth century AD in date. Diameter 30.5 mm, Thickness 1 mm. From topsoil.

SF 4018 Lead disc-shaped bag/sack seal stamped with 'London – Fertiliser'. Post-medieval in age. Diameter 19 mm by 17 mm; Thickness 5 mm. From topsoil.

Ironworking Debris

By Gemma Cruickshanks

Summary

A small assemblage of ironworking debris weighing a total of 2.3 kg was retrieved during excavation of a road and surrounding features at Croftside Farm. Different forms of ironworking debris are diagnostic of separate stages of the ironworking process. Hammerscale and slag spheres recovered here indicate blacksmithing activity (forging iron into an artefact by hammering) while a few larger, denser lumps are more likely to have derived from smelting (producing iron from ore in a furnace). A range of undiagnostic fragments were also recovered. The material seems to have been reused as part of surfacing or the core within a post-medieval road; there is no indication of in situ metalworking. As such it is unclear exactly where and when the ironworking activity which produced this material took place.

The assemblage

The material was visually examined and classified using common terminology (e.g. Crew and Rehren 2002; Lucas and Paynter 2010; McDonnell and Milns 2015) based upon characteristics such as size, morphology and density. The assemblage is summarised below (Table 11) and a full catalogue is in the archive.

Type	Weight (g)
Smelting slag	435.9
Hammerscale	31.1
Slag spheres	30.9
Undiagnostic iron slag	1653.3
Cinder	109.4
Total	2260.6

Table 11: Summary of ironworking debris assemblage by weight (g).

Smelting Slag

Two fragments (SF 1001 and SF 003 context 030) were sufficiently large and dense enough to suggest they derived from smelting. Both were from the topsoil (001) and may therefore relate to activity of a different date to that in the road, though this remains unclear.

Micro-debris: Hammerscale and slag spheres

Over 60 g of magnetic flake and spheroidal hammerscale was recovered during sample processing. Hammerscale flakes and spheres fly from hot iron during forging and welding respectively and are therefore diagnostic of blacksmithing. In large quantities, such debris is a good indication of in situ activity, since it is usually too small to easily clear away, resulting in its accumulation in floor layers around an anvil. The recovery of so much from deposits within the road (003) matrix is therefore unusual and indicates micro-debris was indeed cleared up and removed in some cases. The hammerscale flakes and spheres occur in the same contexts, suggesting the forging and welding took place in the same location. These forms of debris were retrieved from 17 different contexts, but most (91% by weight) were from a deposit of industrial waste at the base of the road (086), interpreted as a bedding or foundation deposit.

Undiagnostic iron slag

Many fragments are too small and/or fractured to determine which stage of the ironworking process they were produced. Over half (1116.6 g) was recovered from the same lower road deposit (086) as the hammerscale flakes and spheres, suggesting a link to blacksmithing. A metallised layer within the road (046) and matrix surrounding overlying rubble core (041) produced the next largest quantities at 204 g and 89 g respectively.

Cinder

The only other vitrified material was two fragments of cinder (SF 3037 and SF 4002; 109 g) from topsoil (001). Such material could have been produced during a range of high temperature processes and is not diagnostic of a particular period.

Discussion

This is an unusual assemblage. The combination of the unabraded small fragments of undiagnostic slag, along with a relatively large number of hammerscale flakes and spheres is more typical of an in situ blacksmithing assemblage, found within a workshop in the floor layers surrounding the hearth and anvil. Its context here however, suggests this material was redeposited as part of a bedding layer or core for a post-medieval road. Ironworking debris is not chronologically diagnostic in its own right; it is not possible to know how old this material was before being redeposited in the road. While logic would dictate it is likely to be roughly contemporary, it could easily have been inadvertently mined from an earlier site along with soil and stones for the road. Ironworking debris and other industrial residues were reused in cobbled surfaces and roads since prehistory.

An alternative interpretation is that a blacksmith may have been working on site during construction of the road. A portable, raised hearth would leave no trace archaeologically and it is easy to imagine how often iron items like tools or horseshoes may have required renewal or repair during such a project. The presence of smaller quantities of blacksmithing debris in deposits surrounding the foundation layer (086) may be the result of bioturbation, as small fragments can easily be transported by roots, insects or animals. The radiocarbon date from the agricultural soil beneath the road indicates that the road is post the 14th century in date. The road itself was not dated by scientific means.

General Discussion

The environment

The earliest evidence for activity on the excavated area was found in the form of a small series of randomly distributed pits from which no artefacts were recovered. However, the pits ranged in date from the Mesolithic to the late Bronze Age, a period of c. 3000 years or more (Table 1). It seems likely the site was used transiently, perhaps seasonally as a camp site by hunting parties using the Bannock Burn and its access to the River Forth and its flood plain. The area around Croftside was rich in natural resources, from woodland (timber, firewood, nuts, fruits and fungi), open ground (seeds, game and fowl) and waterways (fish and fowl). There was evidence, although sparse, of the use of some of the pits as sporadic fire-pits with willow/poplar firewood burnt in the Mesolithic and birch in the late Neolithic. Oak was also used as firewood and rare examples of nutshells from pits also indicated the roasting of hazel nuts. During the Neolithic and the Bronze Ages the area may have similarly been used as a camp site for foraging or hunting to supplement a narrow range of foods produced by farming communities living at permanent settlements nearby.

There is a long gap in the changes to the environment from prehistory into history, and the next recorded evidence is of the landscape prior to the construction of the road (003). The agricultural layer beneath it was investigated by macrofossil and pollen analyses which showed there were significant changes to the environment over time. The lowest context (092) was dated to cal AD 1296 – 1396 (UBA-52862) suggesting these changes took place from the Medieval and into post-Medieval times. At the base of the agricultural level the presence of a number of native woodland tree and shrub species were present that over time changed to include beech, pine and cereal pollen was also present. The woodland was subsequently cleared and on wetter areas which were unsuitable for ploughing heathland and grassland was established. The agricultural layer (051) contained carbonised oat grains, evidence of stubble burning, and field clearance suggesting the landscape before the road was constructed was primarily an agricultural one, with heathland still present.

The wider prehistoric landscape

An increasing number of prehistoric sites have been found in the area around Croftside (Figure 32), by archaeological excavation and aerial photography. Stray artefacts have been found since the late 19th century, and still continue to be discovered (see Knight 2019). They include stone axe heads and lithic implements, bronze spearheads, fragments of a shale bracelet and pottery vessels, some associated with funerary practices.

Prehistoric sites close to Croftside include Lower Greenyards Bannockburn (NGR: NS 8160 9030). Here a series of excavations were undertaken between 1982 and 1985 on cropmark sites of a promontory fort and nearby palisaded homestead (Rideout 1996). These revealed structural remains mainly of Iron Age date and evidence of occupation or other activity from the Mesolithic to the present day. More recent work on the site of the proposed Greenyards roundabout (NGR: NS 8175 9018) revealed the remains of a wooden roundhouse and a number of isolated pits (Mitchell 2010). No finds were discovered in any of the deposits but charred cereal grains recovered from postholes of the roundhouse produced radiocarbon dates of 1740 – 1520 cal BC, the later part of the early Bronze Age. Excavations at Cowie Road, Bannockburn (NGR: NS 8160 9010) revealed enclosures defined by pits and post-alignments dated from late fifth to the early third millennium BC (Rideout 1997) with some deposits containing early Neolithic carinated bowl pottery. Medieval or post-Medieval rig and furrow overlay the site and a small assemblage of medieval pottery was also recovered. Another Neolithic settlement was excavated at Chapelfield, Cowie (NGR: NS 8363 8957). Here circular and oval buildings, pottery and pitchstone dated the occupation to the early and late Neolithic periods (Atkinson 2003).

In 2024 the discovery of a possible Bronze Age settlement and medieval ceramic production in the form of a kiln site in the nearby area were found at Cushenquarter Farm (NGR: NS 8380 8693). The prehistoric finds were similar to those uncovered at nearby Brucefields, a funerary site with isolated pits excavated in 2021 (NRHE ID: 378716). Prehistoric cropmark sites to the south-east of Croftside have been recorded as possible



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Figure 32: Map showing distribution of prehistoric activity around Croftside Farm.

settlement on a low ridge east of Plean Farm at Sauchenford Smallholdings (NGR: NS 83617 87788) and barrows close to the canalised course of the Sauchinford Burn (NGR: NS 83201 88373) to the north of Plean (see NRHE).

The evidence for use, possibly permanent but most likely periodic, of the wider area throughout prehistory is copious, but that evidence often produces only small glimpses into the past as at Croftside Farm. However, it is notable that the raised marine deposits and higher ground around Croftside, and above the floodplain of the River Forth, was used during the Mesolithic and throughout the Neolithic and Bronze Ages for settlement, but also for burial and other ritual activities (Figure 32).

The Historic Landscape

The road

During the excavation of the road at Croftside, it was considered that it could have been Roman in origin and part of the routeway coming from Camelton to the south and heading to the fort at Ardoch (Braco) to the north. Further analysis of its type of construction and the production of a radiocarbon date argued against this interpretation. The suggested alignment of the actual Roman road placed it a field away from Croftside to the west (Figure 33) and physical evidence of a road was discovered to the north-west of the Stirling services at the

A9 Bannockburn interchange where a metalled surface formed of packed gravel and pebbles was located (Hind 2004). A degraded cobbled surface further north in Beechwood Park in Stirling was also considered to be part of the Roman road but only late 17th century and early 18th century pottery, coins and a cannonball were recovered from it (Cook 2014).

Subsequent excavation of the Croftside Farm road (003) and the recovery of post-Medieval finds from an agricultural soil sealed beneath suggested a possible mid-17th century date at the earliest, but perhaps an early 18th century date for its construction was more realistic. This interpretation is based on the cartographic evidence and analysis of the underlying pottery assemblage. Charcoal recovered from the agricultural soil sealed beneath the road was submitted for radiocarbon dating and returned a date in the 14th century (Table 1), which confirmed that the land had been cultivated since at least the medieval period.

The earliest cartographic depiction of the road is on Grassom's Map of Stirlingshire published in 1817 (Figure 34) where it appears to provide access to and from Bannockburn House in a north-west to south-east direction. The road passed Hillhead and continued to the north-west opposite Pirnhall before rejoining what is now the modern A872.

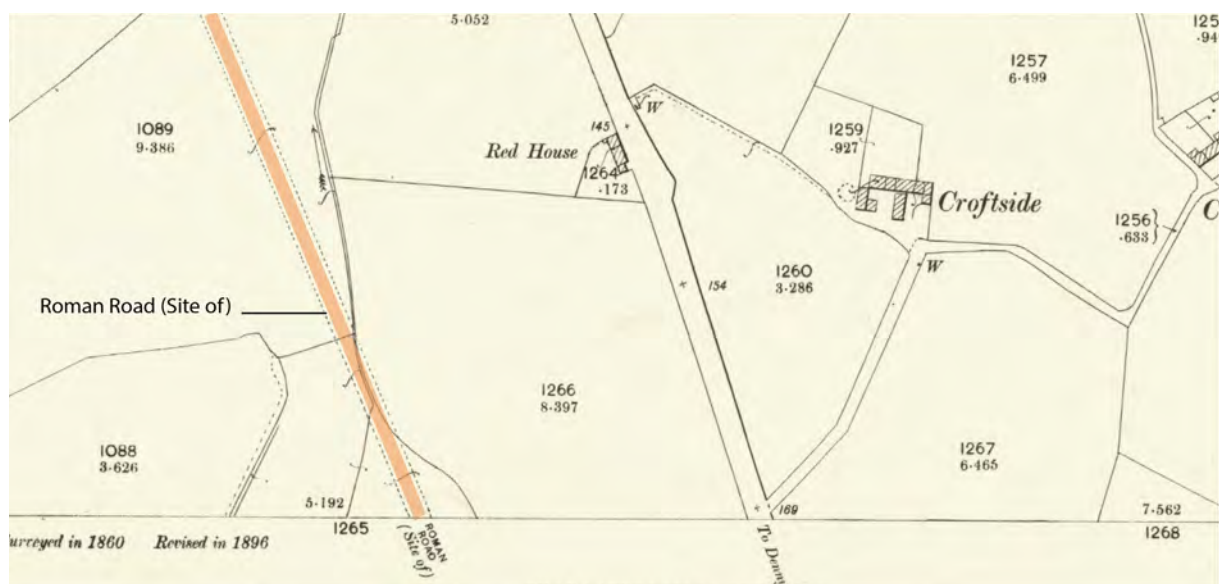


Figure 33: Course of the Roman Road, depicted on an extract from the Ordnance Survey Map of Stirlingshire published in 1897. (© Crown copyright and database rights 2026 OS AC0000817522).

The later 1865 first edition Ordnance Survey map (Figure 35) shows the same road but instead of continuing on to the north-west as it passed Hillhead it turned abruptly to the WSW and joined what is now the A872 at Pirnhall. A slight kink in the road opposite Blondwell may be where

the earlier road joined the main carriageway and the angled south-west end of the access road to Croftside appears to have been added to connect to the main carriageway after the former Croftside Farm Road had gone out of use.



Figure 34: The Croftside Farm Road depicted in red on an extract from John Grassom's map of Stirlingshire published in 1817. (© National Library of Scotland).



Figure 35: The layout of the roads around Croftside as depicted on an extract from the Ordnance Survey 1st Edition 6" to the mile map of Stirlingshire sheet XV11 published 1865. The section of road depicted on Grassom's earlier map in red has been removed. The orange line projects the course of the road on Grassom's earlier map and the red line indicates a new section of road built after the former Croftside Farm Road has gone out of use. (© Crown copyright and database rights 2026 OS AC0000817522).

Recent work at Bannockburn House carried out by Addyman Archaeology in 2019 in advance of planting a shelter belt along the eastern boundary of the estate, identified two roads, one of which was around 5.5 m wide and built similarly to the Croftside Farm road with kerbs along both the north and south edges. This was considered to possibly be part of one of the former networks of coal roads in this area associated with the coal workings to the south and it was dated to the late-18th century (Jones and Karsgaard 2019)

Recent research has taken place on the location of Bannockburn House and grounds to determine the extent of the Bannockburn Estate, the locations of early coal pits and the likely routes of early coal roads (Sorowka 2023). It is possible the Croftside Farm Road was used as a coal road but its construction may have not necessarily been originally for that purpose. It is possible that the Croftside Farm road may have been contemporary with either Drummond's Hall (late 16th century), or its successor Bannockburn House (built 1675), to provide a good road to Stirling to and from these properties (HES n.d. LB15277; Clan Carruther's 2018). Carts were widely in use in the Stirling area even in the early 17th century where wheeled vehicles may have been used to provision large houses such as these (Harrison 2005, 288).

The Croftside Farm Road was at some point widened by the addition of a dump of black soil along its eastern side onto which a layer of stone had been bedded. This was obviously a later addition as the stone used here was generally smaller and more angular than that used in the original road's construction. In Harrison's study of road and bridge improvement in Stirling from 1660-1706, he notes, 'The later 17th century saw a marked improvement in the public road system of the Stirling area, with new bridges, better road surfaces and probably some straightening and widening of the roads, roads to markets were to be 20 ft wide, and wider if they had previously been so.', (Harrison 2005, 287).

The finds would point to a post-Medieval date for the construction of the Croftside Farm road, and cartographic evidence seems to support this. Many of the early roads were subject to extensive rebuilding and it is conceivable the road

at Croftside at some point had been subject to major refurbishment. There is some evidence for this in the form of unusually large stones forming the eastern side of the road in Slot 6, along with the industrial debris deposit towards the base of its construction there, plus and the widening of the road along the east side discussed above. Some of the discontinuous trampled areas visible below the top dressing above the cobbled surface would also suggest the road was resurfaced.

The road is aligned towards the 'Hidden Bridge' that crosses the Bannockburn at a low point on the A872 (Figure 36). A recent survey of the bridge identified parts of it as Medieval and it was subsequently widened in the later Medieval period. It was increased in width again during the Victorian period and was latterly incorporated into the A872 (Roche 2018). The Croftside Farm Road may well be on the same alignment as an earlier medieval road leading to the 'Hidden Bridge' but no definitive evidence dating the road to the medieval period was found. Although medieval roads are known in Stirling linked to the River Forth crossings, they are rarely depicted on any surveyed map of the last 200 years, such as the one found recently at Coxet Hill in St Ninian's, Stirling (The Scotsman 2021).

Later activities

A series of stone filled pits in Area A were initially perceived to be associated with coal mining activity as a sufficient amount of coal debris was visible in this area to lead to this conclusion. Although investigated by machine no potential mine shafts were present, although the larger rubble filled pits may represent aborted exploratory shafts. Coal mining or coal mine exploration certainly took place around Croftside as about half a mile to the east of the 1865 Ordnance Survey map depicts seven coal pits of which only one remained active (Figure 37).

The coal debris found across the excavated area is presumed to have come from nearby settlement through the distribution of midden material across the fields. The quantities of medieval and post-medieval pottery fragments recovered from Area A would suggest they too had derived from nearby domestic occupation such as at Croftside Farm and its middens.



Figure 36: The Croftside Farm Road and the position of the Hidden Bridge with origins in the Medieval period. (© Crown copyright and database rights 2026 OS AC0000817522).



Key

- | | | | |
|-----------------|-----------------|---------------|-----------------------|
| 1. Corbie Knowe | 3. Richardson's | 5. Engine Pit | 7. Coal Pit (Disused) |
| 2. Back o' Muir | 4. Allan's Pit | 6. Coal Pit | |

Figure 37: Distribution of coal pits to the east of Croftside depicted on an extract from the Ordnance Survey 1st Edition 6" to the mile map of Stirlingshire sheet XV11 published 1865. (© Crown copyright and database rights 2026 OS AC0000817522).

The small pit with industrial waste in its fill may relate to an episode of small-scale industrial activity in the post-medieval period, but this is a rare example. The shallow curvilinear trenches recorded towards the north end of Area A may relate to parts of either an earlier field system or have been contemporary with the post-medieval broad rig cultivation marks visible across other parts of the site. The cultivation marks may be the remnants of those depicted on Roy's mid-18th-century map (Figure 38).

Conclusions

The results of the project indicated a long history of intermittent use of the landscape with rare archaeological evidence throughout prehistory until the medieval period - a story that spans almost 8000 years. They also show how in that

time the landscape changed in order to enable changing human needs. such as for food and the demands of an industrial society. Historical mapping and artefacts also play their part to show those changes, bringing the story up to date.

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Figure 38: Approximate position of the Site overlaid onto Roy's Military Survey of Scotland, published 1747-1755. (© British Library Board)

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Appendix: Pottery catalogue

	SF No.	Sample	Context No.	Area	No. of Pieces	Rim	Base	Handle	Sherd	Weight	Fabric	Description
Evaluation	3		2100	Tr21	1				1	12.2	SPMOW	reduced with green glaze and brown/orange on interior and exterior
	5		2103	Tr21	1				1	22.2	SPMOW	reduced with spalsh of green/brown glaze, splitting/spalls
	7			1 of 7	8		8			281.4	SPMOW	all bases from jugs and storage jars with glaze on interior and exterior, 4 with kick on the base angle
	7			1 of 7	1		1			49	SPMRW	reduced with green glaze, large air bubble in fabric
	7			2 of 7	8				8	78.5	SPMOW	same vessel small globular cooking pot, heavily sooted on exterior with abraded clear/brown glaze on interior
	7			3 of 7	10				10	278.7	SPMRW	reduced with green glaze
	7			3 of 7	3				3	39.4	SPMOW	2 glazed in interior and 2 with heat skin
	7			4 of 7	16				16	170.1	SPMRW	reduced with green/brown glaze, 6 glazed on interior and exterior
	7			4 of 7	4				4	41.7	SPMOW	2 glazed on interior and exterior, and 1 a spall
	7			5 of 7	16	1			15	87.7	SPMRW	1 everted rim glazed on both sides, 11 reduced with green glaze &, 4 glazed on interior and exterior
	7			5 of 7	10				10	72.4	SPMOW	8 glazed interior & exterior
	7			6 of 7	16		2		14	145	SPMOW	badly abraded many worn smooth, 4 with glaze on interior
	7			7 of 7	11	4			7	237.1	SPMOW	mix, upright glazed jug rim, 2 rims from an everted globular pot with heavy sooting in exterior and clear/brown glaze on interior, 1 bs worn smooth
	1001		1		1				1	4.8	SWGW	undecorated body sherd
	1008		1		1	1				58.9	mod red	everted rim, red fabric with white slip on interior -dairy bowl

	SF No.	Sample	Context No.	Area	No. of Pieces	Rim	Base	Handle	Sherd	Weight	Fabric	Description
Excavation	1		001	B	21	5	1	1	14	75	Mod white	base with 'china' on underside, part of tureen lid with chinese transfer print, rest mixture of transfer print, sponge print and bands, mainly blue but also green, brown glazed teapot lid seating
	1		001	B	6				6	37	Mod red	4 slip lined bowls, 1 slip trailed decoration with brown glaze, 1 brown glaze
	1		001	B	5				5	10	SPMRW	reduced with green glaze
	1		001	B	8				8	24	SPMOW	mixture of abraded fabrics
	3		001	C	1		1			12.2	SPMRW	thick with green glaze interior and exterior - abraded
	3		001	C	1				1	3.9	SPMOW	clear glaze, abraded
	7		011	A ext	1				1	0.8	SPMRW	reduced with green glaze
	13		004	B	1		1			6.5	Mod white	badly abraded pedestal base
	14		001	A	6			1	5	36.6	SPMOW	strap handle fragment, neck of bowl with brown glaze on interior
	14		001	A	7	2	3		2	37.7	Mod white	1 rim with blue and white transfer print, the other with blue banding and sponge print, 1 bs with faded hand painted decoration, the rest undecorated
	14		001	A	2		1		1	58.9	Mod red	base from brown glazed storage jar and bs with slip lined interior
	17		001	A N-corner	7			1	6	114	SPMRW	grooved strap handle, wavy incised decoration*
	17		001	A N-corner	27	1	3	1	22	426	SPMOW	rounded rim with short neck, pedestal base with internal glaze, small strap handle, mixture of fabrics some soft/abraded
	20		001	A S-corner	5	1			4	138.7	SPMRW	everted rim from globular pot, reduced with green glaze, illus
	24		013	C	1				1	2.3	SPMOW	green/brown glaze
	25		004	C	3				3	4.6	Mod red	Black glazed body sherds, 1 with white slip trailed decoration
	26		004	C	2				2	3.5	SPMOW	reduced with green glaze (1 stone discarded)
	27		004	C	7				7	9.6	SPMOW	fragments with dark red/purple heat skin and some with green glaze
	29		013	C	1				1	7.8	SPMOW	reduced core with green/brown glaze on exterior
	33		083	B	1				1	32.9	SPMOW	neck of chamber pot type vessel with handle scar, orange/green glaze on interior

	SF No.	Sample	Context No.	Area	No. of Pieces	Rim	Base	Handle	Sherd	Weight	Fabric	Description
	34		044	B	5				5	5.4	SPMOW	Spalls/fragments, some green/brown glaze
	36		061	A	110				110	1364	SPMRW	thin walled reduced grey with olive brown/green glaze, same vessel, handle scar for strap handle, some incised wavy decoration, large jug
	37		061	A	55	9	4	1	41	555	SPMOW	mixture of vessels and fabrics, oxidised fabric very soft/abraded. Jugs also bowls with glaze on interior, rod handle, rounded everted rims and upright rims
	37		061	A	15				15	107	SPMRW	reduced with green/brown glaze, no decoration
	37		061	A	1				1	1	Post-med/mod	white fabric with brown glaze
	37B		061	A	1	1				1.1	Mod white	blue and white hand-painted decoration, possibly tin-glaze, very thin fabric glazed rim sherd
	41		u/s	A	1				1	3.5	SMR	reduced core with worn green glaze, thin walled
	42A		062	A	1			1		4	Mod white	small handle fragment -teapot?
	42A		062	A	47	2	6	2	37	1164	SPMOW	complete ridged strap handle, also rod handle and a thumbed terminal, everted rim, incised wavy decoration
	42A		062	A	44	1	2		41	404	SPMRW	thick walled reduced with green glaze, several spalls/fragments
	43		057	A	7	1			6	84	SPMRW	everted rounded/rolled rim, large bs possible scar for strap handle
	43		057	A	4		3		1	149	SPMOW	2 very thick base sherds, 1 smaller base, oxides red/orange patches
	46		u/s	B	1		1			50.8	SPMOW	reduced core with external heat skin, slight kick on base, unglazed
	47		u/s	A	1			1		15	SPMOW	triangular profile of a rod handle with light orange/green glaze
	49		069	A	6	1			5	396	SPMRW	1 very thick reduced sherd with green glaze, everted rounded rim from a bowl or storage jar
	49		069	A	3		1	1	1	160	SPMOW	small strap handle possibly from a mug, pedestal base oxidised red patches in the reduced fabric
	51		065	A	12		1		11	95.1	SPMOW	same vessel, reduced grey with green glaze on interior and exterior
	53		u/s	A	1				1	21.6	SPMOW	reduced core, green/brown glaze on interior and exterior

	SF No.	Sample	Context No.	Area	No. of Pieces	Rim	Base	Handle	Sherd	Weight	Fabric	Description
	58		004	C	2	1			1	3.8	Mod white	Blue and white transfer print on rim and undecorated body sherd
	59		051	B	2				2	1.6	SPMOW	Frag, poss glazed?
	60		051	B	4	1			3	17.3	SPMOW	fragments/spalls
	62		051	B	1				1	7	SPMRW	reduced with green glaze - smooth fabric
	65		051	B	10		3		7	40	SPMOW	abraded some green glaze
	65		051	B	2				2	5	SPMRW	reduced with green glaze
	66		051	B	4				4	7	SMR	mixture with green glaze
	66		051	B	2		1		1	2	SPMOW	small base with internal glaze - bowl
	66		051	B	2		1		1	19	SPMRW	reduced with green glaze
	67		051	B	2		1		1	28	SMR	reduced undecorated
	69		051	B	1				1	3	SPMRW	reduced with dark green /brown glaze, neck of jug
	70		004	B	1				1	17	Mod stoneware	modern industrial stoneware with brown glaze on exterior - large storage jar or flagon
	70		004	B	3				3	4	Mod red	1 slip-lined bowl and 2 black glazed sherds
	70		004	B	3				3	1	Mod white	white earthenware, undecorated body sherds
	75		004	B	3				3	9.5	SPMOW	reduced core, some green glazed, abraded
	78		004	B	1				1	5.6	SPMRW	green/brown glaze on interior and exterior
	80		004	B	6		1		5	12.7	Mod white	1 blue and white sponge print and 3 blue & white transfer print
	84		041	B	1				1	18.2	SPMOW	reduced with red/brown glaze
	85		041	B	1				1	1.9	SMR	abraded body sherd
	85		004	B	5				5	8.3	SPMRW	smooth reduced with green/brown glaze -thin walled
	86		044	B	1				1	0.4	SPMOW	red/brown glazed fragment
	91		041	B	1				1	35.7	SPMRW	thick walls reduced with green glaze
	92		087	B	1		1			3.5	SMR	reduced core with red/brown glaze
	94		087	B	1				1	1.7	SMR	abraded body sherd
	96		004	B	2				2	5.9	SMR	abraded bodysherds
	100		086	B	1				1	4.7	SPMOW	orange fabric with red/brown glaze
	101		041	B	1				1	3.9	SPMRW	reduced with green glaze, thin walls
	102		046	B	1			1		16.8	SPMRW	terminal for strap handle
	103		u/s	B	1				1	2	SPMRW	reduced with green glaze

	SF No.	Sample	Context No.	Area	No. of Pieces	Rim	Base	Handle	Sherd	Weight	Fabric	Description
	104		046	B	1				1	0.9	SPMRW	Small green glazed body sherd
	106		050	B	4			1	3	16.1	SPMOW	thin walled reduced with green glaze
	108		051	B	4				4	3.9	SPMOW	green and brown glaze
	108		051	B	2				2	6.4	SPMRW	reduced with green glaze - thin walled
	109		051	B	1			1		8.6	SPMRW	shallow grooved strap handle with full green/ brown glaze
	111		046	B	1				1	0.9	SWGW	undecorated with orange/red heat skin
	112		051	B	1				1	6.3	SMR	Reduced core with abraded green glaze
	113		051	B	1				1	6.7	SWGW	reduced with green glaze
	113		051	B	1				1	1.9	SMR	reduced core undecorated
	114		051	B	1				1	4.3	SWGW	reduced core with green glaze
	114		051	B	4				4	8.4	SPMOW	green/brown glaze
	115		051	B	1				1	0.5	SPMRW	spall fragment with green glaze
	117		046	B	1				1	1.5	SWGW	orange/red fabric -spall
	117		046	B	4	1	1		2	71.9	SPMOW	everted rim from large bowl or platter, brown glaze, base with green glaze
	117		046	B	1				1	11	SPMRW	large spall with abraded green glaze
	118		051	B	4				4	23.2	SMR	1 with abraded glaze others undecorated
	118		051	B	1				1	2.3	SWGW	reduced core, abraded
	118		051	B	2				2	6	SPMRW	reduced with green glaze, 1 large spall fragment
	119		051	B	1				1	2.1	SWGW	undecorated body sherd
	119		051	B	1				1	6.7	SMR	reduced core with abraded glaze
	119		051	B	1				1	1.6	SPMRW	
	123		051	B	2				2	20.9	SPMOW	thin walled reduced with green glaze
	124		051	B	1				1	4.1	SMR	thin walled, reduced core and green glaze
	124		051	B	2				2	11.1	SPMOW	orange fabric with flaking brown glaze, post-med to modern
	124		051	B	1				1	1.4	SPMRW	spall fragment, reduced with green glaze
	127		086	B	1				1	1.9	SWGW	reduced light grey core and abraded green glaze
	127		086	B	1				1	4.1	SPMRW	brown glaze interior and exterior
	129		004	C	1				1	2	SMR	reduced core -undecorated
	130		050	C	1				1	3.6	SPMOW	reduced core with green/brown glaze, no decoration

	SF No.	Sample	Context No.	Area	No. of Pieces	Rim	Base	Handle	Sherd	Weight	Fabric	Description
	132		u/s	C	1	1				21.1	SPMOW	orange/red fabric, rim from a plate or platter, interior decoration very abraded - illus
	133		051	B	1				1	19.5	SMR	reduced core, neck of jug or jar - undecorated
	134		051	B	2		1		1	16.2	SPMOW	shallow base angle with abraded brown glaze on interior
	135		051	B	2				2	12.5	SMR	reduced cores and abraded, no decoration
	136		086	B	2			1	1	35	SMR	grooved strap handle, light green glaze
	138		u/s	B	1				1	12	SWGW	thumbed terminal, some green glaze
	139		051	B	1				1	5	SWGW	unglazed body sherd with some fuming
	140		004	B	1				1	4	Mod red	black manganese glaze on both sides, storage jar
	141		u/s	B	1				1	2	SPMOW	clear/brown glaze on inside and out - bowl?
	142		086	B	1		1			1	SMR	reduced core possible base angle
	2018		001	-	1				1	0.1	SPMRW	Tiny green glazed body sherd
	1008		001	-	1				1	1	SPMRW	small fragment/spall reduced with green glaze
	2018		001		1				1	0.2	SPMRW	small fragment/spall reduced with green glaze
		4S	17	B	1				1	0.1		burnt fragment unreconisable
		12S	12	C	1				1	4.3	SPMRW	thin walled reduced with green/brown glaze
		12S	12	C	1				1	0.1	Mod white	fragment
		13S	12	C	1				1	0.1	un-id	fragment
		19S	35	B	1				1	3	SPMRW	thin walled reduced with green/brown glaze
		21S	44	B	1				1	0.1	SPMOW	fragment
		22S	41	B	2				2	0.2	SMR?	fragments
		31S	61	A	6				6	6.2	SPMOW	mainly oxidised orange/red with clear/brown glaze
		32S	69	A	2				2	1.5	SPMOW	clear/brown glaze
		33S	62	A	32				32	35.2	SPMRW	spalls/fragments reduced with green glaze
		33S	62	A	1				1	3	SMR	undecorated body sherd
		37S	51	B	1				1	0.1	SPMRW	Spall/fragment
		38S	4	C	1				1	0.1	SPMRW	spall reduced with green glaze
		46S	41	B	1				1	0.1	SPMRW	spall reduced with green glaze
		53S	51	B	1				1	0.9	SMR	fragment
		58S	86	B	1				1	1.9	SPMRW	reduced with green/brown glaze
					719	34	50	14	621	7914.9		

	SF No.	Sample	Context No.	Area	No. of Pieces	Rim	Base	Handle	Sherd	Weight	Fabric	Description	
Brick and Tile	9		001	B	4				4	100.1	brick/tile	red fabric roof tile fragments	
	3003		001	-	2					29	brick/tile	red/orange fabric with edges -roof tile	
	2		001	B	5				5	32.8	brick/tile	Unglazed fragments	
	39		u/s	A	1				1	121.7	brick/tile	Red fabric roof tile fragment	
	57		004	C	1				1	21.6	Tile	Red/orange fabric with mica, roof tile fragment	
	4015		001	-	1				1	53.1	brick/tile	Red fabric roof tile fragment	
	16		001	A	2				2	292	brick/tile	red fabric, 1 corner fragment with holes through it	
	4		2100	Tr21	1				1	52.7	brick/tile	red fabric with curved edge/ knob, roof tile	
		51S	46	B	2				2	0.3	brick/tile	orange/red fabric fragments	
	13		004	B	2				2	11.8	Brick/tile	red/orange fabric, no diagnostic features	
	61		051	B	1				1	13	Brick/tile	fragment very light no diagnostic features	
	98		041	B	1				1	10.2	Brick/tile	Possible field drain pipe fragment	
	116		050	B	1				1	2.8	Brick/tile	Glazed? Abraded pottery fragment	
						24					741.1		

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