6. ENVIRONMENTAL REMAINS

6.1 Animal bone

Hannah Britton

Small quantities of animal remains, comprising mammal bone (790 fragments, 15g), were recovered. A full methodology is provided in the site archive.

In total 790 small fragments were recovered, all of which came from small to large mammals. No fish, bird or micromammal remains were retrieved. No fragments were identifiable to species but were categorised according to size of mammal, ranging from small (rabbit/squirrel-sized) to large (horse/cattle-sized). Fragmentation was extensive throughout the assemblage, with much of the material being smaller than 4mm, and all specimens were burnt. This, alongside very minimal hand recovery of animal bone during excavation, suggests that unburnt animal bone may not have survived well in the soil conditions on site and burning increased the likelihood of preservation. No evidence of butchery, gnawing or pathology was identified on the remains, and no sexing or ageing was able to be conducted.

Due to the poor condition of the bone, these animal remains provide little evidence regarding human–animal relationships at the site, however, the presence of burnt bone may indicate waste disposal from food consumption.

6.2 Archaeobotany and charcoal

Diane Alldritt

Ninety-six environmental sample flots, and material sorted from the sample retents, were examined for carbonised plant macrofossils and charcoal. The flots were dried before being examined under a low-power binocular microscope typically at ×10 magnification. Wood charcoal was examined using a high-powered Vickers M10 metallurgical microscope at magnifications up to ×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 & Hopf (2000).

The environmental samples produced generally low recovery of carbonised plant remains, with only 16 of the samples producing greater concentrations of charred material. The assemblage consisted of charcoal fragments, mixtures of well-preserved cereal grain and weed seeds, and sporadic finds of hazelnut shell amongst crushed detritus below the level of identification. Full results of the analysis are given in Table 1 (Area 1) and Table 2 (Area 2).

6.2.1 Results: Area 1

Roundhouse 1

A small quantity of charcoal was recovered with *Alnus* sp. (alder) and *Betula* sp. (birch) identified from Post Hole 074 (probably hearth fuel waste sweepings), together with a few trace fragments of *Corylus avellana* (hazel) nutshell recorded from C074, Post Hole 128, Pit 136 and Pit/Post Hole 132. Minimal burning appears to have taken place within this structure, other than fuel used for general domestic heating purposes, and the lack of waste accumulation suggests the roundhouse may have been regularly cleaned out or had only sporadic occupation.

Roundhouse 2

Samples produced trace amounts of degraded charred remains with indeterminate cereal grain found in Post Holes 082 and 096 and a single fragment of hazelnut shell also in C096. The remains suggest some low-level burning activity, perhaps domestic cooking, taking place within a largely sterile structure, which may have had episodic occupation or periods of abandonment.

Roundhouse 3

Concentrated deposits of hazelnut shell were recorded from some of the pit and post hole features, suggesting potential areas where processing and roasting of hazelnuts prior to storage and consumption may have been taking place, particularly in Pit 148, which also contained a small amount of *Hordeum vulgare* sl. (barley) cereal grain (nutshell from this feature was dated to 1220–1000 BC at 95% probability (2923±22 BP, SUERC-99178 and 2894±24 BP, SUERC-99179), Table 3). Circular feature 216 similarly produced a significant concentration of well-preserved hazelnut shell along with alder and birch charcoal and a scatter of barley grains. Slightly lesser quantities of hazelnut shell were found in Post Hole 144 and Pits 146 and 230, along with alder charcoal in C146 and C230, where

Table 1 Carbonised plant remains from Area 1

	Context	019	029	051	063	075	083	087	097	101	105	117	125	129	131	133	137	139	145	147	149	161	171	177	201	203	207	217	223	227	231	235	258	261	272	274	278
Carbonised Cereal Grain and Chaff	Common Name																																				
Avena sp.	oat			3																												3		5			
Triticum dicoccum	emmer wheat										1											2															
Triticum dicoccum spikelet forks / glume frags	emmer wheat chaff																					73															
Triticum spelta	spelt wheat																					3															
Triticum spelta glume bases	spelt wheat chaff																					13													13		
Triticum sp.	wheat																																				
Triticum sp. internodes	wheat chaff																					3												3			
Hordeum vulgare var. *vulgare*	six row hulled barley										2											7						2						5	3		
Hordeum vulgare var. *nudum*	naked barley														1																				19		
Hordeum vulgare sl.	barley			6						4					1			2			6						5			2	2			24		
Secale cereale	rye																														1		21			
Indeterminate cereal grain (+embryo)		1		2			1		1		2				3							11	1								2		112	106	1	
Charcoal																																					
Quercus	oak		2	3						5			1		3							2													6		1
Corylus	hazel																					6						1			1	2	5				
Alnus	alder					1							1		8					5								1								5	1
Betula	birch					1																															
Indeterminate							1																														
Carbonised Wild Resources																																					
Corylus avellana nutshell	hazel nutshell	3	1	5		4			1	4	8			2		1	1	10	18	61	165	10	1			1		106			52	9	1	10		2	3
Calluna stems	heather									1																											
Rhizomes																						2															
Carbonised Weeds																																					
Persicaria maculosa	redshank																					1													1		
Persicaria lapathifolia	pale persicaria																					1															
Fallopia convolvulus	black-bindweed																																		1		
Pisum / *Lathyrus* spp.	peas									1																											

Table 1 *cont (a)*

	Context	019	029	051	063	075	083	087	097	101	105	117	125	129	131	133	137	139	145	147	149	161	171	177	201	203	207	217	223	227	231	235	258	261	272	274	278
Galeopsis tetrahit	common hemp-nettle			3											1							1															
Galium aparine	cleavers																																	1			
Chrysanthemum segetum	corn marigold																																	1			
Carex sp.	sedges																					1													1		
Bromus sp.	bromes																					1															
Indeterminate weed				1																														1			

Table 1 *cont (b)*

	Context	337	348	349	356	381	627	637	640	644	658	666	674	678	680	682	697	723	730	754	777	784	822	823	825	830	850	873	877
Carbonised Cereal Grain and Chaff	Common Name																												
Triticum dicoccum	emmer wheat				2																7								
Triticum spelta	spelt wheat																												
Triticum spelta glume bases	spelt wheat chaff																								1				
Triticum sp.	wheat					1					5	1										2							
Hordeum vulgare var. *vulgare*	six row hulled barley					4															7								
Hordeum vulgare var. *nudum*	naked barley					16													1		14	2							
Hordeum vulgare sl.	barley			1	10						6														21				
Cerealia stem frags	cereal chaff																			1									
Indeterminate cereal grain (+embryo)			1	5	5	24					28	1				3	1	3			37	1			14				
Charcoal																													
Quercus	oak										2					3		2									20		
Corylus	hazel																	3		5									
Alnus	Alder			5	10																								
Indeterminate												1																	
Carbonised Wild Resources																													
Corylus avellana nutshell	hazel nutshell		1	1						1		1				1	3	1			3	4			32				
Indeterminate fruit stone / nut																				1									
Carbonised Weeds																													
Polygonaceae	Knotweed family				1																				1				
Rumex sp.	docks																				1								
Pisum / *Lathyrus* spp.	peas																						1						
Bromus sp.	bromes					1															3								

the good preservation suggested the fragments may have been burnt in situ or had not been moved far from the source of burning. Some of these features were perhaps small scoop hearths or fire pits used for roasting hazelnuts and other food preparation activity.

Trace finds of cereal grain and a small amount of hazelnut shell and charcoal were found in some of the other deposits and were probably general domestic waste sweepings radiating out from the more focused areas of burning activity. Post Hole 100 contained a few grains of barley together with *Quercus* sp. (oak) charcoal, hazelnut shell and a single piece of *Calluna* sp. (heather) stem, possibly waste from peat burning. Post Hole 104 contained trace grains of *Triticum dicoccum* (emmer wheat) and well-preserved *Hordeum vulgare* var. *vulgare* (six-row hulled barley) along with hazelnut shell, while Post Hole 138 also contained barley together with a slighter larger amount of nutshell.

The presence of large concentrations of hazelnut shell in Roundhouse 3 is interesting, considering its radiocarbon dates in the Late Bronze Age (1220–1000 cal BC, 95% probability; 2923±22 BP, SUERC-99178 and 2894±24 BP, SUERC-99179). The hazelnut shell possibly shows a continuation of earlier prehistoric gathering practices taking place in conjunction with well-developed cereal agriculture at the site. This has similarities with material identified from the Iron Age souterrain at Inverboyndie, Banff, where abundant hazelnut shell was recorded along with hulled barley (Alldritt 2021). Bishop et al (2009) demonstrated gathering of wild resources as a long-standing and consistent feature of earlier Scottish prehistory, throughout the Mesolithic and into the Late Neolithic/Early Bronze Age in some areas. The radiocarbon dating results from Roundhouse 3 in the Late Bronze Age therefore have potential to show further continuation of these themes.

Roundhouse 4

A significant concentration of well-preserved carbonised remains was recovered from Post Hole 160, suggesting this feature may have been a fire pit or hearth area rather than a post hole (charred barley grain from this feature was dated to 910–800 cal BC, 95% probability; 2705±26 BP, SUERC-99869 and 2713±26 BP, SUERC-99870). The deposit consisted primarily of charcoal, mostly *Corylus* sp. (hazel) type with a small amount of oak, present together with a cache of mixed cereal waste including grain and chaff from emmer wheat and *Triticum spelta* (spelt wheat) and a small amount of barley grain. A thin scattering of weeds of cultivated/disturbed ground species was also present, including *Persicaria lapathifolia* (pale persicaria), *P. maculosa* (redshank) and *Galeopsis tetrahit* (common hemp-nettle). Two fragments of burnt peat from the deposit suggested peat was possibly also being used in addition to charcoal for fuel for domestic purposes, such as cereal drying or cooking, and Roundhouse 4 was perhaps a focal location for these activities.

Post Hole 160 also contained small hammerscale/slag fragments, suggesting industrial burning was taking place in Roundhouse 4, perhaps smithing activity. The structure might therefore have been seasonally multi-purpose, with both domestic and industrial processes taking place at various times. The waste material from cereal processing including glume wheat chaff and weeds could have been simply discarded on the fire or combined with sweepings from cereal parching/drying and recycled as kindling for other burning purposes around the settlement, following depositional pathways suggested by Hillman (1981), van der Veen (1992) and with comparison to Buckland et al (1993). Significantly, van der Veen (1989: 305) pointed to the use of chaff and peat or wood as a fuel for grain drying, which could further distort the evidence, in particular in deposits where chaff outnumbers grain, as it does in C160, as the chaff may well be waste material that was recycled as fuel.

Four other deposits from Roundhouse 4, including Pits 050, 222 and Post Holes 170 and 176, contained only trace amounts of charred remains with scarce finds of grain, charcoal and hazelnut shell. Overall, the types of cereal grains identified from Roundhouse 4 suggested probable Late Bronze Age or Iron Age agricultural activity.

Roundhouse 5

Roundhouse 5 contained low levels of charred remains with degraded indeterminate grain in Post Holes 696, 729 and Ditch 722. Ditch 722 also contained a few fragments of oak and hazel charcoal, which was probably fuel waste from the roundhouse.

Roundhouse 6

Roundhouse 6 produced a few finds of hazelnut shell and cereal grain, mostly barley types. This included

Hordeum vulgare var. *nudum* (naked barley) and a small amount of emmer wheat, primarily from Post Hole 776, which suggests a hearth or cooking area is likely to have been nearby, but no evidence of one has survived in the roundhouse (dated to 930–800 cal BC, 95% probability; 2687±22 BP, SUERC-99190 and 2731±24 BP, SUERC-99191).

Six-post Structure 1
A small cache of degraded cereal grain, mostly indeterminate but including a few barley and wheat grains, was found in Post Hole 657 (radiocarbon dated to the Late Bronze Age; 920–800 cal BC, 95% probability; 2726±24 BP SUERC-99188 and 2694±24 BP SUERC-99189), along with oak charcoal. Trace cereal finds were present in C665. The remains were likely to be general background or residual material from activities taking place around the settlement, and this structure was possibly a storage area or farm outbuilding with little evidence for any major burning activity taking place within.

Six-post Structure 2
Pit 681 produced a small amount of crushed oak charcoal fragments.

Structure 2
A large concentration of oak charcoal was recovered from Post Trench 849, which could perhaps represent remains of structural timbers burnt in situ.

Ring Ditch 824
Ditch 824 contained a large deposit of crushed charcoal and hazelnut shell along with a small amount of barley cereal grain, which probably represents discarded domestic hearth waste.

Four-post Structure 1
A trace scatter of degraded hazelnut shell was recovered from Post Hole 018, which probably represents trampled, wind-blown or swept remains.

Pits
A number of pit features produced finds of charcoal and cereal grain and were probably being used as waste pits for general domestic refuse from the settlement. Pits 260, 271 and 380 produced notable concentrations of cereal grain comprising mostly degraded and indeterminate remains but including finds of *Secale cereale* (rye), hulled barley and oat in Pit 260, naked and hulled barley with spelt chaff in C271 and similar barley in Pit 380. The main constituent of the pits overall was charcoal, probably all fuel waste. Oak charcoal was found in Pits 028, 271 and 277, while concentrations of birch were recorded from 350 and 355, and alder from Pit 259. Radiocarbon dates from Pits 271, 350 and 380 were all Late Bronze Age while those from Pit 260 were early medieval (Table 3).

6.2.2 Results: Area 2

Roundhouse 7
Roundhouse 7 was largely sterile of identifiable carbonised remains, with only a single fragment of hazel charcoal found in Pit/Post Hole 450 and trace charred detritus elsewhere. This indicated very low levels of burning activity occurring here, and perhaps that this was a structure that was used intermittently or regularly swept clean.

Structure 3
Two fragments of degraded hazelnut shell were found in Post Hole 531, which were likely to be residual remains.

Ring Ditch 545
Fill 551 produced hazel charcoal (samples dated to 780–400 cal BC, 95% probability; 2503±26 BP, SUERC-100351 and 2414±26 BP, SUERC-100352), Post Hole 953 had a large amount of oak, and Post Hole 951 had a small amount of oak charcoal. This probably represented fuel waste or remains of structural timbers burnt in situ.

Four-post Structure 3
Pit/Post Hole 464 contained a degraded fragment of hazelnut shell, which was possibly residual material and not particularly significant.

Pit Group 1
The pits in Pit Group 1 were likely to be fire pits and contained mainly charcoal with trace finds of hazelnut shell. A large concentration of oak charcoal was recorded from the fill of Pit 390, along with well-preserved fragments of *Salix/Populus* sp. (willow/poplar) and a single seed of degraded carbonised cf. *Linum usitatissimum* (flax), but this was possibly intrusive given the condition.

Table 2 Carbonised plant remains from Area 2

	Context	336	349	407	415	417	420	422	451	454	463	465	468	480	490	494	523	532	551	564	578	589	906	921	931	939	945	952	954	956	961	964
Carbonised Cereal Grain and Chaff	Common Name																															
Avena sp.	oat																	1													4	
Triticum sp. internodes	wheat chaff																															1
Hordeum vulgare var. *vulgare*	six row hulled barley																													28	57	216
Hordeum vulgare var. *nudum*	naked barley																															18
Hordeum vulgare sl.	barley																													18	69	127
Cerealia stem frags	cereal chaff																															3
Indeterminate cereal grain (+embryo)																						2						1	1	79	79	35
Charcoal																																
Quercus	oak	20					15														20							3	10			
Corylus	hazel		6						1										5								6			8	3	2
Alnus	alder																										2			4	2	1
Salix / *Populus*	willow / poplar							4																							3	3
Carbonised Wild Resources																																
Corylus avellana nutshell	hazel nutshell			3			1				1	1						2			2									3	14	
Rhizomes																															1	1
Indeterminate fruit stone / nut								2																								
Carbonised Weeds																																
Chenopodiaceae	Goosefoot family																															1
Stellaria media	chickweed																															4
Polygonaceae	Knotweed family																															1
Persicaria maculosa	redshank																														5	5
Persicaria lapathifolia	pale persicaria																														2	

Table 2 *cont*

Context		336	349	407	415	417	420	422	451	454	463	465	468	480	490	494	523	532	551	564	578	589	906	921	931	939	945	952	954	956	961	964
Fallopia convolvulus	black-bindweed																															1
Rumex sp.	docks																															2
Rubus fruticosus	bramble					1																										
Vicia sp.	vetches																													7		
Pisum / Lathyrus spp.	peas	1			1	14		2					3																			
cf. *Linum usitatissimum*	cf. flax							1																								
Plantago lanceolata	ribwort plantain																													1		
Danthonia decumbens	heath-grass																													1		2
Indeterminate weed																														3		2
Other Remains																																
Vitis vinifera (non-carb pip)	grape-vine																											1				

Other features

A kiln and possible field oven kilns (955 and 960) produced three significant deposits of cereal grain and charcoal primarily recovered from the bowl fill (C964) and flue fill (C961) of Kiln 960 (dating to 540–660 cal AD, 95% probability; 1428±24 BP, SUERC-99194 and 1493±24 BP, SUERC-99198). Grain and charcoal were also recorded in Pit 955. The grain from Kiln 960 and Pit 955 consisted mainly of well-preserved hulled barley with a small amount of naked barley and oat also present. The charcoal was a mixture of hazel and alder with some nicely preserved willow/poplar also recorded and a few fragments of rhizome, suggesting peat or heathy turves may also have been used as fuel in the kiln. Weeds of cultivated/disturbed ground included redshank, pale persicaria, *Stellaria media* (chickweed) and *Fallopia convolvulus* (black bindweed), which probably arrived with the cereal harvest and were not screened out by sieving. *Rumex* sp. (docks), *Plantago lanceolata* (ribwort plantain) and *Danthonia decumbens* (heath grass) may have come in from grassy fields or with peat fuel.

Pit 577 contained a large deposit of oak charcoal and was perhaps a fire or waste pit.

Pit 944 contained a large deposit of oak and hazel charcoal (dated to the Middle Neolithic) and was possibly a fire pit.

Two isolated pit features were potentially prehistoric fire pits and contained material burnt in situ. Pit 319 produced a large deposit of oak charcoal, while Pit 350 contained hazel. No cereal grain was present in either pit. Pit 350 was radiocarbon dated to the Late Bronze Age (1010–810 cal BC, 95% probability; 2788±26 BP SUERC-100349 and 2715±26 BP SUERC-100350).

6.2.3 Conclusion

The environmental samples produced several well-preserved caches of carbonised cereal grain and charcoal from this later prehistoric, probably Late Bronze Age/Iron Age farming settlement. The cereal grain confirms an agricultural economy largely reliant on the cultivation of barley types and wheat, including emmer and spelt, with small amounts of oat also present. Rye grain was recorded from a limited number of deposits, mostly in Pit

260, which dated to the early medieval period, representing a later phase of activity.

The cereal and chaff remains suggested crop processing and corn-drying activity taking place at the site, with recovery of burnt waste remains in Area 1, comprising wheat chaff and grain primarily focused in Roundhouse 4, indicating that this structure was potentially being used for agricultural processing activity or that cereal waste was being reused as domestic fuel here. In Area 2, Kiln 960 was being employed for the drying of large amounts of barley in the early medieval period, with the assemblage dominated by hulled barley and a few naked grains present.

Scatters of residual trace grain and charcoal were found across the site, reflecting typical settlement waste, including background burnt detritus from cereal processing and drying activity, cooking and fuel waste. The six-post and four-post structures produced very few carbonised remains other than probable residual material, which is not uncommon for this type of feature. It suggests they may have been raised storage structures for unprocessed grain or other materials (Cook 2016; Dunwell & Ralston 2008).

The concentration of hazelnut shell in Roundhouse 3 is notable, given the results from radiocarbon dating. As the hazelnut shell is contemporary with the agricultural material, it shows that large-scale gathering and over-winter storage of wild resources was continuing into later prehistory, perhaps as an insurance policy against failed arable harvests.

The carbonised plant remains included cereal grain, chaff, weed seeds, wood charcoal, burnt peat and other heathland/peatland material from multi-period settlement activity from the Late Bronze Age to the Iron Age, and into the first millennium AD. As such, the assemblage has both local and regional significance to our understanding of changes in the economy and environment at this time.

6.3 Radiocarbon dates

Eighteen pairs of environmental data were submitted for radiocarbon dating to SUERC. Detailed descriptions of the methods employed by the SUERC Radiocarbon Laboratory can be found in Dunbar et al (2016). The results are presented in Table 3 below using the conventions outlined in Millard 2014, and have been calibrated using OxCal v4.4.2 (Bronk Ramsey 2009) and the IntCal20 atmospheric calibration curve (Reimer et al 2020); calibrated dates have been rounded outwards to the nearest decade.

The environmental assemblage available for radiocarbon dating was relatively poor, due to the low recovery of carbonised plant remains and the often degraded condition. Material derived from oak was excluded from dating selection due to that species' longevity. Many of the deposits within features were sterile, which limited the choice of what could be targeted for dating. A small number of features contained richer assemblages. The majority of the samples submitted for dating were single-entity grain or nutshell fragments, with a small number of contexts reliant upon wood charcoal; where possible, different species were dated from the same context but in some instances the material was too poor and the same species was used for both dates in the pair, with potential issues arising from this selection due to the same entity possibly being dated as two different samples.

The dates indicate a range of periods of activity on the site, from the Middle Neolithic to the Early Medieval. The evidence does not suggest continuous occupation throughout this time span but does indicate episodes of reoccupation within the same area over a long time period.

The earliest date comes from Pit 944 in Area 2, where charcoal samples dated to the Middle Neolithic (3360–3100 cal BC, 95% probability; 4516±26 BP, SUERC-100360 and 3350–3090 cal BC, 4498±26 BP, SUERC-100361).

Roundhouse 3 (Pit 148) in Area 1 contained charred hazelnut shell dating to the last two centuries of the second millennium BC (1220–1020 cal BC, 95% probability; 2923±22 BP, SUERC-99178 and 1200–1000 cal BC, 95% probability; 2894±24 BP, SUERC-99179), a slightly earlier date than the majority of the Late Bronze Age settlement evidence.

A very consistent set of dates was produced from Six-post Structure 1, Roundhouse 4, Roundhouse 6 and a number of the scattered pits in Area 1, all dating to the very latest Bronze Age, *c* 1050–800 BC (95% probability; 2830±26 BP, SUERC-100358; 2801±26 BP SUERC-100359; 2726±24 BP, SUERC-99188; 2694±24 BP, SUERC-99189; 2687±22 BP, SUERC-99190; 2731±24, BP SUERC-

99191; 2705±26 BP, SUERC-99869; and 2713±26 BP, SUERC-99870). Ring Ditch 545 in Area 2 was a little later, extending from the Late Bronze Age into the Early Iron Age (780–400 BC, 95% probability; 2503±26 BP, SUERC-100351 and 2414±26 BP, SUERC-100352).

A later date was produced from Ring Ditch 824 in Area 1, in the last two centuries of the first millennium BC, into the Middle Iron Age (200–40 cal BC, 95% probability; 2104±24 BP, SUERC-99192 and 200–40 cal BC, 95% probability; 2105±22 BP, SUERC-99193).

Two features in Area 1 produced dates in the 8th–10th centuries AD; Pits 234 and 260, to the north of Roundhouse 1 (Pit 234, 770–1000 cal AD, 1121±26 BP, SUERC-100342 and 770–950 cal AD, 1189±26 BP, SUERC-100343; Pit 260, 770–990 cal AD, 1140±24 BP, SUERC-99180 and 890–1000 cal AD, 1111±22 BP, SUERC-99181, all 95% probability). In Area 2, a further two features produced dates within the first millennium AD, Pit 955 (250–540 cal AD, 95% probability; SUERC-100362, 1666±26 BP and SUERC-100363, 1631±26 BP) and Kiln 960 (540–660 cal AD, 95% probability; SUERC-99194, 1428±24 BP and SUERC-99198, 1493±24 BP), located to the south-east of Four-post Structure 8. The dates from these features fell into the early medieval period, indicating some reuse of settlement through the first millennium AD, while also suggesting that industrial activity perhaps represented by the kiln is a later manifestation.

Table 3 Radiocarbon dates. Calibrated using OxCal 4.4.2

Lab no.	Area	Context	Feature	Material	Date BP	95% probability	$\delta^{13}C$
SUERC–99178	1	149	Pit 148, RH3	Charred nutshell: hazel	2923±22	1220–1020 BC	–24.1‰
SUERC–99179	1	149	Pit 148, RH3	Charred nutshell: hazel	2894±24	1200–1000 BC	–21.6‰
SUERC–100358	1	752	Post Hole 751, RH6	Charcoal: corylus	2830±26	1060–900 BC	–26.8‰
SUERC–100359	1	752	Post Hole 751, RH6	Charcoal: corylus	2801±26	1050–840 BC	–28.3‰
SUERC–100349	1	349	Pit 350	Charcoal: alnus	2788±26	1010–840 BC	–26.4‰
SUERC–100350	1	349	Pit 350	Charcoal: alnus	2715±26	910–810 BC	–26.4‰
SUERC–99869	1	161	Post Hole 160, RH4	Charred cereal grain: barley	2705±26	910–800 BC	–25.0‰
SUERC–99870	1	161	Post Hole 160, RH4	Charred cereal grain: barley	2713±26	910–810 BC	–24.2‰
SUERC–99182	1	272	Pit 271	Charred cereal grain: barley	2692±22	900–800 BC	–22.9‰
SUERC–99871	1	272	Pit 271	Charred cereal grain: barley	2697±26	910–800 BC	–22.8‰
SUERC–99183	1	381	Pit 380	Charred cereal grain: naked barley	2701±24	910–800 BC	–23.8‰

Table 3 *cont*

Lab no.	Area	Context	Feature	Material	Date BP	95% probability	$\delta^{13}C$
SUERC–99184	1	381	Pit 380	Charred cereal grain: barley	2706±24	910–810 BC	–24.8‰
SUERC–99188	1	658	Post Hole 657, 6P1	Charred cereal grain: emmer/ spelt	2726±24	920–810 BC	–24.1‰
SUERC–99189	1	658	Post Hole 657, 6P1	Charred spikelet fork: cf. emmer wheat	2694±24	910–800 BC	–23.6‰
SUERC–99190	1	777	Post Hole 776, RH6	Charred cereal grain: hulled barley	2687±22	900–800 BC	–24.8‰
SUERC–99191	1	777	Post Hole 776, RH6	Charred cereal grain: hulled barley	2731±24	930–810 BC	–24.7‰
SUERC–100347	1	274	Pit 273	Charcoal: alnus	2501±26	780–540 BC	–26.2‰
SUERC–100348	1	274	Pit 273	Charcoal: alnus	2481±26	780–480 BC	–26.1‰
SUERC–100353	1	650	Pit 649	Charcoal: corylus	2475±26	770–470 BC	–26.2‰
SUERC–100357	1	650	Pit 649	Charcoal: corylus	2522±26	790–540 BC	–27.4‰
SUERC–99192	1	825	RD 824	Charred cereal grain: barley	2104±24	200–40 BC	–24.4‰
SUERC–99193	1	825	RD 824	Charred nutshell: hazel	2105±22	200–40 BC	–24.3‰
SUERC–100342	1	235	Pit 234	Charred nutshell: hazel	1121±26	AD 770–1000	–24.1‰
SUERC–100343	1	235	Pit 234	Charred nutshell: hazel	1189±26	AD 770–950	–25.8‰
SUERC–99180	1	261	Pit 260	Charred cereal grain: cf. rye	1140±24	AD 770–990	–25.2‰
SUERC–99181	1	261	Pit 260	Charred cereal grain: indet.	1111±22	AD 890–1000	–22.7‰
SUERC–100360	2	945	Pit 944	Charcoal: corylus	4516±26	3360–3100 BC	–26.0‰
SUERC–100361	2	945	Pit 944	Charcoal: alnus	4498±26	3350–3090 BC	–27.1‰
SUERC–100351	2	551	RD 545	Charcoal: corylus	2503±26	780–540 BC	–25.8‰

Table 3 *cont*

Lab no.	Area	Context	Feature	Material	Date BP	95% probability	$\delta^{13}C$
SUERC–100352	2	551	RD 545	Charcoal: corylus	2414±26	740–400 BC	–26.7‰
SUERC–100362	2	956	Pit 955	Charred cereal grain: barley	1666±26	AD 250–540	–23.3‰
SUERC–100363	2	956	Pit 955	Charred cereal grain: barley	1631±26	AD 380–540	–25.5‰
SUERC–99194	2	961	Kiln Flue, 960	Charred cereal grain: hulled barley	1428±24	AD 590–660	–24.7‰
SUERC–99198	2	961	Kiln Flue, 960	Charred cereal grain: hulled barley	1493±24	AD 540–640	–24.0‰