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**Reports from the Centre for Human Palaeoecology,  
University of York**

Report 2003/05

**Assessment of samples from medieval deposits from ten excavations in  
Aberdeen: plant remains and the nature of the deposits**

by

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4 September, 2003

THE UNIVERSITY *of York*

# Assessment of samples from medieval deposits from ten excavations in Aberdeen: plant remains and the nature of the deposits

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## Summary

*An assessment is presented of the nature of the plant macrofossil content and general nature of the deposit concerned for a total of 91 samples from ten sites, selected from 292 samples excavated from thirteen sites in Aberdeen in the period from the late 1970s to early 1990s. Some samples consisted of no more than 'spot finds' of wood or charcoal, others of sediment with a variable content of macrofossil plant remains preserved by charring or waterlogging.*

*Most prominent in the samples examined were the remains of material perhaps most likely to have been imported for fuel—peat and heather (perhaps partly from turves), though with at least one example of material thought to represent grass sods. Food remains were rather sparse, though walnut was recorded—for the first time in medieval Aberdeen—from one site. Fig was recorded from seven samples from four sites, adding to the small amount of evidence for importation of this exotic fruit seen in earlier studies in the town.*

*The samples examined in this assessment probably do not, for the most part, warrant further investigation, although some with a well-preserved assemblage of insect remains may be worthy of recording more fully in the light of the results of the parallel assessment of macro-invertebrates.*

KEYWORDS: ABERDEEN; MEDIEVAL; OCCUPATION DEPOSITS; PLANT REMAINS (CHARRED AND WATERLOGGED); FUEL; PEAT

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Hall, A. (2003). Assessment of samples from medieval deposits from ten excavations in Aberdeen: plant remains and the nature of the deposits. *Reports from the Centre for Human Palaeoecology, University of York* **2003/05**, 30pp.

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# Assessment of samples from medieval deposits from thirteen excavations in Aberdeen: plant remains and the nature of the deposits

## *Introduction and methodology*

For this assessment, a large number of samples collected over many years of excavations of medieval deposits in Aberdeen were submitted by Aberdeen Archaeological Unit. Much of the material consisted of small and rather dehydrated samples of sediment and, on initial inspection in the laboratory, a proportion were rejected as being unlikely to furnish useful evidence concerning past environments, living conditions and human activity in the city. The list of sites for which material was examined is given in Table 1.

Samples varied in size from small amounts of sediment containing specimens for identification (usually wood) to large bags of several litres in volume. Where material seemed likely to contain evidence of plant and invertebrate macrofossils, subsamples of up to 5 kg (sometimes the whole sample if it was small) were processed following techniques described by Kenward *et al.* (1980). For these 'test' subsamples (marked /T in the tables), treatments were as follows: where there was clearly a quantity of uncharred ('waterlogged') organic material, the residue left after sieving was subjected to paraffin flotation (*ibid.*), then a washover of less dense material was taken off. The residue was re-sieved into fractions on 0.3, 1 and 2 mm sieves (with 4 mm and 10 mm sieves used where necessary) and some or all of each fraction examined under a low-power binocular microscope. Where uncharred organic material was thought to be absent (or at any rate very sparse), a 'washover' of the lighter (in this case usually charred) fraction was made by swirling and decanting. The washover was examined wet or dry, depending on the results of an initial inspection to check for uncharred remains, whilst the residue was generally dried before being inspected.

Two samples were rather large and were thought to contain much fishbone; they were subjected to 'bulk sieving' (*ibid.*) but only one was examined for this assessment (marked '/BS' in the relevant table).

The small samples of material for identification (/SPT in the tables) included some material selected from the larger samples during inspection in the laboratory in cases where the separate identification of a distinctive component was required.

A tally of plant remains and other components of the various fractions examined was recorded directly into a personal computer using *Paradox* software, together with notes on the nature of the material. Taxa or components were recorded using a three- or four-point semi-quantitative, the former for the BS sample and for samples treated as 'spot' finds of individual remains or small samples of material for identification, the latter for the 'test' subsamples.

## *Results*

The results of this exercise are presented in Tables 2-11, on a site-by-site basis; in each table, the samples are listed in context and sample number order for convenience. The following comments can be made about the material:

### **Site E15 No 3 Bonded Warehouse Virginia St (Table 2)**

Not surprisingly, given their date and context, the three /T samples examined gave rather different results. The 17<sup>th</sup>-18<sup>th</sup> C floor sample yielded only small amounts of charred material, consistent with debris from a hearth which became incorporated into the floor as it accumulated. The sample from a 14<sup>th</sup>-15<sup>th</sup> C midden contained a diversity of remains including some traces of foodplants and probably material originating in imported peat or turf. The late 12<sup>th</sup>-13<sup>th</sup> C posthole fill produced an assemblage

of (mainly) weed seeds unusual in the abundance of remains (even in a rather large subsample of over 3 kg in weight), suggestive of some mechanism for concentration.

### **Site E19 Carmelite Friary (Table 3)**

For the most part, the samples from this excavation examined in the assessment yielded only small amounts of charred material, mainly charcoal (but always in small amounts), though in some cases quantities of burnt and/or unburnt peat were identified (especially uncharred peat forming the spot sample 345 from Pit DH, and charred peat fragments from 276 (burnt area DT within church), 320 (layer in stone feature EC) and perhaps also 10041 (a sample containing coffin remains). Indeed, one sample (274, 'charcoal') proved to consist of what was probably largely peat ash. By contrast, the concretions from sample 336 from Pit DH appeared to have formed from faecal material (supported by the presence of moderate numbers of fig seeds). The significance of these observations may become clearer when an archaeological narrative is available for this site.

### **Site E21 43-57 Upperkirkgate (Table 4)**

Plant remains in the series of samples from this site were limited to small numbers of charred specimens (with the exception of a single uncharred duckweed frond from Sample 70). The identifiable remains included heather root/twig material and occasional cereal grains (mainly barley but with some records for bread/club wheat and oats). Charcoal was moderately common in samples from some of the 13<sup>th</sup>-14<sup>th</sup> C fills of gulleys CP and CR (contexts 210, 225 and 226) but it was charred and uncharred peat which formed the largest organic component in this series, with charred peat being abundant in 13<sup>th</sup>-14<sup>th</sup> C pit fills BM (117) and 109 as well as forming much of the spot sample from 157a and probably present in a series of three fills of a 15<sup>th</sup>-16<sup>th</sup> century pit fill (AA) (along with charred remains of heather). Uncharred peat was abundant—not surprisingly!—in the 13<sup>th</sup>-14<sup>th</sup> C peat layer, Context 36. Smaller amounts of charred or uncharred peat were recorded in several other samples. The lack of uncharred plant material (other than peat) contrasts somewhat with the results for the examination of one sample from this site previously: the sample from Context 200 yielded some uncharred remains of probable urban weeds (flixweed, *Descurainia sophia* (L.) Webb ex Prantl) and weld (*Reseda luteola* L.) amongst other remains, along with burnt peat.

### **Site E29 30-46 Upperkirkgate**

No further material was thought worthy of assessment for this excavation: almost all the samples had been studied previously (and were not considered to require further analysis via new subsamples), and those which had not did not appear likely to furnish useful biological material.

### **Site E34 Gallowgate Middle School (Table 5)**

Although several samples from this site had been examined during earlier work, it was felt that some warranted re-examination and others should be assessed because they had not been investigated before and appeared promising as a source of bioarchaeological information. The samples for contexts previously explored were three fills of a late 12<sup>th</sup>-13<sup>th</sup> C pit interpreted (from the quantities of leather offcuts present and in the context of the site as a whole) as being associated with leatherworking, and one fill from the contemporaneous pit, EU (Context 233).

Perhaps the most striking feature of some of the samples from this site is the evidence for both grass turves and peat turves (in the Scottish sense of blocks of peat)—the latter not having been very securely established in previous analyses. Peat was present in a charred and/or uncharred form in all but one of the samples and abundant in an uncharred state in late 12th-13th midden Contexts 22, 70

and 81 and late 14th barrel (BN) fill 60; burnt peat was only ever present in trace amounts. Grass turf is indicated primarily by the remains of heath grass, *Danthonia decumbens* (L.) DC. in Lam. & DC., and especially the cleistogenes (see accounts of samples from Contexts 70 and 233). Taxa also likely to have originated in this way are the sedge (*Carex*) and ?tormentil (*Potentilla* cf. *erecta* (L.) Rauschel) found alone, or (in more than half the cases) together, in almost every sample. Various remains of charred and uncharred heather and ?heather were present throughout the samples in low concentrations too, as were remains of *Sphagnum* (in eleven samples) consistent with the cutting of heathland turves as well as with importing peat.

Remains of plants potentially useful to the inhabitants of the site included seeds of fig (traces in pit fill 33 in BG and barrel fill 60 in BN), and traces of fruits (or in one case leaf fragments) of bog myrtle or sweet gale (*Myrica gale* L.) in midden 81, and pit fills 84, 104 and 107 in CT. These very small amounts do not appear to represent deliberate use of the latter plant on the site, however, and they may simply have arrived incidentally in peat or some other peatland material. The single box (*Buxus sempervirens* L.) leaf in 13<sup>th</sup>-14<sup>th</sup> C pit fill 111 in DA presumably stands as evidence for a formal garden somewhere in the vicinity, whilst the presence of (mostly uncharred) hazel nutshell fragments at 'background' levels (traces in nine contexts) is consistent with the general picture of medieval occupation deposits here in Aberdeen and elsewhere.

A last comment which needs to be made at this stage concerns the 'leatherworkers' pit CT. An obvious material whose presence might be established—if the leatherworking involved the tanning stage as well as the making up of leather goods—is tree bark. Bark was noted in 24 samples in the group examined in this project, usually in small amounts, the largest concentrations being recorded in Contexts 88 (midden) and 111 (fill of pit DA) from site E34. They *may* therefore represent waste from tanning, but more telling perhaps is the record of bark sclereids from pit fill 84 (moderate amounts) and midden 85 (a trace). These small clusters of lignified cells are characteristic of many kinds of bark and their recognition in quantity (they are almost certainly present but overlooked in many deposits) seems to point to the presence of abundant decayed bark—one likely source of which is via tanning.

### **Site E35 16-18 Nether Kirkgate (Table 6)**

Cut turves seem likely to have formed part of at least three of the deposits examined for this site, too: 'turf stack' Context AH (translated numerically here as 18), and midden deposits 109 and 306. Various fragments of heather (mostly uncharred) were present in almost all the samples and other indicators of peatland or moorland quite frequent in small amounts. Uncharred peat was recorded in abundance in turf stack 18, midden layers 37 (here clearly including *Sphagnum* peat), 109 and 306, and pit fill 482. That the midden layers also contained various kinds of 'litter' (?from stable manure) is perhaps indicated by the records of uncharred fragments of bracken stalk and/or frond in all the midden deposits, albeit in very small amounts, with grass/cereal straw material in three of them. With the exception of a moderate number of tentatively identified uncharred oats spikelets in midden Context 109, food remains were limited to traces of hazel and walnut (*Juglans regia* L.) nutshell, fruitstones of raspberry and rowan and some charred and uncharred cereal caryopses. The record for walnut is the first for any site in Aberdeen though it is long 'overdue', walnut being recorded from many urban archaeological deposits of medieval date throughout the British Isles (the nearest record in space and time to that in Aberdeen being from Kirk Close, Perth, in a 13<sup>th</sup>-14<sup>th</sup> C context, cf. Robinson 1987).

### **Site E37 Castle Street (Table 7)**

Material from four contexts was examined, mostly in the form of 'spot' samples. All the plant remains were charred (in some cases only partly so, having a 'toasted' appearance) and some fragments bore a sooty or 'varnished' surface. This material seems most likely to have originated in roofing where the effects of smoke-blackening in preservation of organic thatch are now well documented (cf. Letts

1999). Lens 347 proved to be rich in remains of heather (mainly charred twig fragments, but also some leaves, shoots, flowers and capsules), and much the same material was recorded from Sample 11 from ?burnt roof material 398, whilst a sample of the quarry pit fill in 396GG (7) had only charred herbaceous material, perhaps cereal straw (and, from the presence of other remains, oat straw). This material is important in suggesting the nature of at least part of the roofing material at this period (13<sup>th</sup>-15<sup>th</sup> C) in Aberdeen and it is roofing which may account for the presence of small amounts of charred heather and other remains in so many of the deposits where no great concentration of fossils formed in the past.

(N.B. A further sample from this site—from context 396GG— was not processed until a late stage in this part of the project and has not been examined so far.)

### **Site E38 Carmelite Friary (Table 8)**

Plant remains were rather limited in these samples, many of which were spot finds from pit fill ND (1138). Apart from some very decayed oak wood, this pit fill yielded material which proved to be very humified peat (Sample 40) and ?peat ash (Samples 75 and 87). Humified peat was also abundant in the sample from pit fill 878 and present in charred or uncharred form in modest amounts in several other samples. Pit fill 393 in HD seems likely to have had a faecal component (with *Sphagnum* perhaps being used as toilet tissue), whilst one of the samples (50) from sump fill 549 perhaps also contained food waste (there were traces of several edible fruit taxa, including fig, apple and strawberry). The loam layer 342 may have contained material originating in turves (if not having actually supported turf *in situ*).

### **Site E42 Aberdeen Academy**

Neither of the two samples submitted was considered to be worth assessing.

### **Site E43 St Clements Street**

Neither of the two samples submitted was considered to be worth assessing.

### **Site E45 St Clements Street**

The two samples submitted were both examined more closely. Both yielded only small amounts of charred material, the sample from 13 having only a little fine charcoal, whilst that from 11 was found to contain traces of charred ?heather root/twig, oat grains and *Cenococcum* sclerotia, with traces of charred and uncharred peat—the most likely origin for which is perhaps in (incompletely) burnt turves or peat, though the evidence is hardly substantial enough to be compelling.

### **Site E47 Shiprow (Table 10)**

Material from this excavation was assessed prior to the present project (Hall and Kenward 2000) and the results are reiterated in Table 10. The three samples from feature AD indicated some of the material which was probably burnt as fuel in the oven or kiln: heather and heathland/moorland turf and perhaps also some bracken and grass. The reason for constructing the kiln or oven was not, however, clear from the plant remains. The bulk of the material burnt and forming the fill of shallow oval cut AK/AL was heather brushwood.

## Site E58 Dunbar Hall (Table 11)

The four samples (three from 13<sup>th</sup>-14<sup>th</sup> C pit fills, one from a ?medieval ditch fill) contained only rather small amounts of charred material. Samples from pit fill Contexts 3 and 5 both gave a few remains consistent with the presence of debris from burnt turves whilst there were traces of charred oat grains in the other two, but no suite of remains consistent with a clear origin for the material.

## Acknowledgements

I am grateful to Alison Cameron and Judith Stones, Aberdeen Archaeological Unit, for provision of material and funds for this work, as well as for information concerning the archaeology of the contexts for which material was examined. John Carrott at Palaeoecology Research Services undertook management of samples and most of the processing and is warmly thanked. English Heritage kindly gave permission for the work to be undertaken.

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Table 1. List of sites for which material was examined in this assessment, with the numbers of samples submitted and the number examined in some way.

<b>Site code and name</b>	<b>No. samples submitted</b>	<b>No. samples examined beyond initial inspection</b>
E15 No 3 Bonded Warehouse Virginia St	11	4
E19 Carmelite Friary	38	15
E21 43-57 Upperkirkgate	25	12
E29 30-46 Upperkirkgate	22	0
E34 Gallowgate Middle School	42	15
E35 16-18 Nether Kirkgate	30	6
E37 Castle Street	20	7
E38 Carmelite Friary	83	22
E42 Aberdeen Academy	2	0
E43 St Clements Street	2	0
E45 St Clements Street	2	2
E47 Shiprow	11	4
E58 Dunbar Hall	4	4
<b>Totals</b>	<b>292</b>	<b>91</b>

Table 2. Notes on samples assessed for No. 3 Bonded Warehouse, Virginia St, Aberdeen (site E15).

Context	Sample	Weight (kg)	Context type and notes
1	1/T	1.56	[floor, 17 <sup>th</sup> -18 <sup>th</sup> C] The washover of about 100 cm <sup>3</sup> was mostly charcoal of which most seemed to be oak ( <i>Quercus</i> ), up to 25 mm in maximum dimension and with the appearance of ‘chips’, although this may just have been a result of the way the fragments fractured; there were also moderate amounts of charred ?heather (cf. <i>Calluna vulgaris</i> (L.) Hull) root/basal twig fragments and traces of charred heather twig and capsules, and some fragments of cinder-like charred organic material (which were not certainly cinders as such); also present were traces of charred cereal grains amongst which barley ( <i>Hordeum</i> ) and ?rye (cf. <i>Secale cereale</i> L.) were noted. The very large wet residue of about 450 cm <sup>3</sup> was of sand and gravel (to 40 mm).
26	26/T	2.024	[middens, 14 <sup>th</sup> -15 <sup>th</sup> C] This subsample yielded a moderate-sized ‘flot’ (from paraffin-flotation) in which there were some fragments of feather, and uncharred heather shoot tips and leaves. There was a very large residue of about 750 cm <sup>3</sup> , of which about 400 cm <sup>3</sup> was sand, grit and a little gravel (to 55 mm) and bone. The washover was of granular woody debris; many of the coarser fragments seeming to be slightly indurated flaky/laminated sediment, perhaps matrix which had dried and not properly disaggregated on washing. There were quite a lot of animal hairs, even bristles, and some charred and uncharred peat (to 10 mm); some charred twig fragments seemed to be heather.  Identifiable plant remains included rare uncharred seeds of grape ( <i>Vitis vinifera</i> L.) and fig ( <i>Ficus carica</i> L.); many of the other uncharred seeds were rather flattened or eroded, sometimes mainly fragmentary. They mainly represented weeds, although traces of oat ( <i>Avena</i> ) and barley were noted. The fragments of moss present were all taxa likely to have arrived from heathland (in cut heather or turves) or in peat. The trace of uncharred duckweed ( <i>Lemna</i> ) fronds seems likely to point to importation of water from a pond or stream.
57	57/SPT	0.05	[middens, 14 <sup>th</sup> -15 <sup>th</sup> C] This was a small sample of almost dry, ‘platy’ amorphous organic/compressed detritus, very like peat, but probably organic occupation material. The subsample was left to soak for some days but was still rather intractable, very little passing the sieve, and remaining platy and coherent. It appeared essentially to be sandy, herbaceous detritus with some quite coarse straw-like fragments and some fragments of fly puparia.
103	103/T	3.08	[posthole fill 103AV, late 12 <sup>th</sup> -13 <sup>th</sup> C] There was a very large flot mostly (and unusually) consisting of seeds, of which the bulk were from weeds (including many cornfield taxa): there were vast numbers of seeds or fruits of chickweed ( <i>Stellaria media</i> (L.) Vill.) and hemp-nettle ( <i>Galeopsis</i> Subgenus <i>Galeopsis</i> ) with abundant ‘turnip’ ( <i>Brassica rapa</i> L.), sheep’s

Context	Sample	Weight (kg)	Context type and notes
			<p>sorrel (<i>Rumex acetosella</i> agg.) and corn spurrey (<i>Spergula arvensis</i> L.). Taxa present in modest numbers included black bindweed (<i>Bilderdykia convolvulus</i> (L.) Dumort.), fat hen (<i>Chenopodium album</i> L.), nipplewort (<i>Lapsana communis</i>), wild radish (<i>Raphanus raphanistrum</i> L.) and field penny-cress (<i>Thlaspi arvense</i> L.), with various other cornfield weeds present in smaller numbers (including, for example, shepherd's needle, <i>Scandix pecten-veneris</i> L., corn marigold, <i>Chrysanthemum segetum</i> L., ?cornflower, <i>Centaurea</i> cf. <i>cyanus</i> L., corncockle, <i>Agrostemma githago</i> L.). Also recorded were seeds and other remains of plants likely to have originated in heathland (heather was present as moderate numbers of uncharred shoot fragments and tentatively identified charred root/basal twig fragments). Charred cereals in the form of oats (including some tentatively identified cultivated oat, <i>A. sativa</i> spikelets) and barley (the latter with some grains showing evidence of sprouting prior to charring) were also observed. Other 'useful' plants included traces of seeds or fruits of fig and hemp (<i>Cannabis sativa</i> L.), with hazel (<i>Corylus avellana</i> L.) nutshell and stalk and frond fragments of bracken (<i>Pteridium aquilinum</i> (L.) Kuhn).</p> <p>The very large residue of about 1600 cm<sup>3</sup> was about half organic debris, mainly woody fragments (wood, including eroded chips, and bark), but with further abundant seeds, the rest being sand with a little grit and gravel (to 35 mm); amongst these mineral clasts were some fragments of baked clay/soil/daub throughout the fractions. Charred and uncharred peat (to 10 mm) was also present.</p> <p>Though the plant remains recorded are not surprising in any way, the huge concentration of seeds and fruits calls for some explanation. Presumably the post-hole acted as a 'sink' for the collection of material during its lifetime (assuming it remained partly open at the surface). Perhaps the seeds were concentrated by being swept across the floor from an area of grain cleaning.</p>

Table 3. Notes on samples assessed for Carmelite Friary, Aberdeen (site E19).

Context	Sample	Weight (kg)	Context type, phase and notes
252	252/SPT	0.775	[layer of soil above coffin remains DA, phase 2c] A rather small sample of indurated, slightly purplish grey-brown, gritty, sandy silty clay with some charcoal (washed to 0.3 mm to check the charcoal and other charred remains). There was a very small washover of a few cm <sup>3</sup> of charcoal (to 5 mm) and charred peat (10 mm) and a large residue of about 200 cm <sup>3</sup> of sand and gravel to 25 mm).
269	269/T	2.05	[fill in pit in church, Phase 1, 13 <sup>th</sup> C] The moderate-sized residue consisted of clean quartz sand and a little gravel (to 45 mm); there was a very small flot containing a trace of charcoal and very decayed insect cuticle. The very small washover comprised a few cm <sup>3</sup> of charcoal (to 5 mm)
272	272/SPT	0.30	[pit fill, Phase 1, 13 <sup>th</sup> C] This reddish-brown, crumbly, just moist ?ash with clasts of grey-brown clay yielded a moderate-sized residue of about 25 cm <sup>3</sup> of sand and red ?burnt soil to (5 mm) and a little gravel (10 mm).
274	274/SPT	0.30	[charcoal, Phase 1, 13 <sup>th</sup> C; for comparison with 252, to establish what was being burnt] This deposit was a slightly reddish-brown (locally bright red to buff to black), soft to crumbly, rather undense ?peat ash. It yielded a small washover of about 15 cm <sup>3</sup> of what was probably mainly charred heather root/basal twig fragments (to 15 mm) and a moderate-sized residue of about 50 cm <sup>3</sup> of sand and gravel (to 10 mm) and some undisaggregated sediment.
276	276/T	2.418	[burnt area DT within church, Phase 1] The tiny flot for this sample contained traces of heather leaves (which may have included both charred and slightly charred specimens), and some other charred remains of dwarf shrubs in the Ericaceae family. The largish washover of about 150 cm <sup>3</sup> consisted of charcoal (to 15 mm) and burnt peat (10 mm) and there was a moderate-sized residue of about 175 cm <sup>3</sup> of sand, grit and gravel (to 10 mm). With this was charred ?heather root/twig material, and also some strange reddish root casts of silt (to 20 mm). A small amount of uncharred peaty material left undisaggregated was made into a smear on a microscope slide and proved to be rich in diatom frustule fragments, so is perhaps a mud (gyttja) or similar natural lacustrine deposit (from within a peat sequence?). The only other plant remains were rare charred oat grains, bracken pinnule fragments and corn spurrey, persicaria ( <i>Polygonum persicaria</i> L.) and pondweed ( <i>Potamogeton</i> sp.) propagules

Context	Sample	Weight (kg)	Context type, phase and notes
279	279/T	1.226	[pit fill in DU, Phase 1] There was a moderate-sized residue of about 120 cm <sup>3</sup> of clean quartz sand and a little gravel (to 10 mm); the tiny flot contained a trace of fine charcoal, whilst the small washover comprised a few cm <sup>3</sup> of charred and (mainly) uncharred peat (to 5 mm) and a little charcoal (to 5 mm). There were traces of charred oat grains and hazel nutshell fragments.
314	314/T	1.10	[fill of stone feature EC, Phase 2] The very small washover consisted of a few cm <sup>3</sup> of what looked like amorphous 'faecal concretion' or mineralised plant tissue; the traces of fig seeds certainly suggest a faecal component. The very large residue of about 425 cm <sup>3</sup> was of gravel (to 40 mm) and sand with ?decayed faecal concretions: the gravel and sand component included much very amorphous concreted material (with a reddish-brown, glassy character), and there were quite a lot of small and very eroded bone fragments (to 10 mm), including those of fish.
315	315/T	1.68	[lower fill of pit DH, Phase 1] This sample yielded a small flot containing a little fine charcoal; the large residue of about 200 cm <sup>3</sup> was of sand, grit and gravel (to 20 mm). There was also a small washover of a few cm <sup>3</sup> of charcoal (to 10 mm) and uncharred peat (to 5 mm)
320	320/T	0.662	[layer in stone feature EC, Phase 3, 16 <sup>th</sup> -17 <sup>th</sup> C] There was a very large residue of about 175 cm <sup>3</sup> of burnt coal-like peat, real coal (both to 30 mm) and cinder (to 10 mm), with gravel (to 15 mm) and sand; with these were traces of faecal concretion and crushed fish bone. The small flot contained some charred cereal grains (poorly preserved barley) and dock ( <i>Rumex</i> ) fruits and charred remains of a few other weeds, as well as traces of insect material. The washover of about 40 cm <sup>3</sup> was mostly charred material: modest numbers of further charred barley grains, mostly poorly preserved, some ?heather root/basal twig fragments and a fine fraction which contained some elongated amorphous silicified material, perhaps just a component of ash.
322	322/T	1.10	[fill in stone feature EC, Phase 2] The small washover of a few cm <sup>3</sup> consisted of charred material (apparently burnt peat) and burnt ?soil; the very large residue of about 425 cm <sup>3</sup> was of sand, grit and gravel (to 25 mm).
323	323/T	1.15	[fill in stone feature EC, Phase 2] There was a small washover of a few cm <sup>3</sup> of charcoal (to 10 mm) and some ?charred peat (5 mm); the large residue of about 350 cm <sup>3</sup> was of sand, grit and gravel (to 25 mm).
324	324/T	0.43	[fill in stone feature EC, Phase 2] The very small washover consisted of a few cm <sup>3</sup> of charcoal (to 10 mm); there was a moderate-sized residue of about 50 cm <sup>3</sup> of sand, grit and a little gravel (to 25 mm).

Context	Sample	Weight (kg)	Context type, phase and notes
336	336/SPT	0.50	[accumulation of black organic in pit DH, Phase 1] This material comprised moist, crumbly (working plastic), varicoloured (mid-dark brown to grey-brown) sandy clay silt with patches of light grey ash and black specks of charcoal. There was a mixture, when disaggregated, of slimy clay and crisp, brittle, somewhat concreted material. The washover contained moderate numbers of rather poorly preserved fig seeds and very decayed, concreted material, like extremely degraded faecal concretion. The residue of about 250 cm <sup>3</sup> (i.e. very large) was of undense concreted material, presume further very decayed faecal concretion, with some sand and a little gravel (to 15 mm). There were traces of insect cuticle in this sample.
345	345/SPT	0.20	[accumulation of black organic in pit DH, Phase 1] This sample had dried out, and at the time of examination consisted of crumbly, brittle (clearly ashy), fine-grained material with a colour ranging from pale brown to dark brown with dark grey-brown patches, with a little gravel. A large quantity of undense uncharred material (peat, to 15 mm) formed the huge residue of about 200 cm <sup>3</sup> .
10041	10041/T	1.48	[coffin remains DA, Phase 2c] The modest-sized flot of fine granular material appeared to comprise very humified peat (this requires checking). The large residue of about 225 cm <sup>3</sup> was of grit, gravel (to 15 mm) and sand, with some pieces of oak wood (to 30 mm). The latter were infiltrated with mineral material, probably from iron (presumably coffin nails). The small washover of about 50 cm <sup>3</sup> was of granular peat or peat-like sediment in rounded fragments (to 10 mm; the rounding may be just a function of processing), but there was also some burnt peat, charcoal and a little decayed wood (all to 5 mm).

Table 4. Notes on samples assessed for 43-57 Upperkirkgate, Aberdeen (site E21).

Context	Sample	Weight (kg)	Context type, phase and notes
2	2/T	1.204	[pit fill in AA, Phase2a, 15 <sup>th</sup> -16 <sup>th</sup> C] There was a tiny flot in which the only biological remains were sclerotia (resting bodies) of the soil-dwelling fungus <i>Cenococcum</i> which probably has no interpretative significance in isolation. The large residue was of sand, grit and gravel (35 mm), with a trace of charred; in addition, the small washover of about 20 cm <sup>3</sup> of charred and uncharred peat (to 15 and 5 mm respectively) and further <i>Cenococcum</i> sclerotia; rare charred oat grains were also noted.
6	6/T	0.775	[pit fill in AA, Phase 2a, 15 <sup>th</sup> -16 <sup>th</sup> C] This sample yielded a small residue of about 150 cm <sup>3</sup> of sand, grit, and gravel (to 25 mm), and a small washover about 30 cm <sup>3</sup> of charred material. The latter mainly comprised ?heather root/twig fragments with traces of securely identified heather leaves and twig fragments, and a little other charcoal (to 10 mm). Traces of coal and charred ?peat (both to 5 mm) were also noted.
7	7/T	0.64	[pit fill in AA, Phase 2a, 15 <sup>th</sup> -16 <sup>th</sup> C] There was a small residue of 75 cm <sup>3</sup> of sand, grit and gravel (to 5 mm) and a small washover of about 60 cm <sup>3</sup> of fine charred material, mostly ?heather root/twig and burnt fish bone (but also some uncharred fish bone). There were traces of coal (to 15 mm) and charred ?peat (to 5 mm).
8	8/T	1.02	[pit fill in AA, Phase 2a, 15 <sup>th</sup> -16 <sup>th</sup> C] The small residue of about 125 cm <sup>3</sup> consisted of sand, grit and gravel (to 10 mm); the washover about 60 cm <sup>3</sup> was fine charred material, mainly ?heather root/twig. A trace of charred heather twig and sedge stem was also noted. Some burnt ?peat was present in the form of a modest component of brownish (sometimes black) material (to 5 mm), much of it remaining with residue
36	36/T	1.666	[peat layer, Phase 2, 13 <sup>th</sup> -14 <sup>th</sup> C] (This sample was recorded as being very desiccated before processing.) There was a huge residue of about 1850 cm <sup>3</sup> of granular, rather indurated and brittle amorphous humified sandy peat with some quite large fragments (up to 45 mm).
68	68/T	1.208	[pit fill in AX, Phase 2a] There was a moderately large flot, mainly charred peat and charcoal and charred ?heather root/twig fragments; the large residue of sand and gravel (to 30 mm) including a little more burnt peat (to 10 mm) whilst the very small washover consisted of a few cm <sup>3</sup> of burnt peat with a little uncharred peat (to 5 mm), charcoal, and coal.
70	70/T	1.706	[pit fill in AA, Phase 2a, 15 <sup>th</sup> -16 <sup>th</sup> C] This sampled produced a small flot of charcoal and charred peat. The large residue of about 250 cm <sup>3</sup> was sand and gravel (to 15 mm) with a trace of pottery (40 mm) and baked clay/daub (10 mm). The washover of about 60 cm <sup>3</sup> was mainly oak charcoal (to 30 mm), charred

Context	Sample	Weight (kg)	Context type, phase and notes
			?heather root/basal twig and shoot fragments, and peat (from uncharred fragments up to 2 mm, via black charred fragments to clasts of yellow ashy material thought to be heavily combusted peat. The only other identifiable plant material was a single uncharred frond of duckweed.
109	109/T	0.588	[pit fill, Phase 2, 13 <sup>th</sup> -14 <sup>th</sup> C] There was a moderately large flot of charred plant material, apparently mostly heather twig fragments (to 15 mm). The small washover of about 30 cm <sup>3</sup> consisted of more such charred material including fragments of burnt peat (to 10 mm) and a few heather twig fragments. The moderate-sized to large residue of about 100 cm <sup>3</sup> was of gravel (to 10 mm) and further burnt peat fragments.
117	117/T	0.732	[pit fill in BM, Phase 1, 13 <sup>th</sup> -14 <sup>th</sup> C] The very small flot contained a little charred wood and a cereal grain. The large residue of about 150 cm <sup>3</sup> was mainly undense black/buff fragments (to 15 mm), with some very pale or pinkish ones, which might be mineral soil; the former seemed to be burnt peat with mineral material. There was a little gravel and stone (to 50 mm) and some sand. The small washover comprised a few cm <sup>3</sup> of burnt peat charcoal and burnt soil and there were traces of unidentifiable charred cereal grains.
157a	1571/ SPT	0.1	This material consisted of crumbly (but with indurated lumps), varicoloured, very undense, almost dry material with pinkish to rufous-brown, black and white speckling; it looked most like compacted peat ash/imperfectly burnt peat or something similar; a subsample of 100 g was washed to 0.3 mm and it produced a huge residue of about 125 cm <sup>3</sup> . The interpretation of peat ash seems to be confirmed by this observation.
157b	1572	-	The material was very like 1571, but somewhat greyer; it was not processed at this stage.
210	210/T	1.234	[fill in gully CP, Phase 1, 13 <sup>th</sup> -14 <sup>th</sup> C] The large flot was mostly charcoal, with some charred cereal grains (showing rather variable preservation); no invertebrate remains were seen. After drying, to permit easier examination, this flot, along with a washover of about 60 cm <sup>3</sup> of further charcoal was found to contain some diffuse-porous roundwood material as well as a little ?heather root/basal twig (to 15 mm) and leafless heather twig, charred root/rhizome fragments and charred herbaceous detritus (both to 5 mm), giving an impression of material originating in the burning of turves (in the sense of material pared from vegetated surfaces rather than in the usual Scottish sense of blocks of peat). The presence of some 'varnished' fragments may indicate an origin in roofing material. The large residue of about 275 cm <sup>3</sup> was of gravel (to 25 mm), grit and sand.
225	225/T	1.738	[layer in gully CR, Phase 1, 13 <sup>th</sup> -14 <sup>th</sup> C] There was a small flot with charcoal and rootlets (which might be ancient). The

Context	Sample	Weight (kg)	Context type, phase and notes
			modest-sized washover of about 75 cm <sup>3</sup> consisted of charcoal, quite heavily iron-stained, and the very large residue of about 600 cm <sup>3</sup> was of sand, grit and gravel (to 55 mm) with small iron-rich concretions (which might be amorphous organic material cementing together sand grains). There were a few charred cereal grains—oats and barley—but poorly preserved.
226	226/T	0.584	[gully fill in CR, Phase 1, 13 <sup>th</sup> -14 <sup>th</sup> C] The very small flot comprised a few charcoal fragments and a few rather poorly preserved charred cereal grains (including bread/club wheat, <i>Triticum 'aestivo-compactum'</i> and ?barley); there was a small washover of about 20 cm <sup>3</sup> of angular charcoal. The very large residue of about 200 cm <sup>3</sup> was of sand and grit with a little charcoal (to 30 mm) and some more charcoal. The charcoal fragments were rather rounded and iron-salt-encrusted so were perhaps reworked.
229	229/T	0.806	[gully fill in CR, Phase 1, 13 <sup>th</sup> -14 <sup>th</sup> C] The small washover of about 20 cm <sup>3</sup> consisted mainly of ?iron-rich concreted material or perhaps very decayed peat (to 3 mm), with a little charred peat (of the same size), charcoal (to 10 mm) and a single charred barley grain. There was a very large residue of about 425 cm <sup>3</sup> of sand, grit and gravel (to 35 mm).

Table 5. Notes on samples assessed for Gallowgate Middle School, Aberdeen (site E34).

Context	Sample	Weight (kg)	Context type, phase and notes
14	34/T	2.48	[midden, late 12 <sup>th</sup> -13 <sup>th</sup> C] The modest-sized flot consisted of fine plant debris. A washover of about 100 cm <sup>3</sup> taken from the residue proved to be mainly granular decayed wood debris and undisaggregated sediment (it had probably become dried and somewhat indurated in store), with a little peat and charcoal. Amongst the wood fragments were some eroded chips of oak (to 15 mm in maximum dimension). Seed and fruits were not abundant and mostly somewhat eroded: there were suggestions from them that part of the deposit comprised material originating in soil or turf as well as from peat. The large dry residue of about 525 cm <sup>3</sup> was of sand, grit and gravel (to 70 mm).
22	28/T	3	[midden deposit, late 12 <sup>th</sup> -13 <sup>th</sup> C] The small flot was of fine plant debris with some peat fragments, seeds/fruits and insects. The large residue of about 900 cm <sup>3</sup> consisted of about 350 cm <sup>3</sup> sand and gravel, the rest being granular organic material, mainly indurated peat (fragments to 10 mm) and a little charred ?heather root/basal twig material and ?charred peat. The small range of identifiable plant remains probably represented taxa brought from a variety of sources with only turves or imported soil being more than weakly indicated.
33	37/T	2.212	[pit fill in BG, 13 <sup>th</sup> -14 <sup>th</sup> C] The modest-sized flot contained fine organic debris, including very decayed wood and insect cuticle. The very large residue of about 700 cm <sup>3</sup> was of sand, grit and gravel, with a piece of part-charred wood (oak). The rather large washover of about 70 cm <sup>3</sup> was of fine organic material with some wood and charcoal, but the coarser fraction was mainly charred heather twig fragments (some 'varnished' with ?soot). There were some quite well preserved cereal grains, including a part-burnt barley caryopsis. Fly puparia fragments were abundant and the uncharred plant material included heather shoots and a modest range of taxa in trace quantities with no ecological group predominant. Seeds of fig were present but the deposit did not give the appearance of containing faecal material.
60	13/T	3	[organic fill of barrel BN, late 14 <sup>th</sup> C] The modest-sized flot consisted of fine organic material including quite a lot of beetles, and some uncharred seeds. The large residue of about 650 cm <sup>3</sup> included about 525 cm <sup>3</sup> of organic debris, the rest being sand and gravel, with one shard of fine pottery. The organic material was mainly peat fragments (though some may have been undisaggregated peaty matrix), with a little wood, bark and charcoal. Seeds and fruits included fig and hazel nutshell with a small range of taxa from a number of probable sources. A possible heathland/turf component was certainly present, though small.

Context	Sample	Weight (kg)	Context type, phase and notes
70	3/T	3	[middens deposit, late 12 <sup>th</sup> -13 <sup>th</sup> C] The modest-sized flots were of fine plant debris, insect remains and some uncharred ?heather root/basal twig fragments. The moderate-sized residue was about 500 cm <sup>3</sup> , of which a few tens of cm <sup>3</sup> were sand and grit, the rest rather fine granular organics, mainly in the <1 mm fraction. They included small twiggy debris, some of which was further ?heather root/twig, along with silty peat and some rhizome fragments—altogether giving the appearance of material originating in turves, in support of which interpretation can be cited all the records of identifiable plant remains: in addition to heather, these were heath grass ( <i>Danthonia decumbens</i> (L.) DC. in Lam. & DC.) spikelets/cleistogenes (the latter are cleistogamous, i.e. non-opening, spikelets found at the bases of the culms rather than on flowering spikes), sedge ( <i>Carex</i> ), ?tormentil ( <i>Potentilla</i> cf. <i>erecta</i> (L.) Rauschel) and the moss <i>Hypnum</i> cf. <i>cupressiforme</i> Hedw.
81	2/T	3	[middens, 12 <sup>th</sup> -13 <sup>th</sup> C] The modest-sized flots were of fine plant detritus including ‘bleached’ heather leaves and shoot tips and <i>Sphagnum</i> leaves. The large residue comprised about 800 cm <sup>3</sup> of material of which about 325 cm <sup>3</sup> was woody debris and peat (mainly the latter) and a little charcoal; the remaining 475 cm <sup>3</sup> was sand, grit and gravel (to 70 mm). The organic fraction of the residue yielded further vegetative fragments of heather, and a variety of (presumably) peat- or heathland-derived remains, including rhizome fragments of cotton-grass ( <i>Eriophorum vaginatum</i> L.), seeds of bell heather ( <i>Erica cinerea</i> L.) and the mosses <i>Aulacomnium palustre</i> (Hedw.) Schwaegr. and <i>Polytrichum</i> . Nutlets of bog myrtle or sweet gale, <i>Myrica gale</i> L., must also have originated in material from peatland but whether deliberately or accidentally imported cannot be determined. There was a rather large assemblage of other plant remains, mainly fruits or seeds of various weed taxa typical of cultivated land, but with some aquatics (perhaps from imported water).
83	1/T	3	[middens deposit, late 12 <sup>th</sup> -13 <sup>th</sup> C] The small flots contained a little charcoal and a few weed seeds. The large residue of about 750 cm <sup>3</sup> included about 450 cm <sup>3</sup> sand and gravel, the rest being granular organics, mainly uncharred peat with a little burnt peat (both to 10 mm). Identifiable plant remains were limited to trace amounts of a modest variety of taxa, including weeds and some which may have arrived in turves from, for example, wet grassland.
84	21/T	3	[fill in leatherworkers pit CT, late 12 <sup>th</sup> -13 <sup>th</sup> C; sample examined during previous study] The modest-sized flots were of fine plant debris with decayed bark and some seeds. The large residue was about 1000 cm <sup>3</sup> , of which all but about 300 cm <sup>3</sup> was woody debris: wood (including chips to 50 mm) and bark (30 mm), plus some peat (25 mm), with some large (to 70 mm) bone fragments. The finer fractions included moderate numbers of

Context	Sample	Weight (kg)	Context type, phase and notes
			sclereids (clusters of lignified cells from within bark and thought to be diagnostic of decayed bark such as that originating in the tanning process). Identifiable remains represented by fruits and seeds included various weeds, with bog myrtle and hazel nutshell but all were present in trace amounts.
85	5/T	3	[middens, 12 <sup>th</sup> -13 <sup>th</sup> C] There was a large flots with fine organic detritus, mainly beetles, but also some moss, and seeds, and including cross-leaved heath ( <i>Erica tetralix</i> L.) leaves and heather flowers. The large residue of about 850 cm <sup>3</sup> included about 400 cm <sup>3</sup> of grit, gravel and sand, the rest being woody debris with some very decayed leather (to 45 mm) and animal hairs (?from leather processing). A wide range of plant remains was recorded including weeds, duckweed fronds, mosses and some further remains of heather; there may have been some material derived from burnt and unburnt turves.
88	17/T	3	[middens, late 12 <sup>th</sup> -13 <sup>th</sup> C] The modest-sized flots was of fine plant debris and insect cuticle, with a modest range of seeds, including weeds of cereal fields and some possible uncharred cereal grains. The <i>Sphagnum</i> leaves and stems seemed to be from <i>S. palustre</i> L., but there were also some other bog/fen taxa and woodland mosses typical of urban medieval occupation deposits, though none was very common. The modest-sized to large residue amounted to about 900 cm <sup>3</sup> , of which about 500 cm <sup>3</sup> was woody debris (bark, wood and wood chips), the rest being sand, grit and gravel.
104	16/T	3	[fill in leatherworkers pit CT, late 12 <sup>th</sup> -13 <sup>th</sup> C; sample examined during previous study] The rather large flots was of fine plant detritus. There was a very large residue of about 1500 cm <sup>3</sup> in which there were large components of fish and mammal bone (numerically, mainly the former, to 110 mm in maximum dimension), wood fragments (to 25 mm) and grit, the lighter material in the washover making up about 800 cm <sup>3</sup> . Other organic material included moderate amounts of bark, leather, peat and twig fragments. Identifiable plant remains were quite abundant, the range including a variety of weeds (including those of cultivated places and waste ground), with some plants perhaps originating in heathland (e.g. with turves).
107	27/T	3	[fill in leatherworkers pit CT, late 12 <sup>th</sup> -13 <sup>th</sup> C; sample examined during previous study] There was a large flots with coarse plant detritus, fly puparia and earthworm egg capsules. The large residue of about 1200 cm <sup>3</sup> contained only about 300 cm <sup>3</sup> of mineral material (mainly sand and gravel with some bone), the rest being organic, mainly woody, fragments (wood, bark, but also some peat). Some large wood fragments were clearly from roundwood of alder ( <i>Alnus glutinosa</i> (L.) Gaertner). Other plant remains included a variety of taxa typical of these occupation deposits with no one group clearly predominant: there were annual weeds of waste places and arable fields, plants of

Context	Sample	Weight (kg)	Context type, phase and notes
			heathland and a few representatives of a wide range of other possible habitats.
111	15/T	3	[fill of pit DA, 13 <sup>th</sup> -14 <sup>th</sup> C] The rather large flot was of fine and coarse organic detritus, both woody and herbaceous, with modest numbers of beetles. The large residue of about 1200 cm <sup>3</sup> consisted of woody detritus apart from about 200 cm <sup>3</sup> of sand and stones. The coarser woody material was mainly bark and twig fragments (including heather), and there were also some peat fragments (to 20 mm), in which the vegetative remains of cotton-grass probably originated. Some of the peat was charred. With the woody detritus and peat was a small range of plant taxa likely to have arrived from weeds in the vicinity or in material such as straw. One indicator of human activity was a rather large box ( <i>Buxus sempervirens</i> L.) leaf.
233	39/T	5	[pit fill, Context 233EU, late 12 <sup>th</sup> -13 <sup>th</sup> C; sample examined during previous study] There was a rather large flot of fine plant detritus, including many <i>Sphagnum</i> leaves, and a few 'seeds' including a possible turf element ( <i>Danthonia</i> ). The moderate-sized to large residue of about 1000 cm <sup>3</sup> of which 600 cm <sup>3</sup> was sand and gravel (to 40 mm). The remainder was mainly granular organic material including some indurated peat (to 10 mm) and some charred peat (to 5 mm). Further <i>Sphagnum</i> remains (including shoots and stems) were noted, with some rhizome fragments and further remains of <i>Danthonia</i> .
361	361/SPT	0.025	['burnt stuff from black circle' [?context FW]] This sample comprised a few grammes of charred plant material from which a large (for a 25 g sample) residue of about 20 cm <sup>3</sup> of charcoal, including oak (to 10 mm), with a little sand and gravel, and some cemented buff ?silt clasts (which might be concreted peat ash).

Table 6. Notes on samples assessed for 16-18 Nether Kirkgate, Aberdeen (site E35).

Context	Sample	Weight (kg)	Context type, phase and notes
18	8/T	3	[Context 'AH', Area B: turf stack, 13 <sup>th</sup> -14 <sup>th</sup> C]. This subsample yielded a huge residue of about 1600 cm <sup>3</sup> , of which barely 300 cm <sup>3</sup> was sand and gravel (to 40 mm), the being granular organics—mainly peat (highly humified with minute rootlets, in clasts up to 25 mm), with some bark and twigs, traces of heather (various parts of the plant) a few weeds (mainly cornfield taxa but also a component which looks like 'turf' from a grassland area on acidic soil. There were some quite worn seeds, others being very well preserved. The modest-sized flot contained fine plant detritus, including many <i>Sphagnum</i> leaves and a few insects and seeds. Overall, then, the archaeological interpretation of a turf stack seems to be accurate, the 'turf' in question including both peat in the usual sense and surface turves (scraws or divots in the Scots sense).
37	22/T	3	[Area B, midden, 13 <sup>th</sup> -14 <sup>th</sup> C] The huge residue of about 2.2 litres, of which barely 100 cm <sup>3</sup> was sand and a little gravel, comprised woody and herbaceous organics, including many rather coarse moss stems, especially large and mainly leafless <i>Sphagnum</i> stems, though some bore well-preserved leaves. There were also some quite large fronds of <i>Hylocomium splendens</i> and <i>Thuidium tamariscinum</i> ; which, if they arrived with the <i>Sphagnum</i> make it more likely that the larger <i>Sphagnum</i> stems are from collected live material. However, much of remainder of residue comprised peat, both humified with fine rootlets and paler clasts of fragmented, compressed <i>Sphagnum</i> -rich material. There were also some weed seeds (their concentration probably much diluted by the peat and moss. The very large flot of about 30 cm <sup>3</sup> consisted of fine plant detritus with more <i>Sphagnum</i> remains and some uncharred rhizome, as well as beetles.

109	16/T	3	[Area C, midden, 13 <sup>th</sup> -14 <sup>th</sup> C] The large residue of about 1400 cm <sup>3</sup> consisted mainly of granular organics and some moss and twig fragments and a little sand and gravel (about 300 cm <sup>3</sup> within the total volume, the gravel up to 20 mm). It was not unlike midden Sample 22 in this sequence, but with a rather different moss component, the more abundant taxa being <i>Eurhynchium praelongum</i> (Hedw.) Br. Eur. and, again, <i>Sphagnum</i> sp(p)., but with traces of <i>Aulacomnium palustre</i> (Hedw.) Schwaegr., <i>Hypnum</i> cf. <i>cupressiforme</i> Hedw., and <i>Polytrichum</i> sp(p). Also present were heath grass ( <i>Danthonia</i> ) cleistogenes, likely to indicate the presence of grass turves, and some woody taxa. Overall, a mixed 'litter' with a straw component and (from uncharred ?oat chaff) perhaps animal feed. The modest-sized flot of fine plant detritus included fragments of herbaceous root and rhizome and further <i>Danthonia</i> cleistogenes, all consistent with an origin in turves.
119	30/T	3	[Area C, midden, 13 <sup>th</sup> -14 <sup>th</sup> C] There was a large residue of about 1300 cm <sup>3</sup> , of which all but about 250 cm <sup>3</sup> was granular organics, including twig fragments (many seem to be <i>Calluna</i> ), and some wood chips; the rest was sand and gravel, with some cinder-like fragments and very decayed concretions (?faecal), and a little bone. The organics included some peat and a variety of litter components. There was also some food waste in the form of nutshell fragments of hazel and walnut ( <i>Juglans regia</i> L.) and much more wood bark and twig and much less peat than other midden samples in this sequence. Uncharred cereal chaff, probably oats, was again present (cf. Context 109). The moderately large flot contained further fine plant detritus, more <i>Calluna</i> leaves and shoot fragments and unusually large numbers (for medieval Aberdeen!) of bell heather ( <i>Erica cinerea</i> L.) leaves, the last looking too well preserved to be likely to have arrived in peat and thought, therefore, to have arrived with cut heathland vegetation (along with much or most of the heather remains).
306	26/T	3	[Area C, Context 306 BU, midden, 13 <sup>th</sup> -14 <sup>th</sup> C] The large residue of about 900 cm <sup>3</sup> contained about 300 cm <sup>3</sup> of granular organics, the rest being sand and gravel (to 100 mm). The organic fraction contained some undisaggregated compressed herbaceous detritus-rich sediment with a 'strawy' character, but also some peat. The seeds present were mainly from cornfield and waste ground weeds, the material usually being rather eroded/decayed. The small flot added a further record for caryopses of <i>Danthonia</i> .
482	1/T	3	[Area E, Context 482 KM, pit fill, 13 <sup>th</sup> -14 <sup>th</sup> C] There was a large residue of about 800 cm <sup>3</sup> of which a little under half by volume was sand and gravel, the rest 'crisp' fragments of what was essentially sandy, indurated, very humified peat with a little bone. The tiny flot contained a little charcoal, further indurated peat, and a few uncharred seeds of no interpretative value.

Table 7. Notes on samples assessed for Castle Street, Aberdeen (site E37).

Context	Sample	Weight (kg)	Context type, phase and notes
347	3/SPT	0.380	['lens of loam with twigs', ?13 <sup>th</sup> -?14 <sup>th</sup> C] Just moist, dark brown to black, crumbly ashy silt with charred twig fragments. This sample consisted essentially of charred heather remains, mainly twig fragments (to 20 mm) with some root/basal twig material, flower, leaves and shoots and traces of seed capsules.
396			[quarry pit fill in 396GG, 13 <sup>th</sup> -14 <sup>th</sup> C]
	7/T	1.000	The smallish flot contained charred twig fragments (to 30 mm), some with a 'sooted' appearance; some, at least, appeared to be willow ( <i>Salix</i> ). There was a very large washover of charred herbaceous detritus and wood charcoal, including some beautifully preserved charred grass/cereal culm fragments and culm bases. A little of the material was 'toasted' rather than fully charred, consistent perhaps with an origin in a large body of material such as roof thatch. It was remarkably free of weeds.
	8/SPT		A sample of undense charred material, not examined further at this stage.
	9/T	1.975	There was very large residue of about 460 cm <sup>3</sup> of sand, grit and gravel (to 40 mm) and a very large washover of about 600 cm <sup>3</sup> of charred material which proved to consist entirely of wood charcoal, apparently all oak (to 45 mm).
	10/SPT	0.100	Black flaky charcoal and apparently little else, the larger fragments all apparently oak.
398			[Area E+, labelled E37 II E+; Context 398GO; ?burnt roof material, 15 <sup>th</sup> C]
	11/SPT	0.290	Mainly black, loose twig-sized charcoal. This sample was sieved dry: it seemed to be mainly heather with some hazel rod fragments. Some clumps of fine whitish to yellowish black debris might be ash, binding small heather twig fragments together.
	12		Another bag, very like Sample 11, 190g in weight; not examined further at this stage.
625	5/SPT	0.390	[?burnt roof material, 15 <sup>th</sup> C] Just moist, crumbly, dark brown to black ashy silt. The sample separated into charred fine twiggy debris and rather coarse sand. The former were found to be heather twigs and other heather debris, including some 'toasted' material. There were quite a few very small rhizome/culm-base fragments which might indicate the basal parts of plants indicating that the heather was pulled rather than cut. The presence of some baked clay/daub and sand might indicate that turves <i>per se</i> formed part of this material.

Table 8. Notes on samples assessed for Carmelite Friary, Aberdeen (site E38).

Context	Sample	Weight (kg)	Context type, phase and notes
61			[pit fill in BI, Phase 3]
	41/T	1.154	There was a large flot, mainly peat fragments with a little charcoal; the modest-sized residue of barely 100 cm <sup>3</sup> was of sand and gravel, with a washover of a few cm <sup>3</sup> of peat fragments.
	44/T	0.772	The small residue of about 30 cm <sup>3</sup> consisted of clean quartz sand and gravel; the very small flot contained a little charred material. The small washover of about 20 cm <sup>3</sup> was of granular peat (amorphous, very well humified) and a little more charred material.
342	33/T	1.208	[loam (general layer), Phase 5] This sample yielded a large residue of about 200 cm <sup>3</sup> of sand and coal, including a little undisaggregated sediment which looked dark and 'peaty', but which might just have been soot-rich. There were some charred ?heather root/basal twig fragments. The smallish flot contained <i>Cenococcum</i> sclerotia and charred sedge nutlets and might therefore have contained an element of turf. The rather large washover of about 100 cm <sup>3</sup> was of angular charcoal, with burnt peat and coal. There was quite a large component of apparently uncharred silty peat-like material which might be uncharred mor humus (from turves).
393	30/T	1.840	[pit fill in HD, Phase 2a] The moderately large flot of fine plant detritus included beetles and wheat/rye 'bran'. The modest-sized residue of about 200 cm <sup>3</sup> was approximately half by volume sand and grit, the rest organics, including some concretions. Probable indicators of foods included rowan ( <i>Sorbus aucuparia</i> L.) and crowberry ( <i>Empetrum</i> ), the rest of the identifiable remains mainly being weeds, including fragments of seeds or fruits of taxa likely to have grown in cornfields (and thus perhaps representing seeds milled with flour), and moderate numbers of seeds of other annual weeds of waste places and cultivated land. A large proportion of the finest fraction was bran and, whilst worm eggs were not observed in a 'squash', there were rather a lot of <i>Sphagnum</i> leaves with the bran, perhaps indicating use of this moss for hygienic purposes.
549			[sump fill in KV (?549), Phase 7]
	47/T	1.310	The large flot was of fine plant detritus, ?mainly epidermis and including grass and a shrubby legume (perhaps broom). There may also have been epidermis from young heather shoots. The residue of about 75 cm <sup>3</sup> was not checked at this stage (see Sample 50, which looked very similar).

Context	Sample	Weight (kg)	Context type, phase and notes
	50/T	1.952	There was a large flot, rather like that from Sample 47, with many epidermis fragments, much of which might (in this instance) be from willow twigs. The small residue/washover of about 75 cm <sup>3</sup> contained a large proportion floating, fine plant debris, and spongy plant tissue in sheets; the heavier material was sand, coal and 'char (probably largely exuded material from coal). There were some small rather soft woody twigs. Food remains were present as traces, only, but included fig, strawberry, blackberry, raspberry and apple.
645	24/T	1.274	[organic deposit in water channel LU, Phase 1] The modest-sized residue of about 140 cm <sup>3</sup> was of sand and gravel; the small flot was mainly of what were apparently peat fragments, whilst the modest-sized washover of about 100 cm <sup>3</sup> was of granular undisaggregated sediment (which looked as though it had dried out and become somewhat indurated), a little peat, and a little charcoal—and very little else.
863			[grave soil ND, Phase 5]
	13/BS	10.000	There was a large residue of about 1400 cm <sup>3</sup> of pebbles, gravel and sand, with rather abundant bone, especially fish. Some faecal concretions were present in small fragments, too, mostly with a rather 'platy' configuration. There were some peat clasts.
	13/T	5.000	The large residue of about 1000 cm <sup>3</sup> was sand, grit, gravel and bone, especially fish. There was a moderately large flot of fine plant detritus, with beetles, fly puparia and a few seeds. The rather large washover of about 200 cm <sup>3</sup> consisted of granular organics, mostly peat, with bark and some wood, and a little more fish bone, charcoal, bracken pinnule fragments, moss, fly puparia.
864	27/T	0.986	[black organic layer, Phase 6] The largish flot was mainly charcoal and peat with some <i>Sphagnum</i> leaves/shoots. The small residue of about 50 cm <sup>3</sup> was sand and gravel, and the small washover a few cm <sup>3</sup> of charred and uncharred peat fragments.
878	69/SPT		[black organic pit-fill, Phase 3] Dark brown amorphous organic material, presumably natural peat, with a little sand. Not examined further at this stage.

Context	Sample	Weight (kg)	Context type, phase and notes
879	25/SPT	0.200	<p>[peaty black organic] This sample consisted of amorphous, black-brown organics forming a 'blocky' sediment, with grey-brown silty material and some black and white 'speckling' (it looked rather like Sample 40 from Context 1138 from this site): perhaps peat in ashy matrix?</p> <p>There was a large residue of about 100 cm<sup>3</sup> of sandy amorphous organic material, mainly that which had not, by that point, disaggregated (the organics would probably nearly all have passed the 0.3 mm sieve with sufficiently aggressive disaggregation). There was some microlamination internally in some clasts, so there were perhaps ashy; pollen of Ericales and fungal spores were abundant, so this material may have been mor humus or peat.</p>
929	70/T	2.205	<p>[soil in church, Phase 5] The large residue of about 275 cm<sup>3</sup> consisted of quartz sand and some gravel; there was a modest-sized flot, mainly charcoal and insect cuticle, with some corncockle seed fragments. The very small washover of a few cm<sup>3</sup> was of charcoal and ?burnt peat.</p>
1138			[pit fill [ND], Phase 5]
	10/SPT		Very dark brown fibrous wood in a speckled brown silty clay matrix. The wood was very decayed oak.
	17/SPT		Very decayed oak ?planks in a silty matrix.
	40/SPT		<p>'Blocky', moist, very dark brown, compacted, amorphous organic sediment with woody detritus—it had the appearance of very decayed organic matter (peat or 'midden'). A small subsample was washed to 0.3 mm; the sediment was very fine, washing away to almost nothing when rubbed: it seemed to be amorphous organic debris with a minimal pollen content (to judge from a 'squash'); there was a little gravel and sand when washed out, apparently from another component (grey ashy material), not the peat itself. There were some &lt;5 mm fragments of very decayed wood or bark, all very soft and losing their structure, and some tiny charred root/rhizome and twig fragments which have originated in burnt peat/turves, whilst the trace of uncharred heather shoot tips and modest amounts of extremely decayed <i>Sphagnum</i> shoots are likely to have come from uncharred material of this kind.</p>

Context	Sample	Weight (kg)	Context type, phase and notes
	75/SPT		<p>Dry, crumbly, somewhat layered and vesicular, undense, light brown to buff to yellowish-white to slightly reddish brown material, perhaps mainly peat ash; sample weight not recorded but probably about 200 g.</p> <p>There was a large residue, very little material being sieved away and that remaining tending to cohere in a dry, slightly indurated fashion; there were some clasts of grey-brown, speckled material which might have had an organic content once and may still have very decayed organics within grey, slightly indurated silt-like clasts and yellowish to orange brittle non-calcareous concreted material. There was quite a lot of wood, especially in the finer fractions; it was very desiccated and decayed, perhaps most of it actually mineral-impregnated or at least mineral-impregnated, having a very brittle character. There was in addition some brownish material that might have been peat. The whole sample had a somewhat 'ashy' feel to it.</p>
	78/SPT		Dry, black wood 'fibres', brittle. This material appeared to be very decayed oak wood.
	81/SPT		Dry, black wood 'fibres', brittle. This material appeared to be very decayed oak wood.
	82/SPT		Dark brown, dry, flaky peaty material (perhaps organic rubbish rather than peat?) with some very dry oak wood in fibrous strips.
	86/SPT		Completely desiccated wood and ?grey silty clay, some of the former actually consisting of bark (to 50 mm and perhaps including birch) when examined more closely.
	87/SPT	1.100	Mid-dark greyish-brown, crumbly, just moist, ?humic silt with abundant pale orange clasts of ?ash or clay and some wood fragments. This sample yielded a huge residue of about 900 cm <sup>3</sup> of very decayed bark (and a little wood) and speckled, unwashed sediment (locally somewhat clayey, but mostly undense grey ashy material which was rather brittle) with patches of yellowish to orange non-calcareous concretion.

Table 9. Notes on samples assessed for St Clements Street, Aberdeen (site E45).

Context	Sample	Weight (kg)	Context type, phase and notes
11	11/T	3	[organic layer in sand dune (?context 398), ?medieval] The moderate-sized residue was of clean quartz and mica sand; there was one fragment of micaceous sandstone. The small washover of about 15 cm <sup>3</sup> was of charred material: ?heather root/basal twig and burnt peat with quite a lot of (presumably charred) <i>Cenococcum sclerotia</i> ; some unburnt peat was also present.
13	13/T	3	[organic layer in sand dune, ?medieval] The small residue of about 40 cm <sup>3</sup> consisted of quartz and mica sand; the minute washover was mainly mica with a trace of fine charcoal.

Table 10. Notes on samples assessed for Shiprow, Aberdeen (site E47).

Context	Sample	Weight (kg)	Context type, phase and notes
15	15/T	1.000	<p>[sample is from pit AD, layer 15: 12<sup>th</sup> C oven or kiln] Black, crumbly sandy ?charcoal and ash</p> <p>The large residue of about 300 cm<sup>3</sup> consisted of sand and fine charcoal-like material, the latter making a washover of about 200 cm<sup>3</sup>. The charred material resolved, on inspection under the binocular microscope, into what appeared to be burnt peat or mor humus (it was rather vesicular and had sand grains embedded in it, so there was clearly some mineral soil present), with a little wood charcoal (and part-burnt oak wood/charcoal. The 1-2 mm fraction contained some uncharred ?mor humus (or other peaty sediment). A ‘squash’ (<i>sensu</i> Dainton 1992) of a fragment of the uncharred peaty material proved it to consist largely of amorphous organic material but with considerable amounts of heather pollen, suggesting it was mor humus from heather-dominated heathland or moorland. The small numbers of uncharred plant propagules present included some rush seeds (perhaps brought with peatland material) but also some chickweed (<i>Stellaria media</i> (L.) Vill.) seeds which were presumably from weeds growing in the vicinity of the feature. Invertebrates were represented only by a few scraps of unidentifiable cuticle.</p>
25	25/T	1.000	<p>[sample is from pit AD, layer 25: 12<sup>th</sup> C oven or kiln] Mid grey-brown (but speckled orange-brown to black), crumbly/unconsolidated to slightly plastic, slightly silty, slightly clay sand or perhaps largely ash, with some stones 2-20 mm and charcoal.</p> <p>The very large residue of a little over 400 cm<sup>3</sup> was obtained extremely quickly as the sediment disaggregated easily. All but about 125 cm<sup>3</sup> consisted of sand, the rest being charcoal with some burnt bone and traces of ‘toasted’ (part-charred) heather leaves and shoot fragments, and uncharred bracken frond fragments. Also present were some part-charred culm (stem) fragments from grasses or cereals, probably the former. Again, this deposit seemed to consist largely of ash, including material, which had escaped complete combustion by burning in a fire.</p>
34	34/T	1.000	<p>[sample is from pit AD, layer 34: 12<sup>th</sup> C oven or kiln] Moist, dark brown, crumbly to soft (working plastic), sandy amorphous organic sediment or sandy humic silt with ?charcoal traces; it was difficult to determine what the organic content was (it might be very small if the colour was strongly influenced by the mineral sediment present).</p> <p>A rather large lump of somewhat coherent humic material remained during the early stages of disaggregation, but it was sandy internally so was perhaps just the normal matrix of the sample. However, some of the buttery, brown, humic lumps of</p>

Context	Sample	Weight (kg)	Context type, phase and notes
			<p>this kind were found to contain some whitish material inside which seemed to be rich in silica spicules, so it was perhaps all plant ash.</p> <p>A moderate-sized residue of about 375 cm<sup>3</sup> of unwashed humic material and sand/grit in roughly equal proportions was eventually obtained. In it were some small (up to 5 mm) fragments of charcoal and others of cinder-like charred material; a few charred cereals in good condition were present (both oats and 'bread/club' wheat being noted. The finest fraction contained quite a lot of very decayed vertebrate hairs. A few small lumps of ?mor humus were found, via a squash, to be rich in heather pollen in matrix of humus, so imported peatland material is again likely here, consistent with the moderate amounts of uncharred heather shoot tips and traces of charred shoot fragments also recorded in the sample.</p> <p>The very lightest material floating above the residue was decanted to check for insects. Amongst the debris were some very 'flimsy' uncharred plant fragments, perhaps mostly the 'interiors' of chenopod seeds, with some heather leaves. There were a few insects and quite a few vertebrate hairs. The insect remains were rather decayed (E3.0-4.5, with a distinct mode at 4.0, using the scales of Kenward and Large 1998). All showed a colour change towards orange (strength 3-4, mode 4, using the same scales), some having passed beyond orange to 'pale'. There were a few fly puparia and perhaps 20 beetles, among which only <i>Neobisnius</i> sp. was represented by more than one individual. The subjective impression was of a small group from fairly to very foul matter.</p> <p>Overall, the samples from this feature indicate some of the material which was probably burnt as fuel: heather and heathland/moorland turf and perhaps also some bracken and grass. The reason for constructing the kiln or oven is not, however, clear from the plant remains.</p>
96	96/T	2.000	<p>[fill of shallow oval cut AK/AL] Completely unconsolidated black crumbly charcoal, with traces of light brown ?burnt soil or ash; very rich in mica.</p> <p>There was a very large residue after sieving of about 1350 cm<sup>3</sup>, of which about 800 cm<sup>3</sup> was sand and gravel (of rotted granite), some of the gravel clasts apparently burnt (or perhaps just picking up a black coloration from charcoal). The remainder consisted of charred ?heather twig/root including some quite large pieces (to 40 x 10 mm) and charred heather shoot fragments; the finer fractions yielded charred capsules and leaves of heather and there can be little doubt that the bulk of the material burnt was heather brushwood.</p>

Table 11. Notes on samples assessed for Dunbar Hall, Aberdeen (site E58).

Context	Sample	Weight (kg)	Context type, phase and notes
3	3/T	1.484	[pit fill, 13 <sup>th</sup> -14 <sup>th</sup> C] There was very small flot, perhaps including material from burnt turves. The moderate-sized residue of about 150 cm <sup>3</sup> consisted of sand and grit and a little charcoal; there was black and reddish burnt ?soil, the black material perhaps burnt mor humus or peaty A horizon. The small washover of about 70 cm <sup>3</sup> was of charcoal.
5	5/T	1.274	[pit fill, 13 <sup>th</sup> -14 <sup>th</sup> C] The tiny flot contained a few charred seeds, which might have originated in burnt turves or peat. The moderate- sized residue of about 125 cm <sup>3</sup> consisted of sand and charcoal, and included ?heather detritus and charred peat (the latter very black and brittle). The modest-sized washover of about 30 cm <sup>3</sup> contained charred root/rhizome material and charred and ?uncharred peat, and more heather, as well as a tentatively identified charred heath grass caryopsis, all pointing to an origin in heathland turves.
6	6/T	1.208	[pit fill, 13 <sup>th</sup> -14 <sup>th</sup> C] The tiny flot contained a trace of fine charcoal and one very decayed chenopod seed; the very small washover consisted of a few cm <sup>3</sup> of charcoal. The large residue of about 400 cm <sup>3</sup> comprised daub/baked clay with plant impressions and some sand and gravel, with a few barley and oat grains (all well preserved).
99	99/T	2.056	[ditch fill in AF, ?medieval] There was a very small flot containing a trace of coal and charcoal; the large residue of about 400 cm <sup>3</sup> was of sand and grit. The tiny washover of 1-2 cm <sup>3</sup> consisted of charred material, all of it charcoal except for a trace of unidentifiable cereal grains.