

**An evaluation of biological remains from further excavations at
Kingswood, Hull (site code: KWH97)**

by

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Summary

Sediment samples and hand-collected animal bone, mostly of Romano-British date, from further excavations at Kingswood, Hull, were submitted for an evaluation of their bioarchaeological potential.

Analysis of plant and insect macrofossils from the fills of a construction cut gave only resistant stages of soil organisms. A series of samples from ditch fill or deposits associated a river bank yielded a mixture of aquatic organisms, a terrestrial flora and fauna from disturbed habitats, perhaps grazing land, and remains likely to have been transported from in or around structures. A single medieval sample of putative alluvium gave slight evidence of having been deposited by running water.

The only microfossils likely to be of interpretative value are the diatoms observed in Sample 31 (Context 183) which may yield additional information regarding the formation of the deposit.

The vertebrate assemblage is very small and, with the exception of the horse skeleton, is rather poorly preserved and hence of little interpretative value.

Keywords: KINGSWOOD; HULL; EVALUATION; ROMANO-BRITISH; MEDIEVAL; SEDIMENT SAMPLES; VERTEBRATE REMAINS; PLANT REMAINS; CHARRED PLANT REMAINS; INVERTEBRATE REMAINS; INSECTS; MICROFOSSILS; DIATOMS

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Introduction

During early 1997 Humber Archaeology Partnership undertook further excavations at Kingswood, Hull. All of the material submitted for examination was from two trenches (13 and 14) representing three phases of activity: Romano-British (Phase 1), medieval (Phase 2) and post-medieval (Phase 3).

Fifteen sediment samples and a small assemblage of hand-collected animal bone (amounting to 1 box 39 x 31 x 130 cm), were recovered from the deposits.

This report considers the bioarchaeological potential of the material submitted to the EAU for evaluation.

Methods

All fifteen samples ('GBAs' *sensu* Dobney *et al.* 1992) were inspected in the laboratory and a description of their lithology was recorded using a standard *pro forma*. Six (from five contexts) were chosen for further investigation on the basis of information supplied by the excavator and the inspection undertaken in the laboratory. Sediment descriptions for samples not examined further are presented in the Appendix. Subsamples of 2 kg were taken from five of the samples (Samples 22, 29, 30, 31 and 35), and 3 kg from the sixth (Sample 27), for extraction of macrofossil remains, following procedures of Kenward *et al.* (1980; 1986).

All six of the selected samples were examined for microfossils using the 'squash' technique of Dainton (1992), which was originally developed for detection of nematode gut parasite eggs but is of value for a wide range of small remains.

All the hand-collected bone was examined; subjective records were made of preservation, angularity (i.e. the nature of the broken surfaces) and colour, whilst quantities and identifications were noted where appropriate. All fragments not identified to species or species group were recorded as 'unidentified'. These included skull, vertebra, rib and shaft fragments and other elements where species identification was unclear.

Results

The results of the investigations are presented by phase in context number order, with information provided by the excavator in square brackets. Specific questions raised by the excavator are presented in italics.

The sediment samples

Phase 1: Romano-British

Context 136 [Lower fill of robbed construction cut]

Nature of backfill?

Sample 22 (2 kg washover)

Wet, mid grey-brown to light to mid slightly orange brown (cm-scale mottling), plastic and sticky, silty clay.

There was a rather small (dry) residue of iron-concreted sediment in clasts to about 10 mm and a little baked clay/daub and charcoal; the small washover of about 120 cm³ was of plant detritus amongst which were a few badly eroded seeds of plants likely to have been weeds of waste and disturbed ground in the vicinity. There were also some earthworm egg capsules and cysts of soil nematodes resembling those of *Heterodera*, suggesting that at some stage this deposit may have been part of an active soil. No other invertebrates were observed.

Context 183 [Early Romano-British ditch fill]

Is this the river edge or a drainage ditch?

There is a marked difference in the numbers of plant and invertebrate macrofossils recovered from the two samples from this context. Presumably, this indicates a vertical change in the input into, and/or the preservational conditions within, the deposit (or some other form of heterogeneity).

Sample 30 (2 kg paraffin flotation)

Moist, dark slightly greyish brown, crumbly (working plastic), slightly clay humic silt with some very decayed herbaceous detritus.

The very small residue consisted of no more than about 200 cm³ of plant detritus with a little gravel, coal and baked clay or daub. All the plant material was rather orange in colour and oxidised. The identifiable plant macrofossils, which were sparse, were all of taxa of standing or gently flowing water or wet meadow to fen habitats. The moderately large flots were of fine plant detritus (not examined in detail) and contained a few invertebrate remains of no interpretative value.

Sample 31 (2 kg paraffin flotation)

Moist, dark grey, crumbly (working plastic), slightly sandy humic silt with some fine herbaceous detritus. Woody roots and ?rotted charcoal were present in the sample.

There was a moderately large residue of herbaceous and some woody detritus (the former mainly monocotyledonous stem/rhizome fragments) with a little sand and gravel. The identifiable plant macrofossils (which were moderately well to well preserved and present in quite large numbers) were mainly from aquatic and aquatic-marginal taxa; there was also a very little well-preserved charred cereal chaff. The plant remains concur with the archaeological interpretation that this deposit formed by the action of water in a river or ditch—and there is good evidence for several probable bankside taxa suggesting the presence of a variety of kinds of grassland, perhaps even pasture and meadow in the vicinity. There is little evidence of humans from the plant remains and other non-insect components, except for the coal (which might have originated naturally in the tills in this region), charcoal and

traces of linseed (*Linum usitatissimum*).

The moderately large flots were of fine plant detritus (not examined in detail). Invertebrate remains were abundant and well preserved. *Heterodera* type cysts were numerous and there were some earthworm egg capsules, suggesting that there was either inwash of soil or post-depositional burrowing. The insects fell into two groups, species of natural or semi-natural habitats and those typically associated with human occupation. In the first group aquatic and waterside species were sufficiently abundant to indicate sediment formation in or immediately by water. Terrestrial fauna included dung beetles and some plant feeders; subjectively it would appear that the surroundings were strongly modified by human activity, presumably in agricultural use.

The synanthropic insect component included species typically found together in and around buildings, particularly substantial numbers of *Lathridius minutus* (Linnaeus) group, several *Cryptophagus* sp. and specimens of *Xylodromus concinnus* (Marsham) and *Cryptophagus ?scutellatus* Newman. No grain beetles were seen.

The microfossil 'squash' contained several diatoms of more than one form.

Although there is ample evidence to suggest that this was an aquatic deposit, the material examined gives no clear indication as to whether this was an artificial drainage ditch or a natural water course. However, the range of beetles recorded seems a little too restricted to have included a river-transported component, perhaps favouring the first interpretation. Identification of the diatoms may yield some additional information—if marine taxa are present this would suggest that the deposit was formed by the river, and that the river was tidal at this point.

The biological evidence suggests an input of detritus from human occupation, the cereal chaff perhaps indicating the kind of plant debris in which the synanthropic insects lived: rather dry material such as might be found on a house, barn or stable floor.

Context 184 [Early Romano-British ditch fill or riverbank slope/edge]

Fresh water vegetation? Ditch fill?

Sample 29 (2 kg paraffin flotation)

Moist, light to mid grey, slightly crumbly (working plastic), slightly sandy slightly clay silt with small patches of light brown and light grey silt or clay and abundant very decayed herbaceous detritus (some of which may be post-depositionally intrusive woody roots). The sediment showed considerable signs of oxidation along root channels and ?drying cracks.

The moderately large residue consisted of woody and herbaceous detritus, mostly <10 mm; with this were traces of charcoal and baked clay/daub. The plant debris again was mainly monocotyledonous stem/rhizome fragments and unidentifiable roots; the plant remains in this subsample were rather oxidised and reddened. Traces of charred cereal remains included a well-preserved rachis internode and a single rather abraded barley grain. The other plant macrofossils were mainly wetland and grassland taxa, typically representing wet meadows; there were also some weeds and one other probable cultivated taxon, hemp (*Cannabis sativa*). The concentration of 'seeds' was quite high and some were rather better preserved than others.

The moderate-sized flot was of wood and woody roots and monocotyledon rhizome. Natural and artificial habitats were represented by the invertebrate fauna, with rather small numbers aquatic and waterside species, a few species associated with herbaceous vegetation and a substantial synanthropic component. This last group included significant numbers of *Cryptophagus* sp., *Lathridius minutus* group and *Cryptophagus scutellatus*, as well as smaller numbers of *Aglenus brunneus* (Gyllenhal), *Lithocharis* sp., *Gyrophypnus angustatus* and some other taxa which would typically occur with these in artificial accumulations of decaying matter on occupation sites. There were no grain pests. The plant feeders indicated waterside habitats, but no more than herbaceous vegetation in the surroundings, reinforcing the impression of strong human influence.

The biological remains as a whole are indicative of nearby occupation and perhaps of the dumping or indirect introduction of material from within or immediately around buildings.

Context 186 [Romano-British river vegetation?]

Fresh water vegetation? Ditch fill?

Sample 27 (3 kg paraffin flotation)

Moist, mid to dark grey-brown to mid brown (cm-scale mottling), crumbly (working plastic), sandy slightly clay silt with traces of modern roots.

The minute residue comprise no more than a few cm³ of plant detritus. It was very decayed but amongst it were some poorly to moderately well preserved seeds from taxa probably representing somewhat disturbed wetland areas, perhaps a riverbank. The tiny flot added a few more seeds of the same taxa. Moderate numbers of cysts of *Heterodera*-like eelworms and of earthworms suggested either soil inwash or a phase of *in situ* soil formation, an impression strengthened by the presence of several larvae (wireworms) of the click beetle *Athous haemorrhoidalis* (Fabricius), a typical denizen of grazing land soils. Other invertebrates were a mixture of species from semi-natural habitats, although subjectively with some hints of rather foul decaying matter, conceivably dung.

Phase 2: Medieval**Context 180** [?Medieval upcast/bank]

Snail shells present. Is this redeposited alluvial sediment?

Sample 35 (2 kg washover)

Dry, reddish brown to mid blueish grey (cm-scale gleying), crumbly (working sticky and plastic when wet), slightly silty clay with traces of modern rootlets.

The small residue consisted of undisaggregated (slightly concreted) silt; the very small washover of a few cm³ in volume comprised fine roots and further undisaggregated sediment, with some tiny (<2 mm) mollusc shell fragments. There were no identifiable plant macrofossils, although there were traces of insect remains, a few earthworm egg capsules and a single statoblast (resting body) of *Cristatella mucedo* Cuvier, a bryozoan found in clean water. This last record suggests an alluvial origin for the deposit.

Vertebrate remains

Eleven contexts (ten of Romano-British date) produced a small quantity of hand-collected bone. These provided a total of 148 identifiable (2181 g) and 86 unidentifiable (355 g) fragments. The range of identified species is shown in Table 1, together with total number of fragments, numbers of measurable bones and numbers of mandibles with teeth *in situ*.

Most of the bone (110 fragments) was recovered from the fill (Context 173) of a pit and represented part of the skeleton of a young horse. Additional fragments from the same individual were recorded from Context 117. With the exception of the horse skeleton, the material was rather poorly preserved and battered in appearance. Colour was dark brown or brown; black staining and concretions were noted on fragments from Contexts 111, 136 and 156. Evidence of butchery and dog gnawing was present, particularly on material from Context 136. Bones from this deposit were also very fragmented. Small numbers of burnt fragments were noted from six of the 11 contexts (117, 136, 138, 156, 171 and 183).

The horse skeleton included numerous fragments of skull, both mandibles (with teeth), first and second cervical vertebrae and most elements of the front legs. From the teeth present and the long bone fusion data, it was possible to age the individual to around nine months. Although none of the epiphyses were fused approximate withers heights could be obtained from both radii and one of the metacarpals. The radii produced withers heights of 10 hands (1008.7 and 1018 mm), whilst the metacarpal produced a height of 14.2 hands (1452.5 mm). This discrepancy can be explained by the fact that fusion of the epiphyses of the metacarpal occurs somewhat earlier than the radius, suggesting that the withers height, calculated from the metacarpal measurement, is closer to the actual size of the adult animal. On these grounds, it is possible to suggest that these remains represent an animal which would probably attain a height between 14.2 and 15.2 hands, taller than the reconstructed mean height for Roman horses of 13.3 hh (1373.1 mm) calculated by Johnstone (1996) in an extensive study of material from seventeen archaeological sites. However, horses of 14 hands and over have been recovered from Roman deposits, for example at Lincoln (Dobney *et al.* 1996) in 1st and 3rd century deposits and at Wavendon Gate, Milton Keynes (Dobney and Jaques *in press*).

The two pig bones and two unidentified fragments were the only remains recovered from Context 128, dated to the post-medieval period.

Statement of potential and recommendations

Identifiable plant remains were rather patchily preserved through the Romano-British deposits examined, but the assemblages recorded have potential to reconstruct something of the local environment and, if large enough samples are processed, to offer some information about plants cultivated and/or used by the inhabitants of the area, assuming they have not be transported large distances up or downstream by the River Hull. The synanthropic insects are rather too frequent in Contexts 183 and 184 for such a naturally transported origin, however, and it appears much more likely that waste material containing plant and insect remains was deliberately dumped or more indirectly introduced from nearby structures. On the evidence available, the fairly limited range of synanthropic insects, and the lack of grain pests, may stand as evidence of a small isolated settlement (following arguments presented by Kenward *in press*), although substantial further subsamples of the deposits would need to be analysed in detail to be more sure that chance factors were not operating. Clearly the present material deserves further investigation, and any additional excavation program should allow for full sampling aimed at recovering large quantities of sediment from any deposits with preservation by anoxic waterlogging, together with adequate provision for post-excavation analysis and reporting.

The single medieval sample examined in this exercise does not appear to warrant further analysis of plant or invertebrate remains if it is typical of deposits of this period, but medieval and post-medieval layers should still be selectively sampled if encountered during further excavation.

As previously noted, identification of the diatoms from Sample 31 may yield additional information regarding the formation of the deposit (Context 183).

The vertebrate assemblage is very small and, with the exception of the horse skeleton, is rather poorly preserved and hence of little interpretative value. As a consequence, no further analysis of this material is recommended. The poor preservation makes it unlikely that further excavation would produce sufficient bone, or material of suitable quality.

Retention and disposal

All of the material should be retained for the moment.

Archive

All material is currently stored in the Environmental Archaeology Unit, University of York, along with paper and electronic records pertaining to the work described here.

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Table 1. Hand-collected vertebrate remains from Kingswood, Hull.

Taxon		No. fragments	No. measurable	No. mandibles	Weight (g)
<i>Equus</i> f. domestic	horse	128	-	2	
<i>Bos</i> f. domestic	cattle	11	1	-	
<i>Sus</i> f. domestic	pig	2	-	-	
Caprovid	sheep/goat	9	2	1	
<i>Sub-total</i>		<i>150</i>	<i>3</i>	<i>3</i>	<i>2181</i>
Unidentified		86	-	-	355
Total		236	3	3	2536

Appendix

The following samples, all from Phase 1, were described but no further investigations were carried out. The descriptions are presented in context number order.

Context 112 [Fill of early Romano-British boundary ditch containing occupation debris]
Sample 34

Moist, mid grey to mid orange brown (cm-scale mottling), crumbly (working plastic and sticky when wet), clay silt with traces of modern roots.

Context 122 [Shallow Romano-British trackway]
Sample 26

Moist, light grey to mid orange brown (cm-scale mottling), stiff and slightly crumbly (working plastic and sticky when wet), clay silt.

Context 136 [Upper fill of robbed construction cut]
Sample 21

Moist, bluish grey and reddish brown (gleyed on cm-scale), crumbly (working sticky and plastic), clay silt with modern roots present.

Context 138 [Later Romano-British shallow depression fill]
Sample 32

Moist, light to mid orange brown to light to mid grey brown, crumbly (working plastic and sticky when wet), clay silt with traces of modern roots.

Context 140 [Primary fill of 'V'-shaped Romano-British ditch]
Sample 33

Moist, light to mid grey to light to mid orange brown (cm-scale mottling), crumbly (working plastic and sticky when wet), clay silt with modern rootlets present.

Context 164 [Shallow drainage gully fill]
Sample 23

Moist, mid grey brown to mid orange brown, crumbly (working plastic and sticky when wet), clay silt with modern rootlets present.

Context 172 [Romano-British river bank]
Sample 24

Moist, dark grey brown to mid orange brown (cm-scale mottling), oxidising to strong orange brown along cracks and root channels, crumbly (working plastic and sticky when wet), clay silt with traces of modern roots.

Sample 25
As Sample 24 (above).

Context 184 [Early Romano-British ditch fill or riverbank slope/edge]
Sample 28
As Sample 29 (in main text).