

Appendix 7: Environmental Report

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Evaluation of biological remains from excavations at 45-47 St Catherines, Lincoln (Job no. 355; site code: SCEL07)

by

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Summary

A single bulk sediment sample recovered from deposits revealed during archaeological excavations at St Catherines, Lincoln, was submitted for an evaluation of its bioarchaeological potential. The sample was collected from the lowest fill of a possible well of medieval or later date. Other features and deposits were associated with two phases of buildings and several phases of burials relating to St Katherine's Priory. There were also a number of early modern building slots and pits filled with building rubble.

Biological remains recovered from the subsample of the fill were mostly unidentifiable plant detritus, with traces of charcoal. There was also a small assemblage of slightly decayed waterlogged remains of wild plant taxa representing wet places, waste ground and hedgerow, probably reflecting the local vegetation prevailing at the time of deposition. Moderate numbers of variably preserved invertebrate remains were recovered and also included waterside taxa. Cladoceran ephippia were recorded and suggested that standing water was not present on a permanent basis or, perhaps, that the water was subject to pollution, and some of the beetles indicated decaying organic matter; not ideal properties for well water. If the feature was indeed a well then this would seem to explain why it fell into disuse, although it is also possible that this was a less specific water-filled (at least intermittently) cut feature such as a pit. Waterlogged seeds and fruits could provide suitable material for radiocarbon dating, if required.

No further study of the ancient plant and invertebrate remains recovered from this deposit is warranted. However, this evaluation has demonstrated that waterlogged preservation exists within at least some deposits in the area and any future interventions in the vicinity should allow for the possibility of encountering further deposits with similar or better preservation of interpretatively valuable organic remains.

KEYWORDS: 45-47 ST CATHERINES; LINCOLN; EVALUATION; ?MEDIEVAL; MODERN; PLANT REMAINS; CHARRED PLANT REMAINS; INVERTEBRATE REMAINS; BEETLES

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Evaluation of biological remains from excavations at 45-47 St Catherines, Lincoln (Job no. 355; site code: SCEL07)

Introduction

An archaeological evaluation excavation was undertaken by Pre-Construct Archaeology (Lincoln) at St Catherines, Lincoln (approximate NGR SK 971 695), in 2007. Although the excavation began as an evaluation the works eventually extended to preservation by record of the archaeology that would be destroyed by the residential development.

The works revealed two phases of buildings and several phases of burials relating to St Katherine's Priory. The first structure (Structure 1) was thought to be a gatehouse chapel. The function of the second structure (Structure 2), a much larger building was unclear, although it was possibly an enlarged version of the first.

The cemetery area in the east of the site was truncated by feature 325, which was interpreted on site as a well. There were a number of building slots and pits filled with building rubble dating to the early modern period in this area and the putative well was located beneath, and truncated by, one of these (pit 237). It was unclear whether the well was of the same phase as the pits or earlier (perhaps medieval) as the stratigraphy of this part of the site was difficult to interpret because the creation of modern cellars had truncated the deposits.

A single bulk sediment sample ('GBA'/'BS' *sensu* Dobney *et al.* 1992) was submitted to Palaeoecology Research Services Limited (PRS), County Durham, for an evaluation of its bioarchaeological potential.

Methods

The sediment sample was inspected in the laboratory and its lithology recorded using a standard *pro forma*. A subsample was taken and processed, broadly following the techniques of Kenward *et al.* (1980), for the recovery of plant and invertebrate macrofossils. Prior to processing the subsample was disaggregated in water and its volume recorded in a waterlogged state.

Ancient biological remains in the washover were mostly waterlogged and were examined wet. The residue was mostly mineral in nature and was dried and weighed before being recorded.

Plant and invertebrate remains were recorded briefly by 'scanning' using a low-power microscope, identifiable taxa and other biological and artefactual components being listed on paper. During recording, consideration was given to the suitability of the remains for submission for radiocarbon dating by standard radiometric technique or accelerator mass spectrometry (AMS).

Nomenclature for plant taxa follows Stace (1997) and insects follow Kloet and Hincks (1964-77).

Results

Archaeological information, provided by the excavator, is given in square brackets. A brief summary of the processing method and an estimate of the remaining volume of unprocessed sediment follows (in round brackets) after the sample number.

Context 328 [lowest fill of possible well 325]

Sample 3/T (16 kg/10 litres sieved to 300 microns with washover; approximately 20 litres of unprocessed sediment remain)

Moist, mid to dark yellowish-orange to mid to dark blueish-grey (with some patches of mid olive-brown surrounding a core of mid to dark blueish-grey), unconsolidated, very slightly silty sand (more silty in places). Stones (6 to 60 mm) were present

The small washover (~100 ml) was almost entirely of decayed plant material, including roots/rootlets, unidentifiable plant fibres, and a few twig fragments, with some sand and a little charcoal (to 10 mm). The identifiable component of the plant assemblage comprised a small number of decayed waterlogged seeds and fruits. Most of the recorded taxa were wild plants of wet/damp places such as in and around wet ditches, streams and ponds, or in marshy fields (e.g. blinks – *Montia fontana* L. ssp. *chondrosperma* (Fenzl) Walters, bogbean – *Menyanthes trifoliata* L., bog-myrtles – *Myrica*, crowfoot – *Ranunculus* subg. *Batrachium*, rush – *Juncus*, sedge – *Carex*, spike-rush – *Eleocharis*, water-cress/narrow-fruited water-cress – *Rorippa nasturtium-aquaticum* (L.) Hayek/R. *microphylla* (Boenn.) Hyl. ex Á. & D. Löve). A few stalk fragments of bracken (*Pteridium aquilinum* (L.) Kuhn) probably derived from heath or moorland nearby. In addition, other wild plant species such as buttercup (*Ranunculus* subg. *Ranunculus*), chickweed (*Stellaria media* (L.) Vill.), grass family (Poaceae), dock (*Rumex*), knapweed (*Centaurea*), knotgrass (*Polygonum aviculare* L.) and small nettle (*Urtica urens* L.) were represented, all of which are found on waste ground. A single record of hazel (*Corylus avellana* L.) perhaps indicates hedgerow nearby.

There were also moderate numbers of waterlogged invertebrate remains in the washover. Some of these almost certainly represented recent intrusions into the deposit (earthworm egg capsules, for example), but there were also some variably preserved beetle sclerites (most were highly fragmented but chemical erosion varied from slight to severe, with some remains reduced to no more than 'filmy' scraps of cuticle) which were probably contemporary with the formation of the fill. Several species of staphylinid were represented, including *Stenus* sp., and there were elytral fragments of at least two different ground beetles (Carabidae). Other identifiable (at least in part) remains included elytra of *Cercyon analis* (Paykull) (and possibly also *Megasternum obscurum* (Marsham)), an ?*Otiiorhynchus* sp. head fragment and a ?weevil (cf. Curculionidae) pronotum. There were also some cladoceran (water flea) ephippia ('resting eggs') including a few of *Daphnia*. The few identified beetle remains accorded well with the plant macrofossils suggesting decaying organic matter in a waterside situation. The cladoceran ephippia suggest deposition in standing water but that this was perhaps not permanent – as cladocerans often form ephippia as a response to the drying out of temporary bodies of water, although they may also do so as a reaction to other forms of environmental stress such as pollution.

The relatively small residue (dry weight 5.5 kg) was of stones (to 41 mm) and sand.

Discussion and statement of potential

Biological remains recovered from the subsample from the putative well fill were mostly unidentifiable plant detritus (e.g. root/rootlet, twig and leaf fragments, and indeterminate fibres), with traces of charcoal. There was also a small assemblage of slightly decayed waterlogged remains of wild plant taxa representing wet places (such as water-filled ditches/ponds and their margins), waste ground and hedgerow, probably reflecting the local vegetation prevailing at the time of deposition. Moderate numbers of variably preserved invertebrate remains were recovered and also included waterside taxa.

The cladoceran ephippia recorded suggested that standing water was not present on a permanent basis or, perhaps, that the water was subject to pollution and some of the beetles indicated decaying organic matter; not ideal properties for well water. If this feature was indeed a well then this would seem to

explain why it fell into disuse although it is also possible that this was a less specific water-filled (at least intermittently) cut feature such as a pit.

Waterlogged seeds and fruits could provide suitable material for radiocarbon dating (via AMS), if required.

Recommendations

No further study of the ancient plant and invertebrate remains recovered from this deposit is warranted; although detailed recording of the insect remains could probably provide some additional information regarding the past environment within and around the feature this would require the processing of a very large sample (of 50 litres or more) to provide a worthwhile assemblage for interpretation.

This evaluation has demonstrated that waterlogged preservation exists within at least some deposits in this area. Any future interventions in the vicinity should allow for the possibility of encountering further deposits with similar or better preservation and a suitable strategy for the collection, assessment and, where appropriate, analysis of sediment samples should be adopted.

Retention and disposal

The remains recovered from the evaluation subsample should be retained for the present.

Unless required for purposes other than further study of the biological remains, the remaining unprocessed sediment may be discarded.

Archive

All material is currently stored by Palaeoecology Research Services (Unit 8, Dabble Duck Industrial Estate, Shildon, County Durham), along with paper and electronic records pertaining to the work described here.

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