Appendix 3

St Mary's Works

Barton upon Humber

North Lincolnshire

Environmental Assessment for PCA 06-195

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Archaeological Services WYAS
PO Box 30, Nepshaw Lane South, Morley, Leeds LS27 0UG

1. Introduction

1.1 A total of eight soil samples and 127 fragments of animal and fish bone have been assessed. The sample processing produced eight flots together with four bags of sorted retent material that were assessed for plant remains and charcoal. In addition to nineteen fragments of hand-collected animal bone, 108 further fragments were recovered from the samples.

2. Methodology

Environmental samples

2.1 Bulk environmental samples were processed by Archaeological Services WYAS using an Ankara style water flotation system (French 1971). Flots were collected in a 300μm sieve and the heavy fraction (the retent) was collected in a 1mm mesh. The flot, once dry, was scanned using a low powered binocular microscope at magnifications of x4-45. In general, the samples produced relatively small amounts of charred remains, typically 2.5ml to 15ml of material, with the majority of this consisting of abundant cereal grain and some charcoal fragments (Table 1). Modern material such as roots, seeds and so forth were very rare (sample 5 was an exception), hence contamination from modern background material can be considered extremely low.

2.2 Charcoal was scanned under low power magnification to assess the range of types present. Any potential short-lived types were examined in detail under a high power Vickers M10 metallurgical microscope in order to obtain a definitive identification. Plant nomenclature utilised in the text follows Stace (1997) for all vascular plants apart from cereals, which follow Zohary and Hopf (2000).

Faunal remains

2.3 Animal bones were retrieved by hand during excavation and during sample processing. The method of recovery is detailed in Table 2. As relatively few bones were recovered, all are listed here but the fish bones will require analysis by a relevant specialist. Any two fragments that clearly join have only been counted once.

2.4 All the bones were well preserved with little evidence for surface erosion, although all were fragmented to a greater or lesser extent. The assemblage is limited, therefore, by its size alone. In the evident of larger-scale excavation, a valuable bone assemblage might be anticipated.

3. Results

Botanical remains

3.1 The eight soil samples assessed contained a large amount of carbonised cereal grain, often in a good state of preservation, a small number of weeds and a few fragments of well preserved charcoal. Amounts varied from sample to sample but in general the main constituent of each flot was found to be carbonised cereal grain. Occasional evidence for coal and possible industrial activity was also found but this was in trace

amounts and is a tentative identification present in one sample only.

3.2 Cereal grain recovered from the site consisted of *Triticum aestivum* sl. (bread/spelt wheat), *Hordeum vulgare* var. *vulgare* (six row hulled barley) and *Avena* sp. (oat). Most of the wheat appears to be bread type rather than spelt but the preservation was often not good enough to obtain a definitive identification. Identifiable cereal grain was recovered from samples 1 (412), 2 (406), 3 (408), 4 (411) and 7 (537), with the latter producing the most grain overall. A large amount of the grain in sample 7 (537), however, was vesicular and poorly preserved, so only 25% of material from this sample was thoroughly identified. From a brief scan of this entire flot, the majority of cereal grain present was *Hordeum vulgare* sl. (barley). Indeed, the evidence from sample 7 skews the results in favour of a barley crop forming the main cultivated cereal, but in every other sample bread/spelt wheat is the main cereal type recovered.

3.3 A small number of weed seeds were recorded from the samples with possible grassland/pasture suggested by *Rumex* sp. (docks) and heavy arable soils suggested by *Anthemis cotula* (stinking chamomile). Evidence for the possible growing of beans or other vetches was also present in trace amounts with *Vicia* sp. (vetches) perhaps grown as garden plants. Overall recovery of weeds was low throughout the samples and little of the weeds associated with arable cereal processing were present. A cleaned cereal crop ready for storage (once dried) or consumption is proposed.

3.4 Charcoal identified from the site consisted of mostly *Quercus* (oak) with a small amount of *Corylus* (hazel) and *Salix*/*Populus* (willow/poplar). Oak was present in samples 6 (602) and 8 (523) but also in smaller amounts in sample 7 (537) and most likely had a fuel use. Hazel was present in samples 7 and 8, with a well-preserved piece of hazel roundwood recovered from sample 7. This piece was approximately 10mm in diameter and had 5 growth rings, indicating small branch wood, which may have come from a managed woodland resource. A single fragment of willow/poplar was also present in this sample. The range of woodland types represented here suggested mixed deciduous woodland with open or scrub areas, and the potential for coppicing or other forms of management taking place.

3.5 Sample 3 (408) contained atypical material. The retent produced a piece of coal, whilst the flot contained a burnt vesicular shiny organic material (but not peat) and a possible piece of industrial hammerscale. The latter was a small bubble of material, which may have been slag but could equally be geological, so this will need examination by an appropriate specialist. Sample 5 (106) was also atypical in producing a flot of modern material consisting of wood fragments, roots and non-carbonised seeds of *Sambucus nigra* (elder). Importantly this sample did not contain any carbonised plant material, whilst in contrast the charcoal-rich samples produced little modern contamination.

Faunal remains

3.6 Two few bones were recovered to allow for meaningful interpretation,

particularly given the timeframe over which the bones may have been deposited. The presence of cattle, sheep/goat, pig, goose and fish bones attest to the presence of domestic waste following meat consumption and this is confirmed by the identification of cut marks indicative of meat removal. Certainly no evidence of industrial processes (such as tanning or hornworking) was indicated by this small assemblage.

4. Conclusions

4.1 The samples produced a large amount of carbonised cereal grain suggesting a mixed arable economy utilising bread/spelt wheat, barley and oats. The lack of a large weed assemblage suggested grain arriving at the site was probably in an almost fully processed state, although the final stages of cereal drying and storage may have been done on site. Charcoal identification provided evidence for the use of oak woodland for fuel, together with the possible management of more open areas of hazel and willow forest.

4.2 Samples analysed for the purposes of this assessment have shown good preservation of carbonised material, including cereal grain, charcoal and often delicate weed seeds. The potential for further environmental sampling to produce similar results is therefore high. In addition, the lack of modern contamination in the charcoal-rich samples also indicates that reliable radiocarbon dating material would be available if required. All material from these eight samples has been fully identified apart from the scanned remains from sample 7 (537), from which a percentage has been analysed. No further work is required on these samples.

4.3 The faunal assemblage was of limited value due to its small size and any conclusions drawn should be treated with caution. Domestic debris from food consumption is proposed given the range of animals present and the recovery of some butchered bones. No further analysis is required on the mammal/bird assemblage, although two of the bones are measurable and four bones would provide age data should further material be recovered from the site. The fish remains, recovered exclusively from sample processing, should be analysed by a relevant specialist.

Table 1. Carbonised plant remains and charcoal

	Sample	1	2	3	4	5	6	7	8
	Context	412	406	408	411	106	602	537	523
	Total CV	2.5ml	2.5ml	5ml	5ml	0	5ml	15ml	15ml
	Modern	<2.5ml	<2.5ml	<2.5ml	0	10ml	<2.5ml	<2.5ml	<2.5ml
Carbonised Cereal Grain	**Common Name**								
Avena sp.	Oat				5			6	
cf. *Avena* sp.	cf. oat				2				
Triticum aestivum sl.	bread/spelt wheat	8	7	3	5			6	
cf. *Triticum aestivum* sl.	cf. bread/spelt wheat	4							
Hordeum vulgare var. *vulgare*	Six row hulled barley							3	
Hordeum vulgare sl.	barley		2	1	3			23	
Indeterminate cereal (+embryo)		10	12		17		1	18	
Indeterminate cereal (-embryo)		3			4				
Charcoal									
Quercus	oak						8 (0.98g)	3 (0.39g)	5 (1.78g)
Corylus	hazel							1 (0.74g)	2 (0.58g)
Salix/*Populus*	willow/poplar							2 (0.21g)	
Carbonised Weeds									
Rumex sp.	docks	1							
Anthemis cotula	stinking chamomile		1						
Vicia sp.	vetches		1		2				
Other Remains									
Burnt vesicular organic				1					
Coal				1					
Industrial (hammerscale?)				1					
Non-Carbonised Weeds									
Sambucus nigra	elder			5+		10+		10+	5+

Table 2. Faunal remains by context (numbers in brackets refer to butchered bones, italicised entries indicate bones recovered from the soil samples)

Context	Sample	Cattle	Sheep/goat	Pig	Goose	Cattle-sized	Sheep-sized	Bird	Frog/toad	Fish
106	*5*						*1*			
406		1	1			1 (1)				
406	*2*		*1*			*1*	*25*			*24*
408	*3*						*3*			
409			1							
411	*4*					*1*	*16*	*1*	*5*	*2*
412			1		1 (1)	4	2 (1)			
508		1	2			1				
519			1				1			
523				1						
523	*8*		*1*				*5*			
537	*7*						*15*			*2*
602	*6*		*1*				*2*			*2*
Total		2	6	1	1	6	3			

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