

A1 MOTORWAY, LEEMING TO BARTON, FIELD 133 (LITTLE HOLTBY)

PALAEOENVIRONMENTAL REPORT

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Summary

1.0 Introduction

Fifteen bulk environmental samples were taken during the course of the excavation in Field 133 (Little Holtby) on the A1 Motorway, Leeming to Barton road widening scheme. These were submitted for assessment along with hand-collected animal bone and terrestrial mollusca shell.

The preliminary results of the excavation are presented elsewhere. This report presents the results of the assessment of the palaeobotanical and mollusc remains in accordance with Campbell *et al.* (2011) and English Heritage (1991).

2.0 Methodology

The bulk environmental samples were processed at NAA. The colour, lithology, weight and volume of each sample was recorded using standard NAA *pro forma* recording sheets (Table 1). The samples were processed with 500 micron retention and flotation meshes using the Siraf method of flotation (Williams 1973). Once dried, the residues from the retention mesh were sieved to 4mm and the artefacts and ecofacts removed from the larger fraction and forwarded to the relevant specialists. The smaller fraction was not examined and has been retained.

The hand-collected molluscs were air dried and cleaned using a soft brush.

The flot, plant macrofossils, charcoal and molluscs were retained and scanned using a stereo microscope (up to x45 magnification). Any non-palaeobotanical finds were noted on the *pro forma*. All flot data is presented in Table 2.

The plant remains and charcoal were identified to species as far as possible, using Cappers *et al.* (2006), Cappers and Bekker (2013), Cappers and Neef (2012), Hather (2000), Jacomet (2006) and Schoch *et al.* (2004) and the NAA reference collection. Nomenclature for plant taxa followed Stace (2010) and cereals followed Cappers and Neef (2012). The molluscs were identified using Cameron (2008), Evans (1972) and Kerney (1999) with nomenclature following Anderson (2005).

3.0 Results

Animal bone

The sample (6127 AA) yielded two, very small, fragments of burnt animal bone which weighed 0.38g. Two hand-collected calcined fragments, one from 6098 (RF number 810) weighed 0.16g and another from 6127 (RF number 4834) which weighed 0.38g. The small fragment from 6098 is a tooth fragment. A single piece of calcined bone from 6164 (originally thought to be flint and was assigned

as RF 4214) weighed 0.48g, this was thought to be a long bone fragment. All of the fragments are so small that any species or element identification were impossible. This data is presented in Table 3.

Molluscs

Molluscan data is presented in Table 4.

The most prolific snail (with regards to quantities) was *Cecilioides acicula* ($n=190$). However, this is often considered to be a modern contaminant as it can burrow up to 2m. Its presence within the Little Hotlby assemblage may be discounted.

Trench 1

Three contexts were considered stratigraphically relevant to each other; 6099 overlaid 6127 which in turn overlaid 6159. These three contexts yielded *Trochulus hispidus*, *Vallonia* sp. and *Pupilla muscorum*, with *Trochulus hispidus* being the most prolific ($n=143$).

Trench 2

Only the sample from 6128 AB yielded multiple species (six discounting *Cecilioides acicula*). *Cepaea hortensis* was present only in this trench. *Trochulus hispidus* was visible but in far lesser quantities than in Trench 1 (Trench 1 $n=151$, Trench 2 $n= 2$).

Palaeobotanical and charcoal remains

Hazelnut shell fragments were present in five of the flots. The majority yielded a single fragment apiece, with the flot from sample 6159 AA yielding four fragments. Charred plant remains were sparse with only three flots (6127 AC, 6127 AE and 6127 AG) yielding any plant remains: a charred grass seed (*Poaceae*) from the AC sample, and a possible wheat (*Triticum* sp.) grain along with a fruit (*cf.* berry) from the AE sample with a single tuber of false oat-grass (*Arrhenatherum elatius* ssp. *bulbosum*) from the AG sample. However, these were very rooty flots and contained earthworm capsules along with shells which may indicate bioturbation. There were no plant remains visible in the samples from Trench 2. This data is presented in Table 2, along with the flot data

The charcoal presented was small, which made identification difficult, and in such little quantity that these were likely to be present through aeolian deposition.

4.0 Discussion

Animal bone

The dearth of animal bone prevented further discussion.

Molluscs

All the mollusca presented were species that had a preferred ecological niche of open country. The superficial geology is glacial sand and gravel and is suited to the preservation of molluscan shell. However, there is a paucity of archaeological mollusc work throughout the north of England (Kenward 2009, 225) that any data would add to a corpus that should be initiated.

Palaeobotanical and charcoal remains

Hazelnut shell fragments were the most prolific plant remains throughout the samples from Field 133. However, they were in such small quantities, as was the plant remains and the charcoal, that there was limited scope for discussion.

5.0 Statement of potential and recommendations

Some of the palaeoenvironmental remains would be suitable for radiocarbon AMS dating. The most suitable would be the hazelnut shell from 6159 AA and 6127 AE.

Hall and Huntley (2007, 26) place an importance of the Mesolithic in northern England and put forward for newly discovered sites that they 'must be subject to careful sampling'. Therefore, if any future work was to occur in the vicinity of this site this should be borne. This is pertinent due to the potential presence of structural elements, which limited any comparable sites (NAA 2014, 2).

No further work is recommended on this assemblage and, once radiocarbon dates have been achieved, all the palaeoenvironmental remains may be discarded. This would also include the fine fraction residues and any other arisings from the samples.

6.0 References

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Table 1. Sample data

C	SC	TQ	T	CP	TP	MP	PW	PV	CS	TS	Components (sorting)	SW	SV	>SW	>SV
6099	AA	4	1	Yellowish brown	Loose	Sandy silt	60	36	Yellowish grey	Loose	Stone>1cm 20%: stone<1cm 40%: sand 40%	11435	6800	4257	1900
6127	AA	4	1	Yellowish brown	Loose	Sandy silt	58	38	Pale yellowish brown	Loose	Sand 80%: stone>1cm 10%: stone<1cm 10%	16731	9500	3985	1300
6127	AA	4	1	Yellowish brown	Loose	Sandy silt	58	38	Pale yellowish brown	Loose	Stone>4mm 15%: stone<4mm 10%: sand 75%	22088	15800	2896	2000
6127	AB	1	1	Yellowish brown	Loose	Silty sand	9	8	Pale yellowish brown	Loose	Sand 55%: stone<4mm 15%: stone>4mm 30%	2907	1600	1270	400
6127	AC	4	1	Yellowish brown	Loose	Sandy silt	61	39	Pale reddish brown	Loose	Sand 85%: stone<4mm 5%: stone>4mm 10%	21807	13500	4169	2500
6127	AD	4	1	Yellowish brown	Loose	Silty sand	49	39	Pale yellowish brown	Loose	Stone>4mm 15%: stone<4mm 10%: sand 75%	30678	22600	3358	2100
6127	AE	4	1	Reddish brown	Loose	Silty sand	60	36	Pale yellowish brown	Loose	Sand 40%: stone<4mm 50%: stone>4mm 10%	16696	10400	2707	1700
6127	AF	4	1	Yellowish brown	Loose	Sandy silt	60	39	Pale reddish brown	Loose	Sand 40%: stone<4mm 40%: stone>4mm 20%	23233	15000	6353	4300
6127	AG	4	1	Yellowish brown	Loose	Silty sand	43	27	Pale yellowish brown	Loose	Sand 60%: stone<4mm 30%: stone>4mm 10%	12277	7800	2349	1000
6127	AH	4	1	Reddish brown	Loose	Sandy silt	49	36	Pale yellowish brown	Loose	Sand90%: stone<4mm 5%: stone>4mm 5%	14368	8700	3125	1800
6127	AI	1	1	Yellowish brown	Loose	Silty sand	13	9	Yellowish brown	Loose	Sand 70%: stone<4mm 20%: stone>4mm 10%	5464	3400	1594	900
6130	AA	1	1	Yellowish brown	Loose	Silty sand	3	4	Pale yellowish brown	Loose	Sand 60%: stone<4mm 30%: stone>4mm 10%	913	500	259	200
6157	AA	1	1	Brownish yellow	Friable	Sandy silt	1	1	Pale reddish brown	Loose	Sand 60%: stone<4mm 35%: stone>4mm 5%	176	100	71	50
6159	AA	4	1	Yellowish brown	Loose	Silty sand	60	38	Pale yellowish brown	Loose	Sand 60%: stone<4mm 10%: stone>4mm 30%	18747	11200	3339	2200
6164	AA	2	1	Yellowish brown	Loose	Sandy silt	21	18	Pale yellowish brown	Loose	Sand 60%: stone<4mm 15%: stone>4mm 25%	9822	6600	1446	1000

C	SC	TQ	T	CP	TP	MP	PW	PV	CS	TS	Components (sorting)	SW	SV	>SW	>SV
6128	AA	1	2	Dark reddish brown	Loose	Sand	1.3	2	Pale yellowish brown	Loose	Stone<1cm 40%: sand 60%	666	400	327	200
6128	AB	4	2	Yellowish brown	Loose	Silty sand	52	37	Pale yellowish brown	Loose	Sand 70%: stone<4mm 5%: stone>4mm 25%	19181	11900	7993	4200

Key: C= context, SC= sample code, TQ= quantity of tubs in sample, TQP= tub quantity processed, CP= colour of pre-processed sediment, TP= texture of pre-processed sediment, MP= matrix of pre-processed sediment, PW= weight (kg) of processed sediment, PV= volume (l) of processed sediment, CS= colour of dried residues, TS= texture of dried residues, SW= weight(g) of dried residues, SV= volume (ml) of dried residues, >SW= weight (g) of >4mm dried residues, >SV= volume (ml) of dried residues

Table 2: Flot and palaeobotanical data

C	SC	T	Context description	R?	Wt flot (g)	Identifiable plant remains (quantity)	AMS?	Charcoal id	Components	Shell	EWC	BC
6099	AA	1	Sand to north of evaluation trench 6097 (cleaning layer)	yes	2.01	Hazelnut shell (1)	-	-	Very fine rootlets 50%: plant detritus 50%	-	-	-
6127	AA	1	Light yellow sandy spread	yes	2.14	Hazelnut shell (1)	-	-	Sand 20%: very fine rootlets 80%	10	1	-
6127	AB	1	Light yellow sandy spread	yes	0.66	-	-	-	Very fine rootlets 50%: sand 50%	-	2	-
6127	AC	1	Light yellow sandy spread	yes	2.32	<i>cf. Poceaea</i> (1)	-	2	Sand 20%: very fine rootlets 80%	20	3	-
6127	AD	1	Light yellow sandy spread	yes	18.7	Hazelnut shell (2)	-	5	Very fine rootlets 5%: sand 95%	50	2	1
6127	AE	1	Light yellow sandy spread	yes	5.02	Hazelnut shell (1), <i>cf.</i> Wheat grain (1), <i>cf.</i> fruit stone (1)	Yes	4	Sand 20%: very fine rootlets 80%	10	-	-
6127	AF	1	Light yellow sandy spread	yes	2.72	-	-	-	Sand 10%: very fine rootlets 90%	-	2	-
6127	AG	1	Light yellow sandy spread	yes	1.23	False oat-grass tuber (1)	-	1	Sand 10%: very fine rootlets 90%	-	-	-
6127	AH	1	Light yellow sandy spread	yes	40.42	-	-	1	Very fine rootlets 5%: sand 95%	3	2	-
6127	AI	1	Light yellow sandy spread	yes	0.69	-	-	-	Sand 20%: very fine rootlets 80%	50	2	-
6157	AA	1	Fill of Stakehole 6137 to 6156	yes	0.11	-	-	-	Very fine rootlets 100%	-	-	-
6159	AA	1	Sandy area (west of 6158, below 6127)	yes	2.34	Hazelnut shell (4)	yes	3	Very fine rootlets 10%: sand 90%	15	3	-
6164	AA	1	Darker, grittier sand below 6127	yes	1.71	-	-	-	Sand 20%: very fine rootlets 80%	15	-	-
6128	AA	2	Fill of Pit 6135	yes	0.24	-	-	-	Very fine rootlets 100%	-	-	-
6128	AB	2	Fill of Pit 6135	yes	40.59	-	-	1	Very fine rootlets 5%: shell 15%: sand 80%	200	2	-

Key: C= context, SC= sample code, T= trench R?= any remaining residues?, AMS?= any suitable material for radiocarbon AMS dating?, EWC= earthworm capsules, BC= beetle components

Table 3: Animal bone data

C	SC	T	RF	W (g)	Comments
6098	-	1	810	0.16	Calcined tooth fragment
6127	-	1	4834	0.38	Calcined indet. fragment
6127	AA	1	-	0.38	2 x calcined indet. fragments
6164	-	1	4214	0.48	Calcined long bone fragment

Key: C= context, SC= sample code, T= trench, RF= recorded find number, W(g)= weight (g)

Table 4: Molluscan data

C	SC	T	Wt (g)	<i>Trochulus hispidus</i>	<i>Cepaea hortensis</i>	<i>Vallonia</i> sp.	<i>Oxychilus allarius</i>	<i>Pupilla muscorum</i>	<i>Vertigo pygmaea</i>	<i>Cochlicopa</i> cf. <i>lubrica</i>	<i>Cecilioides acicula</i>	Comments
6099	AA	1	1				1					
6127	AA	1	0.04	7		1						
6127	AC	1	0.22	14		1						
6127	AD	1	2.17	63		17		7			31	
6127	AE	1	<1			5		1			4	<i>Pupilla muscorum</i> also included 1 juvenile
6127	AH	1	<1	2								
6127	AI	1	1.25	42		11		2			4	
6127		1	0.66	14								all small, 7x7mm was largest, other identifier on bag I3
6159	AA	1	<0.01	1		2		2			12	
6164		1	2.33	1			2					numerous fragments, also identifier H1 on bag
6164		1	<1	1								identifier F1 on bag
6164		1	0.16	3								identifier I1 on bag
6164		1	0.2	3		3				1	8	
Totals Trench 1				151		40	3	12		1	59	
6128	AA	2	7.4	1	5							numerous fragments
6128	AB	2	75	1	66	97	2	17	3		103	<i>Pupilla muscorum</i> also included 1 juvenile
6128		2	28.83		21							numerous fragments
6132		2	2.88		3							
6161		2	4.93		3							numerous fragments
Totals Trench 2				2	98	97	2	17	3		103	
Overall Totals				304	98	176	5	29	3	1	190	=426

Key: C=context, SC= sample code