Assessment of the bulk environmental samples from Connaught Tunnel: Crossrail Late East (XSY11)

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ENV/BOT/ASS/06/15

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March 2015

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1.1 Site archive and assessment: finds and environmental

Category	Description	Weight
Bulk Soil Samples	Wet-sieved residues from 10 samples, stored wet. Unprocessed soil retained from 9 samples.	1 box of flots 9 bags (total 122 litres)

Table 1 Finds and environmental archive general summary

1.2 The plant remains etc

Introduction/methodology
Fifteen bulk samples were taken from a sequence of alluvial sediments in Trench 3, alongside geoarchaeological monolith tins. These were taken to retrieve plant macrofossils and invertebrates as well as suitable organic remains for radiocarbon dating. Sub-samples of 10 to 20 litres were processed by wet-sieving over a 0.25mm mesh, and the wet-sieved residues stored in water. No residue was obtained from samples {50} to {53}, or sample {55}. Unfortunately a further 13 samples ({8} to {21}), from Trench 1, were mislaid so have not been processed or assessed.

Sub-samples of each residue were scanned briefly, using a low-powered binocular microscope, and the abundance, diversity and general nature of plant macrofossils and any faunal remains were recorded on the MoLAS Oracle database. The botanical information is summarised in Table 1.

Charred remains
Very occasional charcoal fragments were present in the residue from sample [27]{56}, but no charred remains were seen in any other samples.

Waterlogged and mineralised remains
All the samples contained wood and roots/rootlets, usually in very large quantities, and small amounts of moss were seen in samples from [28] and [27], and also [26]{54}. Seeds were very scarce in most samples, with fewer than five taxa being noted in most of the assessed samples and none in sample [29]{65}. Only in samples [28]{58} and [26]{54} were between five and ten taxa seen.

Samples [30]{66}, {67}, {68} (woody peat):
These samples were rather more silty than others, with a smaller proportion of wood and root material. Seeds of alder (*Alnus glutinosa*) were seen in two of the samples, and also occasional alder catkins in {68}. Blackberry (*Rubus* cf. *fruticosus*) and sedge *Carex* sp.) seeds were seen in {67} and {68}, and also water-dropwort (*Oenanthe* sp.) in {68}.

Samples [29]{63}, {64}, {65} (silty clay)
The wet sieved residues contained large amounts of roots and woody material but very few seeds. Very occasional blackberry seeds were seen in {63} and {64} and also alder in {64}. No seeds were seen in {65}.

Sample [28]{58} (clayey peat)
A slightly larger, though still very sparse, assemblage of seeds was seen in this sample, and included a few seeds of gipsy wort (*Lycopus europeus*) and a possible fragment of a hazel

(*Corylus avellana*) nut as well as alder, blackberry and sedge. Large quantities of wood fragments made up the bulk of the residue, along with roots and a little moss.

Samples [27]{56}, {57} (peat)
These samples were similar to {58}, though fewer plant taxa were noted. Both samples produced alder seeds, with a few from sedge and buttercup (Ranunculus acris.bulbosus/repens) in {56}, and occasional blackberry, elder (*Sambucus nigra*) and possible hazelnut in {57}.

Samples [26] {50} to {55}
No residue was obtained after wet sieving samples {50} to {53} and {55}, but sample {54} produced the largest assemblage from this site, though still small. The majority of taxa came from plants of wetland habitats, though no remains of alder were seen here. A single sloe (*Prunus spinosa*) stone was also seen.

Faunal remains
Invertebrate remains in the samples were limited to occasional fragments of beetle exoskeleton observed in samples [30]{68} and [27]{56}, a few cladoceran ephippia in {38} and fragments thought to come from caddis fly larval case in {56}.

Artefactual remains
No artefacts were found in the samples.

2 Potential of the data

2.1 General discussion of potential

Preservation of plant remains, other than wood and roots, was reasonable in the wet-sieved sample residues, but these remains were extremely sparsely distributed and very few were seen in the sub-samples assessed. It is likely, however, that analysis of larger quantities of the residues would produce more diverse assemblages which could help in the reconstruction of the changing environment of the site.

3 Significance of the data

The waterlogged plant and insect assemblages have limited local significance in relation to the understanding of environmental changes during the period under study.

4 Publication project: aims and objectives

4.1 Revised research aims

RRA1: What can the waterlogged plant and insect remains tell us about environmental changes on the site?

4.2 Botanical method statement

It is recommended that samples [30]{68}, [28]{58} and [27]{56} or {57}should be subjected to full botanical analysis in order to answer the research aim listed above. Insect remains should be studied from {68} and {56}.

Methodology will follow standard procedures in use by MOLA, with waterlogged remains scanned and estimates made of their abundance.

Task list

Scanning & id of plant remains from 3 large wet-sieved residues:	2.0 days
Data entry, production & editing of tables:	0.5 days
Analysis of results & research:	0.5 days
Production of archive report:	2.0 days
Total time required:	**5.0 days**

Insect remains

Costings for the analysis should be obtained from an insect specialist. In addition, the following work will need to be carried out by MOLA staff:

Retrieval of samples, processing, packing and dispatch:	1.0 day
Liaison between botanist and insect specialist:	0.25 day

Table 1: Summary of botanical assessment data

A: abundance, D: diversity (1 = occasional, 2 = moderate, 3 = abundant)

					chd wood	wlg seeds	wlg misc	
context	sample	proc vol(l)	ws res vol(ml)	Proc	A D	A D	A D	Comments
26	54	10	100	WL		2 2	3 1	MOSTLY WOOD. SEEDS VERY SPARSE
27	56	10	1000	WL	1 1	1 1	3 1	MOSTLY WOOD, FEW SEEDS
	57	10	1000	WL		1 1	3 2	WOOD, ROOT/LETS,FEW SEEDS
28	58	10	1000	WL		1 1	3 2	MUCH WOOD (SEP SAMPLE), FEW SEEDS
29	63	10	400	WL		1 1	3 1	MOSTLY ROOTS
	64	20	700	WL		1 1	3 1	ROOTS, LUMPS OF CLAY
	65	10	700	WL		1 1	3 1	WOOD/ROOT. NO SEEDS SEEN
30	66	20	1000	WL		1 1	3 1	WOOD & ROOT/LETS. FEW ALDER SEEDS
	67	10	1000	WL		1 1	3 1	WOOD, ROOTS, FEW SEEDS
	68	10	1000	WL		2 1	2 2	SILTY, LITTLE WOOD. SOME SEEDS, ALDER CK