Holocene sea level change and archaeology in the inner Thames estuary, London, UK

Elizabeth Jane Sidell

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Volume II. Appendices

E.J.Sidell, B.A., M.Sc.

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Appendix 1. Wennington Marsh, A13 relief road, London Borough of Havering (TQ 5425 8025)

Troels-Smith Classification Sheet																													
Site Code:		WE-WM94		**Address:**		A13 relief road, Wennington																						**OD top:**	- 0.97m
				Described by:		ejs											**Date:**		23rd March 1997									**OD base:**	- 2.68m
Unit	**Tin**	**Meas**	**Physical Properties**							*Turfa*			*Detritus*			*Limus*			*Argilla*		*Grana*						**Accessory**	**Comment**
			NI	ST	EL	SI	COLOUR	LI	Sh	Tb	TI	Th	Dg	Dh	Dl	Ld	Lc	Lf	As	Ag	Ga	Gs	Gg	GG		**elements**	
1	3	0-13	2	0	0	3	10yr3/1vdkg	0	+									+	3	1	+						
2	3	13-19	3	0	1	3	10yr2/2vdkb	1	2			+ *Phrag*			+				2		+						
3	3	19-22	3	0	2	2	10yr 2/1 bl	0				1^2 *Phrag*			3						+						
4	3	22-33	3	0	1	2	10yr 2/1 bl	0				3^2 *Phrag*			1						+						
5	3	33-41	4	0	1	2	10yr 2/1 bl	0				+			4						+						
6	2+1	41-88	4	0	1	2	10yr 2/1/bl	0				1^3			3						+						
7	1	88-102	4	0	1	3	10yr 2/1/bl	0	1			3^3															
8	1	102-108	4	0	1	3	10yr 2/1/bl	0	1			1^3			1					1							
9	1	108-136	4	0	1	3	10yr 2/1/bl	0	2			2^3								+							
10	4	136-140	3	0	0	3	10yr2/2vdbr	0	2										1	1							
11	4	140-171	2	0	0	3	10yr3/2vdgb	X											3	1	+					mollusc	

Table 36. Wennington Marsh sedimentary log

1.1 Lithology

The monolith tins were cleaned and described according to methods outlined in Chapter 3. A brief summary of the sedimentary grouping is given below.

Group 1, (unit 1, -2.68-2.55m OD)

This unit is a clay-silt with some sand and a trace of undifferentiated *substantia humosa.* Iron staining (*limus ferrugineous)* is also noted and may indicate sub-aerial weathering. Contact to the next unit is gradual.

Group 2, (unit 2, -2.55-2.49m OD)

This unit is still clay-rich but the proportion of *substantia humosa* has risen to approximately 50%. A low proportion of sand was noted as was (possible *Phragmites) turfa herbacea* and detrital woody fragments. This would appear to be a transitional unit between the basal minerogenic and subsequent organic unit, contact to this latter being gradual.

Group 3, (units 3-6, -2.49 – 1.80m OD)

These units form the first half of the major organic unit recorded on this site. It is remarkably well preserved, indicated by the absence of *substantia humosa* and dominated by, in the lower units, *turfa herbacea* and detrital woody fragments. The upper part of this group is marked by a change to greater proportions of wood in conjunction with undifferentiated *turfa herbacea.* The same excellent preservation is demonstrated. Some sand was present throughout the group. Contact to unit 7 was gradual.

Group 4, (units 7-9, -1.80-1.32m OD)

This group consists of more humified organic material with *substantia humosa* recorded in all units, although there is still some identifiable material; a little wood and more *turfa.* As the group develops, a mineral content can be observed. Contact to the subsequent group was gradual.

Group 5, (unit 10, -1.32-1.28m OD)

This unit is transitional between the humified organic units of group 4 and the mineral unit sealing the sampled profile. It is recorded as half *substantia humosa* and half mineral sediment. It also grades into the subsequent deposit.

Group 6, (unit 11, -1.28- -0.97m OD)

The final unit sampled on this site is a grey brown (oxidizing after exposure) silt clay, with a low sand content and some fragments of mollusc shell were identified as components of the unit. Sampled ceased at this point owing to contamination of overburden above.

Magnetic susceptibility (low frequency)

Samples for magnetic susceptibility were split off from the monolith tins and processed according to methods in Chapter 3.

Sample number	m. OD	Pot Number	Pot weight (g)	Pot and sed weight (g)	Sediment weight (g)	1st blank	Magnetic sus.	2nd blank	Result	Value
1	-2.57	209	4.05	8.07	4.02	-0.1	2.9	0.0	2.95	7.34
2	-2.55	678	4.20	8.55	4.35	1.6	4.8	1.7	3.15	7.24
3	-2.53	127	4.26	6.12	1.86	0.2	1.2	0.5	0.85	4.57
4	-2.51	623	4.29	7.50	3.21	0.9	3.0	1.0	2.05	6.39
5	-2.49	665	4.26	6.64	2.38	0.5	2.0	0.6	1.45	6.09
6	-2.47	95	4.23	5.25	1.02	-0.1	0.0	0.1	0.00	0.00
7	-2.45	98	4.28	5.53	1.25	0.0	0.3	0.3	0.15	1.20
8	-2.43	111	4.26	5.74	1.48	0.9	1.2	1.1	0.20	1.35
9	-2 41	44	4.24	8.84	4.60	1.1	6.2	1.2	5.05	10.98
10	-2.39	624	4.36	5.84	1.48	0.6	1.1	0.6	0.50	3.38
11	-2.37	368	4.07	5.43	1.36	0.0	0.4	0.3	0.25	1.84
12	-2.35	689	4.21	5.71	1.50	1.7	2.1	1.9	0.30	2.00
13	-2.33	353	4.22	5.44	1.22	0.2	0.2	0.3	-0.05	-0.41
14	-2.31	357	4.23	5.45	1.22	0.3	0.3	0.5	-0.10	-0.82
15	-2.29	691	4.24	5.93	1.69	1.9	1.9	1.8	0.05	0.30
16	-2.27	370	4.25	5.49	1.24	0.1	0.0	0.3	-0.2	-1.61
17	-2.25	116	4.21	5.53	1.32	0.5	0.5	0.6	-0.05	-0.38
18	-2.23	118	4.26	5.55	1.29	-0.1	-0.1	0.0	-0.05	-0.39
19	-2.21	225	4.00	5.00	1.00	0.0	0.0	0.3	-0.15	-1.50
20	-2.19	60	4.27	5.63	1.36	0.3	0.5	0.5	0.10	0.74
21	-2.17	80	4.23	5.65	1.42	0.5	0.4	0.5	-0.10	-0.70
22	-2.15	627	4.24	5.17	0.93	0.5	0.5	0.9	-0.20	-2.15
23	-2.13	24	4.22	5.03	0.81	1.6	1.5	1.9	-0.25	-3.09
24	-2.11	112	4.28	5.50	1.22	0.2	0.2	0.3	-0.05	-0.41
25	-2.09	610	4.37	5.35	0.98	1.0	1.0	1.4	-0.2	-2.04
26	-2.07	220	4.24	5.53	1.29	0.1	0.2	0.3	0.00	0.00
27	-2.05	53	4.39	5.59	1.20	0.3	0.3	0.4	-0.05	-0.42
28	-2.03	205	4.10	5.21	1.11	1.9	2.0	2.2	-0.05	-0.45
29	-2.01	207	4.26	5.17	0.91	0.2	0.3	0.3	0.05	0.55
30	-1.99	112	4.28	5.18	0.90	0.3	0.5	0.2	0.25	2.78

31	-1.97	200	4.16	5.56	1.40	-0.1	0.1	0.0	0.15	1.07
32	-1.95	710	4.36	5.38	1.02	0.3	0.5	0.5	0.10	0.98
33	-1.93	24	4.23	5.71	1.48	0.4	0.9	0.6	0.40	2.70
34	-1.91	89	4.24	5.83	1.59	0.1	0.5	0.2	0.35	2.20
35	-1.89	626	4.28	5.69	1.41	0.3	0.8	0.4	0.45	3.19
36	-1.87	126	4.00	4.93	0.93	2.2	2.3	2.2	0.10	1.08
37	-1.85	47	4.24	5.81	1.57	0.3	0.5	0.3	0.20	1.27
38	-1.83	73	4.26	5.75	1.49	0.0	0.4	0.1	0.35	2.35
39	-1.81	3	4.05	5.43	1.38	0.0	0.6	0.1	0.55	3.99
40	-1.79	692	4.25	5.70	1.45	0.9	1.3	1.0	0.35	2.41
41	-1.77	702	4.21	5.55	1.34	1.3	1.7	1.5	0.30	2.24
42	-1.75	800	4.28	5.76	1.48	0.6	1.0	0.6	0.40	2.70
43	-1.73	632	4.33	5.72	1.39	0.1	0.4	0.3	0.20	1.44
44	-1.71	117	4.36	5.32	0.96	-0.1	0.1	0.2	0.05	0.52
45	-1.69	685	4.22	5.61	1.39	0.2	0.1	0.3	-0.15	-1.08
46	-1.67	260	4.24	5.69	1.45	0.7	0.8	0.8	0.05	0.34
47	-1.65	96	4.27	5.84	1.57	0.3	0.3	0.4	-0.05	-0.32
48	-1.63	229	4.37	6.61	2.24	0.1	0.2	0.2	0.05	0.22
49	-1.61	635	4.25	5.96	1.71	1.8	2.3	2.0	0.40	2.34
50	-1.59	147	4.25	5.55	1.30	0.4	0.7	0.6	0.20	1.54
51	-1.57	634	4.22	5.41	1.19	0.6	0.8	0.7	0.15	1.26
52	-1.55	235	4.23	5.80	1.57	0.4	0.8	0.6	0.30	1.91
53	-1.53	354	4.27	5.19	0.92	1.0	1.0	1.1	-0.05	-0.54
54	-1.51	114	4.24	5.75	1.51	0.2	0.4	0.4	0.10	0.66
55	-1.49	120	4.26	5.96	1.70	3.0	0.5	0.5	-1.25	-7.35
56	-1.47	696	4.21	5.17	0.96	1.7	1.6	1.7	-0.10	-1.04
57	-1.45	604	4.21	6.05	1.84	1.1	1.3	1.3	0.10	0.54
58	-1.43	354	4.28	5.67	1.39	0.5	1.1	0.7	0.50	3.60
59	-1.41	225	4.21	5.17	0.96	1.5	1.4	1.6	-0.15	-1.56
60	-1.39	726	4.36	6.01	1.65	1.4	1.6	1.6	0.10	0.61
61	-1.37	57	4.28	7.38	3.10	0.3	0.7	0.3	0.40	1.29
62	-1.35	293	4.36	6.36	2.00	0.3	0.6	0.5	0.20	1.00
63	-1.33	215	4.23	7.07	2.84	0.2	0.4	0.2	0.20	0.70
64	-1.31	232	4.26	5.53	1.27	0.0	0.4	0.0	0.40	3.15
65	-1.29	212	4.02	8.33	4.31	-0.1	3.8	-0.1	3.90	9.05
66	-1.27	44	4.25	8.85	4.60	1.1	6.2	1.2	5.05	10.98

Table 37. Wennington Marsh magnetic susceptibility results

Percentage organic carbon

The magnetic susceptibility samples were subsequently used to measure the organic carbon content and processed according to the methods in Chapter 3.

Sample number	m. OD	Crucible number	Crucible weight (g)	Before firing (g)	After firing (g)	% organic carbon
1	-2.57	19	5.36	9.38	8.59	19.65%
2	-2.55	38H	5.88	10.22	9.31	20.97%
3	-2.53	124	5.42	7.28	6.44	45.16%
4	-2.51	16L	5.95	9.14	7.76	43.26%
5	-2.49	34	5.92	8.29	6.98	55.27%
6	-2.47	57	5.54	6.56	5.73	81.37%
7	-2.45	66	5.43	6.68	5.66	81.60%
8	-2.43	123	5.48	6.96	5.66	87.84%
9	-2.41	39	5.62	10.22	9.79	9.35%
10	-2.39	X10	6.03	7.50	6.38	76.19%
11	-2.37	37	5.49	6.85	5.76	80.15%
12	-2.35	20C	5.82	7.34	6.04	85.53%
13	-2.33	63	5.39	6.61	5.54	87.70%
14	-2.31	27	5.51	6.73	5.76	79.51%
15	-2.29	37H	5.92	7.60	6.29	77.98%
16	-2.27	10	5.34	6.58	5.47	89.52%
17	-2.25	54	5.44	6.76	5.62	86.36%
18	-2.23	62	5.53	6.82	5.71	86.05%
19	-2.21	33	5.21	6.21	5.35	86.00%
20	-2.19	48	5.48	6.84	5.71	83.09%
21	-2.17	6	5.56	6.98	5.75	86.62%
22	-2.15	18	4.95	5.87	5.11	82.61%
23	-2.13	83	5.09	5.89	5.21	85.00%
24	-2.11	58	5.39	6.61	5.65	78.69%
25	-2.09	43H	5.65	6.62	5.80	84.54%
26	-2.07	57	4.87	6.15	5.12	80.47%
27	-2.05	26	5.32	6.52	5.53	82.50%
28	-2.03	45L	6.19	7.28	6.38	82.57%
29	-2.01	66	4.86	5.76	5.08	75.56%
30	-1.99	31A	5.71	6.60	5.85	84.27%
31	-1.97	15	5.35	6.75	5.65	78.57%
32	-1.95	86	4.90	5.91	5.22	68.32%
33	-1.93	47	5.57	7.05	5.89	78.38%
34	-1.91	16	5.65	7.24	5.97	79.87%
35	-1.89	82	4.97	6.38	5.25	80.14%
36	-1.87	2D	4.86	5.78	5.06	78.26%
37	-1.85	8	5.19	6.77	5.89	55.70%
38	-1.83	40	5.37	6.86	5.64	81.88%
39	-1.81	25	5.30	6.68	5.60	78.26%
40	-1.79	16A	6.03	7.47	6.38	75.69%
41	-1.77	1	4.89	6.22	5.14	81.20%
42	-1.75	25H	5.65	7.13	5.93	81.08%

43	-1.73	72	5.05	6.43	5.31	81.16%
44	-1.71	115	5.38	6.34	5.57	80.21%
45	-1.69	X14	5.98	7.36	6.32	75.36%
46	-1.67	7D	5.03	6.47	5.27	83.33%
47	-1.65	121	5.60	7.17	5.84	84.71%
48	-1.63	7	5.25	7.49	5.63	83.04%
49	-1.61	X19	6.06	7.77	6.43	78.36%
50	-1.59	30L	5.67	6.96	5.93	79.84%
51	-1.57	110	5.86	7.05	6.06	83.19%
52	-1.55	14	5.34	6.91	5.65	80.25%
53	-1.53	46H	5.64	6.54	5.84	77.78%
54	-1.51	53	5.26	6.77	5.56	80.13%
55	-1.49	61	5.59	7.29	5.89	82.35%
56	-1.47	X29	6.21	7.15	6.36	84.04%
57	-1.45	14H	5.66	7.49	5.95	84.15%
58	-1.43	72	5.17	6.56	5.40	83.45%
59	-1.41	2L	5.89	6.92	6.07	82.52%
60	-1.39	15H	5.57	7.21	5.85	82.93%
61	-1.37	74	5.64	8.74	6.27	79.68%
62	-1.35	29L	5.71	7.70	6.09	80.90%
63	-1.33	46	5.52	8.36	6.17	77.11%
64	-1.31	75	5.34	8.81	6.08	78.67%
65	-1.29	44	5.36	9.67	8.44	28.54%
66	-1.27	39	5.62	10.22	9.79	9.35%

Table 38. Wennington Marsh percentage organic carbon results

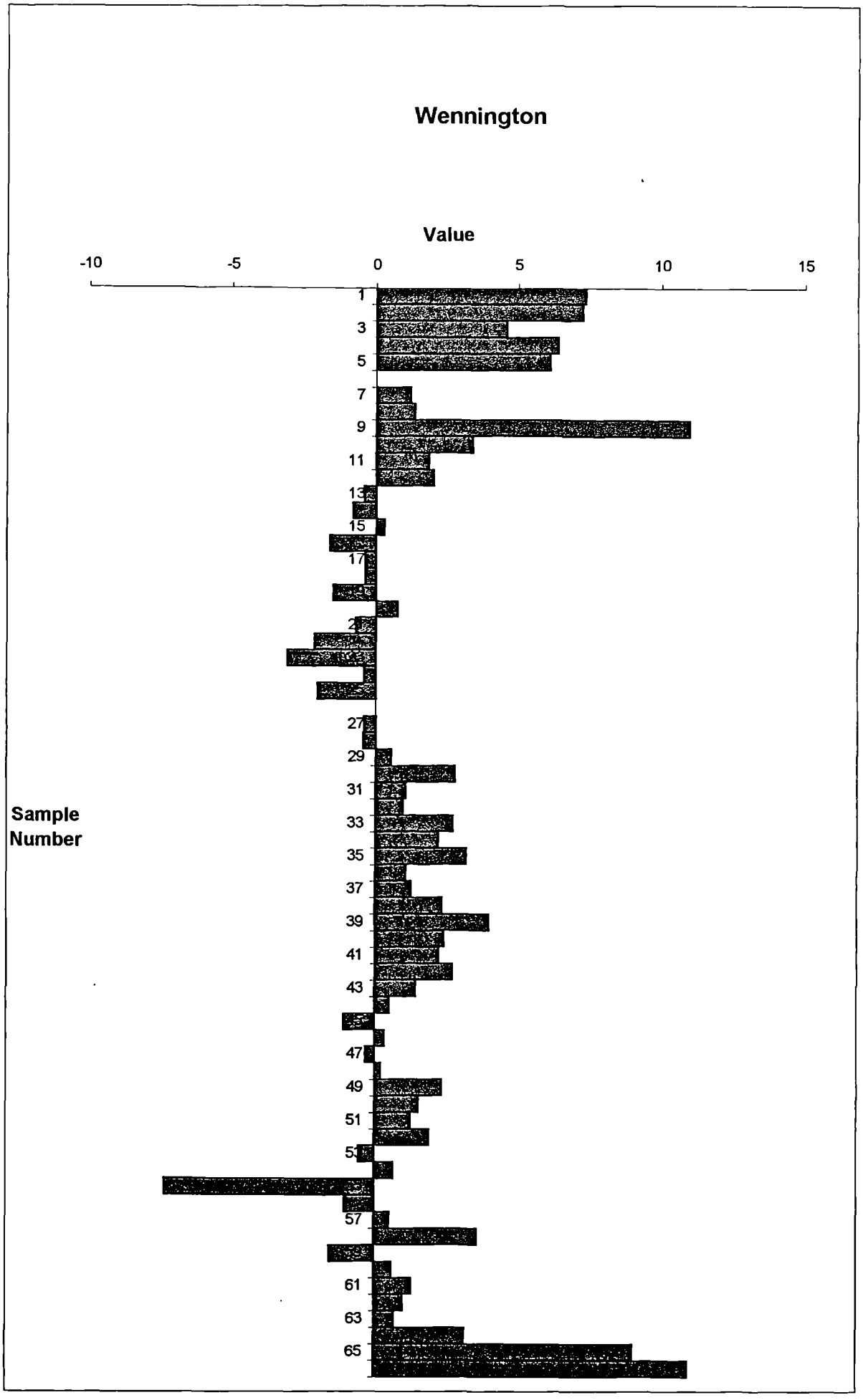

Figure 149. Wennington Marsh magnetic susceptibility graph

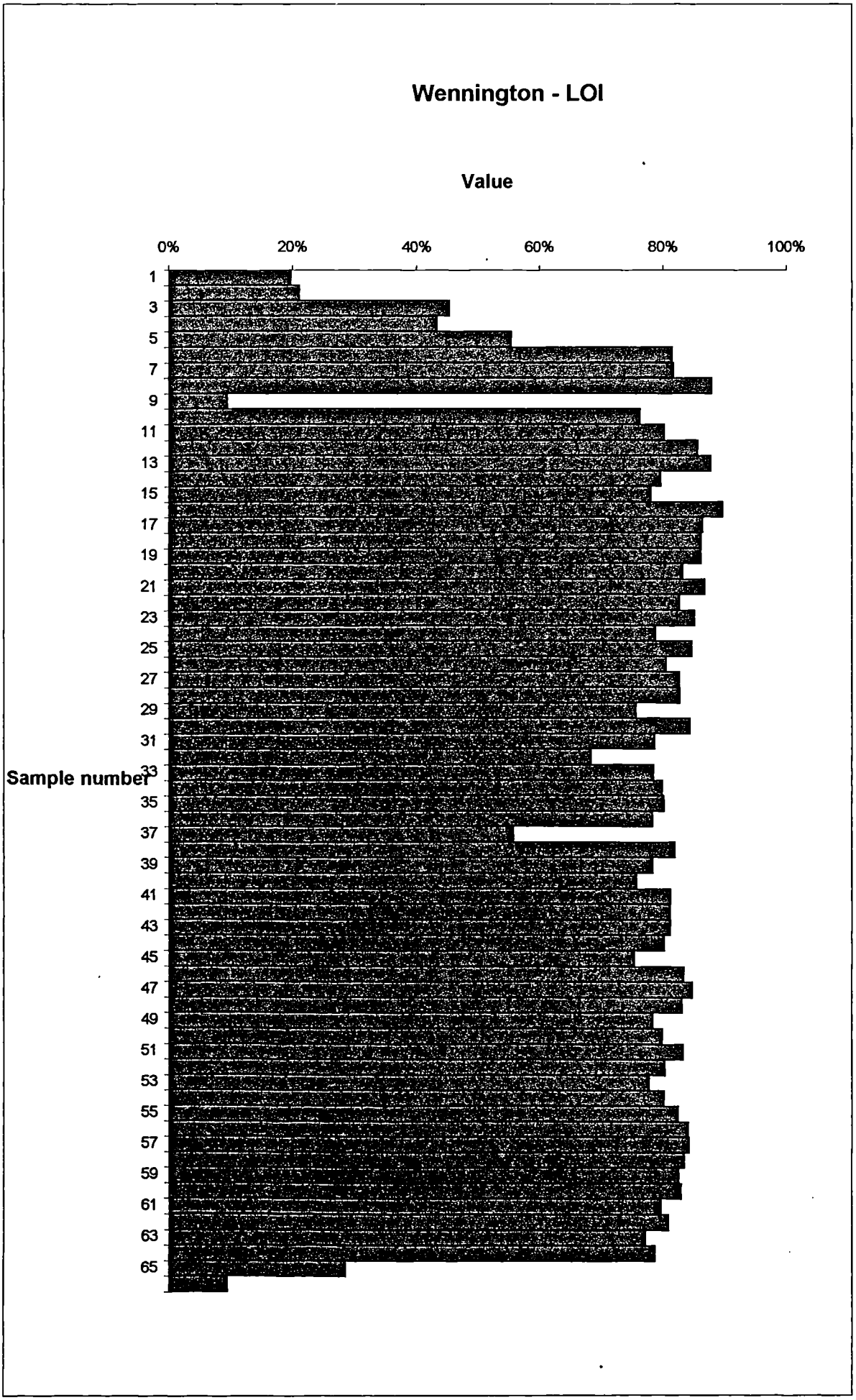

Figure 150. Wennington Marsh percentage organic carbon graph

1.2 Chronology

Radiocarbon

Two samples were submitted to Beta Analytic Inc., Miami for radiocarbon assay. The samples were cut from the monolith tins towards the base and top of the major organic unit (i.e. where the deposit would yield sufficient material to date).

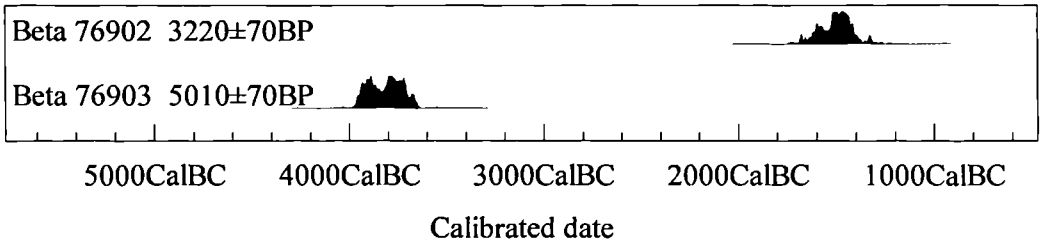

Figure 151. Wennington Marsh radiocarbon measurements

Dendrochronology

Three samples were collected from oak stumps for dendrochronological measurement; although only one of these dated, this is (to date) the only measurement achieved from prehistoric timber in the London region. The sample contained 124 rings, including 13 sapwood, but no bark edge and the sequence cross-matched between 2262-2139 BC. Ian Tyers (Department of Archaeology, University of Sheffield) who obtained the measurement is of the opinion that this does not give a felling/dying date as he estimates that several sapwood rings are missing. Predictions for sapwood counts are that 'normally' sapwood will account for between 10 and 55 rings of an oak tree (Hillam et al. 1987), potentially putting the death of this tree as late as 2097 BC. As yet, it is not possible to date yew trees using the dendrochronology method; it is hoped that future research and the construction of a chronology will resolve this. Unfortunately, it was not possible to record the altitude at which this tree was found as the road scheme contractors had lifted it from the trench. It was associated with the yew trees, which appear, by examination of the sections and plant macrofossil assemblages (see below) to be concentrated at *c.* 2.0m OD.

Sample number	Sample code	OD height	Material	Tendency	Tendency code (Shennan 1994)	Stratigraphic context	Radiocarbon years BP	$\delta^{13}C$ (‰)	Calendar years BP (2σ)	Calendar years BC (2 σ)
Beta 76902	WEN1	-1.38-1.28m	Compact very dark brown humified peat with leaf, moss and stem fragments, bark, roots, much wood and organic material. Macro-fossil species include *Ranunculus* subgen. *Batrachium*, *Viola* (violet), *Carex*, Gramineae (grass), *Eupatorium cannabinum* (hemp agrimony), *Juncus*, *Typha* and Characeae.	Positive	1	Contact at top of peat unit to overlying mineral sediment. Transgressive contact.	3220 ± 70	-25.0 ‰*	3630-3270	1680-1320
Beta 76903	WEN2	-2.55-2.48m	Degraded very dark brown peat with much wood and organic material. Macro-fossil species include *Rubus* (berry), Cyperaceae, *Carex*, *Ranunculus* subgen *Batrachium*, *Solanum dulcamera* and Umbellifereae.	Negative	5	Base of peat unit. Regressive contact.	5010 ± 70	-25.0 ‰*	5910-5600	3960-3650

* estimated

Table 39. Wennington Marsh radiocarbon results

1.3 Biostratigraphy

Diatoms

Subsamples were split from the monolith tins for examination of diatoms. Samples were not split at equal distances throughout the sequence but were collected across contacts between organic and minerogenic sediments to examine the nature of aquatic conditions at these transitional periods.

Sample number	OD height	Diatom group	Sedimentary group
1	-2.58m	1	1
2	-2.56m	1	1
3	-2.54m	1	2
4	-2.52m	1	2
5	-2.50m	1	2
6	-1.32m	2	5
7	-1.30m	2	5
8	-1.28m	2	5
9	-1.26m	2	6

Table 40. Wennington Marsh diatom sample details

Diatom group 1 (samples 1-5, -2.58-2.5m OD)

Preservation in these samples was extremely poor with only two taxa recovered; *Nitzschia navicularis* and *Pseudopodosira westii*. Although such poor assemblages cannot be relied upon, it is notable that these are both brackish marine species.

Diatom group 2 (samples 6-9, -1.32-1.26m OD)

Preservation was much better in these samples with full counts obtained from all but the uppermost sample. There is reasonably consistency between the assemblages, which are dominated by brackish and marine species such as *Nitzschia navicularis, Cyclotella striata, Cymatosira belgica* and *Pseudopodosira westii* with some evidence for a slight freshening up the sequence.

WENNINGTON MARSH DIATOMS									
Sample number	1	2	3	4	5	6	7	8	9
Group	1	1	1	1	1	2	2	2	2
Traverses	3	4	3	3	3	24	27	40	27
OD Height (m)	-2.58	-2.56	-2.54	-2.52	-2.50	-1.32	-1.30	-1.28	-1.26
Achnanthes sp.						2			
Actinocyclus octonarius?						1			
Actinoptychus senarius							1	1	
Caloneis westii?								2	
Cocconeis scutellum						2	1	4	
Cocconeis sp.						4	3	4	
Coscinodiscus perforatus						1			
Cocconeis stauroneiformis							1		
Coscinodiscus sp.						2	4	2	
Cyclotella antiqua							1		1
Cyclotella meneghiniana						2		4	
Cyclotella sp.						6	1	5	2
Cyclotella striata						52	66	27	3
Cymatosira belgica						26	13	2	
Delphinius surirella						4	4		
Diploneis didyma						3	2	2	
Diploneis interrupta						4			
Diploneis sp.								2	1
Diploneis subadvena						1			
Epithemia adnata							1		
Fragilaria pinnata						4	2		
Gomphonema sp.						1			
Martyana martii						3			
Navicula abrupta						1			
Navicula sp.						4	9	2	
Nitzschia navicularis	4					49	52	82	27
Nitzschia palustris?						1			
Nitzschia punctata?								1	
Nitzschia sp.						1			
Opephora pacifica							4	1	
Opephora sp.						3	3		
Paralia sulcata						11	11	17	4
Pinnularia sp.							4	3	
Podosira stelligera						1	5	1	
Pseudopodosira westii		2			1	3	5	31	9
Rhaphoneis amphiceros						3	8	5	1
Stephanodiscus sp.								1	3
Staurosirella leptosauron?						2			
Thallasionema nitzschioides						1	1	1	
Thallasiosira sp.						3	1		
Triceratum favus						1			
TOTAL	**4**	**2**	**0**	**0**	**1**	**202**	**203**	**198**	**51**

Table 41. Wennington Marsh diatom counts

Pollen

Dr. Rob Scaife undertook a preliminary assessment of pollen samples from the site: these data are reproduced below with his permission.

PAZ 1 (-2.57-1.47m OD)

The lowest zone has been delimited on the basis of a larger number of aquatic and marginal aquatic taxa and their percentages. These include Cyperaceae; *Sagittaria, Typha latifolia, T. angustifolia* type, Hydrocotyle and *Sphagnum*. The zone is dominated by trees (*Quercus, Tilia, Fraxinus* and *Alnus*) and shrubs (*Corylus avellana* type and *Salix*). Apart from the wetland plant type noted, herb taxa are scarce. Spores of *Pteridium aquilinum* (bracken), *Dryopteris* type (fern) and *Polypodium vulgare* (polypody fern) are recorded. Further up the sequence , there is a predominance of woodland elements with *Quercus, Tilia, Alnus* and *Corylus avellana* type. *Taxus* is noted. Small numbers of *Betula, Pinus, Ulmus* and *Salix* continue from the preceding zone. *Hedera helix* is noted at 85cm. Non-arboreal pollen is almost absent. Spores are similar to the preceding zone.

PAZ 3 (-1.47-1.07m OD)

This zone is characterized by a significant expansion of herb types and a corresponding reduction in *Alnus* from the high values of the preceding zones. The dominant and important herb taxa are Poaceae (to 35%), Cyperaceae and Chenopodiaceae (to 9%). There are, however, a diverse range of other herbs present to lesser percentages. Taxa include *Sinapis* type (mustard), *Hornungia* type and Asteraceae type (daisy).

Plant macro-fossils

Dr. Andy Fairbairn undertook a preliminary assessment of plant macrofossil samples from the site: these data are reproduced below with his permission.

Sample 12 (-2.48-2.58m OD)

Degraded peat with much wood. Species identified include *Rubus*, Cyperaceae, *Carex, Ranunculus* subgen *Batrachium, Solanum dulcamera* and Umbellifereae.

Sample 11 (-2.38-2.48m OD)

Degraded peat with much wood. *Typha* was the only identifiable species.

Sample 9 (-2.18-2.28m OD)

Degraded peat with much wood. *Carex, Alnus, Rubus* and *Lemna* (duckweed) were identified.

Sample 7 (-1.88-1.98m OD)

Wood rich peat with many bryophyte remains. Bark, leaf and stem fragments abundant, with woody and herbaceous roots. Seeds included *Taxus, Carex, Alnus, Ilex* (holly), *Viola, Ranunculus* subgen *Batrachium, Solanum dulcamera* and *Betula.* Two species of moss; *Neckera crispa* and *Eurynchium* cf. *striata* were also identified.

Sample 5 (-1.68-78m OD)

Highly degraded peat with very little that was recognisable. Some wood fragments with the occasional *R. fruticosus* (blackberry) seed.

Sample 3 (-1.48-1.58m OD)

Degraded, less compact peat with many woody and bark fragments, slightly fewer moss, leaf and stem fragments. Few seeds present, including *Rubus fruticosus* agg., *Ranunculus* subgen. *Batrachium, Viola* and fungal sclerotia.

Sample 1 (-1.28-1.38m OD)

Compact peat with leaf, moss and stem fragments, bark, root and much wood. Seeds include *Ranunculus* subgen. *Batrachium, Viola, Carex,* Gramineae, *Eupatorium cannabinum, Juncus, Typha* and Characeae.

Trees

A series of tree samples collected from the peat are tabulated below.

Number	Species	Length
Tree 1	*Taxus*	10.1m incomplete
Tree 2	*Taxus*	3.65m incomplete
Tree 3	*Taxus*	5.20m incomplete
Tree 4	*Taxus*	8.16m incomplete
Tree 5	*Taxus*	3.40m incomplete
Tree 6	*Taxus*	2.90m incomplete
Tree 7	*Taxus*	7.71m incomplete
Tree 8	*Taxus*	2.90m incomplete
Tree 9	*Taxus*	1.95m incomplete
Tree 10	*Taxus*	4.25m incomplete
Tree 11	*Taxus*	4.70m incomplete
Tree 12	*Taxus*	6.45m incomplete
Tree 13	*Taxus*	2.70m incomplete
Tree 14	*Taxus*	2.85m incomplete
Tree 15	*Taxus*	No data
Tree 16	*Taxus*	No data
Tree 17	*Quercus*	No data
Tree 18	*Quercus*	No data
Tree 19	*Quercus*	No data

Table 42. Wennington Marsh tree details

Appendix 2. Voyagers Quay, 5B3 Copperfield Road, London Borough of Bexley, SE28 (TQ 4730 8130)

Troels-Smith Classification Sheet																										
Site Code: CPP95/1				**Address:** Voyagers Quay, Bexley																					**OD top:**	-3.72m
				Described by: ejs												**Date:** 25th November 1997									**OD base:**	-6.97m
Unit	**TIn**	**Meas**	**Physical Properties**							*Turfa*			*Detritus*			*Limus*			*Argilla*		*Grana*				**Accessory**	**Comment**
			NI	ST	EL	SI	COLOUR	LI	Sh	Tb	Tl	Th	Dg	Dh	Dl	Ld	Lc	Lf	As	Ag	Ga	Gs	Gg	GG	**elements**	(inc. Structure, Lso)
1	8.5	0-7	3	0	0	3	2.5Y4/3olive br	0													4	+	+			
2	8.5	7-22	3	0	0	3	2.5Y3/3 d.ol br	0											+	1	3	+	+			
3	8.5	22-25	3	0	0	3	2.5Y3/3 d.ol br	0											1	1	2					
4	8.5	25-35	3	0	0	3	2.5Y3.5/1 vdkg	0											1	1	2	+	+	+		
5	8.5	35-46	3	0	0	3	2.5Y3/1v dgre	x											1	1	2	+	+			
6	7.8	0-4.5	4	0	0	3	2.5Y/2.5/1 bla	0	1						+				2	1	+					
7	7.8	4.5-6	3	0	0	3	2.5Y3/2v dgrbr	0	+										3	1						
8	7.8	6-9.5	3	0	0	3	2.5Y3/1 vdk gr	0	+						+				3	1						
9	7.8	9.5-14	3	3	0	3	2.5Y3/2 vdkg b	0	+										2	2						
10	7.8	14-18	3	3	0	3	2.5Y4/2 d gr br	0	+						+				3	1					more wood	
11	7.8	18-27	3	4	0	3	2.5Y3/2 vd gbr	0	+				+						3	1						
12	7.8	27-31	4	2	0	3	2.5Y/2.5/1 bl	0	+						+				3	1						
13	7.8	31-34.5	3	1	0	3	2.5Y3/1.5vg/b	0	+						+				3	1						
14	7.8	34.5-43	4	0	0	3	2.5Y3/2 vdg br	x	+						+				3	1						
15	7.15	0-2	4	0	0	3	10YR3/1vdk gr	2	+										2	2	+					
16	7.15	2-7.5	3	0	0	3	10YR3/1 vdkgr	4	+						+				2	2	+					
17	7.15	7.5-9	4	0	0	3	10YR2/1black	4							4					1						
18	7.15	09-012	3	0	0	3	10YR3/2 vdgbr	0	+										3	1	+					
19	7.15	012-14	3	0	0	3	10YR4/2dkg br	2											3	1	+					
20	7.15	14-18	3	2	0	3	10YR3/2 vdgbr	1	+										2	2						
21	7.15	18-19	3	2	0	3	2.5Y/2.5/1 bl	1	1										2	1	+					
22	7.15	19-19.5	3	0	0	3	10YR3/1vdk gr	1											2	2						

23	7.15	19.5-27	3	3	0	3	10YR3/1 vdkgr	0	+						+				2	2						
24	7.15	27-29	3	1	0	3	10YR3/2 vdgbr	1	1										2	1	+					
25	7.15	29-35	4	2	0	3	10YR2/2 vdkbr	0	1										2	1	+					
26	7.15	35-45	3	2	0	3	10YR2.5/1vdbr	x	+										2	2	+					
27	6.5	0-7	3	0	0	3	2.5Y3/2vdkgbr	0	+						+				2	2	+					
28	6.5	7-9	4	0	0	3	10YR2/1black	0	1						+				2	1	+					
29	6.5	9-27	3	1	0	3	2.5Y3/1vdk gr	0	+										1	3	+					
30	6.5	27-45	4	2	0	3	2.5Y/2.5/1 bla	x	1										2	1						
31	5.5	0-44	3	1	0	3	2.5Y3/2vdkgbr	x	+						+				3	1	+				vivianite	
32	4.55	0-12	3	0	0	3	2.5Y3/1vdk gr	0	+						+				3	1	+					
33	4.55	012-26	3	0	0	3	2.5y3.5/1 (v)dg	0	+			+			1[3]				2	1	+					
34	4.55	26-29.5	3	0	0	3	2.5Y4/2dk grb	0	+			+							3	1	+					
35	4.55	29.5-45.5	3	0	0	3	2.5Y3/2 vdg br	x											2	2	+					
36	3.7	0-28	3	0	0	3	10YR4/4 dk yb	0										+	2	2	+					
37	3.7	28-45	3	0	0	3	10YR4/1.5dg/b	x	+									+	2	2					less iron	

Table 43. Voyagers Quay BH1 sedimentary log

Troels-Smith Classification Sheet																												
Site Code: CPP95/2				Address: Voyagers Quay, Bexley																							OD top:	-3.59m
				Described by: ejs														Date: 28th November 1997									OD base:	-6.97m
Unit	Tin	Meas	Physical Properties							*Turfa*				*Detritus*			*Limus*			*Argilla*		*Grana*				Accessory	Comment
			Ni	ST	EL	Si	COLOUR	Li	Sh	Tb	Tl	Th	Dg	Dh	Di	Ld	Lc	Lf	As	Ag	Ga	Gs	Gg	GG	elements	(Structure, Lso)
1	10.4	0-9	4	0	0	3	10YR2/1 black	x	4						+				+	+	+					
2	10.4	9-10		void			void																			
3	10.4	10-15	4	0	0	3	2.5Y2.5/1black	0							+				3	1						
4	10.4	15-45	3	3	0	3	2.5Y3/2vdk gb	x					1		+				2	1					preserved leaves	
5	9.7	0-13	2	0	0	3	2.5Y3/1.5vdgb	0	+						+				3	1						
6	9.7	13-21	4	1	0	3	2.5Y2.5/1black	0	1										2	1	+					
7	9.7	21-34	4	0	0	3	10YR2/1 black	0	4	?+				+	+											
8	9.7	34-38	4	0	0	3	10YR2/2vdk br	1	1						+				2	1	+					
9	9.7	38-45	4	0	0	3	10YR2/1 black	x	4						+											
10	8.95	0-29	4	0	0	3	10YR2/1 black	4	4			+			+				+	+	+					
11	8.95	29-36	4	0	0	3	10YR2/1 black	4							4											
12	8.95	36-37	4	0	0	3	10YR2/2 vdkbr	3	4						+						+					
13	8.95	37-47	3	1	0	3	2.5Y3/1 vdk gr	x	+						+				3	1	+					
14	8.25	0-26	3	0	0	3	2.5Y3/2vd g br	0	+			+			+				2	2	+					
15	8.25	26-30	4	0	0	3	10YR2/1 black	0	3										1		+					
16	8.25	30-44	4	0	0	3	10YR2/1 black	x	4			+														
17	7.6	0-25	4	0	0	3	10YR2/1 black	0	4			*+Ph*			+				+	+	+					
18	7.6	25-37	4	1	0	3	10YR2/2 vdkbr	1	1						+				2	1	+					
19	7.6	37-39	4	0	0	3	10YR2/1 black	1							4[4]											
20	7.6	39-45	4	1	0	3	10YR2/2vdk br	x	+						+				2	1	+					

Table 44. Voyagers Quay BH2 sedimentary log

2.1 Lithology

The monolith tins were cleaned and described according to methods outlined in Chapter 3. A brief summary of the sedimentary grouping is given below.

BH1

Group 1, unit 1, -6.97-6.90m OD

Sampling ceased when the terrace sands and gravels were encountered. The unit consisted of poorly sorted olive brown (2.5Y 4/3) sand with some granule and pebble sized gravel clasts. No bedding was observed. Contact to the unit above was gradual.

Group 2, unit 2, -6.90-6.75m OD

This unit has a fining up tendency, consisting mainly of a dark olive brown (2.5Y3/3) sand with granule and pebble sized clasts. However, there is a silt component and traces of clay within the sedimentary matrix. No bedding was observed. Contact to the unit above was gradual.

Group 3, units 3,4,5 -6.75-6.51m OD

The base of this block shows a decrease of the sand content and a concurrent increase in the clay fraction. However, progressing up the sequence there is a re-introduction of granule and pebble sized clasts within the matrix. No bedding was observed. The sequence breaks at this point between U4/100 samples

Group 4, units 6,7,8, -6.24-6.145m OD

These units are dark (2.5Y 3/1, 3/2, 2.5/1 very dark grey to black) minerogenic silt clays, with slight fluctuations in the proportions of clay to silt. A very low proportion of sand is present at the base of this block. Degraded organic material (*substantia humosa*) was observed in addition to detrital fragments of degraded wood (*detritus lignosus*). No structure or bedding was observed within the units. Contact was gradual to the unit above.

Group 5, units 9-14, -6.145-5.80m OD

These units are finely laminated, more markedly at the base, but the strength of the lamination decreases as the sequence accumulates. The deposits are dark silt clays (2.5Y 4/2, 3/2. 3/1.5 2.5/1 dark grey-brown to black) with minor fluctuations in the proportion of grain size across the laminations. Low proportions of *substantia humosa* and *detritus lignosus* are present, with traces of degraded comminuted plant fragments (*detritus granosus*). The sequence breaks at this point between U4/100 samples

Group 6, units 15, 16, -5.60-5.525m OD

This group consists of dark (10YR2.5/2- 3/1 very dark grey/brown) clay silt, with a low sand content and a low *substantia humosa* and *detritus lignosus* content. No bedding or structure was observed. Contact to the overlying unit was sharp.

Group 7, unit 17, -5.525-5.505m OD

This unit consists of a black (10YR2/1) wood fragment. Contact to the overlying unit was sharp.

Group 8, units 18-34, -5.05-4.63m OD

This group consists of dark (black to dark grey-brown) horizontally laminated cross-bedded organic silt clay. Laminations varied in strength as the grain size fluctuated. Organic presence was mainly highly degraded material classed as *substantia humosa*, although some wood fragments (*detritus lignosus*) were present in the upper part of the sequence. Contact to the overlying unit was gradual. (N.B. there are several breaks of sequence between U4/100 samples within this group).

Group 9, units 35-37 – 4.63-3.57m OD

This group sees a swing to inorganic brown (2.5Y3/2, 10YR4/4, 10YR4/1) structureless silt clays. Iron staining was observed at the top of the sequence where a few flecks of organic matter were also noted. The top of this group was sealed by modern overburden.

BH2

Group 1 (unit 1 –6.97-6.88m OD)

This unit, the base of the sequence is the floodplain terrace sand and gravel, stained black by the inclusion of degraded woody fragments. Unfortunately it was extremely loose and the contact to the overlying unit had slipped, leaving a 10mm void.

Group 2 (units 3-6, -6.87-6.06m OD)

This group consists of dark (2.5Y 2.5/1, 3/2, 3/1.5 black to very dark grey brown) structureless fine-grained silty clays. All had a component of *detritus lignosus* and towards the top of this group; small amounts of *substantia humosa* were present. Crushed layered leaves were noted in unit 4. Contact was gradual and horizontal to the unit above.

Group 3 (unit 7, –6.06-5.93m OD)

This unit consists of a band of highly degraded black (10YR2/1) organic matter, which was classified as substantia humosa with traces of *detritus lignosus, detritus herbacea* and possibly *turfa bryophytica.* Contact to the overlying unit was gradual.

Group 4 (unit 8, -5.93-5.89m OD)

This unit is dominantly minerogenic, with a dark brown (10YR 2/2) silt clay and a low proportion of sand. Organic material is present, but on the whole could not be differentiated and was classed as *substantia humosa.* Traces of detrital wood were also present. Contact to the overlying unit was slightly sharper than had been observed previously.

Group 5 (units 9-12, -5.89-5.05m OD)

Although there is a break in sequence between U4/100 tins in this group, the deposits remain consistent and have been grouped together for simplicity. The group is almost wholly organic, with a sequence of highly degraded black (10YR2/1) *substantia humosa,* sealing a block of wood. Traces of detrital wood are present above and below the large fragment of wood. There is a limited mineral component within the matrix. Contact to the overlying unit is sharp and presumed erosional.

Group 6 (units 13-14, -5.05-4.43m OD)

Again, there is a break in sequence, however, the units are consistent and again have been grouped for simplicity. Minerogenic (dark) grey (2.5Y3/1,2) structureless clay silt with a low proportion of sand is present. Traces of *substantia humosa, turfa herbacea* and *detritus lignosus* were noted within the matrix and presumed derived from the underlying unit. Contact to the overlying unit was gradual.

Group 7 (units 15-17, -4.43-3.79m OD)

This group marks a change back to organic accumulation. A break in sequence is present, but consistency suggests units may be grouped for simplicity. Undifferentiated black (10YR2/1) *substantia humosa* predominates with a low mineral content, mainly at the base of the group, although some is also present to the top. Traces of what appear to be *Phragmites* rhizomes were present, as was other, unidentifiable *turfa herbacea* and detrital wood fragments. Contact to the overlying unit was gradual.

Group 8 (unit 18-20, -3.79-59m OD)

This unit is a very dark brown (10YR2/2) weakly laminated silt clay with traces of sand, undifferentiated organic matter and detrital wood fragments and one large wood fragment in the middle of the group.

Magnetic susceptibility (low frequency)

Samples for magnetic susceptibility were split off from the monolith tins and processed according to methods in Chapter 3.

Sample number	m. OD	Pot number	Pot weight (g)	Pot+sed weight (g)	Sediment weight (g)	1st blank	Magnetic sus.	2nd blank	Result	Value
1	-6.96	601	4.22	7.76	3.54	0.9	5.3	1.1	4.30	12.15
2	-6.94	374	4.29	7.44	3.15	0.0	3.8	0.2	3.70	11.75
3	-6.92	295	4.38	8.41	4.03	2.0	5.6	2.2	3.50	8.68
4	-6.90	723	4.08	9.65	5.57	-0.5	8.4	-0.3	8.80	15.80
5	-6.88	644	4.00	8.92	4.92	-0.2	17.4	0.0	17.50	35.57
6	-6.86	236	4.30	8.93	4.63	-0.5	11.4	-0.5	11.90	25.70
7	-6.84	360	4.20	9.00	4.80	1.8	6.3	1.9	4.45	9.27
8	-6.80	375	4.25	8.88	4.63	0.8	5.3	1.1	4.35	9.40
9	-6.78	372	4.03	9.99	5.96	0.0	5.3	0.1	5.25	8.81
10	-6.76	601	4.22	9.74	5.52	0.1	5.4	0.3	5.20	9.42
11	-6.74	731	4.28	9.28	5.00	-0.3	4.2	-0.3	4.50	9.00
12	-6.72	118	4.39	11.20	6.81	0.5	8.6	0.6	8.05	11.82
13	-6.70	103	4.23	11.10	6.87	0.2	7.1	0.3	6.85	9.97
14	-6.68	723	4.27	10.72	6.45	1.5	7.7	1.6	6.15	9.53
15	-6.66	117	4.38	9.61	5.23	-0.1	4.8	0.0	4.85	9.27

16	-6.64	235	4.23	9.31	5.08	1.3	6.0	1.4	4.65	9.15
17	-6.62	293	4.12	11.47	7.35	0.8	8.2	0.9	7.35	10.00
18	-6.60	92	4.25	9.03	4.78	0.8	4.8	0.8	4.00	8.37
19	-6.58	637	4.20	9.46	5.26	0.0	6.0	0.2	5.90	11.22
20	-6.56	653	4.23	10.25	6.02	1.0	6.1	1.3	4.95	8.22
21	-6.54	676	4.29	7.76	3.47	1.1	3.7	1.3	2.50	7.20
22	-6.52	500	4.23	8.67	4.44	0.4	4.2	0.5	3.75	8.45
23	-6.24	286	4.27	11.74	7.47	0.6	7.2	0.8	6.50	8.70
24	-6.20	372	4.24	12.54	8.30	0.0	9.1	-0.2	9.20	11.08
25	-6.18	157	4.29	13.37	9.08	1.3	11.7	1.4	10.35	11.40
26	-6.16	645	4.25	11.20	6.95	1.1	9.8	1.2	8.65	12.45
27	-6.14	660	4.20	11.55	7.35	0.5	7.9	0.6	7.35	10.00
28	-6.12	376	4.24	12.94	8.70	0.0	9.3	1.0	8.80	10.11
29	-6.10	130	4.14	8.54	4.40	0.4	5.3	0.7	4.75	10.80
30	-6.08	53	4.39	8.78	4.39	0.2	6.9	0.3	6.65	15.15
31	-6.06	733	4.06	8.71	4.65	0.5	4.5	0.6	3.95	8.49
32	-6.04	208	4.23	8.96	4.73	0.3	3.5	0.5	3.10	6.55
33	-6.02	665	4.27	6.88	2.61	1.9	3.2	2.1	1.20	4.60
34	-6.00	389	4.29	7.92	3.63	0.5	1.8	0.4	1.35	3.72
35	-5.98	14	4.26	7.60	3.34	0.0	2.1	0.1	2.05	6.14
36	-5.96	379	4.29	7.50	3.21	1.4	3.2	1.6	1.70	5.30
37	-5.94	612	4.01	8.00	3.99	1.0	5.1	1.1	4.05	10.15
38	-5.92	729	4.38	7.10	2.72	0.2	3.9	0.4	3.60	13.24
39	-5.90	293	4.18	7.26	3.08	1.2	3.5	1.5	2.15	6.98
40	-5.88	20	4.26	9.21	4.95	0.2	4.1	0.3	3.85	7.78
41	-5.86	144	4.26	6.60	2.34	2.8	3.8	2.0	1.40	5.98
42	-5.84	105	4.25	6.55	2.30	0.2	3.1	0.3	2.85	12.39
43	-5.82	34	4.06	8.98	4.92	0.2	6.6	0.4	6.30	12.80
44	-5.53	13	4.36	6.54	2.18	0.7	1.8	0.8	1.05	4.82
45	-5.51	358	4.29	6.42	2.13	0.4	1.4	1.0	0.70	3.29
46	-5.49	15	4.23	6.50	2.27	0.3	0.9	0.4	0.55	2.42
47	-5.47	666	4.21	7.38	3.17	0.4	1.2	0.5	0.75	2.37
48	-5.45	77	4.27	6.32	2.05	2.0	2.1	2.1	0.05	0.24
49	-5.43	212	4.24	6.50	2.26	0.0	0.7	0.1	0.65	2.88
50	-5.41	708	4.21	6.21	2.00	-0.3	0.5	0.0	0.65	3.25
51	-5.39	719	4.21	6.31	2.10	1.6	2.2	1.8	0.50	2.38
52	-5.37	305	4.27	6.27	2.00	0.1	0.6	0.2	0.45	2.25
53	-5.35	92	4.26	6.77	2.51	1.5	2.4	1.6	0.85	3.39
54	-5.33	644	4.21	6.55	2.34	0.3	0.9	0.6	0.45	1.92
55	-5.31	6	4.03	6.54	2.51	1.6	3.1	1.8	1.40	5.58
56	-5.29	211	4.26	6.36	2.10	0.6	1.8	0.8	1.10	5.24
57	-5.27	87	4.06	5.63	1.57	0.0	0.6	0.2	0.50	3.18
58	-5.25	10	4.38	6.72	2.34	0.6	2.5	0.7	1.85	7.91
59	-5.23	217	4.23	7.12	2.89	0.0	1.5	0.2	1.40	4.84
60	-5.21	377	4.26	6.56	2.30	1.3	2.5	1.4	1.15	5.00
61	-5.19	634	4.26	8.24	3.98	0.2	3.3	0.3	3.05	7.66
62	-5.17	370	4.23	8.59	4.36	0.0	3.9	0.1	3.85	8.83
63	-5.15	232	4.28	7.41	3.13	0.1	2.4	0.2	2.25	7.19
64	-5.13	114	4.21	8.06	3.85	0.3	3.9	0.4	3.55	9.22
65	-5.11	377	4.27	9.30	5.03	0.1	5.2	0.4	4.95	9.84
66	-5.09	257	4.24	9.48	5.24	0.1	5.0	0.2	4.85	9.26
67	-5.07	157	4.28	8.71	4.43	1.4	5.5	1.6	4.00	9.03
68	-4.79	102	4.39	10.50	6.11	0.7	5.9	0.9	5.10	8.35
69	-4.77	730	4.05	11.09	7.04	1.3	6.4	1.5	5.00	7.10
70	-4.75	378	4.21	9.70	5.49	0.9	4.9	1.1	3.90	7.10
71	-4.73	12	4.11	10.13	6.02	0.8	5.9	1.1	4.95	8.22
72	-4.71	368	4.12	8.66	4.54	0.0	3.5	0.0	3.50	7.71
73	-4.69	28	4.09	7.33	3.24	0.8	3.3	0.9	2.45	7.56
74	-4.67	103	4.22	8.44	4.22	0.9	4.2	1.1	3.20	7.58
75	-4.65	622	4.25	7.58	3.33	1.1	3.7	1.3	2.50	7.51
76	-4.63	277	4.27	8.96	4.69	1.1	4.8	1.3	3.60	7.68
77	-4.61	33	4.03	8.80	4.77	0.2	3.9	0.3	3.65	7.65
78	-4.59	146	4.21	8.73	4.52	1.8	5.3	2.0	3.40	7.52
79	-4.57	266	4.07	8.61	4.54	0.7	4.0	0.8	3.25	7.16
80	-4.55	223	4.27	7.53	3.26	0.1	1.7	0.2	1.55	4.75
81	-4.53	733	4.29	6.36	2.07	1.6	2.8	1.7	1.15	5.56

82	-4.51	143	4.25	6.62	2.37	0.3	2.9	0.5	2.50	10.55
83	-4.49	652	4.25	6.54	2.29	0.7	1.8	0.8	1.05	4.59
84	-4.47	384	4.28	6.93	2.65	1.6	2.8	1.9	1.05	3.96
85	-4.45	284	4.36	9.72	5.36	1.0	76.1	1.1	75.05	140.02
86	-4.43	280	4.28	8.36	4.08	1.5	38.2	1.8	36.65	89.83
87	-4.41	702	4.22	6.74	2.52	1.7	10.1	1.8	8.35	33.13
88	-4.39	5	4.21	7.41	3.20	1.3	16.1	1.5	14.70	45.94
89	-4.37	667	4.28	8.52	4.24	0.4	18.1	0.6	17.60	41.51
90	-4.16	665	4.25	6.16	1.91	-0.1	0.9	0.0	0.95	4.97
91	-4.14	225	4.21	6.50	2.29	1.9	3.2	2.0	1.25	5.46
92	-4.12	732	4.19	7.35	3.16	1.4	3.4	1.5	1.95	6.17
93	-4.10	116	4.06	6.20	2.14	0.1	1.1	0.1	1.00	4.67
94	-4.08	126	4.23	5.88	1.65	0.5	1.5	0.7	0.90	5.45
95	-4.06	732	4.19	7.35	3.16	1.4	3.4	1.5	1.95	6.17
96	-4.04	285	4.03	6.03	2.00	-0.2	0.9	0.0	1.00	5.00
97	-4.02	688	4.22	6.22	2.00	1.5	2.8	1.6	1.25	6.25
98	-4.00	112	4.06	5.63	1.57	0.0	0.6	0.2	0.50	3.18
99	-3.98	122	4.26	7.40	3.14	0.8	3.2	0.8	2.40	7.64
100	-3.96	266	4.24	6.67	2.43	1.3	2.9	1.4	1.55	6.38
101	-3.94	707	4.27	7.00	2.73	1.1	2.9	1.3	1.70	6.23
102	-3.92	54	4.37	7.78	3.41	0.5	3.3	0.5	2.80	8.21
103	-3.90	645	4.26	7.19	2.93	0.0	2.0	0.0	2.00	6.83
104	-3.88	209	4.06	7.25	3.19	0.3	2.5	0.3	2.20	6.90
105	-3.86	69	4.26	7.29	3.03	0.3	2.7	0.6	2.25	7.43
106	-3.84	708	4.19	6.79	2.60	0.7	1.9	0.8	1.15	4.42
107	-3.82	9	4.39	7.79	3.40	0.5	2.1	0.7	1.50	4.41
108	-3.80	664	4.22	6.75	2.53	1.5	2.7	1.9	1.00	3.95
109	-3.78	251	4.25	7.13	2.88	0.8	2.7	1.1	1.75	6.08
110	-3.76	303	4.28	7.56	3.28	1.4	3.3	1.6	1.80	5.49
111	-3.74	207	4.26	9.38	5.12	1.1	4.2	1.3	3.00	5.86
112	-3.72	353	4.24	9.26	5.02	0.3	4.4	0.5	4.00	7.97

Table 45. Voyagers Quay magnetic susceptibility results

Percentage organic carbon

The magnetic susceptibility samples were subsequently used to measure the organic carbon content. Full methodology may be found in Chapter 3.

Sample number	m. OD	Crucible number	Crucible weight (g)	Before firing (g)	After firing (g)	% Organic carbon
1	-6.96	77	5.39	8.92	7.56	38.53%
2	-6.94	51	5.22	8.39	6.95	45.43%
3	-6.92	117	5.50	9.50	7.95	38.75%
4	-6.90	78	5.42	10.43	8.94	29.74%
5	-6.88	55	5.23	9.29	7.76	37.68%
6	-6.86	30	5.33	9.92	8.49	31.15%
7	-6.84	20	5.40	9.83	8.52	29.57%
8	-6.80	62	5.52	10.15	9.00	24.84%
9	-6.78	10	5.34	9.71	8.68	23.57%
10	-6.76	52	5.43	9.49	8.55	23.15%
11	-6.74	31	5.48	10.37	9.28	22.29%
12	-6.72	208	8.03	14.84	13.61	18.06%
13	-6.70	207	8.35	15.22	13.98	18.05%
14	-6.68	78	5.42	10.43	8.94	29.74%
15	-6.66	232	8.55	13.78	12.89	17.02%
16	-6.64	15	5.35	10.04	9.00	22.17%
17	-6.62	236	7.65	14.98	13.55	19.51%

18	-6.60	74	5.64	10.40	9.19	25.42%
19	-6.58	3	4.98	9.89	8.63	25.66%
20	-6.56	243	9.12	15.12	13.74	23.00%
21	-6.54	3	4.97	8.45	7.32	32.47%
22	-6.52	53	5.26	9.68	8.61	24.21%
23	-6.24	241	8.43	15.88	15.13	10.07%
24	-6.22	12	4.98	9.88	9.29	12.04%
25	-6.20	225	9.23	17.51	16.64	10.51%
26	-6.18	152	8.53	17.6	16.54	11.69%
27	-6.16	54	5.45	10.41	9.73	13.71%
28	-6.14	177	8.99	16.33	15.43	12.26%
29	-6.12	227	9.20	17.87	16.24	18.80%
30	-6.10	6	5.56	9.52	7.97	39.14%
31	-6.08	222	8.62	13.0	11.49	34.47%
32	-6.06	?	8.98	13.63	11.33	49.46%
33	-6.04	9	5.58	9.26	7.80	39.67%
34	-6.02	122	5.62	8.22	6.60	62.31%
35	-6.00	48	5.48	9.10	6.94	59.67%
36	-5.98	70	5.38	8.71	6.81	57.06%
37	-5.96	63	5.39	8.60	7.00	49.84%
38	-5.94	31	5.48	9.08	7.03	56.94%
39	-5.92	49	5.27	7.98	6.39	58.67%
40	-5.90	47	5.57	8.64	7.50	37.13%
41	-5.88	5	5.54	9.66	8.24	34.47%
42	-5.86	70	5.38	7.71	5.94	75.97%
43	-5.84	51	5.23	7.51	5.81	74.56%
44	-5.82	68	5.40	9.38	7.79	39.95%
45	-5.53	28	5.54	7.69	6.55	53.02%
46	-5.51	77	5.39	7.51	6.03	69.81%
47	-5.49	4	5.44	7.70	6.17	67.70%
48	-5.47	14	5.34	8.21	6.05	75.26%
49	-5.45	58	5.39	7.36	5.69	84.77%
50	-5.43	44	5.36	7.60	6.28	58.93%
51	-5.41	47	5.57	7.56	6.34	61.31%
52	-5.39	22	5.51	7.60	6.08	72.73%
53	-5.37	119	5.56	7.54	6.10	72.73%
54	-5.35	11	5.36	7.86	6.23	65.20%
55	-5.33	110	5.52	7.85	6.20	70.82%
56	-5.31	112	5.51	8.00	6.11	75.90%
57	-5.29	115	5.38	7.47	6.10	65.55%
58	-5.27	111	5.15	6.71	5.40	83.97%
59	-5.25	42	5.67	8.00	6.19	77.68%
60	-5.23	197	8.58	11.47	9.03	84.43%
61	-5.21	101	5.47	7.75	5.93	79.82%
62	-5.19	17	5.37	8.09	5.96	78.31%
63	-5.17	119	5.56	9.76	8.57	28.33%
64	-5.15	58	5.39	8.51	7.80	22.76%
65	-5.13	61	5.59	9.43	8.88	14.32%
66	-5.11	53	5.26	10.28	9.57	14.14%
67	-5.09	114	5.28	10.48	9.83	12.50%
68	-5.07	60	5.41	9.78	8.66	25.63%
69	-4.79	55	5.23	10.45	9.75	13.41%
70	-4.77	112	5.51	10.21	9.58	13.40%
71	-4.75	16	5.64	9.97	9.42	12.70%

72	-4.73	1	5.40	9.93	9.15	17.22%
73	-4.71	66	5.43	9.94	9.02	20.40%
74	-4.69	25	5.30	8.53	7.80	22.60%
75	-4.67	45	5.17	9.38	8.32	25.18%
76	-4.65	33	5.20	8.53	7.71	24.62%
77	-4.63	72	5.17	9.84	8.66	25.27%
78	-4.61	41	5.38	10.12	8.90	25.74%
79	-4.59	38	5.28	9.78	8.58	26.67%
80	-4.57	119	5.56	9.85	8.63	28.44%
81	-4.55	113	5.48	8.74	7.33	43.25%
82	-4.53	65	5.41	7.47	6.21	61.17%
83	-4.51	2	5.34	7.71	6.08	68.78%
84	-4.49	39	5.62	7.90	6.34	68.42%
85	-4.47	116	5.43	8.06	6.16	72.24%
86	-4.45	64	5.59	10.02	8.67	30.47%
87	-4.43	50	5.48	9.56	8.14	34.80%
88	-4.41	90	5.46	7.97	6.42	61.75%
89	-4.39	18	5.64	8.82	7.16	52.20%
90	-4.37	150	5.06	8.58	6.83	49.72%
91	-4.16	38	5.28	7.17	5.68	78.84%
92	-4.14	71	5.69	7.96	6.37	70.04%
93	-4.12	76	5.02	8.18	6.06	67.09%
94	-4.10	118	5.35	7.48	6.07	66.20%
95	-4.08	13	5.27	6.92	5.78	69.09%
96	-4.06	113	5.47	7.66	6.06	73.06%
97	-4.04	7	5.25	7.24	5.93	65.83%
98	-4.02	40	5.37	7.36	6.00	68.34%
99	-4.00	78	5.42	7.74	6.27	63.36%
100	-3.98	118	5.35	8.48	6.52	62.62%
101	-3.96	36	5.48	7.89	6.40	61.83%
102	-3.94	24	5.35	8.07	6.36	62.87%
103	-3.92	7	5.25	8.64	6.58	60.77%
104	-3.90	61	5.59	8.50	7.06	49.48%
105	-3.88	123	5.48	8.66	7.19	46.23%
106	-3.86	15	5.35	8.37	6.91	48.34%
107	-3.84	35	5.33	7.91	6.80	43.02%
108	-3.82	34	5.42	7.89	6.77	45.34%
109	-3.80	2	5.34	7.85	6.50	53.78%
110	-3.78	18	5.64	8.51	6.88	56.79%
111	-3.76	37	5.49	8.77	7.17	48.78%
112	-3.74	120	5.40	10.09	8.14	41.58%
113	-3.72	72	5.17	10.11	8.25	37.65%

Table 46. Voyagers Quay percentage organic carbon results

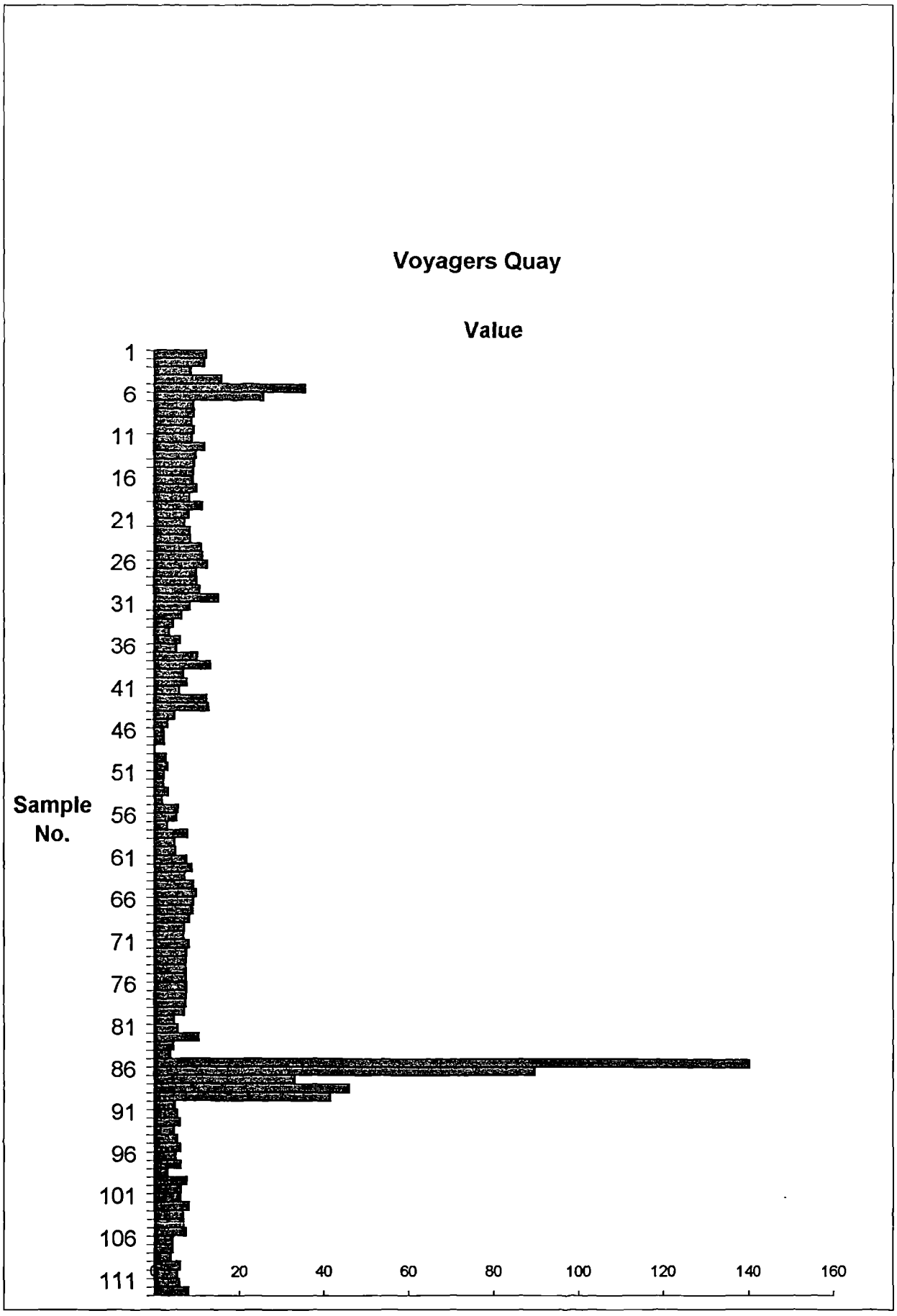

Figure 152. Voyagers Quay magnetic susceptibility graph

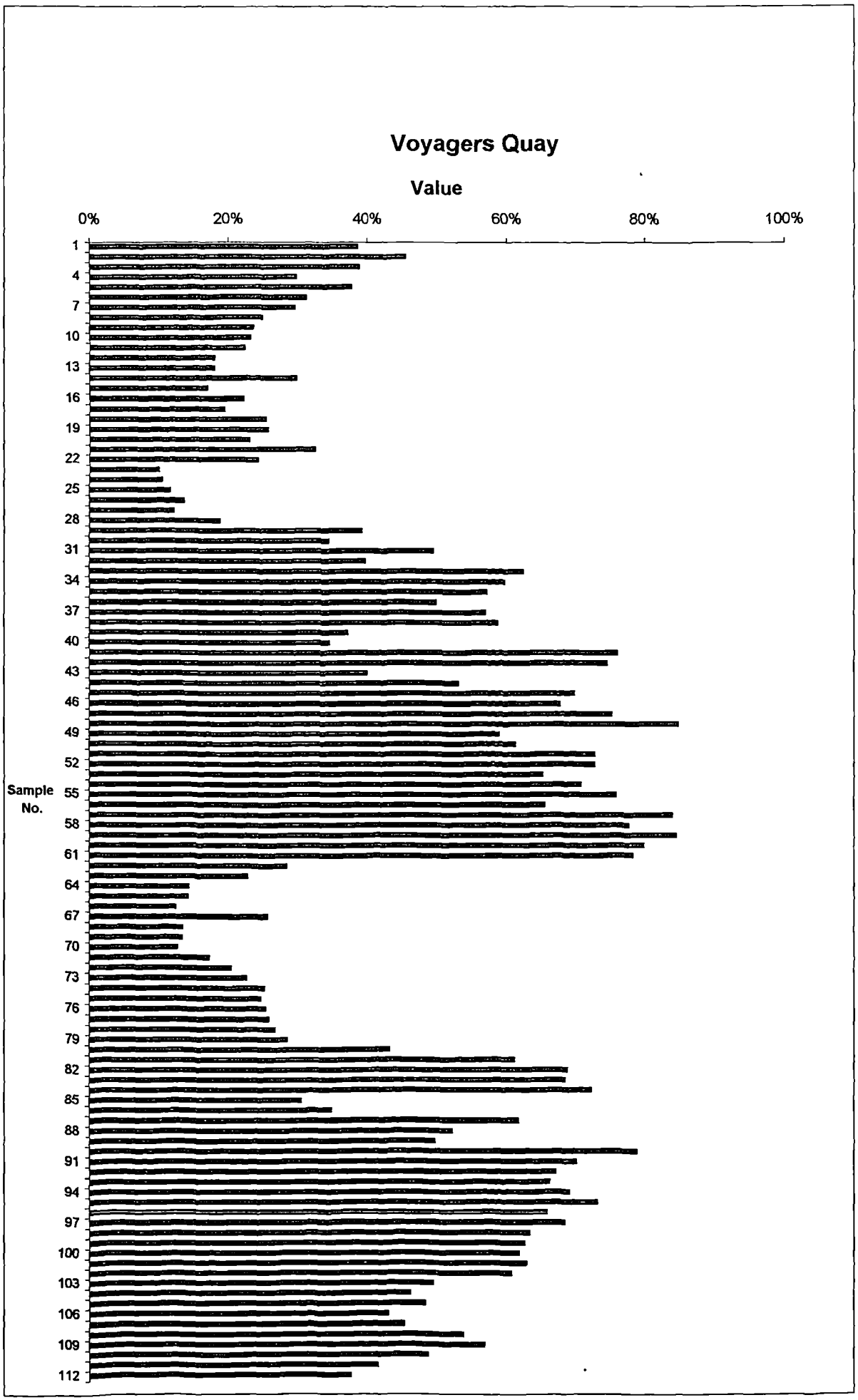

Figure 153. Voyagers Quay percentage organic carbon graph

2.2 Chronology

Radiocarbon

Four samples were submitted to Beta Analytic Inc., Miami for radiocarbon assay. The radiocarbon method is discussed in Chapter 3. Results are presented below.

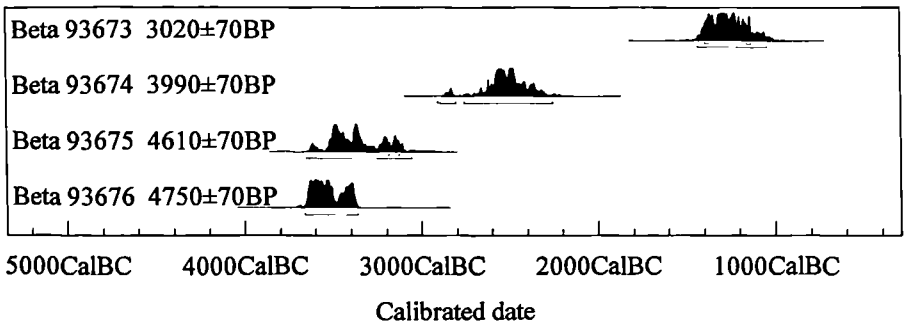

Figure 154. Voyagers Quay radiocarbon measurements (BH2)

Sample no.	Code	OD height	Material	Tendency	Tendency code (Shennan 1994)	Stratigraphic context	Radiocarbon years BP	$\delta^{13}C$ (‰)	Calendar years BP (2σ)	Calendar years BC (2 σ)
Beta 93673	A2/1	-1.92-87m	Silt clay with humified organic material.	Positive	2	Top of organic mud. Transgressive contact.	3020 ± 60	25 ‰ *	3380-2970	1430-1020
Beta 93674	A2/2	-2.60-55m	Humified organic material.	Negative	6	Base of peat. Regressive contact.	3990 ± 70	25 ‰ *	4790-4240	2850-2300
Beta 93675	A2/3	-3.31-27m	Laminated silt clay with some humified organic matter.	Negative	6	Base of organic mud. Regressive contact.	4610 ± 70	25 ‰ *	5580-5050	3630-3090
Beta 93676	A2/4	-3.95-90m	Highly humified black peat, mainly unidentifiable plant matter. Wood and some possible *Phragmites* rhizomes	None	8	Towards top of peat.	4750 ± 70	25 ‰ *	5610-5310	3660-3370

* estimated

Table 47. Voyagers Quay radiocarbon results

2.3 Biostratigraphy

Diatoms

Subsamples were split from the U4/100 samples for examination of diatoms. Samples were not split at equal distances throughout the sequence but were collected across contacts between organic and minerogenic sediments to examine the nature of aquatic conditions at these transitional periods. Preparation followed standard procedures (see Chapter 3).

Sample Number	OD height	Diatom group	Sedimentary group
1	-6.84m	1	2
2	-6.82m	1	2
3	-6.80m	1	2
4	-6.78m	1	2
5	-6.76m	1	2
6	-6.54m	2	2
7	-6.52m	2	2
8	-6.14m	3	2
9	-6.12m	3	2
10	-6.10m	3	2
11	-6.08m	3	2
12	-5.17m	4	9
13	-5.15m	4	9
14	-5.13m	4	9
15	-5.11m	4	9
16	-5.09m	4	9
17	-4.78m	5	10
18	-4.76m	5	10
19	-4.48m	6	10
20	-4.46m	6	10
21	-4.44m	6	10
22	-4.42m	6	11
23	-3.82m	7	11
24	-3.80m	7	11
25	-3.78m	7	12
26	-3.76m	7	12

Table 48. Voyagers Quay diatom sample details

Diatom group 1 (samples 1-5, -6.84-6.76m OD)

No valves were found in samples 1 and 2. The remaining three samples were dominated by the species *Paralia sulcata, Cymatosira belgica, Rhaphoneis amphiceros, Delphineis surirella, Cyclotella striata* and *Nitzschia navicularis.*

Diatom group 2 (samples 6 and 7, -6.54-53m OD)

The same group of species dominates these two samples but in different proportions to Group 1. *Cyclotella striata* although still at 25% of total valves counted has dropped from the 34% observed in sample 5. *Paralia sulcata* is now at *c.* 15% (from 5% in sample 5) but drops slightly from sample 6 to 7. *C. belgica* has decreased and *N. navicularis* increased slightly.

Diatom group 3 (samples 8-11, -6.14-6.08m OD)

No valves were recovered from samples 10 and 11, which was an organic clay. Otherwise, the group is dominated by *N. navicularis, P. sulcata, R. amphiceros, C. striata* with lower proportions of *C. belgica* and also *Pseudopodosira westii.* Within group 3 there is relatively little change: *P. sulcata* increases by 5%, as does *P. westii* and *N. navicularis.* However, *C. striata* and *R. amphiceros* both decrease in value by 10% and 5% respectively.

Diatom group 4 (samples 12-16, -5.17-5.09m OD)

No valves were observed in samples 12-14. Samples 15 and 16 are dominated by *C. striata* and *P. sulcata,* with lesser quantities of *N. navicularis, C. belgica, R. amphiceros* and *P. westii.* Within the group, the changes are minor: *C. striata* drops from sample 15 to 16, as does *N. navicularis. P. sulcata* increases.

Diatom group 5 (samples 17 and 18, -4.78-76m OD)

Sample 17 was poor in diatoms; species observed included *N. navicularis, P. westii* and *Diploneis incurvata.* A count was obtained from sample 18, dominated by *N. navicularis, P. sulcata* and *P. westii.* In comparison with (the top of) Group 4, the trend showed that *C. striata* has plummeted (from *c.* 35 to 5%) whilst *P. westii* has increased from c. 5% to 20% and *N. navicularis* has increased from c. 5% in sample 16 to 40% in sample 18.

Diatom group 6 (samples 19-22, -4.48-4.42m OD)

Only 2 valves were observed in this group. The species recorded were *N. navicularis* and *Cymatosira belgica.*

Diatom group 7 (samples 23-26, -3.82-3.76m OD)

These samples were poor in diatoms; full counts could not be made. The species observed were *Cyclotella striata, Cyclotella* sp. *Cymatosira belgica,* and *Pseudopodosira westii.*

VOYAGERS QUAY DIATOMS																										
Sample number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Group	1	1	1	1	1	2	2	3	3	3	3	4	4	4	4	4	5	5	6	6	6	6	7	7	7	7
Traverses		*	*	*	*	*	*	*	11	*	*	*	*	*	*	*	3	19	3	3	3	3	3	3	3	3
OD Height (minus)	6.84	6.82	6.8	6.7	6.76	6.54	6.53	6.14	6.12	6.1	6.08	5.17	5.15	5.13	5.11	5.09	4.78	4.76	4.48	4.46	4.44	4.42	3.82	3.8	3.78	3.76
Achnanthes lanceolata				5																						
Achnanthes sp.			1		1																					
Actinoptychus senarius			2	1	2	1	2	2	1						5	2										
Amphora sp.				1	1													1								
Brachysira follis									1																	
Cocconeis disculus			3	3	4	1		2																		
Cocconeis pediculus																2										
Cocconeis peltoides						4	4		1						1	3										
Cocconeis perforatus				2																						
Cocconeis placentula			3	1	3		1								1	3										
Cocconeis scutellum			7	14	8	4	4	8	7						1	4										
Cocconeis sp.				1			2								1			8								
Coscinodiscus perforatus			1			1																				
Coscinodiscus sp.			5	3																						
Ctenophora pulchella						2	1																			
Cyclostephanus sp.			1																				-			
Cyclotella antiqua															3	4		3								
Cyclotella meneghiniana			3												1	1		4								
Cyclotella ocellata									1																	
Cyclotella sp.			6	5	7	3	3	4	5						4	2		7								1
Cyclotella striata			44	55	70	56	52	37	11						67	53		10							1	
Cymatosira belgica			28	36	14	13	8	12	6						11	13		4		1			1		1	
?Cymbella lacustris/Surirella sp.			1																							
Cymbella sp.				1																						
Delphinius surirella			9	14	15	13	10	13	2						7	9		2								
Diploneis didyma			3	2	1	3	2	1	6						1	1		4								

Diploneis incurvata																1	1								
Diploneis interrupta																	2								
Diploneis sp.				1					1																
Epithemia adnata			1																						
Epithemia argus					1																				
Epithemia sp.								1							1	1									
Eunotia sp.																1									
Fragilaria crotonensis				1																					
Fragilaria inflata					1																				
Fragilaria pinnata			2		1																				
Fragilaria sp.			3	1	1		1								1										
Gomphonema acuminatum																1									
Gomphonema sp.							1								1	2									
Gyrosigma sp.					4										1			1							
Hantzschia sp.				1																					
Hantzschia virgata						1																			
Melosira arenaria							1																		
Navicula sp.				1	2	1		4	1						4	8		1							
Navicula striolata				1																					
Nitzschia dubia							1																		
Nitzschia epithemioides																2									
Nitzschia navicularis			26	18	25	43	31	64	62						25	12	2	75	1						
Nitzschia panduriformis					2	1	1																		
Nitzschia sinuata				1																					
Nitzschia sp.						1		1							2	1									
Paralia sulcata			20	12	9	37	30	47	51						50	60		36							
Petroneis marina				1																					
Pinnularia sp.																1		1							
Pleurosigma sp.				1																					
Podosira stelligera									4									3							
Pseudopodosira westii			5	1	1	3	8	8	18						6	8	1	35							1
Rhaphoneis amphiceros			29	21	24	35	52	32	21						9	6		2							
Rhaphoneis minutissima			4	1	6		1																		
Rhaphoneis sp.			2																						

Staroneis sp.															1											
Surirella ovata				1																						
Surirella sp.					1																					
Synedra sp.							1	2	1																	
Thallasionema nitzschioides				2		1		3								2										
Thallasiosira sp.				1	3	6	3	1	1						7	1		1								
TOTAL	**0**	**0**	**208**	**210**	**207**	**230**	**219**	**243**	**201**	**0**	**0**	**0**	**0**	**0**	**211**	**203**	**4**	**201**	**1**	**1**	**0**	**0**	**1**	**0**	**2**	**2**

* = not recorded

Table 49. Voyagers Quay diatom counts

Pollen

Dr. Rob Scaife undertook a preliminary assessment (without zonation) of eight pollen samples as part of the archaeological project on this site. The results have been used in the interpretative narrative (Chapter 5, Section II) and are summarized here with his permission. Extraction and counting methods are described in Chapter 3. The basal sample failed to produce a countable assemblage of grains.

Trees and shrubs

Tree and shrub types dominate the pollen spectra. These include *Ulmus, Quercus, Tilia* and *Corylus avellana* type. *Fraxinus, Betula* and *Pinus* were also noted.

Herbs

These increase towards the top of the profile with expansion of *Chenopodium* type and Poaceae as the most important phenomenon, especially in the upper clays and silts, which has the most taxonomic diversity. Cereal type (differentiated from 'large Poaceae') *Pteridium aquilinum* and *Plantago lanceolata* are present to the bottom of the pollen profile and slightly higher values in the lowest level counted undoubtedly relate to Early Neolithic activity.

Marsh

Taxa attributed to wetlands include dominant *Alnus* with sporadic occurrences of marsh herbs (*Caltha* type, *Typha latifolia, Typha angustifolia/Sparganium* type and Cyperaceae). Other carr shrubs include *Salix* and *Rhamnus cathartica* (buckthorn). Highest values of *Alnus* occur in the lower half of the profile but gradually decline from 60% to 15% in the highest level. This decline corresponds with general expansion of herbs (especially Poaceae, Cyperaceae and Chenopodiaceae).

Spores

Ferns include fluctuating values of *Pteridium aquilinum* (to 40%) with monolete *Dryopteris* type and *Polypodium vulgare*. High values of the former in the uppermost sediments are undoubtedly due to taphonomy.

Appendix 3. Gallions Reach, Thamesmead, London Borough of Greenwich, SE28 (TQ 4490 7985)

Troels-Smith Classification Sheet																											
Site Code: GAH96			**Address:** Gallions Reach, Thamesmead, BH1																						**OD top:**	-1.08m
			Described by: ejs													**Date:** December 1997									**OD base:**	-6.20m
Unit	**TIn**	**Meas**	**Physical Properties**							***Turfa***			***Detritus***			***Limus***			***Argilla***		***Grana***				**Accessory**	**Comment**
			NI	ST	EL	SI	COLOUR	LI	Sh	Tb	Tl	Th	Dg	Dh	Dl	Ld	Lc	Lf	As	Ag	Ga	Gs	Gg	GG	**elements**	(inc. Structure, Lso)
1	9.9	0-2	3	0	0	3	2.5Y4/2dk grbr	0											1	1	2					
2	9.9	2-19	3	0	0	3	2.5 Y5/4 l oli br	0											1	1	2					
3	9.9	19-35	3	0	0	3	2.5Y4/2dgrbr-10YR5/8 y br	0											1	1	2					
4	9.9	35-46	4	0	0	3	10YR3/1vd gre	x											2	1	1					
5	9.3	0-8	2	0	0	3	2.5Y6/3 l y bro	0													4				fine	
6	9.3	8-16	2	0	0	3	2.5Y5/4 l o bro	0											2	1	1					
7	9.3	16-29	2	0	0	3	2.5Y5/3 lo br	0												1	3					
8	9.3	29-33	2	0	0	3	2.5Y5/4 l o bro	0											2	2	+					
9	9.3	33-42	2	0	0	3	2.5Y6/3 l y bro	0												+	4				fine	
10	9.3	42-44	3	0	0	3	2.5Y6/1 grey	x											1	1	2					
11	8.7	0-1	3	0	0	3	2.5 Y5/4 lolivbr	0											3	1	+					
12	8.7	1-39	3	0	0	3	2.5Y3/1v da gr	0							$+^2$				1	1	2				fine	
13	8.7	39-44	4	0	0	3	10YR2/2vdbro	x	1										1	1	1					
14	8.1	0-5	4	0	0	3	10YR2/1black	0	+						1				2	1	+					
15	8.1	5-10	4	0	0	3	10YR2/1black	0	1						1				1	1	+					
16	8.1	10-17	3	0	0	3	10YR3/2dkgrbr	2	+						+				3	1						
17	8.	17-45	4	0	0	3	10YR2/1black	x	3						1^2											
18	7.5	0-12	4	0	0	3	10YR2/1black	0	4										+		+					
19	7.5	12-18	4	0	0	3	10YR2/1black	0	3			+			+				1		+					
20	7.5	18-26	4	0	0	3	10YR2/1black	0	4												+			+	subang flint	
21	7.5	26-38	4	0	0	3	10YR2/1black	0	4						+				+						patches clay	
22	7.5	38-45	4	0	0	3	10YR2/1black	x	4						+				+							
23	6.9	0-7.5	4	0	0	3	10YR2/1black	1	3						1						+					

24	6.9	7.5-10	4	0	0	3	10YR2/1black	0	4						+					+					
25	6.9	10-13	4	0	0	3	10YR2/2vdbro	0	3										1		+					
26	6.9	13-29	4	0	0	3	10YR2/1black	0	4			+									+					
27	6.9	29-36	4	0	0	3	10YR2.5/1blvg	0	3			+			+						1					
28	6.9	36-45	4	0	0	3	10YR2.5/1blvg	x	2			+			+				+	1	1					
29	6.3	0-20	4	0	0	3	10YR2/2vdbro	x	1						+				2	1	+					
30	5.7	0-11	4	0	0	3	10YR2/1black	0	2						+			+	1	1	+					
31	5.7	11-29	3	0	0	3	2.5Y3/1vdkgre	0	+			*+Ph*			+			+	3	1	+					
32	5.7	29-36	4	0	0	3	10YR2/1black	0	2						+				2	+	+					
33	5.7	36-46	4	0	0	3	10YR2/1black	x	3			+			+				1	+	+					
34	5.1	0-15	3	0	0	3	2.5Y4/1dkgrey	0											3	1						
35	5.1	15-20-	3	0	0	3	10YR4/3brown	3										+	2	2	+					
36	5.1	20-24	3	0	0	3	10YR4/3brown	3										+	3	1	+					sealed block contam soil
37	5.1	34-37	3	0	0	3	10YR4/3brown	x										+	3	1						

Table 50. Gallions Reach BH1 sedimentary log

Troels-Smith Classification Sheet																										
Site Code: GAH96				**Address:** Gallions Reach, Thamesmead, BH2																					**OD top:**	-0.61m
				Described by: ejs													**Date:** December 1997								**OD base:**	-6.47m
Unit	**Tin**	**Meas**	***Physical Properties***							***Turfa***			***Detritus***			***Limus***			***Argilla***		***Grana***				**Accessory**	**Comment**
			NI	ST	EL	SI	COLOUR	LI	Sh	Tb	Tl	Th	Dg	Dh	Dl	Ld	Lc	Lf	As	Ag	Ga	Gs	Gg	GG	**elements**	(inc. Structure, Lso)
1	9.9	0-15	3	0	0	3	2.5Y4/2dgbrow	0												+	1	1	1	1		
2	9.9	15-25	3	0	0	3	2.5Y4/2dgbrow	0											1	1	2	+				
3	9.9	25-28	3	0	0	3	10YR3/1vdgre	0											2	1	1					

4	9.9	28-30	3	0	0	3	10YR2.5/1vdgl	0	+									2	2	+					
5	9.9	30-34	4	0	0	3	10YR2/1black	0	2									2	+						
6	9.9	34-37	4	0	0	3	10YR2/1black	0	4						+			+		+					
7	9.9	37-46	4	0	0	3	10YR2/1black	x	4						+			+		+					
8	9.25	0-34	3	0	0	3	10YR3/1dkgr	0	1						1			2							
9	9.25	34-45	3	0	0	3	10YR3/1dkgr	X	1						+			3	+						
10	8.1	0-44	4	0	0	3	10YR2/1black	x	4		+	+			+					+					
11	7.5	0-28	4	0	0	3	10YR2/1black	0	4			*+Ph*			+					+					
12	7.5	28-41	4	0	0	3	10YR2/1black	0	4			+			+			+							
13	7.5	41-44	4	0	0	3	10YR2/1black	x	1			+						3	+						
14	6.9	0-6	4	0	0	3	10YR2/1black	0	4			+			+					+					
15	6.9	6-16	4	0	0	3	10YR2/1black	0	1			*+?Ph*			1		+	2	1	+					
16	6.9	16-44	4	0	0	3	10YR2/1black	x	2			+			+			2	+	+					
17	6.3	0-36	4	0	0	3	10YR2/1black		3			*+Ph*			+			1		+					
18	6.3	36-46	3	0	0	3	10YR2/1+4/3 bl+br	x	1									1	2	+					
19	5.7	0-5.5	4	0	0	3	10YR2/1black	0	4																
20	5.7	5.5-7	4	0	0	3	10YR2/1black	0	2								+	2	+						
21	5.7	7-20.5	4	0	0	3	10YR2/2vdbro	1	1									2	1						
22	5.7	20.5-37	3	0	0	3	10YR3/1vdkgr	0										3	1						
23	5.0	37-45	3	0	0	3	10YR3/1vdkgr	x									+	3	1						
24	5.1	0-6	3	1	0	3	10YR4/3+4/6d grybr+dyb	0										1	1	2					
25	5.1	6-43	3	0	0	3	10YR3/1vdkgr	x									+	3	1						
26	4.5	0-35	3	0	0	3	10YR4/3brown	x									+	2	2						

Table 51. Gallions Reach BH2 sedimentary log

Troels-Smith Classification Sheet																										
Site Code: GAH96			**Address:** Gallions Reach, Thamesmead, BH3																					**OD top:**	-3.01m
			Described by: ejs													**Date:** January 1998								**OD base:**	-5.66m
Unit	**TIn**	**Meas**	**Physical Properties**							***Turfa***			***Detritus***			***Limus***			***Argilla***		***Grana***				**Accessory**	**Comment**
			NI	ST	EL	SI	COLOUR	LI	Sh	Tb	TI	Th	Dg	Dh	Dl	Ld	Lc	Lf	As	Ag	Ga	Gs	Gg	GG	**elements**	(inc. Structure, Lso)
1	9.5	0-1	4	0	0	3	10YR2/1black	2							4^3											
2	9.5	1-15	4	0	0	3	10YR2/1black	0	4						$+^3$						+					
3	9.5	15-19	4	0	0	3	10YR2/1black	0	4										+		+					
4	9.5	19-25	4	0	0	3	10YR2/1black	0	4						$+^3$						+					
5	9.5	25-34	4	0	0	3	10YR2/1black	x	3						$+^3$				1							
6	9.0	0-1	4	0	0	3	2.5Y/2.5/1 blk	2											2	2						
7	9.0	1-22	3	0	0	3	10YR3/4dkybr	4							4^2											
8	9.0	22-44	3	2	0	3	2.5Y/2.5/1 bla	x	+						+				2	2						
9	8.5	0-6	4	0	0	3	10YR2.5/1vdrb	0	1						+				2	1						
10	8.5	6-31	4	0	0	3	10YR2/1black	2	2	1^3		1^3			+											
11	8.5	31-39	4	0	0	3	10YR3/3 dkbr	2							4^2											
12	8.5	39-46	4	0	0	3	10YR2/1black	x	4		+	+			+											
13	8.0	0-18.5	4	0	0	3	10YR2/1black	x	4			$+^2Ph$			+				+							
14	8.0	18.5-39	4	0	0	3	10YR2/1black	0	3			$+^2Ph$			1^2											
15	7.5	0-6	4	0	0	3	10YR2/1black	0	4			^+Ph			+						+					
16	7.5	6-25	4	0	0	3	10YR2/1black	0	4			^+Ph			+				+		+					
17	7.5	25-36	4	0	0	3	10YR2/1black	x	2			+			+				1	1	+					
18	7.0	0-9	4	0	0	3	2.5Y3/1vdkgre	0											1	+	+			3	ceramic	?greensand
19	7.0	9-20	3	0	0	3	10YR2/1black	1	4						+						+				ceramic	
20	7.0	20-39	2	0	0	3	2.5Y3/2vdkgrbr	x											3	1	+				?slag	

Table 52. Gallions Reach BH3 sedimentary log

Troels-Smith Classification Sheet																												
Site Code: GR96				**Address:** Gallions Reach, Thamesmead, BH4																							**OD top:**	+0.23m
				Described by: ejs																							**OD base:**	-3.13m
Unit	**Tin**	**Meas**	**Physical Properties**							*Turfa*			*Detritus*			*Limus*			*Argilla*		*Grana*					**Accessory**	**Comment**	
			NI	ST	EL	SI	COLOUR	LI	Sh	Tb	Tl	Th	Dg	Dh	Dl	Ld	Lc	Lf	As	Ag	Ga	Gs	Gg	GG	**elements**	(inc. Structure, Lso)	
1	6.0m	0-9	3	0	0	3	2.5Y5/3 loli br	0												+	2		1	1			
2	6.0m	9-25	2	0	0	3	2.5Y6/3lybrown	1				+[3]									4						
3	6.0m	25-35	4	0	0	3	10YR2/1black	0	+						+[2]				1	1	2						
4	6.0m	35-38	4	0	0	3	10YR2/1black	0	+										2	1	1						
5	6.0m	38-42	4	0	0	3	10YR2/1black	x	+										2	2	+						
6	5.5m	0-20.5	4	0	0	3	10YR2/1black	0	4			+															
7	5.5m	20.5-28	4	0	0	3	10YR2/1black	0	4						+				+	+							
8	5.5m	28-33	3	0	0	3	2.5Y4/2 dkgrb	1											2	2							
9	5.5m	33-41	4	0	0	3	10YR2/1black	x	4						+												
10	5.0m	0-13	4	0	0	3	10YR2/1black	0	4			+			+						+						
11	5.0m	13-23	4	0	0	3	10YR2/1black	0	3						1[3]						+						
12	5.0m	23-29.5	4	0	0	3	10YR2/1black	2	4			+									+						
13	5.0m	29.5-33	3	0	0	3	10YR2/1-2.5Y4/3bl+lobr	2	2												2				sand in peat		
14	5.0m	33-39	4	0	0	3	10YR2/1black	x	4			+															
15	4.5m	0-2	4	0	0	3	10YR2/1black	0	4			*+Ph*			+						+						
16	4.5m	2-9	4	0	0	3	10YR2/1black	0	4						+				+		+						
17	4.5m	9-13	3	0	0	3	2.5Y3/1vdkgre	0	1										2	1	+						
18	4.5m	13-19	3	0	0	3	2.5Y3/1vdkgre	0				+			+				2	2	+						
19	4.5m	19-24	3	0	0	3	2.5Y3/1vdkgre	0	+			+							2	2	+						
20	4.5m	24-42	3	0	0	3	2.5Y3/1vdkgre	x	+										2	2	+				?contam		
21	4.0m	0-28	3	0	0	3	2.5Y4/2dkgbro	0											1	2	1						
22	4.0m	28-33	3	0	0	3	2.5Y3/2vdkgbr	1											2	2							

23	4.0m	33-44	3	0	0	3	10YR4/4dkybr	x										2	2					stiff	
24	3.5m	0-4	3	4	0	3	10YR2/1black	3	+									1	1	2					
25	3.5m	4-4.25	4	4	0	3	10YR2/1black	3	4																
26	3.5m	4.25-5	3	4	0	3	10YR3/1vdkgr	1	+									2	1	1					
27	3.5m	5-6	3	4	0	3	10YR2/1-2.5Y6/3bl-lybr	3	+									+	+	4					
28	3.5m	6-12	4	4	0	3	10YR2/1black	0	1									+	1	2					
29	3.5m	12-19	3	4	0	3	2.5Y3/1vdkgre	0										1	2	1					
30	3.5m	19-24	3	4	0	3	2.5Y3/2vdkgrb	0										+	1	3					
31	3.5m	24-25	4	4	0	3	10YR2/1black	0	3											1					
32	3.5m	25-27.5	3	4	0	3	2.5y5/3lolbrow	0	+									+	1	3					
33	3.5m	27.5-31	4	4	0	3	2.5Y2.5/1black	0	1									+	1	2					
34	3.5m	31-38	3	0	0	3	2.5Y4/3olbrow	0										2	2	+					
35	3.5m	38-45	3	0	0	3	10YR3/4dkybr	x										1	2	1					
36	3.0m	0-18	3	0	0	3	10YR3.5/4dky	0											1	3					
37	3.0m	18-31.5	3	0	0	3	10YR4/3brown	0										2	2	+					
38	3.0m	31.5-39	3	0	0	3	10YR3/4dkybr	x										1	1	2					

Table 53. Gallions Reach BH4 sedimentary log

Troels-Smith Classification Sheet																											
Site Code: GAH96				**Address:** Gallions Reach, Thamesmead, BH5																						**OD top:**	+0.83m
				Described by: ejs												**Date:** January 1998										**OD base:**	-5.11m
Unit	**Tin**	**Meas**	**Physical Properties**							***Turfa***			***Detritus***			***Limus***			***Argilla***		***Grana***				**Accessory**	**Comment**	
			NI	ST	EL	SI	COLOUR	LI	Sh	Tb	Tl	Th	Dg	Dh	Dl	Ld	Lc	Lf	As	Ag	Ga	Gs	Gg	GG	***elements***	(inc. Structure, Lso)	
1	8.5m	0-16	3	0	0	3	10YR2/1-4/3bl-br	0							1^2				1	1	1						
2	8.5m	16-44	3	0	0	3	10YR4/3brown	x	+										1	1	2						
3	8.0m	0-10	3	0	0	3	10YR4/3brown	0	+										3	1	+						
4	8.0m	10-28.5	3	1	0	3	10YR4/3-6/4b/yb	2											2	1	1				fine sand laminae		
5	8.0m	28.5-29	4	0	0	3	10YR2/1black	2	4																		
6	8.0m	29-36	3	1	0	3	10YR4/3-6/4br-yb	1	+										2	1	1				fine sand laminae		
7	8.0m	36-36.5	4	1	0	3	10YR2/1black	1	4																		
8	8.0m	36.5-39	3	1	0	3	10YR4/3-6/4br-yb	1											2	1	1						
9	8.0m	39-39.5	4	1	0	3	10YR2/1black	1	4																		
10	8.0m	39.5-44	3	1	0	3	10YR2/1black	x	+										1	1	2						
		HIATUS																									
11	5.5m	0-9.5	3	0	0	3	10YR4/3brown	0	+										2	1	1						
12	5.5m	9.5-15.5	3	0	0	3	10YR4/3brown	0											1	1	2						
13	5.5m	15.5-22	3	0	0	3	10YR4/3brown	0	+										2	2	+						
14	5.5m	22-24	3	0	0	3	10YR4/2dkgbr	0											1	1	2						
15	5.5m	24-28	3	0	0	3	10YR4/3brown	0											3	1							
16	5.5m	28-28.5	3	0	0	3	10YR4/3brown	0											1	1	2						
17	5.5m	28.5-29	4	0	0	3	10YR2/1black	0	2			1							1								
18	5.5m	29-32	3	0	0	3	2.5Y4/2grbr	0											1	1	2						
19	5.5m	32-32.5	4	0	0	3	10YR2/1black	0	2			2															
20	5.5m	32.5-37	3	0	0	3	10YR4/3brown	0	+										1	1	2						

21	5.5m	37-44.5	3	0	0	3	10YR4/3brown	x	+									2	1	1					
22	5.0m	0-5	3	2	0	3	10YR4/3brown	0										2	1	1					
23	5.0m	5-10	3	3	0	3	10YR4/3brown	0										1	2	1					
24	5.0m	10-14	3	1	0	3	10YR4/3brown	0	+									1	1	2					
25	5.0m	14-24	3	0	0	3	10YR4/3brown	0										2	1	1					
26	5.0m	24-35	3	0	0	3	10YR4/3brown	0										+	1	3					
27	5.0m	35-40	3	0	0	3	10YR4/3brown	x										1	2	1					
28	4.5m	0-9	3	0	0	3	10YR4/3.5dyb	0	+									3	1	+				test.+	
29	4.5m	9-17	3	0	0	3	10YR4/2dkgbr	0	+									2	1	1					fine sand
30	4.5m	17-30.5	3	0	0	3	10YR4/4dkybr	0										3	1	+					
31	4.5m	30.5-34	3	0	0	3	10YR4/4dkybr	0										2	1	1					
32	4.5m	34-44	3	0	0	3	10YR4/4dkybr	x										3	1	+					
33	4.0m	0-7	3	0	0	3	10YR4/3brown	0										2	1	1					
34	4.0m	7-10	3	0	0	3	2.5Y5/3lobr	0										1	1	2					fine
35	4.0m	10-12	3	0	0	3	10YR4/3brown	0										2	1	1					
36	4.0m	12-21	3	0	0	3	2.5Y5/4lobro	0										+	1	3					
37	4.0m	21-34	3	0	0	3	10YR4/3brown	0									+	3	1	+					
38	4.0m	34-42	3	0	0	3	10YR4/3brown	0										2	1	1					
39	4.0m	42-46	3	0	0	3	10YR4/3brown	x										3	1	+					
40	3.5m	0-19	3	0	0	3	10YR4/6dkybr	0									+	3	1						
41	3.5m	19-27	3	0	0	3	10YR4/3brown	0										2	1	1					
42	3.5m	27-44	3	0	0	3	10YR4/3brown	x									+	3	1	+					
43	3.0m	0-6	3	0	0	3	10YR4/3brown	0										2	2	+					
44	3.0m	6-13.75	3	0	0	3	10YR4/3brown	0										1	2	1					
45	3.0m	13.75-22.5	3	0	0	3	10YR4/3brown	0										2	2	+			+	rock?slag	
46	3.0m	22.5-45	3	0	0	3	10YR4/3brown	x										3	1	+				rock?slag	

Table 54. Gallions Reach BH5 sedimentary log

Troels-Smith Classification Sheet																											
Site Code: GAH96				**Address:** Gallions Reach, Thamesmead, BH6																						**OD top:**	+0.38m
				Described by: ejs													**Date:** January 1998									**OD base:**	-5.35m
Unit	**Tin**	**Meas**	**Physical Properties**							*Turfa*			*Detritus*			*Limus*			*Argilla*		*Grana*				**Accessory**	**Comment**
			Nl	ST	EL	Sl	COLOUR	Ll	Sh	Tb	Tl	Th	Dg	Dh	Dl	Ld	Lc	Lf	As	Ag	Ga	Gs	Gg	GG	**elements**	(inc. Structure, Lso)
1	9.0m	0-23	4	0	0	2	10YR2/1black	x	3			+			1^2											
2	8.5m	0-7	4	0	0	2	10YR2/1black	0	2						+				1	1						
3	8.5m	7-18	4	0	0	2	10YR2/1black	0	4						+											
4	8.5m	18-25	4	0	0	2	10YR2/1black	x	3										1	+						
5	8.0m	0-26	4	0	0	3	10YR2/2vdkbr	x	1						+				2	1	+					
6	7.5m	0-9	3	0	0	3	2.5Y3/1vdkgrey	0	+						+				3	1	+					twiggy, v. plastic
7	7.5m	9-18	3	0	0	3	2.5Y3/1vdkgrey	0	+				+						3	1	+					v. plastic
8	7.5m	18-24	4	0	0	3	2.5Y2.5/1black	0	+										3	1						firmer
9	7.5m	24-45	3	0	0	3	2.5Y4/1dkgrey	x				*+Ph*			+				3	1						v.v plastic
10	7.0m	0-32	4	0	1	2	10YR2/1black	0	4			$+^2$			$+^2$						+					
11	7.0m	32-42	4	0	1	2	10YR2/1black	x	4			$+^4$			$+^4$						+					
12	6.5m	0-34	4	0	0	2	10YR2/1black	0	2			1^2			1^2											
13	6.5m	34-41	4	0	0	2	10YR2/1black	x	3			+			+				1							
14	6.0m	0-13	4	0	0	2	10YR2/1black	0	3						1^3											
15	6.0m	13-20	4	0	0	2	10YR2/1black	0	2						1^2				1							
16	6.0m	20-34	4	0	0	2	10YR2/1black	0	2			+			2^2											
17	6.0m	34-42	4	0	0	2	10YR2/1black	x	3			+							1							
18	5.5m	0-21	4	0	0	3	10YR2/2dkbr	0	1			*+Ph*			1^3				1	1						
19	5.5m	21-26	4	0	0	3	10YR2/1black	0	3			+							1		+					
20	5.5m	26-31	4	0	0	3	10YR2/2dkbr	0	1			+							2	1	+					
21	5.5m	31-32.5	3	0	0	3	10YR2/2-4/2(d)b	1	+										2	1	1					
22	5.5m	32.5-39	4	0	0	3	10YR2/1black	x	3			+			+				1							

23	4.5m	0-10	3	4	0	3	10YR3/2-6/4vdkgbr-lybr	0	+									1	1	2					lam clay-silt with fne sand
24	4.5m	10-24	3/4	4	0	3	10YR2/1+above	0	1									1	1	1					lam org/clay/sand
25	4.5m	24-36	3	4	0	3	10YR3/2-6/4vdkgbr-lybr	0	+									1	1	2					lam sand/silt
26	4.5m	36-44	3	2	0	3	10YR4/2dkgrbr	x										2	1	1					
27	4.0m	0-45	3	0	0	3	10YR4/3brown	x									+	2	2					molluscs	stiff, fe
28	3.5m	0-39	3	0	0	3	10YR4/2.5dkgr-brown	x										2	2	+			+	ceramic	stiff

Table 55. Gallions Reach BH6 sedimentary log

Troels-Smith Classification Sheet																									
Site Code: GAH96			**Address:** Gallions Reach, Thamesmead, BH7																					**OD top:**	-1.57m
			Described by: ejs													**Date:** January 1998								**OD base:**	-4.99m
Unit	**Tin**	**Meas**	**Physical Properties**							***Turfa***			***Detritus***			***Limus***			***Argilla***		***Grana***				**Accessory**	**Comment**
			NI	ST	EL	SI	COLOUR	LI	Sh	Tb	Tl	Th	Dg	Dh	Dl	Ld	Lc	Lf	As	Ag	Ga	Gs	Gg	GG	**elements**	(StructureLso)
1	8.7	0-13.5	4	0	0	2	2.5Y4/2dkgrbr	0				+								1	3			+		medium
2	8.7	13.5-38	3	0	0	2	2.5Y4/2dkgrbr	0											+	1	3					
3	8.7	38-46	3	0	0	2	2.5Y4/2dkgrbr	x											1	1	2					
4	8.1	0-4.5	4	0	0	3	2.5y2.5/1black	1	+										1	1	2					
5	8.1	4.5-7.5	4	1	0	3	10YR2/2vdkbr	0	+						+				2	2	+					
6	8.1	7.5-18.5	4	0	0	3	10YR2/1black	0	1										2	1	+					
7	8.1	18.5-31	4	0	0	3	10YR2/1.5blvdb	0	+						+				2	2	+					
8	8.1	31-34	4	0	0	3	10YR2/1black	0	+						+				2	2	+					
9	8.1	34-44	3	0	0	3	10YR3/1vdkgre	x	+						+				3	1	+					
10	7.5	0-6.5	3	0	0	3	2.5Y3/1vdkgrey	0				+							3	1						
11	7.5	6.5-12	4	0	0	3	2.5Y2.5/1black	0							+				3	1						
12	7.5	12-34	3	0	0	3	2.5Y3/1vdkgrey	0							+				3	1						decayed wood

13	7.5	34-44	4	0	0	3	10YR2/1.5blvdb	x	3						+				1		+				
14	6.9	0-5	4	0	0	3	10YR2/1black	0	3			+			1^3						+				
15	6.9	5-12.5	4	0	0	3	10YR2/1black	0	4						+				+		+				
16	6.9	12.5-28	4	0	0	3	10YR2/1black	0	4			+			+						+				
17	6.9	28-36	4	0	0	3	10YR2/1black	0	2						+					1	1	+			
18	6.9	36-44	3	0	0	3	2.5Y2.75/1blvdg	x	+											3	1	+			
19	6.3	0-9.5	4	0	0	3	10YR2/2vdkbr	1							+				3	1	+				
20	6.3	9.5-10.5	4	0	0	3	10YR2/2vdkbr	1							4^3										
21	6.3	10.5-26	4	0	0	3	10YR2/1black	0	+						+				3	1					
22	6.3	26-43	4	0	0	3	10YR2/1black	x							+				3	1					
23	5.7	0-45	4	0	0	3	2.5Y3/1vdkgrey	x	+						+				3	1	+				

Table 56. Gallions Reach BH7 sedimentary log

Troels-Smith Classification Sheet																										
Site Code: GAH96			**Address:** Gallions Reach, Thamesmead, BH8																					**OD top:**	+0.57m
			Described by: ejs													**Date:** January 1998								**OD base:**	-5.03m
Unit	**Tin**	**Meas**	**Physical Properties**							***Turfa***			***Detritus***			***Limus***			***Argilla***		***Grana***				**Accessory**	**Comment**
			NI	ST	EL	SI	COLOUR	LI	Sh	Tb	Tl	Th	Dg	Dh	Dl	Ld	Lc	Lf	As	Ag	Ga	Gs	Gg	GG	***elements***	(Structure, Lso)
1	9.2m	0-4	2	0	0	3	2.5Y6/3lybrown	2													4					fine
2	9.2m	4-5	2	0	0	3	2.5Y6/4lybrown	1													4					coarse
3	9.2m	5-8	2	0	0	3	2.5Y5/4lobrown	1											+	+	4					fine
4	9.2m	8-10	2	0	0	3	2.5Y6/4lybrown	0													4					coarse
5	9.2m	10-14	2	0	0	3	2.5Y5/3lobrown	2											+	+	4					fine
6	9.2m	14-18	2	0	0	3	2.5Y6/3lybrown	2													4					coarse, fining up
7	9.2m	18-19	2	0	0	3	2.5Y5/3lobrown	0											1	1	2					

8	9.2m	19-22	2	0	0	3	2.5Y5/4lobrown	0											+	4						medium
9	9.2m	22-24	2	0	0	3	2.5Y5/4lobrown	0										1	1	2						
10	9.2m	24-34	2	0	0	3	2.5Y5/3lobrown	0										1	1	2						
11	9.2m	34-44	3	0	0	3	2.5Y5/2 greybro	x										1	2	1						
12	8.4m	0-20.5	3	0	0	3	2.5Y3/2dkgrybro	2										+	1	3	+					
13	8.4m	20.5-22	4	0	0	3	2.5Y2.5/1black	2	2						+					2						oak
14	8.4m	22-34	4	0	0	3	2.5Y2.5/1black	0	2									1	1							
15	8.4m	34-45	4	0	0	3	2.5Y2.5/1black	x	1									2	1							
16	7.8m	0-29	3	1	0	3	10YR4/1dkgrey	0	+						+			3	1	+						
17	7.8m	29-32	4	0	0	3	10YR2/1 bl	0	3									1								
18	7.8m	32-44	4	0	0	3	10YR2/1 bl	x	3						1											
19	7.2m	0-17	4	0	0	3	10YR2/1 bl	0	1			[1] *Ph*			[2] 2			+								
20	7.2m	17-23	4	0	0	3	10YR2/1 bl	0	4									+								
21	7.2m	23-42	4	0	0	3	10YR2/1 bl	X	3									1		+						patch clay
22	6.6m	0-6	4	0	0	3	10YR2/1 bl	0	3			[1] *Ph*			+					+						
23	6.6m	6-21	4	0	0	3	10YR2/1 bl	0	4			+			+			+		+						
24	6.6m	21-28	4	0	0	3	10YR2/1 bl	0	3			+			+			1		+						
25	6.6m	28-39	4	0	0	3	10YR2.5/1vdgr/b	0	1			+*Ph*			[3] 1			1	1	+						
26	6.6m	39-46	4	0	0	3	10YR2/2vdkbr	x	+									2	2	+						
27	6.0m	0-13	4	0	0	3	10YR2/1 bl	0	+						1			2	1	+						
28	6.0m	13-29	4	0	0	3	10YR2/2vdkbr	0	+						+			2	2							
29	6.0m	29-41	4	0	0	3	10YR3/2vdkgrbr	x	+									2	2							
30	5.2m	0-43	3	0	0	3	10YR3/1vdkgrey	x	+								+		2	2						
31	4.0m	0-1	4	0	0	3	10YR2/2vdkbr	3	2					2												
32	4.0m	1-8	3	0	0	3	10YR4/4dkybr	0										1	1	2						
33	4.0m	8-15	3	0	0	3	10YR4/6dkybr	1											1	3						
34	4.0m	15-24	3	0	0	3	10YR3/3dkb	2										1	2							
35	4.0m	24-42		contam with overburden																						

Table 57. Gallions Reach BH8 sedimentary log

3.1 Lithology

The U4/100 tins were cleaned and described according to methods outlined in Chapter 3. A brief summary of the sedimentary grouping is given below.

BH1

Group 1 (units 1-3, -6.20-5.85m OD)

These deposits consist of fine-grained dark grey/brown silty sands above the gravel, lightening in colour up the profile. Contact to the next unit was gradual.

Group 2 (unit 4, -5.85-5.74m OD)

This unit was a silt clay with low quantities of sand and traces of degraded organic matter. Contact to the next unit was lost in the cutting shoe.

Group 3 (unit 5, -5.58-5.5m OD)

This unit was a relatively thin band of light yellowish brown fine sand. Contact to the next unit was gradual.

Group 4 (units 6-12, -5.50- 4.60m OD)

This group is made up of various grey/brown silt sand clay units, the proportions of each varying up the sequence with no obvious pattern. In the uppermost unit, some traces of wood were recovered. Contact to the next unit was gradual.

Group 5 (units 13-16, -4.60-4.22m OD)

This group continues to be dominated by clay silt sands although there is now a noticeable fining up tendency. Traces of wood continue in this group and undifferentiated *substantia humosa* also makes up a proportion of the sediment. Contact to the next unit was sharp.

Group 6 (units 17-27, -4.22-2.98m OD)

This group is highly organic with a humified black peat. Wood fragments are present throughout, whilst much less *turfa herbacea* was noted and that mainly at the top of the

sequence. Clay was also present, with very small amounts of sand present almost throughout, particularly towards the top of the group. Some flint gravel was noted midway up the group. Contact to the next group was gradual.

Group 7 (units 28-33, -2.98-1.68m OD)

This group is a black-brown organic mud, generally dominated by *substantia humosa* and clay, with lesser quantities of silt and sand. Wood fragments are present throughout in small quantities with limited *turfa herbacea*. The mineral content tends to fine upwards. The contact to the next group was lost in the cutting shoe.

Group 8 (units 34-37, -1.45-1.08m OD)

This final group is purely mineral sediment with no organic traces at all. It is fine grained, mainly clay with some silt and sand in the middle of deposit. Iron staining was noted in the top three units. Some modern contamination was noted in the middle, suggesting there has been some reworking as well as truncation by the modern fill.

BH2

Group 1 (unit 1, -6.47-6.32m OD)

This unit is orange/brown sand and gravel with very limited amounts of silt in the matrix. Contact to the next group was gradual.

Group 2 (units 2-4, -6.32-6.17m OD)

This group is more fine grained, fining upwards from a sand/silt with some clay and gravel, to a grey silt clay with highly humified organic material in unit 4. Contact to the next group was gradual.

Group 3 (units 5-7, -6.17-6.01m OD)

This group is a black humified peat/organic mud. Wood fragments are present throughout, as are *turfa herbacea* (possibly *Phragmites)* traces. Contact to the next unit was lost in the cutting shoe.

Group 4 (units 8-9, -5.81-5.36m OD)

This group is a band of dark grey organic mud with a high mineral content and inclusions of humified undifferentiated organics plus some wood fragments. Contact to the next unit was lost in the cutting shoe.

Group 5 (units 10-14, -4.65-3.39m OD)

This is a black humified peat comprised almost entirely of *substantia humosa* with some sand, wood and herbaceous plant fragments including possible *Phragmites* traces. Contact to the next unit was gradual.

Group 6 (units 14-18, -3.39-2.41 m OD)

This group is a black organic mud; fluctuating proportions of degraded organic material with clay silt and sand. No obvious pattern of formation is apparent. Some iron staining was noted at the base. Wood and herbaceous plant parts were noted throughout. Contact to the next unit was lost in the cutting shoe.

Group 7 (unit 19, -2.41-2.355m OD)

This is a thin layer of black peat, composed of undifferentiated *substantia humosa*. Contact to the next unit was gradual.

Group 8 (units 20-21, -2.355-2.205m OD)

This is an organic mud black at the base with some iron staining and coarsening upwards slightly as the mineral content increases. Contact to the next unit was slightly sharp.

Group 9 (units 22-26, -2.205-0.61m OD)

This final group is entirely mineral, brown grey silt clay with some sand towards the top. Traces of iron staining were observed at two places within the deposit. It was truncated by modern overburden.

BH3

Group 1 (unit 1, -5.66-5.65m OD)

This unit is composed entirely of badly humified black wood resting above the Pleistocene gravel. Contact to the next unit was sharp.

Group 2 (units 2-7, -5.65-5.03m OD)

This unit is a black, mainly organic deposit composed mainly of heavily degraded organic matter with some less humified traces of wood. Some mineral sediment is present throughout, including a thin band at unit 6. Contact to the next unit was sharp.

Group 3 (units 8-9, -5.03-4.76m OD)

This group is a black organic mud with small amounts of *substantia humosa* and wood within a clay silt matrix. Contact to the next unit was gradual.

Group 4 (units 10-17, -4.76-3.45m OD)

This is a further humified black peat with limited amounts of mineral sediment, mainly towards the top of the group. Wood fragments are present throughout, as are herbaceous plant fragments, possibly *Phragmites.* Contact to the next unit was lost in the cutting shoe.

Group 5 (units 18-20, -3.40-3.01m OD)

This final group is mainly mineral sediment with a thin peat band. However, there are traces of ceramic and possible greensand and slag, suggesting some contamination in this upper level of the borehole.

BH4

Group 1 (units 1-2, -3.13-2.88m OD)

This unit is the sand and gravel at the base of the Holocene sequence. Some silt was noted in the matrix with an overall fining up tendency. Contact to the next unit was gradual.

Group 2 (units 3-5, -2.88-2.71m OD)

This group is a black mineral dominated deposit, with a low proportion of *substantia humosa* throughout. The mineral component continues to fine upwards. Contact to the next group was lost in the cutting shoe.

Group 3 (units 6-16, -2.66-1.57m OD)

This group is a black heavily humified peat composed mainly of *substantia humosa*. Wood fragments are consistently present, as are herbaceous plant parts. There is a low mineral component throughout - mainly very small amounts of sand. Contact to the next unit was gradual.

Group 4 (units 17-20, -1.57-1.24m OD)

This is an organic mud, predominantly very dark grey silt clay with some sand and small amounts of detrital wood, *substantia humosa* and *turfa herbacea*. Contact to the next unit was lost in the cutting shoe.

Group 5 (units 20-23, -1.16-0.72m OD)

This group is a stiff brown silt clay with small amounts of sand at the base. The contact to the overlying unit was lost within the cutting shoe.

Group 6 (units 24-33, -0.66-0.35m OD)

This is a group of mainly dark grey mineral units with thin bands of black organic material, entirely composed of *substantia humosa*. Contact to the next group was gradual.

Group 7 (units 34-38, -0.35-+0.23m OD)

The final group is brown silt clay sand showing a general trend of coarsening upwards to the point where it was truncated by the modern overburden.

BH5

Group 1 (units 1-2, -5.11-4.67m OD)

These units are brown sand silt clay with a fragment of humified wood in the lowest unit. Contact to the next group was lost in the cutting shoe.

Group 2 (units 3-10, -4.61-4.17m OD)

This group is composed of mainly mineral sediment (silt clay) with interleaved laminae of fine sand and humified organic matter. There is a large gap in the record here where several of the U4/100 tins have unfortunately been mislaid. Records from the fieldwork indicate that the missing stratigraphy was minerogenic.

Group 3 (units 11-29, -2.12-0.94m OD)

This group consists of brown/black minerogenic deposits, generally thinly bedded alternating between coarser silty sands and silt clays. Some organic matter is present; highly humified and generally *substantia humosa* and *turfa herbacea*. This organic material is present in the finer grained units.

BH6

Group 1 (units 1-4, -5.35-4.87m OD)

This unit is the basal peat above the Pleistocene gravel. It is composed mainly of *substantia humosa* with wood and limited herbaceous plant parts at the base. Some silt clay was present in addition increasing in content upwards. Contact was lost in the cutting shoe.

Group 2 (units 5-9, -4.46-3.67m OD)

This group is a dark grey/black organic mud composed mainly of silt clay with some sand, wood, herbaceous plant parts and badly degraded organic matter. Its texture varies between highly plastic and fairly firm. Contact to the overlying unit was lost in the cutting shoe.

Group 3 (units 10-19, -3.54-1.8mOD)

This is a substantial humified black peat unit, dominated by *substantia humosa* with large quantities of wood and slightly less herbaceous plant parts present. There is a variable mineral component with some sand at the base and clays to the top. Contact to the next unit was gradual.

Group 4 (units 20-21, -1.8-1.735m OD)

This is a thin band of dark brown silty clay with some sand and degraded organic matter. Contact to the overlying unit was gradual.

Group 5 (unit 22, -1.735-1.67m OD)

This is a thin band of humified black peat showing some wood and *turfa herbacea* inclusions and a low clay content. Contact to the next unit was lost in the cutting shoe.

Group 6 (units 23-25, -1.56-1.20m OD)

This is a group of laminated grey/black/brown mineral units, composed mainly of sand and silt clay with a low organic content. Contact to the overlying units was gradual.

Group 7 (units 26-28, -1.2-+0.38m OD)

This final group is without organic inclusion and is grey-brown mineral sediment but less coarse than the preceding unit, made up mainly of silt clay with some sand and some traces of gravel in the upper unit, which may be contamination with the modern overburden. Some iron staining was noted in this deposit.

BH7

Group 1 (units 1-4, -4.99-4.335m OD)

This is the sand and gravel of the Shepperton Terrace, which gradually fines up and at the top includes a small amount of degraded organic matter. Contact to the next unit was slightly sharp.

Group 2 (units 5-12, 4.335-3.44m OD)

This group is an organic mud with limited amounts of *substantia humosa* from the base with wood fragments (which increase towards the top) and also *turfa herbacea* in unit 10. The mineral component fines up from a sand silt clay to a silt clay.

Group 3 (units 13-17, -3.44-2.83m OD)

This is a black peat, highly humified with some wood throughout, some herbaceous plant parts and a low mineral content, mainly sand with a little clay. In the upper levels, some gravel was noted. Contact to the next group was gradual.

Group 4 (units 18-23, -2.83-1.57m OD)

This final group is mainly mineral sediment, from silt with some sand and gravel fining up to a silt clay. Wood was present throughout and some undifferentiated organic material was also present within the matrix.

BH8

Group 1 (units 1-8, -5.03-4.81m OD)

This group is mainly light brown laminated sand alternating between fine and coarser particles. Contact to the next unit was gradual.

Group 2 (units 9-12, -4.81-4.035m OD)

This group consists of finer mineral sediment, mainly sand with silt clay forming approximately half the deposit. This gets coarser at the top, with some fine gravel included. Contact to the overlying unit was relatively sharp.

Group 3 (units 13-15, -4.035-3.79m OD)

This is a black organic mud composed of undifferentiated *substantia humosa* and sand at the lowest point, fining up to silt clay. Some traces of wood were present at the base of the group. Contact to the next group was lost in the cutting shoe.

Group 4 (unit 16, -3.64-3.35m OD)

This is a relatively thin band of dark grey clay silt, also containing some sand, wood and *substantia humosa*. Contact to the next unit was gradual.

Group 5 (units 17-25, -3.35-2.08m OD)

This group is a black peat with very limited amounts of mineral sediment (mainly sand and clay) within the overall matrix of *substantia humosa*. This increases towards the top.

Wood is present in much of the sequence as are herbaceous plant parts including possible *Phragmites*. Contact to the overlying unit is gradual.

Group 6 (units 26-31, -2.08-+0.16m OD)

Group 6 is predominantly mineral unit with a low but consistent organic presence. This is mainly *substantia humosa* but also includes some wood. The mineral matrix gets slightly coarser towards the top of the unit. Contact to the final group was sharp.

Group 7 (units 32-35, +0.16-+0.57m OD)

This final group is a dark brown silt sand with some clay. No organic material was present. The final unit was contaminated with modern fill.

Magnetic susceptibility (low frequency)

Samples for magnetic susceptibility were split off from the U4/100 tins; full methodology can be found in Chapter 3.

Sample number	m. OD	Pot number	Pot weight (g)	Pot+sed weight (g)	Sediment weight (g)	1st blank	Magnetic sus.	2nd blank	Result	Value
1	-0.70	147	4.05	7.50	3.45	0.3	20.9	0.8	20.35	58.99
2	-0.72	653	4.23	9.24	5.01	0.3	10.3	0.4	9.95	19.86
3	-0.74	109	4.38	10.49	6.11	0.2	10.4	0.3	10.15	16.61
4	-0.76	125	4.31	9.83	5.52	0.0	8.7	0.2	8.60	15.58
5	-0.78	205	4.24	8.53	4.29	-0.1	6.8	0.0	6.85	15.97
6	-0.80	675	4.28	9.37	5.09	-0.2	7.9	-0.1	8.05	15.82
7	-0.82	696	4.21	9.40	5.19	2.0	10.0	2.1	7.95	15.32
8	-0.84	701	4.28	8.39	4.11	1.8	7.9	2.0	6.00	14.60
9	-0.86	722	4.26	9.62	5.36	1.7	9.4	1.8	7.65	14.27
10	-0.88	689	4.22	8.89	4.67	1.6	8.2	1.7	6.55	14.03
11	-0.90	726	4.39	8.70	4.31	1.4	7.8	1.6	6.30	14.62
12	-0.92	640	4.24	9.09	4.85	1.3	8.0	1.4	6.65	13.71
13	-0.94	132	4.26	9.08	4.82	1.2	8.0	1.3	6.75	14.00
14	-0.96	618	4.36	8.28	3.92	1.1	6.4	1.2	5.25	13.39
15	-0.98	126	4.24	8.45	4.21	0.8	6.6	0.8	5.80	13.78
16	-1.00	624	4.38	9.25	4.87	0.8	7.4	0.8	6.60	13.55
17	-1.02	678	4.20	9.37	5.17	0.9	8.6	1.1	7.60	14.70
18	-1.17	700	4.27	11.97	7.70	0.8	13.9	1.0	13.00	16.88
19	-1.19	735	4.28	8.99	4.71	0.5	7.0	0.6	6.45	13.69
20	-1.21	623	4.29	9.29	5.00	0.4	9.3	0.5	8.85	17.70
21	-1.23	695	4.27	10.03	5.76	0.4	5.4	0.5	4.95	8.59
22	-1.25	158	4.38	9.66	5.28	2.1	8.3	2.3	6.10	11.55
23	-1.27	631	4.27	7.64	3.37	1.0	4.7	0.9	3.75	11.13
24	-1.29	622	4.14	9.16	5.02	0.8	6.7	1.0	5.80	11.55
25	-1.31	692	4.26	9.13	4.87	0.6	6.3	0.9	5.55	11.40
26	-1.33	691	4.23	8.09	3.86	-0.1	3.8	0.1	3.80	9.84
27	-1.35	721	4.20	7.45	3.25	0.9	4.1	1.0	3.15	9.69
28	-1.37	294	4.28	8.48	4.20	1.8	6.5	2.1	4.55	10.83
29	-1.39	24	4.21	10.02	5.81	1.7	9.7	1.8	7.95	13.68
30	-1.41	610	4.37	9.77	5.40	0.1	7.5	0.1	7.40	13.70
31	-1.43	687	4.22	8.49	4.27	1.0	6.6	1.2	5.50	12.88

32	-1.45	636	4.21	10.12	5.91	1.3	9.0	1.6	7.55	12.77
33	-1.47	627	4.26	9.78	5.52	0.1	7.1	0.4	6.85	12.41
34	-1.49	207	4.27	8.78	4.51	0.1	6.8	0.4	6.55	14.52
35	-1.51	220	4.26	8.48	4.22	1.2	6.1	1.4	4.80	11.37
36	-1.53	645	4.27	10.40	6.13	1.0	6.6	1.3	5.45	8.89
37	-1.55	615	4.38	9.94	5.56	0.9	4.5	0.9	3.60	6.47
38	-1.57	634	4.24	12.41	8.17	0.8	6.0	0.8	5.20	6.36
39	-1.59	616	4.20	10.63	6.43	1.6	6.4	1.7	4.75	7.39
40	-1.61	702	4.22	11.37	7.15	0.5	7.1	0.8	6.45	9.02
41	-1.76	669	3.99	9.68	5.69	0.6	162.9	0.9	162.15	284.97
42	-1.78	142	4.38	9.70	5.32	0.4	12.8	0.5	12.35	23.21
43	-1.80	293	4.36	9.38	5.02	0.2	5.5	0.3	5.25	10.46
44	-1.82	372	4.25	9.10	4.85	0.3	5.8	0.4	5.45	11.24
45	-1.84	642	4.37	9.40	5.03	0.6	6.2	0.6	5.60	11.13
46	-1.86	225	4.23	8.34	4.11	0.4	4.3	0.4	3.90	9.49
47	-1.88	710	4.38	8.17	3.79	0.5	4.0	0.6	3.45	9.10
48	-1.90	354	4.28	8.27	3.99	0.5	4.0	0.5	3.50	8.77
49	-1.92	604	4.18	9.23	5.05	0.1	4.5	0.2	4.35	8.61
50	-1.94	260	4.24	7.77	3.53	-0.4	2.5	-0.3	2.85	8.07
51	-1.96	626	4.28	7.36	3.08	0.2	2.6	0.4	2.30	7.47
52	-1.98	114	4.23	7.72	3.49	0.8	3.5	1.0	2.60	7.45
53	-2.00	92	4.26	8.31	4.05	0.5	3.6	0.6	3.05	7.53
54	-2.02	683	4.20	7.64	3.44	0.9	0.80	0.8	-0.05	-0.15
55	-2.04	112	4.28	7.98	3.70	1.6	4.1	1.6	2.50	6.76
56	-2.06	632	4.37	7.48	3.11	1.1	3.5	1.6	2.15	6.91
57	-2.08	82	4.28	7.88	3.60	-0.2	2.1	-0.5	2.45	6.81
58	-2.10	648	4.28	7.88	3.60	1.7	4.2	1.8	2.45	6.81
59	-2.12	605	4.27	6.53	2.26	-0.5	0.9	-0.3	1.30	5.75
60	-2.14	685	4.23	7.05	2.82	1.9	3.8	2.0	1.85	6.56
61	-2.16	54	4.39	6.33	1.94	1.6	2.4	1.6	0.80	4.12
62	-2.18	649	4.37	6.94	2.57	-0.3	0.7	-0.4	1.05	4.09
63	-2.20	665	4.26	6.56	2.30	-0.3	0.8	-0.2	1.05	4.57
64	-2.35	800	4.29	7.31	3.02	0.6	29.1	0.6	28.5	94.37
65	-2.37	390	4.20	7.19	2.99	0.4	7.1	0.5	6.65	22.24
66	-2.39	688	4.20	10.20	6.00	1.6	11.8	1.7	10.15	16.92
67	-2.41	673	4.28	10.21	5.93	1.8	15.2	1.9	13.35	22.51
68	-2.43	635	4.26	8.26	4.00	1.0	6.0	1.1	4.95	12.38
69	-2.45	652	4.24	11.4	7.16	-1.1	16.9	-0.3	17.60	24.58
70	-2.47	644	4.21	6.15	1.94	2.0	5.1	2.0	3.10	15.98
71	-2.49	125	4.38	6.11	1.73	1.1	2.0	1.3	0.80	4.62
72	-2.51	702	4.22	5.45	1.23	0.4	0.9	0.7	0.35	2.85
73	-2.53	672	4.37	6.26	1.89	1.3	2.4	1.5	1.00	5.29
74	-2.55	622	4.03	6.08	2.05	-0.1	1.2	0.1	1.20	5.85
75	-2.57	645	4.27	5.88	1.61	0.9	1.9	1.1	0.90	5.59
76	-2.59	673	4.28	5.51	1.23	0.1	1.0	0.4	0.75	6.10
77	-2.61	142	4.37	6.38	2.01	2.1	3.6	2.2	1.45	7.21
78	-2.63	24	4.23	6.27	2.04	0.7	1.8	0.9	1.00	4.90
79	-2.65	635	4.25	6.02	1.77	1.7	2.6	1.9	0.80	4.52
80	-2.67	678	4.22	5.97	1.75	1.9	2.8	2.1	0.80	4.57
81	-2.69	695	4.27	5.96	1.69	1.5	2.5	1.7	0.90	5.33
82	-2.71	685	4.24	6.12	1.88	1.1	2.2	1.4	0.95	5.05
83	-2.73	722	4.26	6.53	2.27	1.0	2.4	1.3	1.25	5.51
84	-2.75	640	4.23	6.17	1.94	1.9	2.9	2.2	0.85	4.38
85	-2.77	132	4.27	5.74	1.47	1.8	2.5	2.1	0.55	3.74
86	-2.79	681	4.22	5.60	1.38	1.3	1.8	1.4	0.45	3.26
87	-2.81	726	4.38	6.64	2.26	1.8	3.1	1.9	1.25	5.53
88	-2.83	652	4.24	6.47	2.23	-0.1	1.1	0.3	1.00	4.48
89	-2.98	676	4.30	6.10	1.80	2.1	3.0	2.4	0.75	4.17
90	-3.00	731	4.29	6.12	1.83	1.4	2.5	1.7	0.95	5.19
91	-3.02	47	4.24	6.09	1.85	1.4	2.5	1.6	1.00	5.41
92	-3.04	669	4.22	6.01	1.79	2.2	3.1	2.3	0.85	4.75
93	-3.06	54	4.39	6.32	1.93	0.7	1.7	0.8	0.95	4.92
94	-3.08	683	4.22	5.68	1.46	1.7	2.4	1.8	0.65	4.45
95	-3.10	604	4.22	5.56	1.34	0.5	1.2	0.9	0.50	3.73
96	-3.12	624	4.39	5.77	1.38	2.3	2.6	2.5	0.20	1.45
97	-3.14	627	4.14	5.80	1.66	0.9	1.7	1.1	0.70	4.22

98	-3.16	687	4.21	5.59	1.38	1.6	2.2	1.8	0.50	3.62
99	-3.18	109	4.37	6.18	1.81	0.5	1.3	0.7	0.70	3.87
100	-3.20	205	4.21	6.15	1.94	0.3	1.2	0.5	0.80	4.12
101	-3.22	602	4.22	6.05	1.83	0.7	1.7	1.0	0.85	4.64
102	-3.24	615	4.38	6.15	1.77	-0.2	0.7	0.1	0.75	4.24
103	-3.26	692	4.26	6.03	1.77	0.1	1.1	0.5	0.80	4.52
104	-3.28	126	4.23	5.96	1.73	3.3	4.3	3.5	0.90	5.20
105	-3.3	605	4.28	5.51	1.23	2.0	2.7	3.1	0.15	1.22
106	-3.32	696	4.22	5.50	1.28	0.2	0.6	0.4	0.30	2.34
107	-3.34	158	4.39	5.88	1.49	3.1	3.4	3.3	0.20	1.34
108	-3.36	112	4.28	5.55	1.27	0.8	1.0	0.8	0.20	1.57
109	-3.51	701	4.27	5.92	1.65	0.0	1.9	0.2	1.80	10.91
110	-3.53	665	4.27	5.91	1.64	-0.2	1.1	-0.3	1.35	8.23
111	-3.55	207	4.26	5.45	1.19	0.5	0.8	0.7	0.20	1.68
112	-3.57	649	4.37	5.61	1.24	1.7	2.1	1.8	0.35	2.82
113	-3.59	616	4.22	5.51	1.29	3.5	4.0	3.5	0.50	3.88
114	-3.61	644	4.21	5.11	0.90	0.4	0.7	0.5	0.25	2.78
115	-3.63	82	4.29	5.41	1.12	0.8	1.7	0.9	0.85	7.59
116	-3.65	634	4.25	5.38	1.13	0.7	2.4	0.8	1.65	14.60
117	-3.67	610	4.16	5.36	1.20	1.5	1.8	1.7	0.20	1.67
118	-3.69	294	4.28	5.41	1.13	1.2	1.6	1.5	0.25	2.21
119	-3.71	372	4.23	5.37	1.14	-0.1	-0.2	0.0	-0.15	-1.32
120	-3.73	735	4.29	5.24	0.95	1.8	1.9	2.0	0.00	0.00
121	-3.75	260	4.21	5.40	1.19	1.1	1.2	1.2	0.05	0.42
122	-3.77	688	4.25	5.23	0.98	-0.3	-0.3	-0.1	-0.10	-1.02
123	-3.79	642	4.37	4.70	0.33	2.0	2.2	2.2	0.10	3.03
124	-3.81	669	4.22	4.99	0.77	1.9	2.2	2.2	0.15	1.95
125	-3.83	675	4.25	5.04	0.79	1.4	1.5	1.7	-0.05	-0.63
126	-3.85	678	4.22	5.17	0.95	0.4	0.6	0.8	0.00	0.00
127	-3.87	132	4.27	5.06	0.79	-2.0	-2.1	-1.6	-0.30	-3.80
128	-3.89	645	4.27	6.02	1.75	1.1	2.0	1.4	0.75	4.29
129	-3.91	653	4.23	5.22	0.99	1.7	1.5	1.9	-0.30	-3.03
130	-3.93	354	4.28	5.58	1.30	0.8	0.7	0.8	-0.10	-0.77
131	-3.95	602	4.22	5.29	1.07	0.8	1.7	0.9	0.85	7.94
132	-4.10	615	4.38	5.14	0.76	0.9	1.1	1.1	0.10	1.32
133	-4.12	125	4.38	5.59	1.21	-1.0	-1.0	-0.9	-0.05	-0.41
134	-4.14	631	4.04	5.21	1.17	-0.9	-0.6	-0.7	0.20	1.71
135	-4.16	38	4.27	5.43	1.16	1.3	1.9	1.5	0.50	4.31
136	-4.18	626	4.08	4.98	0.90	2.1	2.2	2.2	0.05	0.56
137	-4.20	114	4.23	5.06	0.83	1.9	1.9	2.1	-0.10	-1.20
138	-4.22	648	4.27	5.31	1.04	0.0	-0.1	0.0	-0.10	-0.96
139	-4.24	220	4.26	5.15	0.89	-1.6	-1.6	-1.5	-0.05	-0.56
140	-4.26	147	4.26	5.43	1.17	0.0	0.3	-0.5	0.55	4.70
141	-4.28	92	4.23	5.31	1.08	-0.7	-0.6	-0.5	0.00	0.00
142	-4.30	700	4.27	5.20	0.93	-0.3	-0.2	-0.1	0.00	0.00
143	-4.32	390	4.20	5.11	0.91	0.0	0.2	1.3	-0.45	-4.95
144	-4.34	681	4.25	4.98	0.73	-0.2	0.0	0.3	-0.05	-0.68
145	-4.36	800	4.29	5.16	0.87	2.2	2.3	2.7	-0.15	-1.72
146	-4.38	54	4.37	5.49	1.12	0.3	0.2	0.4	-0.15	-1.34
147	-4.40	692	4.24	5.71	1.47	-1.2	-1.1	-1.0	0.00	0.00
148	-4.42	710	4.37	5.53	1.16	1.9	1.7	1.9	-0.20	-1.72
149	-4.44	673	4.26	6.60	2.34	2.7	2.7	3.0	-0.15	-0.64
150	-4.46	618	4.38	5.37	0.99	-0.6	-0.6	-2.0	0.70	7.07
151	-4.48	689	4.22	5.05	0.83	-1.5	-1.3	-1.2	0.05	0.60
152	-4.50	685	4.22	5.33	1.11	1.5	1.5	1.9	-0.20	-1.80
153	-4.52	225	4.22	5.06	0.84	-0.5	-0.5	-0.3	-0.10	-1.19
154	-4.54	623	4.29	5.33	1.04	-0.5	-0.7	-0.6	-0.15	-1.44

Table 58. Gallions Reach magnetic susceptibility results (BH2)

Percentage organic carbon

The magnetic susceptibility samples were subsequently used to measure the organic carbon content; full methodology can be found in Chapter 3.

Sample number	m. OD	Crucible number	Crucible weight (g)	Before firing (g)	After firing (g)	% Organic carbon
1	-0.7	5	14.38	17.80	17.42	11.11%
2	-0.72	36	11.16	16.13	15.60	10.66%
3	-0.74	38	10.93	16.97	16.28	11.42%
4	-0.76	40	10.99	16.37	15.81	10.41%
5	-0.78	40	10.99	15.23	14.76	11.08%
6	-0.8	25	11.27	16.32	15.75	11.29%
7	-0.82	34	10.78	15.89	15.37	10.18%
8	-0.84	45	9.49	13.56	13.11	11.06%
9	-0.86	44	9.41	14.73	14.13	11.28%
10	-0.88	1	13.57	18.19	17.72	10.17%
11	-0.9	26	11.34	15.59	15.12	11.06%
12	-0.92	23	11.16	15.97	15.47	10.40%
13	-0.94	24	11.18	15.89	15.37	11.04%
14	-0.96	39	10.92	14.81	14.38	11.05%
15	-0.98	20	11.10	15.25	14.85	9.64%
16	-1.0	27	11.41	16.23	15.68	11.41%
17	-1.02	30	11.57	16.70	16.09	11.89%
18	-1.17	12	11.04	18.68	17.84	10.99%
19	-1.19	44	9.41	14.07	13.58	10.52%
20	-1.21	32	11.14	16.10	15.58	10.48%
21	-1.23	42	14.04	19.75	19.09	11.56%
22	-1.25	43	10.22	15.45	14.83	11.85%
23	-1.27	30	11.57	14.91	14.56	10.48%
24	-1.29	41	9.74	14.70	14.14	11.29%
25	-1.31	12A	14.94	19.76	19.19	11.83%
26	-1.33	18	14.64	18.47	17.90	14.88%
27	-1.35	35	10.87	14.07	13.61	14.38%
28	-1.37	32	11.14	15.30	14.77	12.74%
29	-1.39	2	13.91	19.64	19.06	10.12%
30	-1.41	33	10.61	15.94	15.38	10.51%
31	-1.43	14	10.89	15.13	14.68	10.61%
32	-1.45	38	10.93	16.76	16.20	9.61%
33	-1.47	10	10.65	16.13	15.53	10.95%
34	-1.49	29	10.64	15.07	14.66	9.26%
35	-1.51	1	13.57	17.77	17.38	9.29%
36	-1.53	14	10.89	16.96	16.53	7.08%
37	-1.55	37	11.14	16.67	16.44	4.16%
38	-1.57	31	10.80	18.94	18.59	4.30%
39	-1.59	20	11.10	17.49	17.16	5.16%
40	-1.61	25	11.27	18.38	17.95	6.05%
41	-1.76	4	13.98	19.60	19.06	9.61%
42	-1.78	28	11.07	16.33	15.72	11.60%
43	-1.8	10	10.65	15.60	15.00	12.12%
44	-1.82	27	11.41	16.20	15.62	12.11%
45	-1.84	18A	14.64	19.61	18.98	12.68%
46	-1.86	45	9.50	13.55	13.02	13.09%
47	-1.88	41	9.74	13.50	12.95	14.63%
48	-1.9	21	10.88	14.83	14.24	14.94%

49	-1.92	4	13.98	18.98	18.14	16.80%
50	-1.94	37	11.14	14.62	14.11	14.66%
51	-1.96	5	14.38	17.40	17.05	11.59%
52	-1.98	31	10.80	14.25	13.85	11.59%
53	-2.0	22	10.77	14.78	14.23	13.72%
54	-2.02	12	11.05	14.45	13.51	27.65%
55	-2.04	36	11.16	14.81	13.78	28.22%
56	-2.06	26	11.33	14.40	13.56	27.36%
57	-2.08	42	14.04	17.53	16.61	26.36%
58	-2.1	29	10.64	14.19	13.29	25.35%
59	-2.12	23	11.16	13.38	12.61	34.68%
60	-2.14	33	10.61	13.40	12.40	35.84%
61	-2.16	8A	14.88	16.78	15.80	51.58%
62	-2.18	34	10.78	13.31	11.90	55.73%
63	-2.2	21	10.89	13.14	11.83	58.22%
64	-2.35	22	10.77	13.75	13.28	15.77%
65	-2.37	24	11.17	14.12	13.61	17.29%
66	-2.39	28	11.07	17.02	16.60	7.06%
67	-2.41	39	10.93	16.78	15.85	15.90%
68	-2.43	43	10.22	14.17	13.56	15.44%
69	-2.45	2	13.91	21.02	20.34	9.56%
70	-2.47	35	10.87	12.76	11.81	50.26%
71	-2.49	54	5.44	7.16	6.07	63.37%
72	-2.51	48	5.48	6.70	5.92	63.93%
73	-2.53	73	5.58	7.46	6.29	62.23%
74	-2.55	27	5.51	7.55	6.35	58.82%
75	-2.57	116	5.43	7.03	6.24	49.38%
76	-2.59	41	5.38	6.60	5.99	50.00%
77	-2.61	51	5.23	7.23	6.14	54.50%
78	-2.63	30	5.33	7.36	6.18	58.13%
79	-2.65	15	5.36	7.11	6.11	57.14%
80	-2.67	63	5.40	7.13	6.04	63.01%
81	-2.69	74	5.64	7.32	6.47	50.60%
82	-2.71	117	5.50	7.38	6.38	53.19%
83	-2.73	64	5.58	7.84	6.65	52.65%
84	-2.75	39	5.63	7.55	6.55	52.08%
85	-2.77	121	5.60	7.06	6.23	56.85%
86	-2.79	19	5.36	6.72	6.05	49.26%
87	-2.81	60	5.42	7.66	6.72	41.96%
88	-2.83	127	5.61	7.83	6.74	49.10%
89	-2.98	18	5.63	7.43	6.63	44.44%
90	-3.0	52	5.43	7.25	6.55	38.46%
91	-3.02	101	5.47	7.31	6.62	37.50%
92	-3.04	114	5.28	7.06	6.39	37.64%
93	-3.06	4	5.43	7.36	6.62	38.34%
94	-3.08	3	4.98	6.43	5.88	37.93%
95	-3.1	46	5.53	6.87	6.33	40.30%
96	-3.12	111	5.15	6.53	5.98	39.86%
97	-3.14	47	5.57	7.21	6.46	45.73%
98	-3.16	119	5.56	6.93	6.25	49.64%
99	-3.18	28	5.53	7.31	6.45	48.31%
100	-3.2	31	5.48	7.41	6.41	51.81%
101	-3.22	10	5.34	7.15	6.28	48.07%
102	-3.24	14	5.34	7.11	6.24	49.15%

103	-3.26	50	5.48	7.24	6.34	51.14%
104	-3.28	34	5.42	7.11	6.09	60.36%
105	-3.3	25	5.30	6.50	5.65	70.83%
106	-3.32	75	5.34	6.60	5.61	78.57%
107	-3.34	62	5.53	7.00	5.79	82.31%
108	-3.36	115	5.38	6.69	5.59	83.97%
109	-3.51	36	5.48	7.11	6.12	60.74%
110	-3.53	24	5.35	6.98	5.85	69.33%
111	-3.55	113	5.47	6.65	5.71	79.66%
112	-3.57	110	5.52	6.75	5.75	81.30%
113	-3.59	2	5.34	6.62	5.55	83.59%
114	-3.61	49	5.27	6.15	5.44	80.68%
115	-3.63	72	5.17	6.29	5.35	83.93%
116	-3.65	6	5.56	6.67	5.73	84.68%
117	-3.67	13	5.28	6.47	5.45	85.71%
118	-3.69	44	5.36	6.49	5.53	84.96%
119	-3.71	42	5.69	6.80	5.79	90.99%
120	-3.73	56	5.39	6.32	5.53	84.95%
121	-3.75	7	5.25	6.43	5.44	83.90%
122	-3.77	58	5.39	6.34	5.67	70.53%
123	-3.79	43	5.16	6.49	5.39	82.71%
124	-3.81	16	5.64	6.41	5.75	85.71%
125	-3.83	20	5.40	6.18	5.50	87.18%
126	-3.85	112	5.54	6.46	5.66	86.96%
127	-3.87	33	5.21	5.99	5.29	89.74%
128	-3.89	90	5.45	7.19	5.58	92.53%
129	-3.91	70	5.38	6.37	5.47	90.91%
130	-3.93	55	5.23	6.51	5.43	84.38%
131	-3.95	120	5.40	6.42	5.54	86.27%
132	-4.1	11	5.36	6.12	5.49	82.89%
133	-4.12	37	5.49	6.69	5.64	87.50%
134	-4.14	23	5.41	6.57	5.59	84.48%
135	-4.16	118	5.35	6.51	5.60	78.45%
136	-4.18	77	5.39	6.29	5.56	81.11%
137	-4.2	68	5.40	6.14	5.53	82.43%
138	-4.22	124	5.42	6.45	5.57	85.44%
139	-4.24	35	5.33	6.20	5.51	79.31%
140	-4.26	12	4.98	6.15	5.21	80.34%
141	-4.28	59	5.31	6.38	5.46	85.98%
142	-4.3	5	5.54	6.45	5.76	75.82%
143	-4.32	66	5.43	6.33	5.6	81.11%
144	-4.34	123	5.48	6.20	5.62	80.56%
145	-4.36	67	5.54	6.41	5.64	88.51%
146	-4.38	65	5.41	6.52	5.55	87.39%
147	-4.4	17	5.37	6.83	5.54	88.36%
148	-4.42	53	5.26	6.41	5.40	87.83%
149	-4.44	1	5.40	7.72	5.60	91.38%
150	-4.46	61	5.59	6.57	5.70	88.78%
151	-4.48	38	5.28	6.90	5.46	88.89%
152	-4.5	71	5.68	6.78	5.83	86.36%
153	-4.52	9	5.59	6.41	5.72	84.15%
154	-4.54	45	5.17	6.20	5.36	81.55%

Table 59. Gallions Reach percentage organic carbon results (BH2)

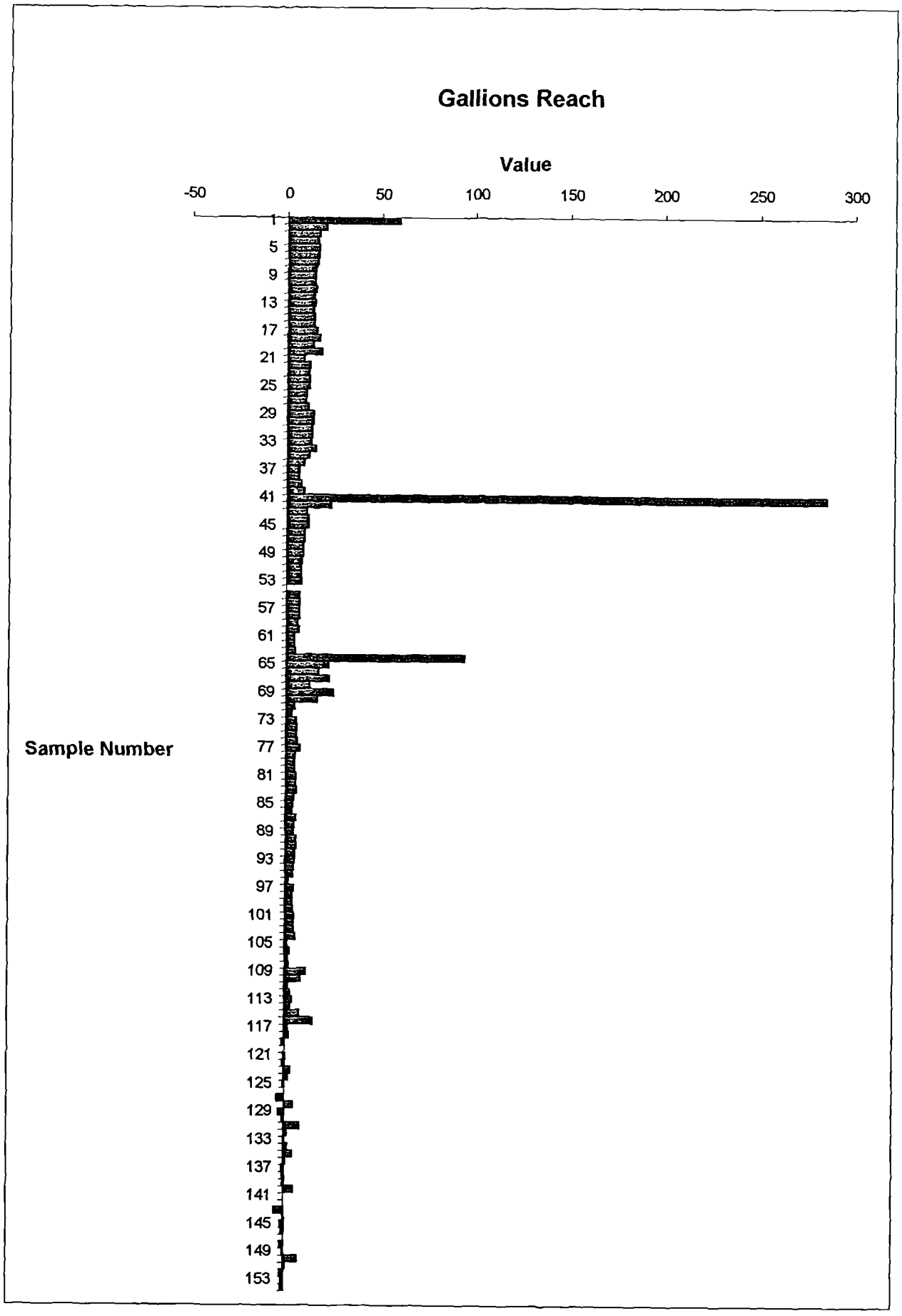

Figure 155. Gallions Reach magnetic susceptibility graph

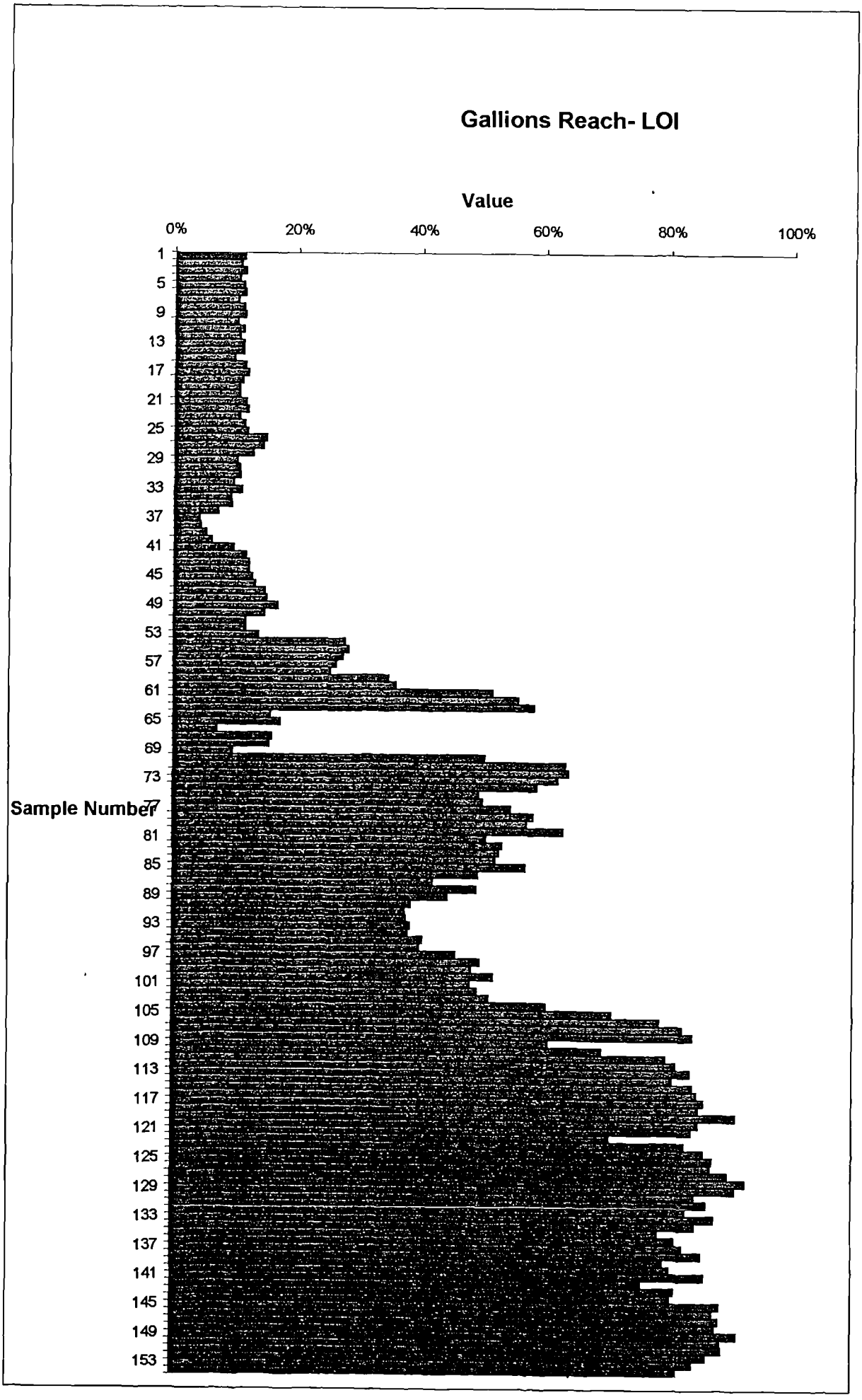

Figure 156. Gallions Reach percentage organic carbon graph

3.2 Chronology

Radiocarbon

Eight samples were submitted to Beta Analytic Inc., Miami for radiocarbon assay. The samples were cut from the U4/100 cores towards the base and top of the major organic units (i.e. where the deposit would yield sufficient material to date).

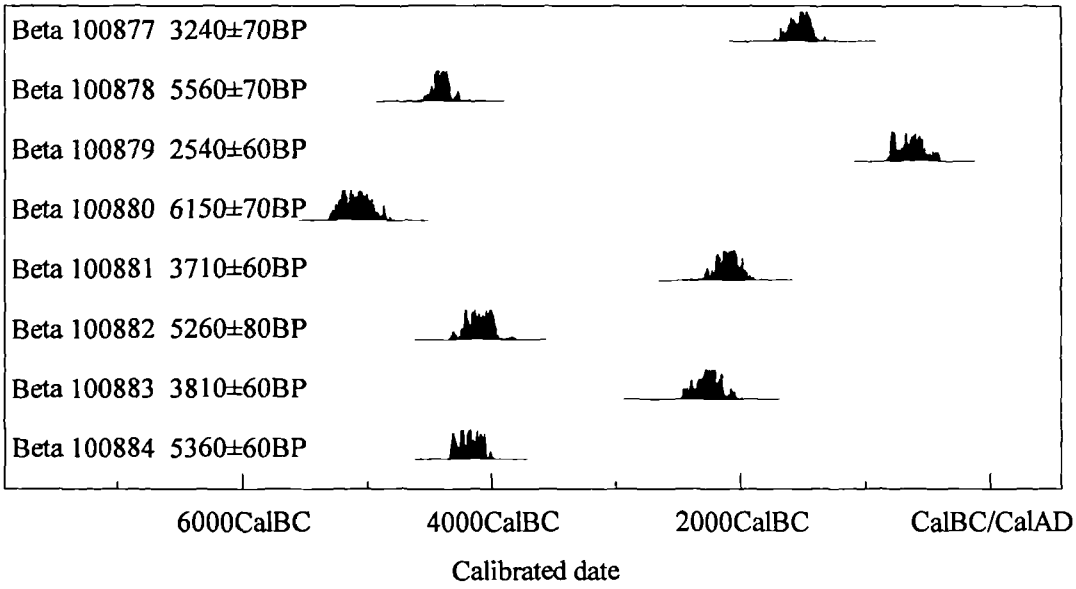

Figure 157. Gallions Reach radiocarbon measurements

Sample no.	Code	OD height	Material	Tendency	Tendency code (Shennan 1994)	Stratigraphic context	Radiocarbon years BP	$\delta^{13}C$ (‰)	Calendar years BP (2σ)	Calendar years BC (2 σ)
Beta 100877	BH1/1	-1.73-68m OD	Black-brown organic mud composed mainly of clay and humified organic matter with some wood and herbaceous plant fragments.	Positive	1	Organic mud between peat and mineral unit	3240 ± 70	-25 ‰ *	3636-3274	1690-1320 cal BC
Beta 100878	BH1/2	-4.25-20m OD	Black humified organic material with wood fragments and herbaceous plant parts. Low mineral content also present.	Negative	5	Base of peat	5560 ± 70	-25 ‰ *	6489-6203	4540-4250 cal BC
Beta 100879	BH2/1	-2.25-20m OD	Black organic mud with low quantities of humified organic matter.	Positive	1	Top of organic mud	2540 ± 60	-25 ‰ *	2777-2357	830-410 cal BC
Beta 100880	BH2/2	-6.17-12m OD	Black humified peat, some mineral component, wood, herbaceous plant parts but mainly undifferentiated organics.	Negative	3	Base of peat	6150 ± 70	-25 ‰ *	7248-6801	5300-4850 cal BC
Beta 100881	BH4/1	-1.61-56m OD	Black highly humified peat with some wood and herbaceous plant parts but mainly undifferentiated organic matter. Low mineral content.	Positive	1	Top of peat	3710 ± 60	-25 ‰ *	4238-3873	2290-1920 cal BC
Beta 100882	BH4/2	-2.86-81m OD	Black organic mud with low quantities of humified organic matter.	Negative	3	Base of peat	5260 ± 80	-25 ‰ *	6274-5894	4320-3940 cal BC
Beta 100883	BH8/1	-2.25-20m OD	Black humified peat, mainly unidentifiable organic matter with some wood and some ?*Phragmites* traces. Low sand and clay content.	None	8	Within peat	3810 ± 60	-25 ‰ *	4413-3989	2460-2040 cal BC
Beta 100884	BH8/2	-3.35-30m OD	Black humified peat, mainly unidentifiable organic matter with some wood and some ?*Phragmites* traces. Low sand and clay content.	Negative	5	Base of peat	5360 ± 60	-25 ‰ *	6289-5949	4340-4000 cal BC

= estimated

Table 60. Gallions Reach radiocarbon results

3.3 Biostratigraphy

Diatoms

Subsamples were split from the U4/100 tins from BH2 for examination of diatoms. Samples were not split at equal distances throughout the sequence but were collected across contacts between organic and minerogenic sediments to examine the nature of aquatic conditions at these transitional periods. Preparation followed standard procedures (see Chapter 3). The assemblages are discussed by groups of samples throughout the core with reference to the ecological classification systems of Hustedt (1953) and Vos and de Wolf (1993).

Sample Number	OD height	Diatom group	Sedimentary group
1	-1.49	4	9
2	-1.51	4	9
3	-1.53	4	9
4	-1.55	4	9
5	-4.01	3	5
6	-4.03	3	5
7	-4.05	3	5
8	-4.07	3	5
9	-4.09	3	5
10	-4.71	2	5
11	-4.73	2	5
12	-4.75	2	5
13	-4.77	2	5
14	-4.79	2	5
15	-6.01	1	3
16	-6.03	1	3

Table 61. Gallions Reach diatom sample details

Diatom group 1 (samples 16-15, -6.03-01m OD)

Only a few valves were observed in these samples, which are all examples of freshwater species, although according to Vos and de Wolf (1993), *Cocconeis placentula* will tolerate brackish water (member of the *Synedra tabulata* epiphytic group).

Diatom group 2 (samples 14-10, -4.79-71m OD)

No valves were recovered from the lowest four samples of this group, however a full count (the only one from Gallions Reach) was obtained from sample 10. This is dominated by brackish species such as *Nitzschia navicularis, Paralia sulcata, Cyclotella striata, Pseudopodosira westii* and *Rhaphoneis amphiceros.*

Diatom group 3 (samples 9-5, -4.09-01m OD)

Only a few valves were recovered from these samples; these were from the brackish water species *Pseudopodosira westii, Paralia sulcata* and *Nitzschia navicularis*

Diatom group 4 (samples 4-1, -1.55-49m OD)

Only a few valves were preserved in these samples; *Nitzschia navicularis* dominating, along with several other brackish species.

GALLIONS REACH DIATOMS																
Sample No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Group	4	4	4	4	3	3	3	3	3	2	2	2	2	2	1	1
Traverses	3	3	3	3	3	3	3	3	3	24	3	3	3	3	3	3
OD height	-1.49	-1.51	-1.53	-1.55	-4.01	-4.03	-4.05	-4.07	-4.09	-4.71	-4.73	-4.75	-4.77	-4.79	-6.01	-6.04
Achnanthes lanceolata																1
Actinoptychus senarius										1						
Cocconeis placentula										1						2
Cocconeis scutellum										7						
Ctenophora pulchella										2						
Cyclotella antiqua										1						
Cyclotella kuetzingiana										1						
Cyclotella sp.										5						
Cyclotella striata	1									15						
Cymatopleura elliptica															1	
Cymatosira belgica	1									1						
Delphinius surirella										6						
Diploneis didyma										6						
Diploneis interrupta	1									1						
Epithemia adnata										1						
Martyana martyi										2						
Navicula sp.										2						1
Nitzschia navicularis	7	2	3				1			80						
Paralia sulcata								3	1	33						
Podosira stelligera										1						
Pseudopodosira westii							1	2	1	18						
Rhaphoneis amphiceros										19						
Synedra ulna										1						
Thallasiosira sp.	1															
Total	**0**	**2**	**3**	**0**	**0**	**0**	**2**	**5**	**2**	**204**	**0**	**0**	**0**	**0**	**1**	**4**

Table 62. Gallions Reach diatom counts

Pollen

Dr. Rob Scaife undertook a preliminary assessment of fourteen pollen samples as part of the archaeological project on this site. The results have been used in the interpretative narrative (Section II, Chapter 6) and are summarized here with his permission. Extraction and counting methods are described in Chapter 3.

Zone 1 (–6.12-4.62m OD)

Ulmus, Tilia, Fraxinus, Corylus avellana type, *Alnus.*

This zone is characterised by arboreal taxa with limited numbers of herbs and spores. *Quercus, Corylus avellana* type and *Alnus* are dominant with also significant numbers of *Tilia, Fraxinus* and *Hedera helix.*

Zone 2 (-4.62-3.12m OD)

Quercus, Tilia, Corylus avellana type, Cyperaceae, *Dryopteris* type.

There is a marked decline in *Ulmus, Fraxinus* and *Hedera helix* from zone 1 whilst *Quercus,* Cyperaceae and *Dryopteris* increase. *Alnus* declines against Cyperaceae and *Salix* is present in small numbers throughout.

Zone 3 (-3.12-2.22m OD)

Quercus, Corylus avellana type, Poaceae, *Alnus, Pteridium.*

Quercus and *Corylus avellana* type remain significant arboreal taxa, whilst *Alnus* is dominant. *Tilia* declines entirely whilst there is a corresponding increase in herb taxa, particularly Poaceae, *Pteridium aquilinum, Plantago lanceolata* and Chenopodium type.

Appendix 4. North Woolwich Pumping Station, London Borough of Newham, (TQ 4345 7985)

Troels-Smith Classification Sheet																										
Site Code:		WW-PS94		**Address:**	North Woolwich pumping station																			**OD top:**	- 0.97m OD	
				Described by: ejs											**Date:**		1st April 97							**OD base:**	- 5.04m OD	
Unit	**Tin**	**Meas**	**Physical Properties**							*Turfa*			*Detritus*			*Limus*			*Argilla*		*Grana*				**Accessory**	**Comment**	
			Nl	ST	EL	Sl	COLOUR	Ll	Sh	Tb	Tl	Th	Dg	Dh	Dl	Ld	Lc	Lf	As	Ag	Ga	Gs	Gg	GG	**elements**	(inc. Structure, Lso)	
1	9	0-8	3	0	0	3	10yr3/1vdkgr	0											+	1	1	+	1	1			
2	9	8-18	4	0	0	3	10yr2/1 bl	0											2	1	1		+				
3	9	18-20	3	0	0	3	10yr2/2vdkbr	1	1									+	2	1	+						
4	9	20-30	4	0	0	3	10yr 2/1 bl	0											2	2	+		+	+			
5	9/8	30-87	4	0	0	3	10yr 2/1 bl	1	2						1^2				1								
6	8/7	87-139.5	3	0	0	3	10yr3/1vdkgr	0	+						+				3	1	+						
7	6	139.5-*c*.141	4	0	0	3	10yr 2/1/bl	0	3					+					1								
8	6	*c*.141-155	4	0	0	3	10yr 2/1/bl	0	2						2^2												
9	6	155-162.5	4	0	0	3	10yr 2/1/bl	0	2			2^3 *Ph*															
10	6/5	162.5-187	3	0	0	3	10yr2/2vdkbr	0	1						1				1	1	+						
11	5	187-189	2	0	0	3	10yr3/1vdgrb	1											2	2							
12	5	189-189.5	4	0	0	3	10yr2/1bl	1	3						1^3						+						
13	5	189.5-190.5	3	0	0	3	10yr2/2vdgyb	1											2	2							
14	5	190.5-218	3	0	0	3	10yr3/2vdgrb	0	1						1^3				1	1	+						
15	5/4	218-247	4	0	0	3	10yr2/1bl	0	3			+			1^3						+						
16	4	247-255.5	4	0	0	3	10yr2/1 bl	0	2										2								
17	4/3	255.5-265.5	3	0	0	3	10yr3/2vdgrb	0	+			+			1				3								
18	3	265.5-285.5	4	0	0	3	10yr 2/1bl	0	3			+			1						+					?lso	
19	3	285.5-291.5	4	0	0	3	10yr 2/1 bl	0	2			2^2 *Ph*									+						
20	3/2/1	291.5-395	3	0	0	3	10yr 2/2vdk br	0	2			2^2 *Ph*						+			+						
21	1	395-407	3	0	0	3	10yr2/1/4/1blg	x	2						1^2					1						glass	

Table 63. North Woolwich sedimentary log

4.1 Lithology

The monolith tins were cleaned and described according to methods outlined in Chapter 3. A brief summary of the sedimentary grouping is given below.

Core description

Group 1 (units 1-4: –5.04m – 4.74m OD)

Unit 1 is the sand and gravel of the Shepperton Terrace. There was a small fine-grained component to this unit, which was sealed by a silt-clay containing a large proportion of clastic material almost certainly derived from the gravel. Unit 3 is similar, although with less larger grain sized material, with a small organic component, unidentifiable *substantia humosa.* Unit 4 does not contain any organic traces.

Group 2 (units 5-9: -4.74m – 3.415m OD)

Unit *5* is mainly undifferentiated s*ubstantia humosa,* however, there is a reasonably well preserved wood component. The subsequent minerogenic unit (6) has a small organic component. The contact between units *5* and 6 was a gradual one, to unit 7, a thin organic horizon. The composition of this unit is different to *5*, as it consists almost entirely of *substantia humosa* with no observed wood fragments. A small minerogenic component is present, with low levels of clay. Unit 8 shows the development of a peat with the removal of any mineral input. There is a change to what appears to be a reed or sedge peat with unit 9, another 150mm up the profile.

Group 3 (units 10-13: – 3.415m – 3.135m OD)

Unit 10 marks a change back to minerogenic deposition. Unit 11 is fully minerogenic. Unit 12 is only 5mm of mainly organic material (degraded organic material, wood and sand). Unit 13 is as unit 11; fully minerogenic.

Group 4 (units 14-17: – 3.135m – 2.385m OD)

This group marks a change to further periods of organic sedimentation, Unit 14 is almost 0.3m of half-mineral, half wood/degraded organics. It grades into unit 15, a much more developed organic unit, highly humified with a sand component. Unit 16 is an organic silt

clay (again highly humified undifferentiated organics) grading into unit 17, a clay unit with traces of wood, herbaceous fragments and degraded organics.

Group 5 (units 18-20: – 2.385m – 1.09m OD)

Unit 18 represents a change in sedimentation back to true peat formation. Although small quantities of sand are present, this is minimal, and no silt clay was observed. Unit 18 is highly humified and the majority of material is indistinguishable organic material with some wood and fragments of herbaceous plants. This appears to have gradually developed into a further reed bed (unit 19), humified, but less so than the levels of decay observed in unit 18. Unit 20 is only distinguished from 19 on the basis of some iron staining observed around the root tracks.

Group 6 (unit 21: - 1.09– 0.97m OD)

This final unit is a highly humified organic mud with some fragments of wood. Personal observation on the site records that the upper units consisted of mineral sediment, however, sampling stopped at this point because the deposits were contaminated, in this case, with modern glass.

Magnetic susceptibility (low frequency)

Samples for magnetic susceptibility were split off from the monolith tins; full methodology can be found in Chapter 3. The χ^{lf} values throughout are low, less than 12^{-8} m^3kg^{-1} suggesting that neither pedogenesis or any form of localized burning took place at any point throughout the sites history. It was not possible to collect data from the very base of the sequence.

Sample number	Metres OD	Pot number	Pot weight (g)	Pot+sed weight (g)	Sediment weight (g)	First blank	Magnetic sus.	Second blank	Result	Value
1	-4.74	732	4.20	8.86	4.66	1.2	4.7	1.3	3.45	7.40
2	-4.72	683	4.23	7.96	3.73	0.5	3.2	0.8	2.55	6.84
3	-4.70	667	4.27	9.62	5.35	2.1	6.4	2.4	4.15	7.76
4	-4.68	66	4.37	10.29	5.92	0.0	4.6	0.1	4.55	7.69
5	-4.66	688	4.23	9.37	5.14	0.9	5.4	1.0	4.45	8.66
6	-4.64	678	4.22	10.88	6.66	0.3	5.6	0.5	5.20	7.81
7	-4.62	685	4.21	8.21	4.00	1.3	4.3	1.3	3.00	7.50
8	-4.60	660	4.22	10.62	6.40	0.1	5.6	0.3	5.40	8.44
9	-4.58	33	4.01	9.04	5.03	-0.4	3.6	-0.1	3.85	7.65
10	-4.56	668	4.22	9.92	5.70	-0.1	3.9	0.0	3.95	6.93
11	-4.54	9	4.39	10.88	6.49	0.3	5.5	0.3	5.20	8.01
12	-4.52	274	4.28	6.04	1.76	0.2	0.8	0.2	0.60	3.41

13	-4.50	693	4.29	6.53	2.24	1.0	2.1	1.3	0.95	4.24
14	-4.46	672	4.36	7.92	3.56	1.5	3.2	1.7	1.60	4.49
15	-4.44	694	4.38	6.99	2.61	0.0	1.2	0.1	1.15	4.41
16	-4.42	682	4.27	7.16	2.89	2.0	3.6	2.1	1.55	5.36
17	-4.40	700	4.28	6.73	2.45	0.6	1.7	0.8	1.00	4.08
18	-4.38	669	4.20	6.06	1.86	0.5	1.2	0.6	0.65	3.49
19	-4.36	677	4.27	6.47	2.20	0.1	1.2	0.3	1.00	4.55
20	-4.34	698	4.21	6.30	2.09	-0.1	1.2	0.1	1.20	5.74
21	-4.32	684	4.35	6.58	2.23	0.8	2.0	0.9	1.15	5.16
22	-4.30	692	4.26	6.32	2.06	0.8	1.5	0.9	0.65	3.16
23	-4.28	681	4.25	6.97	2.72	0.9	2.3	1.1	1.30	4.78
24	-4.26	697	4.29	6.24	1.95	1.1	2.0	1.3	0.80	4.10
25	-4.24	122	4.28	6.73	2.45	0.3	1.5	0.4	1.15	4.69
26	-4.22	695	4.24	5.87	1.63	0.3	1.1	0.5	0.70	4.29
27	-4.20	689	4.22	6.86	2.64	1.3	2.5	1.5	1.10	4.17
28	-4.18	126	4.23	7.38	3.15	0.0	1.4	0.2	1.30	4.13
29	-4.16	131	4.29	7.53	3.24	1.0	2.3	1.1	1.25	3.86
30	-4.08	679	4.36	8.04	3.68	0.6	2.8	0.6	2.20	5.98
31	-4.06	662	4.38	7.74	3.36	0.5	3.2	0.7	2.60	7.74
32	-4.04	664	4.20	7.96	3.76	0.0	3.6	0.5	3.35	8.91
33	-4.02	675	4.28	8.37	4.09	0.2	2.9	0.4	2.60	6.36
34	-4.00	673	4.27	6.52	2.25	0.8	2.0	0.9	1.15	5.11
35	-3.98	674	4.25	6.32	2.07	0.0	1.6	0.2	1.50	7.25
36	-3.96	106	4.31	9.29	4.98	0.8	4.3	0.8	3.50	7.03
37	-3.94	675	4.24	10.23	5.99	0.4	5.2	0.6	4.70	7.85
38	-3.92	663	4.26	7.63	3.37	-0.1	1.9	0.0	1.95	5.79
39	-3.90	671	4.25	9.00	4.75	0.8	4.0	1.0	3.10	6.53
40	-3.88	132	4.24	6.79	2.55	0.3	2.1	0.3	1.80	7.06
41	-3.86	665	4.27	9.32	5.05	0.7	4.6	0.8	3.85	7.62
42	-3.84	227	4.02	9.25	5.23	0.5	4.6	0.9	3.90	7.46
43	-3.82	207	4.28	8.72	4.44	0.3	3.9	0.5	3.50	7.88
44	-3.80	94	4.38	10.45	6.07	-0.1	3.6	-0.1	3.70	6.10
45	-3.78	670	4.27	7.92	3.65	0.7	3.5	1.2	2.55	6.99
46	-3.76	130	4.26	9.57	5.31	0.2	4.5	0.6	4.10	7.72
47	-3.74	701	4.28	8.66	4.38	0.2	3.4	0.2	3.20	7.31
48	-3.72	666	4.21	7.89	3.68	0.2	2.9	0.3	2.65	7.20
49	-3.70	661	4.22	9.32	5.10	0.9	4.7	1.0	3.75	7.35
50	-3.68	42	4.26	11.04	6.78	0.3	5.2	0.4	4.85	7.15
51	-3.66	87	4.26	11.09	6.83	0.4	5.6	0.5	5.15	7.54
52	-3.64	687	4.22	10.76	6.54	0.6	5.5	0.7	4.85	7.42
53	-3.62	52	4.26	9.99	5.73	0.4	4.5	0.5	4.05	7.07
54	-3.60	65	4.01	8.36	4.35	0.0	5.0	0.3	4.85	11.15
55	-3.58	703	4.23	11.95	7.72	0.7	6.3	0.8	5.55	7.19
56	-3.56	136	4.24	11.00	6.76	0.0	4.8	0.0	4.80	7.10
57	-3.54	680	4.24	12.15	7.91	1.0	6.6	1.0	5.60	7.08
58	-3.52	704	4.20	8.41	4.21	-0.2	2.6	0.2	2.60	6.18
59	-3.48	153	4.11	8.66	4.55	0.6	3.7	0.7	3.05	6.70
60	-3.46	121	4.28	7.63	3.35	0.2	2.2	0.3	1.95	5.82
61	-3.44	302	4.26	6.82	2.56	0.3	1.2	0.2	0.95	3.71
62	-3.36	707	4.28	6.66	2.38	0.6	1.5	0.9	0.75	3.15
63	-3.34	161	4.21	6.21	2.00	0.1	0.8	0.3	0.60	3.00
64	-3.30	107	4.11	6.21	2.10	0.8	1.8	1.2	0.80	3.81
65	-3.28	125	4.38	7.00	2.62	-0.1	0.5	0.1	0.50	1.91
66	-3.26	133	4.26	6.01	1.75	0.1	0.8	0.2	0.65	3.71
67	-3.24	148	4.05	6.20	2.15	0.8	1.7	1.0	0.80	3.72
68	-3.22	143	4.09	6.68	2.59	0.9	1.9	1.0	0.95	3.67
69	-3.20	710	4.36	7.16	2.8	1.4	2.7	1.6	1.20	4.29
70	-3.18	719	4.20	6.05	1.85	1.1	1.9	1.4	0.65	3.51
71	-3.14	268	4.13	8.36	4.23	0.3	3.1	0.3	2.80	6.62
72	-3.12	105	4.07	7.30	3.23	0.7	2.9	0.9	2.10	6.50
73	-3.10	78	4.01	7.81	3.80	0.0	2.6	0.2	2.50	6.58
74	-3.08	58	4.23	9.47	5.24	0.6	4.1	0.8	3.40	6.49
75	-3.06	716	4.37	7.87	3.50	1.7	3.5	1.8	1.75	5.00
76	-3.04	729	4.38	8.49	4.11	0.0	2.4	0.3	2.25	5.47
77	-3.02	708	4.21	9.19	4.98	0.8	3.6	1.0	2.70	5.42
78	-3.00	709	4.38	6.72	2.34	0.7	1.6	0.8	0.85	3.63

79	-2.98	735	4.28	8.01	3.73	1.7	4.2	1.9	2.40	6.43
80	-2.96	35	4.02	7.47	3.45	0.1	2.3	0.3	2.10	6.09
81	-2.94	17	4.23	8.00	3.77	2.0	4.3	2.0	2.30	6.10
82	-2.92	706	4.37	6.76	2.39	0.5	1.6	0.6	1.05	4.39
83	-2.90	104	4.27	8.14	3.87	0.7	3.6	0.8	2.85	7.36
84	-2.88	48	4.24	8.58	4.34	0.9	3.9	1.1	2.90	6.68
85	-2.86	711	4.28	8.07	3.79	0.0	. 2.4	0.2	2.30	6.07
86	-2.84	724	4.36	7.81	3.45	0.0	3.3	1.1	2.30	6.67
87	-2.82	124	4.22	7.52	3.30	0.7	2.6	0.7	1.90	5.76
88	-2.80	728	4.27	7.91	3.64	0.3	2.5	0.5	2.10	5.77
89	-2.78	149	4.25	8.19	3.94	0.2	2.5	0.2	2.30	5.84
90	-2.76	730	4.20	7.46	3.26	0.6	2.2	0.7	1.55	4.75
91	-2.74	731	4.29	8.24	3.95	1.0	3.4	1.2	2.30	5.82
92	-2.72	726	4.37	7.88	3.51	1.9	3.7	2.1	1.70	4.84
93	-2.70	733	4.20	9.89	5.69	1.5	5.1	1.7	3.50	6.15
94	-2.66	734	4.26	8.73	4.47	0.2	2.8	0.4	2.50	5.59
95	-2.64	59	4.23	8.65	4.42	0.5	3.0	0.6	2.45	5.54
96	-2.62	714	4.28	8.24	3.96	1.3	3.6	1.5	2.20	5.56
97	-2.60	605	4.27	6.47	2.20	0.0	1.0	0.1	0.95	4.32
98	-2.58	69	4.26	6.71	2.45	1.1	2.5	1.3	1.30	5.31
99	-2.56	717	4.25	7.52	3.27	1.1	2.5	1.3	1.30	3.98
100	-2.54	700	4.28	6.96	2.68	1.1	3.0	1.2	1.85	6.90
101	-2.52	727	4.22	6.25	2.03	1.3	2.8	1.5	1.40	6.90
102	-2.50	85	4.02	5.96	1.94	0.3	1.7	0.7	1.20	6.19
103	-2.48	110	4.21	5.91	1.70	0.5	1.5	0.6	0.95	5.59
104	-2.46	718	4.22	6.94	2.72	0.9	2.6	0.9	1.70	6.25
105	-2.40	292	4.28	6.08	1.80	0.0	0.8	0.2	0.70	3.89
106	-2.38	223	4.39	7.18	2.79	0.0	1.4	0.1	1.35	4.84
107	-2.36	723	4.24	6.59	2.35	1.8	2.9	1.9	1.05	4.47
108	-2.34	715	4.25	6.86	2.61	-0.1	1.1	0.0	1.15	4.41
109	-2.32	296	4.29	7.97	3.68	0.9	2.7	1.0	1.75	4.76
110	-2.30	141	4.23	8.34	4.11	-0.1	2.3	-0.1	2.40	5.84
111	-2.28	377	4.26	8.93	4.67	0.7	3.6	0.9	2.80	6.00
112	-2.26	722	4.25	8.91	4.66	0.4	3.5	0.6	3.00	6.44
113	-2.24	726	4.36	9.62	5.26	-0.1	3.7	0.2	3.65	6.94
114	-2.22	712	4.27	8.41	4.14	0.3	3.0	0.3	2.70	6.52
115	-2.20	7	4.01	8.33	4.32	0.2	3.0	0.4	2.70	6.25
116	-2.18	601	4.20	9.93	5.73	0.6	4.7	0.7	4.05	7.07
117	-2.16	721	4.22	9.93	5.71	1.6	5.6	1.7	3.95	6.92
118	-2.14	258	4.07	9.28	5.21	0.3	4.2	0.5	3.80	7.29
119	-2.12	365	4.26	10.32	6.06	0.2	4.6	0.2	4.40	7.26
120	-2.10	606	4.11	10.28	6.17	1.2	5.8	1.3	4.55	7.37
121	-2.08	158	4.38	7.84	3.46	0.2	2.3	0.2	2.10	6.07
122	-2.06	720	4.27	6.67	2.40	0.3	1.5	0.4	1.15	4.79
123	-2.04	603	4.37	7.54	3.17	-0.1	1.7	0.1	1.70	5.36
124	-2.02	725	4.27	6.82	2.55	0.2	2.7	0.3	2.45	9.61
125	-1.94	251	4.24	7.19	2.95	0.7	2.3	0.9	1.50	5.08
126	-1.92	602	4.22	6.68	2.46	1.5	3.9	1.6	2.35	9.55
127	-1.90	300	4.28	5.83	1.55	0.9	2.0	1.1	1.00	6.45
128	-1.88	607	4.26	6.04	1.78	0.6	2.1	0.7	1.45	8.15
129	-1.86	713	4.37	6.41	2.04	0.5	2.3	0.6	1.75	8.58
130	-1.84	306	4.28	6.01	1.73	0.1	1.2	0.3	1.00	5.78
131	-1.82	687	4.22	5.98	1.76	0.0	1.1	0.2	1.00	5.68
132	-1.80	674	4.25	6.37	2.12	1.3	2.6	1.5	1.20	5.66
133	-1.78	290	4.09	6.41	2.32	-0.1	2.2	0.1	2.20	9.48
134	-1.76	227	4.21	7.14	2.93	0.4	3.0	0.8	2.40	8.19
135	-1.74	694	4.37	6.81	2.44	-0.2	1.6	0.0	1.70	6.97
136	-1.72	682	4.25	6.16	1.91	1.1	2.3	1.4	1.05	5.50
137	-1.70	660	4.22	6.50	2.28	1.9	3.6	2.0	1.65	7.24
138	-1.68	267	4.39	6.38	1.99	0.0	1.2	0.2	1.10	5.53
139	-1.66	260	4.06	6.41	2.35	1.4	3.0	1.6	1.50	6.38
140	-1.64	604	4.01	7.70	3.69	0.8	3.3	1.0	2.40	6.50
141	-1.62	673	4.27	6.53	2.26	0.1	1.2	0.4	0.95	4.20
142	-1.60	207	4.28	7.12	2.84	1.4	2.6	1.8	1.00	3.52
143	-1.56	29	4.09	7.14	3.05	1.8	3.0	2.1	1.05	3.44
144	-1.54	685	4.21	6.67	2.46	1.2	2.1	1.3	0.85	3.46

145	-1.52	671	4.29	6.58	2.29	0.6	1.7	0.8	1.00	4.37
146	-1.50	665	4.27	6.99	2.72	0.1	1.2	0.1	1.10	4.04
147	-1.46	94	4.37	6.97	2.60	0.5	2.3	0.9	1.60	6.15
148	-1.44	684	4.37	8.34	3.97	1.4	3.5	1.4	2.10	5.29
149	-1.42	661	4.25	7.29	3.04	0.0	1.7	0.2	1.60	5.26
150	-1.40	16	4.11	7.39	3.28	1.0	2.9	1.1	1.85	5.64
151	-1.38	692	4.24	7.81	3.57	0.9	3.0	1.0	2.05	5.74
152	-1.36	681	4.26	7.64	3.38	1.8	3.9	1.9	2.05	6.07
153	-1.34	139	4.24	8.48	4.24	0.7	3.8	0.9	3.00	7.08
154	-1.32	288	4.40	7.96	3.56	1.6	3.7	1.7	2.05	5.76
155	-1.28	600	4.23	6.68	2.45	0.2	1.4	0.5	1.05	4.29
156	-1.26	264	4.24	6.64	2.40	1.7	3.0	0.8	1.75	7.29
157	-1.24	9	4.39	7.70	3.31	0.9	3.2	1.1	2.20	6.65
158	-1.22	663	4.26	6.71	2.45	-0.1	1.3	0.0	1.35	5.51
159	-1.20	132	4.28	7.41	3.13	-0.2	1.6	-0.1	1.75	5.59
160	-1.18	697	4.29	6.06	1.77	0.4	1.4	0.6	0.90	5.08
161	-1.16	106	4.27	6.49	2.22	1.1	2.3	1.4	1.05	4.73
162	-1.14	282	4.27	6.77	2.50	1.4	2.5	1.4	1.10	4.40
163	-1.12	698	4.20	6.87	2.67	0.8	1.8	0.9	0.95	3.56
164	-1.10	689	4.22	6.49	2.27	0.2	0.7	0.4	0.40	1.76
165	-1.08	670	4.06	6.78	2.72	0.2	1.4	0.4	1.10	4.04
166	-1.06	42	4.26	7.67	3.41	1.7	3.3	1.8	1.55	4.55
167	-1.04	122	4.26	7.25	2.99	1.8	2.9	1.9	1.05	3.51
168	-1.02	662	4.38	6.59	2.21	1.5	2.3	1.6	0.75	3.39
169	-1.00	667	4.27	7.11	2.84	1.9	2.8	1.9	0.90	3.17
170	-0.98	66	4.16	6.98	2.82	1.5	2.6	1.5	1.10	3.90
171	-0.96	274	4.28	7.58	3.30	1.6	3.0	1.7	1.35	4.09

Table 64. North Woolwich magnetic susceptibility results

Percentage organic carbon

The magnetic susceptibility samples were subsequently used to measure the organic carbon content; full methodology can be found in Chapter 3.

Sample number	Metres OD	Crucible number	Crucible weight (g)	Weight before firing (g)	Weight after firing (g)	% Organic carbon
1	-4.74	9	5.58	10.24	9.64	12.88%
2	-4.72	40	5.37	9.10	8.53	15.28%
3	-4.70	117	5.50	10.84	9.92	17.23%
4	-4.68	124	5.42	11.31	10.28	17.49%
5	-4.66	46	5.52	10.66	9.27	27.04%
6	-4.64	59	5.31	11.35	10.25	18.21%
7	-4.62	8	5.19	9.18	8.47	17.79%
8	-4.60	119	5.56	11.13	10.06	19.21%
9	-4.58	43	5.16	10.17	9.20	19.36%
10	-4.56	16	5.64	11.11	9.91	21.94%
11	-4.54	6	5.55	12.01	10.66	20.90%
12	-4.52	49	5.27	7.01	5.92	62.64%
13	-4.50	48	5.48	7.71	6.28	64.13%
14	-4.46	121	5.60	9.15	6.91	63.10%
15	-4.44	38	5.28	7.88	6.14	66.92%
16	-4.42	37	5.49	8.38	6.58	62.28%
17	-4.40	71	5.69	8.16	6.63	61.94%
18	-4.38	122	5.62	7.47	6.32	62.16%

19	-4.36	10	5.34	7.52	6.23	59.17%
20	-4.34	66	5.42	7.50	6.26	59.62%
21	-4.32	19	5.36	7.57	6.27	58.82%
22	-4.30	44	5.36	7.42	6.18	60.19%
23	-4.28	7	5.25	7.92	6.39	57.30%
24	-4.26	13	5.27	7.22	6.16	54.36%
25	-4.24	112	5.52	7.94	6.56	57.02%
26	-4.22	75	5.34	6.96	6.13	51.23%
27	-4.20	33	5.21	7.85	6.44	53.41%
28	-4.18	41	5.38	8.46	6.86	51.95%
29	-4.16	77	5.39	8.59	6.75	57.50%
30	-4.08	56	5.39	9.07	7.29	48.37%
31	-4.06	26	5.32	8.65	7.13	45.65%
32	-4.04	2	5.34	9.08	7.72	36.36%
33	-4.02	116	5.43	9.36	7.78	40.20%
34	-4.00	74	5.64	7.83	6.94	40.64%
35	-3.98	61	5.59	7.65	6.67	47.57%
36	-3.96	110	5.52	10.09	8.74	29.54%
37	-3.94	115	5.38	9.65	8.62	24.12%
38	-3.92	5	5.53	8.90	7.79	32.94%
39	-3.90	54	5.44	10.17	8.87	27.48%
40	-3.88	15	5.35	7.89	7.42	18.50%
41	-3.86	55	5.23	10.27	9.33	18.65%
42	-3.84	23	5.41	10.19	9.49	14.64%
43	-3.82	45	5.17	9.56	8.92	14.58%
44	-3.80	67	5.54	9.82	8.93	20.79%
45	-3.78	18	5.64	9.27	8.64	17.36%
46	-3.76	42	5.67	10.65	9.95	14.06%
47	-3.74	111	5.16	9.52	8.70	18.81%
48	-3.72	14	5.34	8.97	8.06	25.07%
49	-3.70	53	5.26	10.36	9.58	15.29%
50	-3.68	50	5.48	9.71	9.21	11.82%
51	-3.66	72	5.17	9.92	9.45	9.89%
52	-3.64	51	5.23	10.06	9.43	13.04%
53	-3.62	58	5.39	9.43	8.80	15.59%
54	-3.60	4	5.43	10.00	9.19	17.72%
55	-3.58	119	5.56	9.46	8.64	21.03%
56	-3.56	31	5.48	9.71	9.02	16.31%
57	-3.54	23	5.41	8.79	8.20	17.46%
58	-3.52	39	5.62	9.82	8.64	28.10%
59	-3.50	76	5.02	9.05	8.15	22.33%
60	-3.46	47	5.56	8.88	8.10	23.49%
61	-3.44	114	5.28	7.81	6.44	54.15%
62	-3.36	35	5.33	7.69	5.85	77.97%
63	-3.34	73	5.58	7.54	6.05	76.02%
64	-3.32	118	5.35	7.59	5.90	75.45%
65	-3.30	150	5.05	7.13	5.65	71.15%
66	-3.28	9	5.59	7.58	6.01	78.89%
67	-3.26	25	5.29	7.02	5.87	66.47%
68	-3.24	78	5.42	7.54	6.05	70.28%
69	-3.22	3	4.98	7.54	6.03	58.98%
70	-3.20	81	5.63	8.43	6.23	78.57%
71	-3.18	5	5.54	7.38	6.28	59.78%
72	-3.14	1	5.40	8.82	7.77	30.70%

73	-3.12	27	5.51	8.72	7.77	29.60%
74	-3.10	68	5.40	8.69	7.60	33.13%
75	-3.08	70	5.38	9.90	8.36	34.07%
76	-3.06	75	5.33	8.64	7.23	42.60%
77	-3.04	110	5.52	9.26	7.84	37.97%
78	-3.02	64	5.58	9.56	7.77	44.97%
79	-3.00	33	5.21	7.54	6.39	49.36%
80	-2.98	?	5.47	9.19	7.52	44.89%
81	-2.96	17	5.36	9.12	7.93	31.65%
82	-2.94	36	5.48	8.78	7.70	32.73%
83	-2.92	?	5.32	7.31	6.49	41.21%
84	-2.90	12	4.98	8.80	7.98	21.47%
85	-2.88	63	5.39	9.31	8.26	26.79%
86	-2.86	101	5.47	9.26	8.04	32.19%
87	-2.84	7	5.25	8.70	7.59	32.17%
88	-2.82	17	5.36	8.54	7.31	38.68%
89	-2.80	62	5.53	8.57	7.41	38.16%
90	-2.78	11	5.36	9.26	8.05	31.03%
91	-2.76	60	5.41	8.67	7.42	38.34%
92	-2.74	1	5.40	9.35	8.06	32.66%
93	-2.72	77	5.38	8.26	7.09	40.63%
94	-2.70	?	5.41	9.46	8.18	31.60%
95	-2.66	21	5.68	10.14	8.68	32.74%
96	-2.64	2.8	5.53	9.22	7.86	36.86%
97	-2.62	42	5.67	9.62	7.72	48.10%
98	-2.60	123	5.48	7.90	6.68	50.41%
99	-2.58	?	5.35	7.54	6.43	50.68%
100	-2.56	30	5.32	8.59	7.02	48.01%
101	-2.54	123	5.48	8.14	6.02	79.70%
102	-2.52	27	5.51	7.53	6.19	66.34%
103	-2.50	24	5.34	7.27	6.02	64.77%
104	-2.48	57	5.54	7.21	6.25	57.49%
105	-2.46	22	5.51	7.98	6.52	59.11%
106	-2.40	?	5.47	7.29	6.11	64.84%
107	-2.38	8	5.19	7.95	6.65	47.10%
108	-2.36	?	5.40	7.75	6.61	48.51%
109	-2.34	114	5.28	7.87	6.74	43.63%
110	-2.32	?	5.40	9.08	7.54	41.85%
111	-2.30	13	5.27	9.33	7.90	35.22%
112	-2.28	?	5.45	9.98	8.61	30.24%
113	-2.26	50	5.48	9.90	8.68	27.60%
114	-2.22	72	5.16	9.29	8.16	27.36%
115	-2.20	117	5.49	7.42	6.79	32.64%
116	-2.18	36	5.47	10.78	9.19	29.94%
117	-2.16	71	5.68	9.51	9.02	12.79%
118	-2.14	25	5.30	10.02	8.63	29.45%
119	-2.12	?	5.42	10.32	9.18	23.27%
120	-2.10	150	5.06	11.23	8.27	47.17%
121	-2.08	?	5.59	9.01	7.90	32.46%
122	-2.06	41	5.37	7.76	6.81	39.75%
123	-2.04	16	5.64	8.79	7.13	52.70%
124	-2.02	6	5.56	8.10	6.46	64.57%
125	-1.94	43	5.15	7.88	5.63	82.42%
126	-1.92	3	4.98	7.44	5.93	61.38%

127	-1.90	124	5.43	6.96	5.80	75.82%
128	-1.88	?	5.67	7.46	6.06	78.21%
129	-1.86	59	5.31	7.34	5.74	78.82%
130	-1.84	111	5.15	6.53	5.44	78.99%
131	-1.82	37	5.49	7.24	5.92	75.43%
132	-1.80	28	5.54	7.57	5.96	79.31%
133	-1.78	14	5.35	7.65	6.03	70.43%
134	-1.76	115	5.38	8.29	6.36	66.32%
135	-1.74	53	5.26	7.69	6.04	67.90%
136	-1.72	44	5.36	7.26	5.84	74.74%
137	-1.70	67	5.54	7.20	6.03	70.48%
138	-1.68	39	5.62	7.60	6.21	70.20%
139	-1.66	55	5.24	7.56	5.75	78.02%
140	-1.64	73	5.58	9.24	6.74	68.31%
141	-1.62	40	5.37	7.62	6.06	69.33%
142	-1.60	121	5.59	8.28	6.37	71.00%
143	-1.56	31	5.49	8.53	6.33	72.37%
144	-1.54	45	5.18	7.62	6.00	66.39%
145	-1.52	48	5.48	7.75	6.23	66.96%
146	-1.50	26	5.33	8.04	6.43	59.41%
147	-1.46	113	5.52	9.10	8.14	26.82%
148	-1.44	51	5.23	9.05	6.98	54.19%
149	-1.42	54	5.45	8.48	6.61	61.72%
150	-1.40	19	5.36	8.32	6.53	60.47%
151	-1.38	4	5.44	9.01	6.96	57.42%
152	-1.36	58	5.39	7.38	6.16	61.31%
153	-1.34	61	5.59	9.09	7.29	51.43%
154	-1.32	66	5.43	7.97	6.56	55.51%
155	-1.28	49	5.27	7.71	6.24	60.25%
156	-1.26	74	5.64	10.48	6.59	80.37%
157	-1.24	10	5.34	8.63	6.79	55.93%
158	-1.22	11	5.36	7.91	6.45	57.25%
159	-1.20	47	5.57	8.71	6.83	59.87%
160	-1.18	38	5.28	7.03	6.01	58.29%
161	-1.16	46	5.52	7.73	6.38	61.09%
162	-1.14	78	5.43	7.92	6.36	62.65%
163	-1.12	2	5.34	8.01	6.35	62.17%
164	-1.10	15	5.35	7.61	5.84	78.32%
165	-1.08	57	5.54	8.08	6.47	63.39%
166	-1.06	?	5.43	8.42	6.49	64.55%
167	-1.04	56	5.39	8.13	6.38	63.87%
168	-1.02	122	5.63	7.83	6.50	60.45%
169	-1.00	116	5.43	7.16	6.05	64.16%
170	-0.98	70	5.38	8.19	6.54	58.72%
171	-0.96	63	5.40	8.69	6.79	57.75%

Table 65. North Woolwich percentage organic carbon results

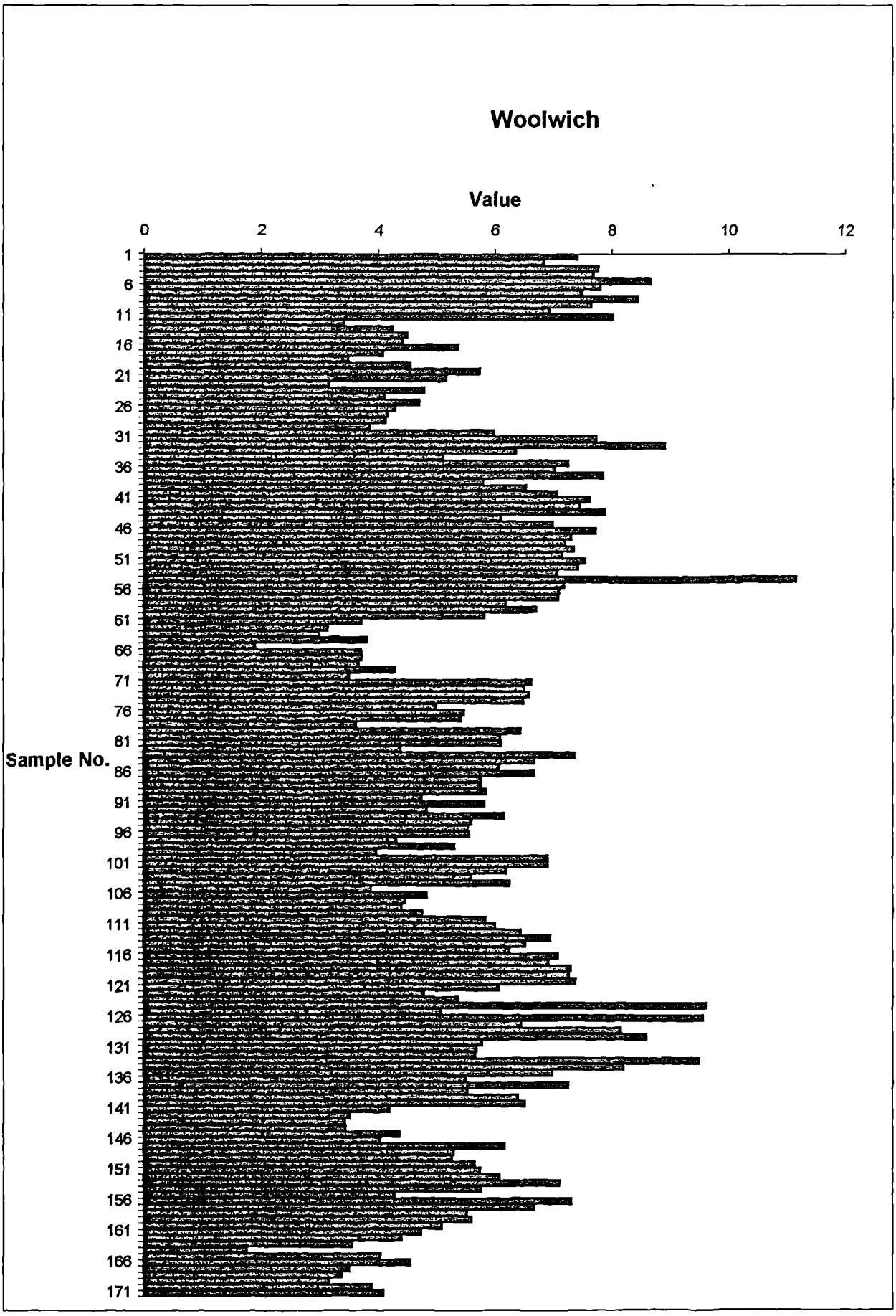

Figure 158. North Woolwich magnetic susceptibility graph

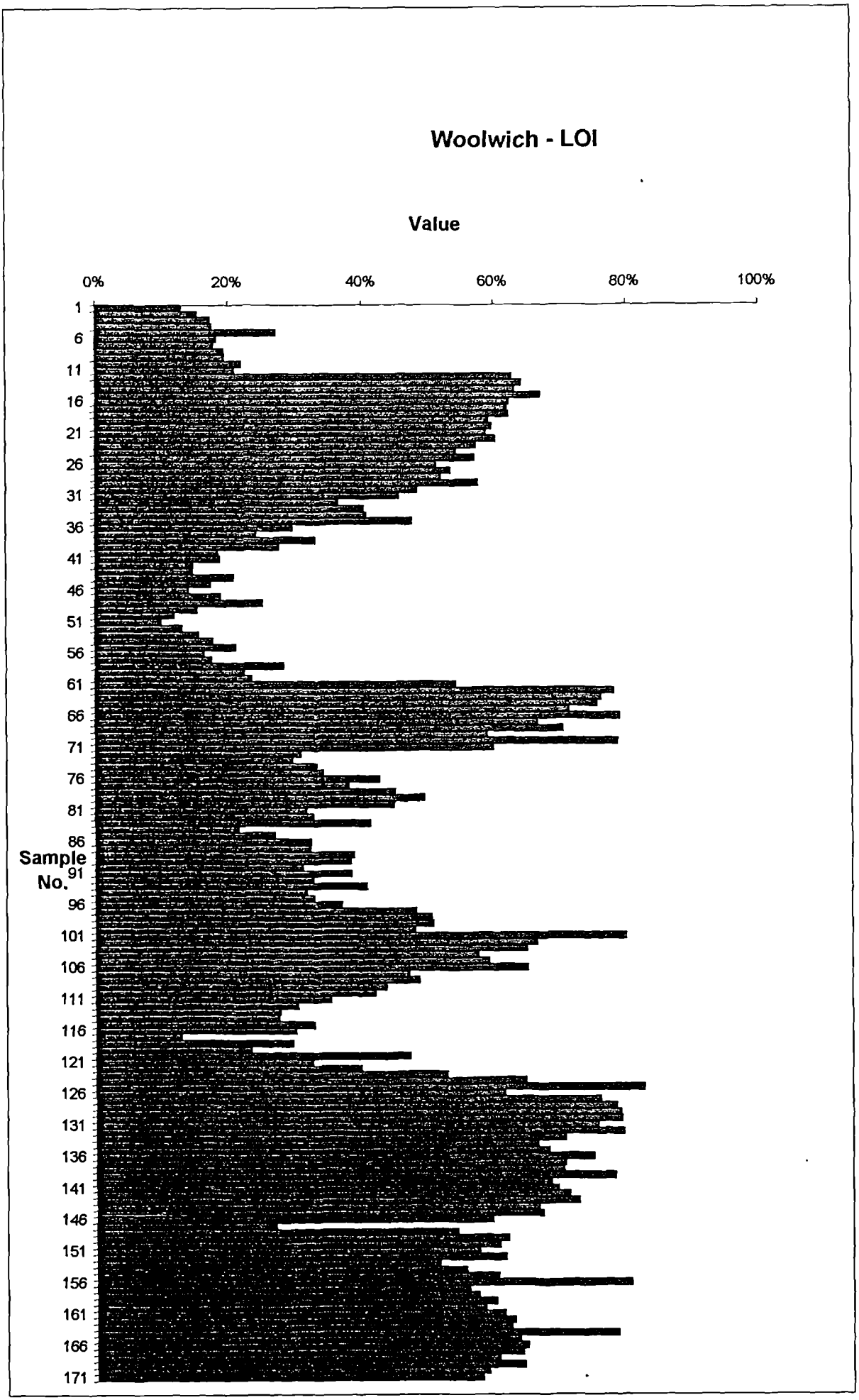

Figure 159. North Woolwich percentage organic carbon graph

4.2 Chronology

Radiocarbon

Six samples were submitted to Beta Analytic Inc., Miami for radiocarbon assay. The radiocarbon method is discussed in Chapter 3. The samples were cut from the monolith tins towards the base and top of the major organic unit (i.e. where the deposit would yield sufficient material to date).

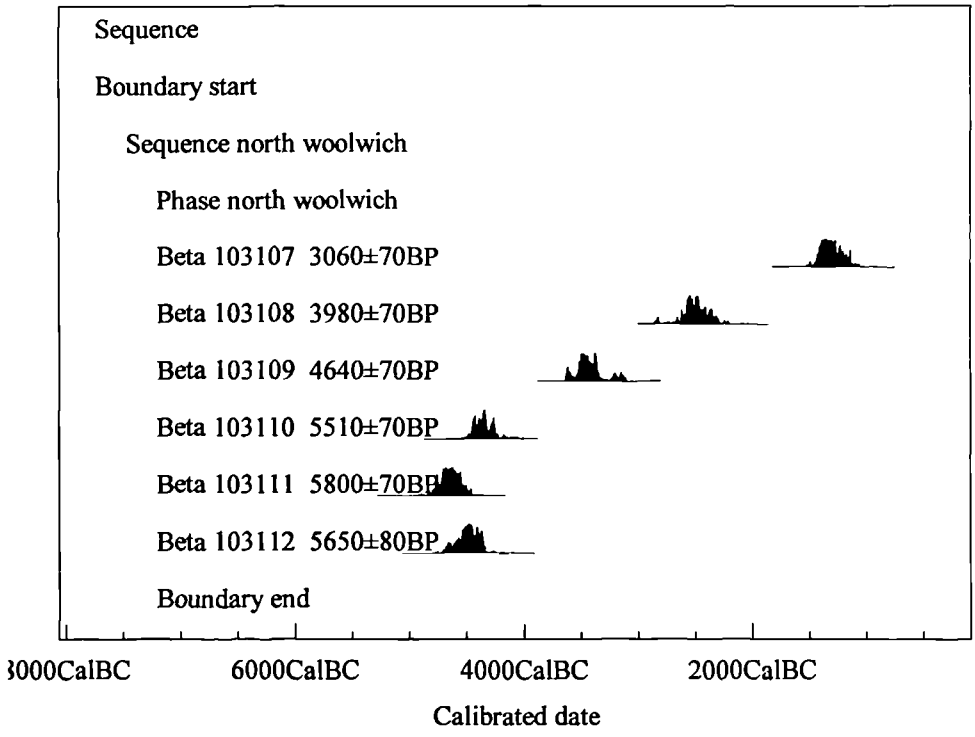

Figure 160. North Woolwich radiocarbon measurements

Sample number	Sample code	OD height	Material	Tendency	Tendency code (Shennan 1994)	Stratigraphic context	Radiocarbon years BP	$\delta^{13}C$ (‰)	Calendar years BP (2σ)	Calendar years BC (2 σ)
Beta 103107	WW-PS/1	- 1.10-1.05m	Black, humified organic mud with detrital wood fragments	Positive	1	At interface between upper peat and upper organic mud. Transgressive contact	3060 ± 70	-25.0 ‰*	3390-3080	1440-1130
Beta 103108	WW-PS/2	- 2.045-1.965m	Dark brown monocotyledonous peat with organic material, iron stained with some sand	None	8	Within upper peat unit	3980 ± 70	-25.0 ‰*	4810-4160	2860-2210
Beta 103109	WW-PS/3	- 2.455-2.395m	Dark greyish brown organic mud with well humified detrital woody and herbaceous fragments	Negative	5	At interface between middle organic mud and upper peat. Regressive contact	4640 ± 70	-25.0 ‰*	5580-5050	3630-3100
Beta 103110	WW-PS/4	- 3.415-3.375m	Dark brown organic mud with well humified detrital wood fragments	Positive	1	Top of basal peat. Transgressive contact	5510 ± 70	-25.0 ‰*	6440-6120	4490-4170
Beta 103111	WW-PS/5	- 4.14-4.10m	Black/dark grey well humified organic mud and well humified wood fragments	Positive	1	Silt clay within basal peat. Transgressive contact to thin mineral unit	5800 ± 70	-25.0 ‰*	6780-6410	4830-4460
Beta 103112	WW-PS/6	-4.50-4.46m	Black/dark grey well humified organic mud with well humified wood fragments	None	8	Towards base of basal peat	5650 ± 80	-25.0 ‰*	6640-6290	4690-4340

* estimated

Table 66. North Woolwich radiocarbon results

4.3 Biostratigraphy

Diatoms

Subsamples were split from the monolith tins for examination of diatoms. Samples were not split at equal distances throughout the sequence but were collected across contacts between organic and minerogenic sediments to examine the nature of aquatic conditions at these transitional periods.

Sample Number	OD height	Diatom group	Sedimentary group
1	-4.75	1	1
2	-4.73	1	2
3	-4.71	1	2
4	-4.69	1	2
5	-4.67	1	2
6	-4.65	1	2
7	-4.63	1	2
8	-4.61	1	2
9	-4.59	1	2
10	-4.57	1	2
11	-4.55	1	2
12	-4.53	1	2
13	-4.51	1	2
14	-4.01	2	2
15	-3.99	2	2
16	-3.97	2	2
17	-3.95	2	2
18	-3.93	2	2
19	-3.91	2	2
20	-3.23	3	3
21	-3.21	3	3
22	-3.19	3	3
23	-3.17	3	3
24	-2.98	4	4
25	-2.96	4	4
26	-2.95	4	4
27	-2.91	5	4
28	-2.89	5	4
29	-2.87	5	4
30	-2.68	6	4
31	-2.66	6	4
32	-2.64	6	4
33	-2.37	7	5
34	-2.35	7	5
35	-2.33	7	5
36	-2.31	7	5
37	-2.29	7	5
38	-2.27	7	5
39	-2.25	7	5
40	-2.23	7	5

41	-2.21	7	5
42	-2.10	8	5
43	-2.08	8	5
44	-2.06	8	5
45	-2.04	8	5

Table 67. North Woolwich diatom sample details

Diatom group 1 (samples 1-13, - -4.75-4.51m OD)

Only the occasional valve was identified from these samples, including a *Pinnularia* sp. and a *Pseudopodosira westii.*

Diatom group 2 (samples 14-19, -4.01 - -3.91m OD)

Preservation within this group was better. Sample 15 was not countable, whilst samples 18 and 19 required traverses of 20 and above to obtain 50 valves. The remaining samples (14, 16 and 17) required around 50 traverses to obtain the count of 200. *Nitzschia navicularis* and *Paralia sulcata* with a reasonable amount of *Pseudopodosira westii* dominate sample 14. One other species present in this sample that belongs to this group is *Diploneis didyma.* The *Paralia sulcata* group is also represented. In addition to a significant presence of *P. sulcata* (nearly 25%), this group also includes *Pseudopodosira westii,* which represents 15% of sample 14. One further group represented is the *Cyclotella striata* group. *C. striata, C. meneghiniana* and *Cyclotella* sp. make up nearly 20 % of this sample. There are also a few valves of *Pinnularia* sp. in this sample.

In sample 16 *N. navicularis* is dominant, achieving almost 50% dominance, with *P. sulcata* and *P. westii* close behind, with approximately 15% each. The *C. striata* group has dropped slightly, but still represents over 10% of the assemblage. There is a slight change with sample 17: *N. navicularis* forms only 25% of the assemblage, whilst *P. sulcata* and *P. westii* together form well over 50% and the *C. striata* group species have dropped below 10%. Samples 18 and 19 are difficult to discuss, as counts of 200 were not achieved, but rather only counts of 50 per sample owing to the very low valve concentration.

Diatom group 3 (samples 20-23, -3.23 - - 3.17m OD)

No valves were recovered from these samples.

Diatom group 4 (samples 24-26, -2.98 - – 2.95m OD)

In sample 24, *N. navicularis* dominates, with over 40% of the assemblage, however, this is nearly matched by the two main species of the *P. sulcata* group (again *P. westii* dominates over *P. sulcata*). *C. striata* is only approximately 10% if the *Cyclotella.* sp. and *C. meneghiniana* valves are included as part of the Vos and de Wolf (1993) *C. striata* group. Sample 25 indicates a slight decrease in the values of *N. navicularis,* whilst *P. westii* and *P. sulcata* stay fairly consistent with a large increase in *C. striata.* In sample 26 *N. navicularis* halves in value (to 20%) whilst *C. striata* alone climbs to values of over 60%. *P. westii* and *P. sulcata* also decrease against this.

Diatom group 5 (samples 27-29, -2.91 - -2.87m OD)

Sample 27 needs replacing. Sample 28 was dominated by the *Paralia sulcata* and *Nitzschia navicularis* groups with a much lower presence of *C. striata.* Sample 29 was not countable.

Diatom group 6 (samples 30-32, -2.68 - 2.64m OD)

Diatom group 7 (samples 33-41, -2.37 - 2.21m OD)

Diatom group 8 (samples 42-45, -2.10 - 2.08m OD)

Unfortunately, only occasional fragments were recovered from these samples, on the whole all from brackish species.

NORTH WOOLWICH DIATOMS																							
Sample number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Group	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	3	3	3	3
Traverses	3	3	3	3	3	3	3	3	3	3	3	3	3	48	3	59	59	20	23	3	3	3	3
OD height	-4.75	-4.73	-4.71	-4.69	-4.67	-4.65	-4.63	-4.61	-4.59	-4.57	-4.55	-4.53	-4.51	-4.01	-3.99	-3.97	-3.95	-3.93	-3.91	-3.23	-3.21	-3.19	-3.17
Achnanthes sp.																7							
Actinoptychus senarius														1		1							
cf *Cyclotella keutzinginiana*																1							
Cocconeis sp.														2		1							
Coscinodiscus sp.																	1						
Cyclotella antiqua														1		2							
Cyclotella meneghiniana														6		4	2						
Cyclotella sp.														19		12	2	2					
Cyclotella striata														13		10	10		3				
Diploneis didyma														7		1		2					
Diploneis sp.																	3		1				
Ellerbeckia arenaria?																			1				
Epithemia sp.														1									
Martyana martii														1		1							
Navicula sp.														2		1							
Nitzschia compressa?																			1				
Nitzschia granulata?																	2						
Nitzschia navicularis														74		92	48	14	19	1			
Paralia sulcata														41		28	49	9	5	1			
Pinnularia sp.						1								3		4	3						
Podosira stelligera																	6	4	3				
Pseudopodosira westii								1						29		35	70	18	16				
Rhaphoneis amphiceros																	1		2				
Rhaphoneis minutissima																		2					
Stephanodiscus sp.																1							
Tabellaria sp.																		2					

Thallasiosira sp.			.													1							
TOTAL	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**200**	**0**	**200**	**197**	**53**	**51**	**2**	**0**	**0**	**0**

NORTH WOOLWICH DIATOMS																							
Sample number	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	
Group	4	4	4	5	5	5	6	6	6	7	7	7	7	7	7	7	7	7	8	8	8	8	
Traverses	32	35	28	*	54	4	3	4	3	3	3	3	3	4	3	3	*	3	2	3	3	3	
OD height	-2.98	-2.96	-2.95	-2.91	-2.89	-2.87	-2.68	-2.66	-2.64	-2.37	-2.35	-2.33	-2.31	-2.29	-2.27	-2.25	-2.23	-2.21	-2.1	-2.08	-2.06	-2.04	
Actinoptychus senarius	2																						
cf *Biddulphia* sp			1																				
Cocconeis sp.		1																					
Coscinodiscus marginatus?	3																						
Coscinodiscus sp.			1		1																		
Cyclotella antiqua	5	1			1																		
Cyclotella meneghiniana	3		3		6													1					
Cyclotella sp.	4	5	7		6									1									
Cyclotella striata	17	50	127		19	1		1						1									
Diploneis bombus	4																						
Diploneis didyma	1	6			2	1																	
Diploneis interrupta			1																				
Diploneis sp.	1	2			2																		
Epithemia sp.	1	1			1																		
Gyrosigma sp.			1																				
Martyana martii																							
Navicula sp.														1									
Nitzschia punctata?	1																						
Nitzschia navicularis	81	74	38		85	4	2					frag		1	5			2					
Nitzschia palustris?																							
Nitzschia punctata var. *elongata*?				3																			

Opephora sp.		1	.																				
Paralia sulcata	23	23	11		26						0.5				2								
Pinnularia sp.	4				2																		
Podosira stelligera	7	4	2		3																		
Pseudopodosira westii	39	32	5		40	2	1	4			1							2		1			
Rhaphoneis amphiceros	4	4			3																		
Synedra cf *ulna*			2																				
Synedra sp.	1																						
Tabellaria sp.	1				2																		
TOTAL	**202**	**204**	**201**	**3**	**201**	**8**	**3**	**5**	**0**	**0**	**1.5**	**<1**	**0**	**4**	**7**	**0**	**0**	**5**	**0**	**1**	**0**	**0**

* - number of traverses not recorded

Table 68. North Woolwich diatom counts

Pollen

Dr. Rob Scaife undertook a preliminary assessment as part of the archaeological project on this site. The results have been used in the interpretative narrative and are summarized here with his permission.

Zone: 1 -4.50- -4.10m OD *Alnus, Corylus avellana* type, *Tilia*

Alnus dominates (to 80%) along with significant values of *Corylus avellana* (to 60%) and high basal values of *Tilia* (35%). *Quercus* and *Ulmus* are also relatively important whilst there are few herbs present. *Pteridium aquilinum* and *Dryopteris* spores are more important in the basal level of this zone.

Zone 2 –4.10 - -3.45m OD *Corylus avellana* type, *Alnus, Tilia, Pinus*

Alnus declines to *c.*30%. There are expansions of *Pinus* (to 25%), *Chenopodium* type (to 10%), Cyperaceae (peak to 10%) and spores of *Pteridium aquilinum* and *Dryopteris* type. There are also increases in miscellaneous types including cysts of algal *Pediastrum*, derived pre-Quaternary palynomorphs and Hystrichospheres/dinoflagellates. Values of *Ulmus, Quercus, Tilia* and *Corylus avellana* type remain similar to zone 1.

Zone 3 –3.45 - -1.60m OD *Alnus, Corylus avellana* type, *Tilia,*

Alnus expands to high values from the base of the zone while *Ulmus, Tilia* and *Corylus avellana* remain consistent. *Betula* and *Fraxinus* increase from zone 2 whilst Chenopodiaceae die out towards the top. Single cereal type pollen and *Plantago lanceolata* grains are noted at 2.92m OD. Spores of *Dryopteris* type remain important (45%).

Zone 4 -1.60 - -1.00m OD

In this zone, arboreal pollen declines whilst there is an expansion of herbs including notably *Plantago lanceolata, Chenopodium* type, Poaceae and cereal type as well as sporadic occurrences of a range of other herbs. There is a very marked expansion of *Pteridium aquilinum.*

Appendix 5. Silvertown Urban Village, London Borough of Newham, E16 (TQ 4050 8035)

Troels-Smith Classification Sheet																											
Site Code: BWC96/BH2			**Address:** West Silvertown urban village																							**OD top:**	+1.52m
				Described by:		ejs												**Date:** 27th December 1998								**OD base:**	-3.465m
Unit	**Tin**	**Meas**	**Physical Properties**							***Turfa***			***Detritus***			***Limus***			***Argilla***		***Grana***				**Accessory**	**Comment**
			NI	ST	EL	SI	COLOUR	LI	Sh	Tb	Tl	Th	Dg	Dh	Dl	Ld	Lc	Lf	As	Ag	Ga	Gs	Gg	GG	**elements**	Structure, Lso
1	7.4	0-8	3	0	0	3	10YR4/4dybr	0													2	+	+	2		
2	7.4	8-16	3	0	0	3	10YR3/3dkb	0													2	1	1	+		
3	7.4	16-27	4	0	0	3	10YR2/1bl	1	+											1	2	+	1	+		
4	7.4	27-43	4	0	0	3	10YR2/1bl	x	3						+				1		+		+			
5	6.9	0-43	4	1	0	3	10YR2/2vdkb	x	3						1^3				+		+					
6	6.3	0-44.5	4	1	0	3	10YR2/2vdkbr	x	3						1^4				+							
7	5.8	0-10	4	1	0	3	10YR2/2vdkb	0	+						1^4				2	1	+					
8	5.8	10-22	3	1	0	3	2.5YR3/1vdkg	0	+						1^4				2	1	+					
9	5.8	22-30	3	0	0	3	10YR2/2vdkb	0	+						+				2	2	+					
10	5.8	30-37	3	0	0	3	10YR3/2vdkb	0	+						+				3	1						
11	5.8	37-43	4	0	0	3	10YR2/2vdkbr	x	+										2	2						
12	4.7	0-24	3	0	0	3	10YR4/2dkgb	x										+	2	2						
13	4.05	0-31	3	0	0	3	10YR4/3br	x										+	2	2						
14	3.4	0-43	3	0	0	3	10YR4/2.5dkg	x										+	2	2						
15	2.7	0-10	2	0	0	3	10YR3/2vdkgb	1	+						+				2	2						
16	2.7	10-38	4	0	0	3	10YR2/1bl	0	1						1				1	1						
17	2.7	38-43	4	0	0	3	10YR2/1+4/3	x	3			+			+				1							
18	2.3	0-4	3	0	0	3	10YR4/3br	2	+										1	1	2					
19	2.3	4-9	4	0	0	3	10YR2/1bl	2							+				2	2	+					
20	2.3	9-31	3	0	0	3	10YR4/1dg	0											+	1	2	+	+	1		
21	2.3	31-34	4	0	0	3	10YR2/1bl	0	1										2	1				+		
22	2.3	34-44	3	0	0	3	10YR2/1bl	x	1						3^3											

Table 69. Silvertown BH2 sedimentary log

Troels-Smith Classification Sheet																										
Site Code:		BWC96/BH3		**Address:** West Silvertown urban village																					**OD top:**	+0.115m
				Described by: ejs																					**OD base:**	-2.325m
Unit	**Tin**	**Meas**	**Physical Properties**							***Turfa***			***Detritus***			***Limus***			***Argilla***		***Grana***				**Accessory**	**Comment**
			NI	ST	EL	SI	COLOUR	LI	Sh	Tb	Tl	Th	Dg	Dh	Dl	Ld	Lc	Lf	As	Ag	Ga	Gs	Gg	GG	**elements**	(inc. Structure, Lso)
1	6.25	0-20.5	4	0	0	3	10YR2/1bl	3	3	+		+			+				1							
2	6.25	20.5-21	3	0	0	3	10YR2/2vdkb	3							4^3											
3	6.25	21-32	3	0	0	3	10YR2/2vdkb	1	2						+				1	1						
4	6.25	32-35	3	0	0	3	10YR3/2vdkgb	1	+						+				3	1						
5	6.25	35-42	4	0	0	3	10YR2/2vdkb	0	2										1	1						
6	6.25	42-44	4	0	0	3	10YR2/2vdkb	x	2										1	1						
7	5.6	0-20	4	0	0	3	10YR2/1bl	0	2						+				1	1						
8	5.6	20-24	3	0	0	3	2.5Y3/1vdkg	0	1						+				2	1						
9	5.6	24-44	3	1	0	3	2.5Y3/1vdkg	x	+						1				2	1						
10	4.8	0-32	3	0	0	3	10YR4/4dkybr	x										+	2	2						
11	4.05	0-44	3	0	0	3	2.5Y4/3ob	x										+	2	2	+					fe root holes

Table 70. Silvertown BH3 sedimentary log

Troels-Smith Classification Sheet																										
Site Code:		BWC96/BH4	**Address:** West Silvertown urban village																					**OD top:**	-0.84m	
			Described by: ejs													**Date:** 27th December 1998								**OD base:**	-2.48m	
Unit	**Tln**	**Meas**	**Physical Properties**							***Turfa***			***Detritus***			***Limus***			***Argilla***		***Grana***				**Accessory**	**Comment**	
			Nl	ST	EL	Sl	COLOUR	Ll	Sh	Tb	Tl	Th	Dg	Dh	Dl	Ld	Lc	Lf	As	Ag	Ga	Gs	Gg	GG	**elements**	(inc. Structure, Lso)	
1	3.9	0-30	3	0	0	3	10YR4/2dkgb	1							+				+	1	3	+		+		
2	3.9	30-32	4	0	0	3	10YR2/2vdkb	0	3										1	+	+					
3	3.9	32-44	4	0	0	2	10YR2/1bl	x	4			+							+							
4	3.25	0-1	4	0	0	3	10YR2/1bl	1	3										1							
5	3.25	1-5	3	0	0	3	10YR3/2vdkgb	1											3	1						
6	3.25	5-7	4	0	0	3	10YR2/1bl	0	2			+			+				2							
7	3.25	7-32	4	0	0	3	10YR2/1bl	0	3			+			1											
8	3.25	32-34	4	0	0	3	10YR2/2vdkbr	0	2	+					+				2							
9	3.25	34-45	4	0	0	3	10YR2/2vdkb	x	1			+			+				3							
10	2.6	0-20	4	0	0	3	10YR2/2vdkb	0	1						1^3				2	+						
11	2.6	20-22	3	0	0	3	10YR3/2vdkgrb	0	+						+				2	2						
12	2.6	22-44	4	0	0	3	10YR2/2vdkb	x	1						+				2	1						

Table 71. Silvertown BH4 sedimentary log

Troels-Smith Classification Sheet																									
Site Code:		BWC96/BH5	**Address:** West Silvertown urban village																					**OD top:**	-1.15m
				Described by: ejs																				**OD base:**	-2.80m
Unit	**Tln**	**Meas**	**Physical Properties**							***Turfa***			***Detritus***			***Limus***			***Argilla***		***Grana***				**Accessory**	**Comment**
			Nl	ST	EL	Sl	COLOUR	Ll	Sh	Tb	Tl	Th	Dg	Dh	Dl	Ld	Lc	Lf	As	Ag	Ga	Gs	Gg	GG	**elements**	(inc. Structure, Lso)
1	4.4	0-24	4	0	0	3	10YR2/1bl	0	4			+			+				+		+			+		
2	4.4	24-45	4	0	0	3	10YR2/1bl	x	3			+			1[2]				+		+					
3	3.8	0-16	4	0	0	3	10YR2/1bl	0	4			+			+				+							
4	3.8	16-20	3	0	0	3	2.5Y3/2vdkgb	0	+						2				2							
5	3.8	20-26	4	0	0	3	10YR2/1bl	0	3			+			+				1							
6	3.8	26-46	4	0	0	3	10YR2/2vdkb	x	2			+			+				2							
7	3.2	0-8	4	0	0	2	10YR2/2vdkb	0	1						+				2	1						
8	3.2	8-24	3	0	0	2	10YR3/2vdkgb	0	+						+				3	1						
9	3.2	24-44	3	0	0	2	10YR3/2vdkgb	x	+						+				3	1						

Table 72. Silvertown BH5 sedimentary log

Troels-Smith Classification Sheet																										
Site Code:		BWC96/BH6		**Address:** West Silvertown urban village																				**OD top:**	+1.74m
				Described by: ejs																				**OD base:**	-2.51m
Unit	**Tin**	**Meas**	**Physical Properties**							***Turfa***			***Detritus***				***Limus***		***Argilla***		***Grana***				**Accessory**	**Comment**
			NI	ST	EL	SI	COLOUR	LI	Sh	Tb	Tl	Th	Dg	Dh	Dl	Ld	Lc	Lf	As	Ag	Ga	Gs	Gg	GG	**elements**	(inc. Structure, Lso)
1	6.5	0-2	4	0	0	3	10YR2/2vdkb	4							4 [4]									+		
2	6.5	2-9	4	0	0	3	10YR2/2vdkb	0	4			+			+						+					
3	6.5	9-38	4	0	0	3	10YR2/1bl	x	2						+				1	1	+					
4	5.9	0-13	4	0	0	3	10YR2/2vdkb	0	2						+				1	1						
5	5.9	13-17	3	0	0	3	2.5Y3/1vdkg	0	+						+				3	1						
6	5.9	17-20	3	0	0	3	2.5Y3.5/1vdkg	2	+						+				3	1						
7	5.9	20-22	4	0	0	3	10YR2/2vdkb	0	4						+						+					
8	5.9	22-29.5	3	0	0	3	10YR3/1vdkg	0	+						1				1	1	1					
9	5.9	29.5-36	3	0	0	3	10YR3/1vdkg	0							+				2	1	1					
10	5.9	36-42	3	0	0	3	10YR2.5/1bl-vdb	0	+						+				2	1	1					
11	5.9	42-44	3	0	0	3	10YR2/1bl	x	2						+				1	1	+					
12	5.4	0-33	4	0	0	3	10YR2/2vdkb	0	+						+				2	2	+					sl.lighter+less wood
13	5.4	33-41	4	0	0	3	10YR2/2vdkb	x	+						+				2	2	+					
14	4.3	0-30	3	0	0	3	2.5Y4/1.5dk/b	x										+	2	2	+					
15	3.2	0-4	3	0	0	3	10YR3/3dkb	1	1						+			+	2	1						
16	3.2	4-38	3	0	0	3	10YR4/3br	x							+				3	1						
17	2.3	0-44	3	0	0	3	10YR4/2	x											3	1						

Table 73. Silvertown BH6 sedimentary log

Troels-Smith Classification Sheet																										
Site Code:		BWC96/BH7	**Address:** West Silvertown urban village																						**OD top:**	+2.47m
			Described by: ejs																						**OD base:**	-1.35m
Unit	**Tin**	**Meas**	**Physical Properties**							***Turfa***			***Detritus***			***Limus***			***Argilla***		***Grana***				**Accessory**	**Comment**
			NI	ST	EL	SI	COLOUR	LI	Sh	Tb	Tl	Th	Dg	Dh	Di	Ld	Lc	Lf	As	Ag	Ga	Gs	Gg	GG	***elements***	*(inc. Structure, Lso)*
1	7.1	0-6	4	0	0	3	2.5y2.5/1lbl	0	1						+[4]				2	1						
2	7.1	6-12	3	0	0	3	2.5Y3/1vdkg	0	+										1	1	2					
3	7.1	12-20	3	0	0	3	2.5Y2.5/1bl	0	+						+[3]				2	2						
4	7.1	20-31	4	0	0	3	10YR2/2vdkbr	x	3			+			+[3]				1							
5	6.2	0-30	4	0	0	3	10YR2/1bl	0	3	+		+			+			+	1							
6	6.2	30-39	4	0	0	3	10YR3/1vdkgr	x	2										2	+						
7	5.05	0-46	3	0	0	3	2.5Y4/2dkgb	x											2	2						
8	4.3	0-16	3	0	0	3	2.5Y3/2vdkgrb	3											2	2						
9	4.3	16-26	4	0	0	3	10YR2/1bl	3	3			+			+			+	1		+					
10	4.3	26-46	3	0	0	3	2.5Y3/2vdkgrb	x										+	3	1						
11	3.5	0-18	3	0	0	3	10YR3/2vdkgrb	2	+						+				3	1						
12	3.5	18-25	4	0	0	3	10YR2/1bl	2	3			+			+				1	+						
13	3.5	25-31	3	0	0	3	10YR4/3br	2	+										3	1						
14	3.5	31-35	4	0	0	3	10YR2/2vdkbr	x	2			+			+				1	1						

Table 74. Silvertown BH7 sedimentary log

Troels-Smith Classification Sheet																										
Site Code:		BWC96/BH8		**Address:** West Silvertown urban village																				**OD top:**	+3.165m
				Described by: ejs																				**OD base:**	-2.635m
Unit	**Tin**	**Meas**	**Physical Properties**							***Turfa***			***Detritus***			***Limus***			***Argilla***		***Grana***				**Accessory**	**Comment**
			NI	ST	EL	SI	COLOUR	LI	Sh	Tb	Tl	Th	Dg	Dh	Dl	Ld	Lc	Lf	As	Ag	Ga	Gs	Gg	GG	***elements***	(inc. Structure, Lso)
1	10.1	0-9	2	0	0	3	10YR4/3dkgrb	1													2	1	1		tes	
2	10.1	9-19	2	0	0	3	10YR4/3dkgrb	1				+							+	+	2	1	1		tes	
3	10.1	19-24	4	1	0	3	10YR3/2vdkgbr	0							+				2	1	1					
4	10.1	24-30	4	0	0	3	10YR2/2vdkbr	0	1										2	1	+					
5	10.1	30-43	4	0	0	3	10YR2/1bl	x	+						+				3	1	+					
6	9.25	0-8	4	0	0	3	2.5Y2.5/1bl	0											3	1	+					
7	9.25	8-13	4	0	0	3	10YR2/1bl	0	1										2	1						
8	9.25	13-19	4	0	0	3	10YR2/1bl	0	2						+				2	+						
9	9.25	19-30.5	4	0	0	3	10YR2.5/1vdg/bl	0	1						+				2	1						
10	9.25	30.5-44	3	0	0	3	10YR3/2vdkgrb	x	+						+				3	1						
11	8.6	0-15.5	4	0	0	3	10YR2/2vdkbr	3	2			+			+				1	1						
12	8.6	15.5-18	4	0	0	3	10YR2/2vdkbr	3							4^3											
13	8.6	18-38	4	0	0	3	10YR2/2vdkbr	0	2						+				1	1						
14	8.6	38-44	3	0	0	3	10YR3/1vdkgb	x	1			+			+				2	1						
15	8.1	0-3	4	0	0	3	10YR2/1bl	3	3	+		+			+				1							
16	8.1	3-5	4	0	0	3	10YR2/1bl	3							4^3											
17	8.1	5-14	4	0	0	3	10YR2/2vdkbr	3	3	+		+			+				1							
18	8.1	14-14.5	4	0	0	3	10YR2/2vdkbr	3							4^3											
19	8.1	14.5-43	4	0	0	3	10YR2/1bl	x	3	+		+			+				1							
20	7.3	0-22	4	0	0	3	10YR2/1bl	0	3	+		+			1											
21	7.3	22-26	3	0	0	3	10YR2/1bl	0	+										3	1						

22	7.3	26-34	4	0	0	3	10YR2/1bl	x	4	+		+			+										
23	6.6	0-12	4	0	0	3	10YR3/3dkbr	0	+										2	2	+					
24	6.6	12-22	3	0	0	3	10YR4.5/2vdgbr	0											3	1						
25	6.6	22-45	3	0	0	3	10YR4/2dkgbr	x											2	2	+					
26	5.55	0-34	3	0	0	3	10YR4/3br	0											2	2						
27	5.55	34-42	3	0	0	3	10YR3/2vdkgbr	x											2	2						
28	4.85	0-45	3	0	0	3	5Y4/1dkgrey	x											2	2	+	+	+	1		
29	4.4	0-8	3	0	0	3	10YR3/2vdgbr	2											+	1	2	+	+	1		
30	4.4	8-14	4	0	0	3	10YR2/1bl	3	4			+			+							+				
31	4.4	14-16	3	0	0	3	2.5Y4/2dkbr	x											1	1	2	+				
32	3.9	0-4	3	0	0	3	2.5Y2.5/1bl	4	+										2	2						
33	3.9	4-7	3	0	0	3	10YR4/3br	3											+	+	3		1			degraded fired clay
34	3.9	7-18	4	0	0	3	10YR2/1bl	2	3						+				1		+					
35	3.9	18-28	3	0	0	3	10YR3/2vdkgbr	3	+										3	1						
36	3.9	28-34	3	0	0	3	10YR5/6vbr	x													4	+	+			

Table 75. Silvertown BH8 sedimentary log

5.1 Lithology

The monolith tins were cleaned and described according to methods outlined in Chapter 3. A summary of the sedimentary grouping is given below.

BH2

Group 1 (units 1-3, -3.465-3.195m OD)

This group consists of the basal sand and gravel of the Shepperton Terrace. The group displays a fining upwards tendency, with some silt sized material in unit 3; this unit also contains some traces of undifferentiated organic material. Contact was gradual to group 2.

Group 2 (units 4-6, -3.195-1.96m OD)

This substantial stratum consists of mainly undifferentiated *substantia humosa* with some woody fragments and low quantities of mineral sediment. The upper units of this group were weakly laminated. The contact to the next group was lost in the cutting shoe at this point.

Group 3 (units 7-11, -1.91-1.45m OD)

This group represents a mineral dominated facies group with a series of silt clays, with well-humified woody fragments and indistinguishable organic material. The lower units were weakly laminated. The contact to the next group was lost in the cutting shoe, as indeed was some additional sediment from the sequence.

Group 4 (units 12-15, -0.88-+0.65m OD)

This group consists of clay-silt, with very little organic content, towards the top of the group. The lower three units all exhibit signs of sub aerial weathering, with iron oxide, or *limus ferrugineous* contained within the sediment. Contact to the next group was gradual.

Group 5 (units 16-17, +0.65-98m OD)

This group shows an increase in the organic content, with both wood and herbaceous material contained within an increasingly organic unit. Unfortunately, contact to the next unit was lost in the cutting shoe.

Group 6 (unit 18, +1.08-1.12m OD)

This unit is a thin band of silt/clay sand, with some traces of *substantia humosa*. Contact to the next unit was relatively gradual.

Group 7 (units 19-21, +1.12-1.42m OD)

This stratum is mineral dominated and coarsens upwards, with some gravel inclusions, but towards the very top, begins to fine up and also includes a small proportion of *substantia humosa*. Contact to the next unit was gradual.

Group 8 (unit 22, +1.42-1.52m OD)

This final unit consisted mainly of badly degraded wood, within a matrix of *substantia humosa*. It was sealed below the modern overburden.

BH3

Group 1 (units 1-3, -2.325-2.005m OD)

This group is organic dominated, with a peat at the base, consisting of mainly degraded material, but with moss, wood and herbaceous fragments. There is a small mineral component, which increases within the group. Contact to the next unit was gradual.

Group 2 (unit 4, -2.005-1.975m OD)

This unit is a thin band of mineral sediment with some traces of *substantia humosa* and wood. Contact to the next unit was gradual.

Group 3 (units 5-9, -1.975-1.245m OD)

This stratum is an organic mud with some traces of wood, but otherwise the organic material is thoroughly degraded. The organic content decreases relative to the mineral up the group. Contact to the next group unfortunately was lost in the cutting shoe.

Group 4 (units 10-11, -0.945-+0.115m OD)

These final units are silt clays with some sand towards the upper part. *Linus ferrugincous* was noted throughout, associated with what appear to be root holes. This group was sealed below the modern overburden.

BH4

Group 1 (unit 1, -2.48-2.18m OD)

This unit is the sand and gravel of the Shepperton Terrace, also including some woody fragments. Contact to the next unit was gradual.

Group 2 (units 2-4, -2.18-1.83m OD)

This group is an organic sequence, with a small proportion of clay (and some sand at the base). The organic material was almost entirely *substantia humosa*, but traces of herbaceous plant fragments were noted. Contact to the next unit was gradual.

Group 3 (unit 5, -1.83-1.78m OD)

This is a very thin unit of silt clay, with no inclusions observed. Contact to the next group was gradual.

Group 4 (units 6-7, -1.78-1.51m OD)

These units are organic, with some mineral component in the lower part, but becoming fully organic, composed mainly of undifferentiated *substantia humosa* but also including wood and *turfa herbacea.* Contact to the next unit was gradual.

Group 5 (units 8-12, -1.51-0.84m OD)

This final group, sealed beneath the modern overburden, is an organic mud, with fluctuating levels of mineral:organic. Wood fragments were observed in all units within the group.

BH5

Group 1 (units 1-3, -2.80-2.04m OD)

This basal group is essentially a highly degraded black peat with some clay and sand (and gravel in the basal unit) sitting above the terrace gravel. Both wood and *turfa herbacea* were noted as inclusions. Contact to the next unit was gradual.

Group 2 (unit 4, -2.04-2.0m OD)

This unit is an organic mud, composed of clay and wood, with some undifferentiated substantia humosa. Contact to the next group was gradual.

Group 3 (units 5-6, -2.0-1.74m OD)

This group was also an organic mud, with increasing mineral component upwards. The organic part was mainly *substantia humosa* with woody and herbaceous fragments. Unfortunately, contact to the next unit was lost in the cutting shoe.

Group 4 (units 7-9, -1.59-1.15m OD)

This final group, sealed below the modern overburden is mineral dominated, with low proportions of *substantia humosa* and also wood.

BH6

Group 1 (unit 1, -2.51-2.49m OD)

This thin horizon consisted of degraded wood mainly, with some gravel sized clasts. Contact to the next unit was abrupt.

Group 2 (units 2-4, -2.49-1.90m OD)

This group is initially a highly degraded peat, but incurs a mineral component, with the formation of an organic mud, with both *substantia humosa* and woody fragments. Contact to the next unit was gradual.

Group 3 (units 5-6, -1.90-1.83m OD)

These units are mineral dominated, silt clay, with a low quantity of both *substantia humosa* and woody fragments. Contact to the next unit was relatively abrupt.

Group 4 (unit 7, -1.83-1.81m OD)

This unit is a thin organic band, with some sand and degraded wood present within the matrix of *substantia humosa*. Contact to the next group was gradual.

Group 5 (units 8-10, -1.81-1.61m OD)

This group is almost entirely mineral based, with sand silt clays and low quantities of organics, both wood and *substantia humosa*. Contact to the next unit was gradual.

Group 6 (unit 11, -1.61-1.59m OD)

This thin unit consists of organic mud, half *substantia humosa* and half clay silt, with low proportions of sand and wood fragments. Unfortunately, the contact to the next unit was lost in the cutting shoe.

Group 7 (units 12-17, -1.54-+1.74m OD)

This final stratum consists of a mineral sediment, containing sands at the base but fining up to become a silt clay at the top, where the group was sealed below the modern overburden. Iron staining was noted halfway up the group, where the unit began to fine upwards, and at a level where the organic component increased slightly.

BH7

Group 1 (unit 1, -1.35-1.29m OD)

This basal unit consists of a organic mud overlying the Shepperton Terrace. Very degraded wood was also noted. Contact to the next unit was gradual.

Group 2 (units 2-3, -1.29-1.15m OD)

This group was less organic with only traces of *substantia humosa* and wood. It fined up from the base of the group, but no laminations were observed. Contact to the next unit was gradual.

Group 3 (units 4-6, -1.15-0.20m OD)

This stratum is highly organic, but with a small clay content throughout. The matrix is mainly *substantia humosa* with woody and herbaceous fragments and a small moss component. The middle unit also exhibited signs of weathering. Unfortunately there was a substantial loss of sediment at this point in the sequence.

Group 4 (units 7-8, +0.50-1.42m OD)

This stratum was composed solely of grey clay silt, with no structure or inclusions. Contact to the next unit was abrupt.

Group 5 (unit 9, +1.42-1.52m OD)

This unit is a thin organic band, composed mainly of *substantia humosa* with some clay and less sand, wood and *turfa herbacea*. The unit appears to have been weathered, suggested by the presence of *limus ferrugineous*. Contact to the next group was abrupt.

Group 6 (units 10-11, +1.52-2.3m OD)

This group is mineral dominated, with some wood and *substantia humosa* in the upper unit. The lower unit shows the weathering present within group 5. Contact to group 7 was relatively gradual.

Group 7 (unit 12, +2.3-2.37m OD)

This unit is a thin black organic mud; mainly *substantia humosa* with clay and less silt, wood and herbaceous fragments within the matrix. Contact to the next unit was relatively gradual.

Group 8 (unit 13, +2.37-2.43m OD)

This unit is a silt clay, with only limited traces of organic material in the form of *substantia humosa.* Contact to the next unit was relatively gradual.

Group 9 (unit 14, +2.43-2.47m OD)

This final unit, beneath the modern overburden consisted of organic mud; half *substantia humosa* and half clay silt. Wood and *turfa herbacea* were also present within the matrix.

BH8

Group 1 (units 1-2, -2.635-2.445m OD)

This group consists of the sand and gravel of the Shepperton Terrace, containing a few fragments of smashed mollusc shell and plant material. It fines upward, with a silt clay component within the matrix in the higher levels. Contact to the next group was gradual.

Group 2 (units 3-6, -2.445-1.725m OD)

This group is composed of a series of minerogenic units which fine upwards from a sand silt clay to a clay rich unit containing low proportions of sand and some organic traces; both *substantia humosa* and *turfa herbacea.* Contact to the next unit was gradual.

Group 3 (units 7-9, -1.725-1.5m OD)

These units form a group of black organic muds in which the organic material is highly degraded and consists mainly of *substantia humosa* with occasional fragments of wood. Contact the next unit was gradual.

Group 4 (unit 10, -1.5-1.365m OD)

This unit consists of more highly minerogenic sediment, with only small traces of *substantia humosa* and wood fragments. Unfortunately, the contact to the next unit and some additional sediment was lost in the cutting shoe and at the junction between samples.

Group 5 (units 11-20, -1.165-+0.325m OD)

Group 5 consists of a substantial stratum of organic rich sediment, in some cases the mineral content reaches approximately 50%, but this is rare. Some units are entirely wood based (degraded) and wood is present throughout the sequence. Other organic material includes moss and *turfa herbacea.* One the whole, the organic material is contained within a matrix of undifferentiated unlaminated *substantia humosa.* Contact to the next unit was gradual.

Group 6 (unit 21, +0.325-0.365m OD)

This unit is a thin hiatus between two highly organic groups. It consists of traces of *substantia humosa* and black clay dominated mineral sediment. Contact to the next unit was gradual.

Group 7 (unit 22, +0.365-0.445m OD)

This unit represents a reversal to organic sedimentation with a highly degraded black peat, consisting of *substantia humosa,* moss, wood and herbaceous plant fragments. Contact to the next unit was at the junction of U4/100 tins and could not be recorded with certainty.

Group 8 (units 23-27, +0.445-1.915m OD)

This group is made up of mineral sediment, mainly silt/clay with some sand present in the lower units, along with a few traces of *substantia humosa* in the lowest unit. No structure was observed within any of the sediment. Contact was once again at the junction between U4/100 samples and could not be recorded with certainty.

Group 9 (units 28-29, +2.165-2.695m OD)

This sediment shows a substantial increase in grain size with dark grey/brown gravel present in both units, in additional to sand and silt/clay. The stratum coarsens upwards with a relatively abrupt contact to the subsequent unit.

Group 10 (unit 30, +2.695-2.755m OD)

This unit is a further peat band, consisting of black *substantia humosa* with wood and *turfa herbacea* fragments and small quantities of sand. Contact to the next group was abrupt.

Group 11 (units 31-33, +2.755-2.895m OD)

This group is a further relatively coarse-grained sediment, although not as clast-dominated as group 9. The overall tendency is coarsening upwards, with the upper levels mainly sand with some gravel. Degraded fired clay was noted at this level. Contact to the next unit was abrupt.

Group 12 (unit 34, +2.895-3.005m OD)

This is a further thin peat band, although there is a small mineral component present. Otherwise, the organic part is composed of black *substantia humosa* and some wood fragments. Contact to the next unit was relatively abrupt.

Group 13 (unit 35, +3.005-3.105m OD)

This is a thin mineral unit, of unlaminated grey brown silt clay with traces of *substantia humosa*. Contact to the next unit was abrupt.

Group 14 (unit 36, +3.105-3.165m OD)

This final unit, truncated beneath the modern overburden is a further reversal to coarse-grained mineral sediment being almost wholly composed of sand, with some larger sized clasts present within that matrix. No organic material was noted.

Magnetic susceptibility (low frequency)

Samples for magnetic susceptibility were split off from the U4/100 cores from BH8. Full methodology can be found in Chapter 3.

Sample number	m. OD	Pot number	Pot weight (g)	Pot+sed weight (g)	Sediment weight (g)	Value
1	2.315	274	4.11	15.19	11.08	25.81
2	2.295	382	3.96	15.37	11.41	24.91
3	2.275	351	4.03	14.33	10.30	25.44
4	2.255	292	4.05	15.32	11.27	19.34
5	2.235	290	4.08	14.76	10.68	20.19
6	2.215	277	4.06	14.90	10.84	20.83
7	2.195	365	4.10	15.67	11.57	20.47
8	2.175	362	4.10	15.94	11.84	21.06
9	2.155	383	4.03	15.14	11.11	20.27
10	2.135	280	4.10	15.37	11.27	20.13
11	2.115	371	4.06	13.14	9.08	19.27
12	2.095	370	4.05	13.90	9.85	19.85
13	2.075	279	4.08	13.63	9.55	18.17
14	2.055	380	4.05	15.03	10.98	18.27
15	2.035	356	4.03	15.10	11.07	17.30
16	2.015	259	4.01	13.74	9.73	18.76
17	1.995	381	4.03	14.92	10.89	18.76
18	1.975	387	4.04	14.67	10.63	18.44
19	1.955	373	4.00	14.33	10.33	18.06
20	1.285	273	4.07	14.34	10.27	11.84
21	1.265	260	4.08	14.62	10.54	11.05
22	1.245	287	4.05	13.64	9.59	13.45
23	1.225	294	4.15	15.03	10.88	13.49
24	1.205	385	4.04	14.86	10.82	12.41
25	1.185	222	4.23	15.75	11.52	14.17
26	1.165	223	4.18	14.74	10.56	12.41
27	1.145	224	4.22	15.33	11.11	15.99
28	1.125	213	4.22	15.50	11.28	12.52
29	1.105	219	4.02	15.38	11.36	12.94
30	1.085	209	4.25	15.10	10.85	12.71
31	1.065	228	4.04	14.72	10.68	15.89
32	1.045	212	4.06	15.37	11.31	23.45
33	1.025	215	4.04	14.85	10.81	16.16
34	1.005	216	4.09	15.35	11.26	17.04
35	0.985	217	4.06	14.68	10.62	14.43
36	0.965	221	4.04	15.02	10.98	14.77
37	0.945	226	4.04	12.04	8.00	8.75
38	0.925	210	4.04	9.64	5.60	6.61
39	0.905	211	4.03	8.53	4.50	9.00
40	0.885	235	4.00	9.14	5.14	10.02
41	0.865	232	4.28	10.29	6.01	8.74
42	0.585	234	4.21	8.13	3.92	43.62
43	0.565	214	4.27	5.72	1.45	10.00
44	0.545	230	4.24	8.50	4.26	5.05
45	0.525	227	4.01	7.22	3.21	10.44
46	0.505	236	4.25	6.58	2.33	4.94
47	0.485	233	4.25	8.03	3.78	7.67

48	0.465	231	4.18	11.42	7.24	8.15
49	0.445	225	4.07	8.79	4.72	9.64
50	0.425	229	4.16	10.40	6.24	8.81
51	0.405	306	4.11	9.77	5.66	6.71
52	0.385	305	4.05	8.09	4.04	12.38
53	0.365	301	4.14	9.50	5.36	9.79
54	0.345	300	4.11	9.37	5.26	14.73
55	0.325	304	4.09	8.04	3.95	13.42
56	0.305	303	4.05	9.15	5.10	12.45
57	0.285	302	4.10	8.84	4.74	19.30
58	-0.215	71	4.22	10.39	6.17	46.68
59	-0.235	33	4.23	10.09	5.86	12.88
60	-0.255	131	4.22	7.56	3.34	6.59
61	-0.275	135	4.22	9.82	5.60	7.77
62	-0.295	66	4.37	9.65	5.28	4.83
63	-0.315	44	4.21	9.59	5.38	9.11
64	-0.335	23	4.38	9.35	4.97	11.17
65	-0.355	41	4.24	9.79	5.55	11.98
66	-0.375	43	4.37	10.44	6.07	12.69
67	-0.395	25	4.22	8.03	3.81	10.76
68	-0.415	27	4.21	9.44	5.23	6.88
69	-0.435	73	4.26	8.96	4.70	5.00
70	-0.455	9	4.38	9.05	4.67	4.28
71	-0.475	4	4.22	7.83	3.61	6.51
72	-0.495	7	4.21	7.82	3.61	6.51
73	-0.515	70	4.27	8.41	4.14	8.45
74	-0.535	14	4.26	9.08	4.82	8.30
75	-0.555	57	4.26	6.72	2.46	6.91
76	-0.575	17	4.22	7.78	3.56	2.25
77	-0.595	38	4.26	8.74	4.48	8.59
78	-0.715	2	4.25	12.18	7.93	26.17
79	-0.735	36	4.35	11.55	7.20	22.64
80	-0.755	74	4.24	10.56	6.32	14.16
81	-0.775	10	4.37	9.87	5.50	3.82
82	-0.795	11	4.35	10.50	6.15	6.42
83	-0.815	45	4.35	10.97	6.62	5.51
84	-0.835	3	4.20	8.48	4.28	5.37
85	-0.855	49	4.24	9.69	5.45	7.52
86	-0.875	54	4.37	10.20	5.83	7.20
87	-0.895	156	4.20	7.69	3.49	5.44
88	-0.915	16	4.25	9.76	5.51	10.80
89	-0.935	158	4.36	9.39	5.03	7.46
90	-0.955	69	4.26	7.96	3.70	3.51
91	-0.975	30	4.25	7.35	3.10	6.13
92	-0.995	24	4.22	10.19	5.97	6.37
93	-1.015	150	4.28	9.76	5.48	6.02
94	-1.035	162	4.24	8.57	4.33	6.58
95	-1.055	153	4.25	9.18	4.93	4.67
96	-1.075	157	4.25	8.36	4.11	8.39
97	-1.095	58	4.23	9.03	4.80	5.42
98	-1.115	67	4.36	8.80	4.44	6.64
99	-1.135	6	4.22	10.59	6.37	5.10
100	-1.365	13	4.35	14.27	9.92	17.79
101	-1.385	37	4.22	12.97	8.75	16.65
102	-1.405	155	4.22	10.89	6.67	13.12
103	-1.425	55	4.21	13.08	8.87	10.32

104	-1.445	52	4.27	12.20	7.93	10.47
105	-1.465	39	4.23	13.48	9.25	10.16
106	-1.485	151	4.37	13.91	9.54	9.17
107	-1.505	154	4.37	10.59	6.22	21.38
108	-1.525	22	4.25	10.06	5.81	13.94
109	-1.545	47	4.22	8.50	4.28	12.50
110	-1.565	5	4.20	10.34	6.14	14.82
111	-1.585	1	4.22	11.21	6.99	10.09
112	-1.605	48	4.25	9.13	4.88	13.22
113	-1.625	15	4.20	9.40	5.20	15.19
114	-1.645	18	4.25	9.15	4.90	16.94
115	-1.665	62	4.26	9.06	4.80	13.54
116	-1.685	32	4.25	8.11	3.86	11.53
117	-1.705	46	4.26	7.99	3.73	13.14
118	-1.725	26	4.28	8.62	4.34	15.09
119	-1.745	65	4.22	6.54	2.32	19.83
120	-1.765	34	4.20	8.89	4.69	14.39
121	-2.215	28	4.26	10.26	6.00	21.33
122	-2.235	40	4.37	9.69	5.32	24.62
123	-2.255	159	4.21	8.75	4.54	24.01
124	-2.275	35	4.20	9.34	5.14	23.83
125	-2.295	42	4.23	8.81	4.58	19.10
126	-2.315	160	4.36	9.08	4.72	18.96
127	-2.335	64	4.21	9.71	5.50	21.55
128	-2.355	137	4.24	11.05	6.81	35.98
129	-2.375	163	4.27	12.41	8.14	21.19
130	-2.395	20	4.26	11.89	7.63	16.84
131	-2.415	147	4.25	11.09	6.84	11.18
132	-2.435	8	4.25	11.56	7.31	11.90
133	-2.455	59	4.22	13.56	9.34	10.55
134	-2.475	134	4.27	13.29	9.02	8.26
135	-2.495	72	4.36	12.01	7.65	11.11
136	-2.515	21	4.22	12.17	7.95	16.35
137	-2.555	75	4.22	16.19	11.97	7.00

(These data were collected on a metre that was attached to a computer which automatically calculated values, therefore, reading for air blanks are not presented)

Table 76. Silvertown magnetic susceptibility results (BH8)

Percentage organic carbon

The magnetic susceptibility samples were subsequently used to measure the organic carbon content; full methodology can be found in Chapter 3.

Sample number	m. OD	Crucible number	Crucible weight (g)	Before firing (g)	After firing (g)	% Organic carbon
1	2.315	10	15.97	27.01	25.41	14.49
2	2.295	65	15.46	26.91	25.27	14.32
3	2.275	66	16.49	26.77	25.39	13.42
4	2.255	89	15.30	26.52	25.04	13.19

5	2.235	69	15.82	26.48	25.13	12.66
6	2.215	4	14.50	25.34	24.02	12.18
7	2.195	42	16.00	27.54	26.21	11.53
8	2.175	12	13.97	25.77	24.47	11.02
9	2.155	35	15.16	26.24	25.06	10.65
10	2.135	83	15.15	26.38	25.26	9.97
11	2.115	25	14.60	23.65	22.70	10.50
12	2.095	40	15.07	24.91	23.94	9.86
13	2.075	23	14.27	23.82	22.86	10.05
14	2.055	90	14.89	25.83	24.81	9.32
15	2.035	63	15.47	26.52	25.38	10.32
16	2.015	46	14.86	24.57	23.57	10.30
17	1.995	47	15.79	26.64	25.53	10.23
18	1.975	27	15.01	25.62	24.58	9.80
19	1.955	26	15.24	25.57	24.49	10.45
20	1.285	48	15.38	25.62	24.92	6.84
21	1.265	86	15.33	25.84	25.23	5.80
22	1.245	43	15.12	24.67	24.05	6.49
23	1.225	13	16.01	26.84	26.13	6.56
24	1.205	4	14.50	25.25	24.44	7.53
25	1.185	18	14.53	26.01	25.03	8.54
26	1.165	2	14.50	25.04	24.17	8.25
27	1.145	82	14.05	25.14	24.28	7.75
28	1.125	19	16.42	27.70	26.80	7.98
29	1.105	28	13.97	25.30	24.35	8.38
30	1.085	70	15.42	26.25	25.21	9.60
31	1.065	21	14.07	24.72	23.68	9.77
32	1.045	93	15.99	27.27	26.10	10.37
33	1.025	38	15.57	26.38	25.17	11.19
34	1.005	34	14.84	26.09	24.79	11.56
35	0.985	16	13.80	24.42	23.15	11.96
36	0.965	25	14.60	25.59	23.93	15.10
37	0.945	74	15.67	23.66	21.37	28.66
38	0.925	35	15.16	20.75	18.88	33.45
39	0.905	41	13.89	18.39	16.65	38.67
40	0.885	74	15.67	20.83	18.51	44.96
41	0.865	28	13.97	19.96	17.50	41.07
42	0.585	34	14.86	18.78	16.72	52.55
43	0.565	44	13.78	15.22	14.17	72.92
44	0.545	18	14.54	18.80	16.29	58.92
45	0.525	89	15.30	18.52	16.44	64.60
46	0.505	81	15.58	17.90	16.62	55.17
47	0.485	85	15.37	19.14	17.53	42.71
48	0.465	14	15.29	22.54	19.65	39.86
49	0.445	75	14.92	19.63	16.77	60.72
50	0.425	41	13.90	20.14	16.74	54.49
51	0.405	93	16.00	21.67	18.31	59.26
52	0.385	36	16.71	20.74	18.22	62.53
53	0.365	72	15.83	21.19	17.63	66.42
54	0.345	38	15.57	20.82	16.90	74.67
55	0.325	88	15.11	19.04	15.98	77.86
56	0.305	77	14.18	19.26	15.71	69.88
57	0.285	30	14.51	19.24	16.00	68.50
58	-0.215	23	14.29	20.54	17.71	45.28
59	-0.235	10	15.97	21.89	18.32	60.30
60	-0.255	19	16.42	19.75	17.63	63.66

61	-0.275	47	15.75	21.48	17.51	69.28
62	-0.295	63	15.47	20.83	16.80	75.19
63	-0.315	69	15.81	21.24	17.11	76.06
64	-0.335	11	15.69	20.71	16.87	76.49
65	-0.355	90	14.90	20.47	16.21	76.48
66	-0.375	86	15.32	21.44	17.17	69.77
67	-0.395	72	15.84	19.71	16.85	73.90
68	-0.415	26	15.24	20.49	16.54	75.24
69	-0.435	48	15.38	20.16	16.74	71.55
70	-0.455	74	15.68	20.40	16.86	75.00
71	-0.475	82	14.05	17.72	14.84	78.47
72	-0.495	77	14.17	17.81	14.90	79.95
73	-0.515	93	15.99	20.19	16.99	76.19
74	-0.535	46	14.86	19.73	15.86	79.47
75	-0.555	77	14.18	16.67	14.65	81.12
76	-0.575	43	15.12	18.68	15.68	84.27
77	-0.595	blank	14.58	19.11	15.67	75.94
78	-0.715	35	15.15	23.08	20.53	32.16
79	-0.735	66	16.48	23.71	21.11	35.96
80	-0.755	86	15.33	21.69	18.48	50.47
81	-0.775	42	16.00	21.53	17.96	64.56
82	-0.795	16	13.79	20.02	15.98	64.85
83	-0.815	27	15.02	21.69	17.69	59.97
84	-0.835	13	16.02	20.35	17.71	60.97
85	-0.855	66	16.50	22.02	18.63	61.41
86	-0.875	88	15.11	21.00	17.48	59.76
87	-0.895	30	14.51	18.03	15.71	65.91
88	-0.915	83	15.16	20.71	17.35	60.54
89	-0.935	70	15.43	20.51	17.37	61.81
90	-0.955	89	15.29	19.04	16.04	80.00
91	-0.975	25	14.59	17.73	15.80	61.46
92	-0.995	31	14.57	20.61	16.87	61.92
93	-1.015	65	15.45	20.97	17.93	55.07
94	-1.035	31	14.57	18.97	16.40	58.41
95	-1.055	11	15.68	20.62	17.41	64.98
96	-1.075	26	15.24	19.41	16.87	60.91
97	-1.095	12	13.97	18.86	15.68	65.03
98	-1.115	36	16.71	21.20	18.37	63.03
99	-1.135	36	16.71	23.15	19.44	57.61
100	-1.365	38	15.57	25.53	24.15	13.86
101	-1.385	67	14.52	23.27	21.97	14.86
102	-1.405	16	13.81	20.54	19.71	12.33
103	-1.425	65	15.44	24.35	22.72	18.29
104	-1.445	14	15.30	23.23	21.61	20.43
105	-1.465	85	15.37	24.64	23.24	15.10
106	-1.485	blank	14.59	24.13	22.09	21.38
107	-1.505	2	14.51	20.78	18.83	31.10
108	-1.525	83	15.15	21.00	18.32	45.81
109	-1.545	11	15.68	20.03	17.43	59.77
110	-1.565	2	14.51	20.73	17.49	52.09
111	-1.585	30	14.51	21.55	18.00	50.43
112	-1.605	34	14.84	19.78	16.52	65.99
113	-1.625	28	13.96	19.21	15.79	65.14
114	-1.645	47	15.80	20.72	17.86	58.13
115	-1.665	12	13.98	18.84	16.12	55.97
116	-1.685	21	14.08	18.00	15.58	61.73

117	-1.705	46	14.86	18.66	16.63	53.42
118	-1.725	81	15.59	19.95	18.03	44.04
119	-1.745	27	15.02	17.40	16.53	36.55
120	-1.765	88	15.11	19.84	18.24	33.83
121	-2.215	72	15.84	21.23	19.82	26.16
122	-2.235	69	15.81	21.16	19.29	34.95
123	-2.255	43	15.12	19.71	17.88	39.87
124	-2.275	48	15.37	20.56	18.17	46.05
125	-2.295	82	14.05	18.66	16.38	49.46
126	-2.315	blank	14.57	19.32	17.09	46.95
127	-2.335	44	13.79	19.34	16.89	44.14
128	-2.355	13	16.02	22.88	20.15	39.80
129	-2.375	75	14.93	23.15	20.50	32.24
130	-2.395	90	14.89	22.53	20.71	23.82
131	-2.415	67	14.50	21.34	20.08	18.42
132	-2.435	41	13.89	21.22	20.12	15.01
133	-2.455	40	15.07	24.42	24.03	4.17
134	-2.475	31	14.57	23.57	23.11	5.11
135	-2.495	63	15.48	23.13	22.53	7.84
136	-2.515	18	14.53	22.49	21.90	7.41
137	-2.555	42	16.00	27.99	27.72	2.25

Table 77. Silvertown percentage organic carbon results (BH8)

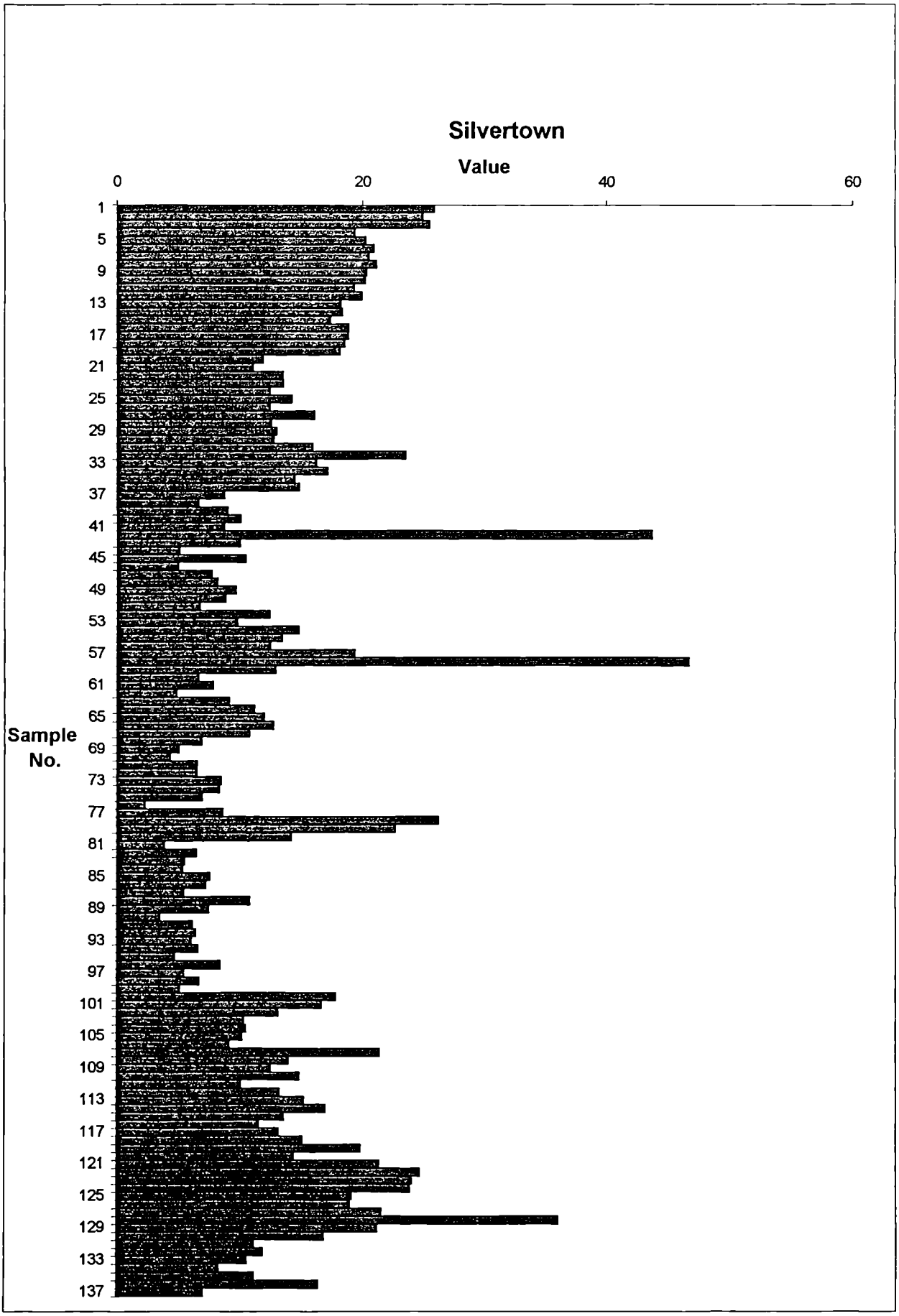

Figure 161. Silvertown magnetic susceptibility graph

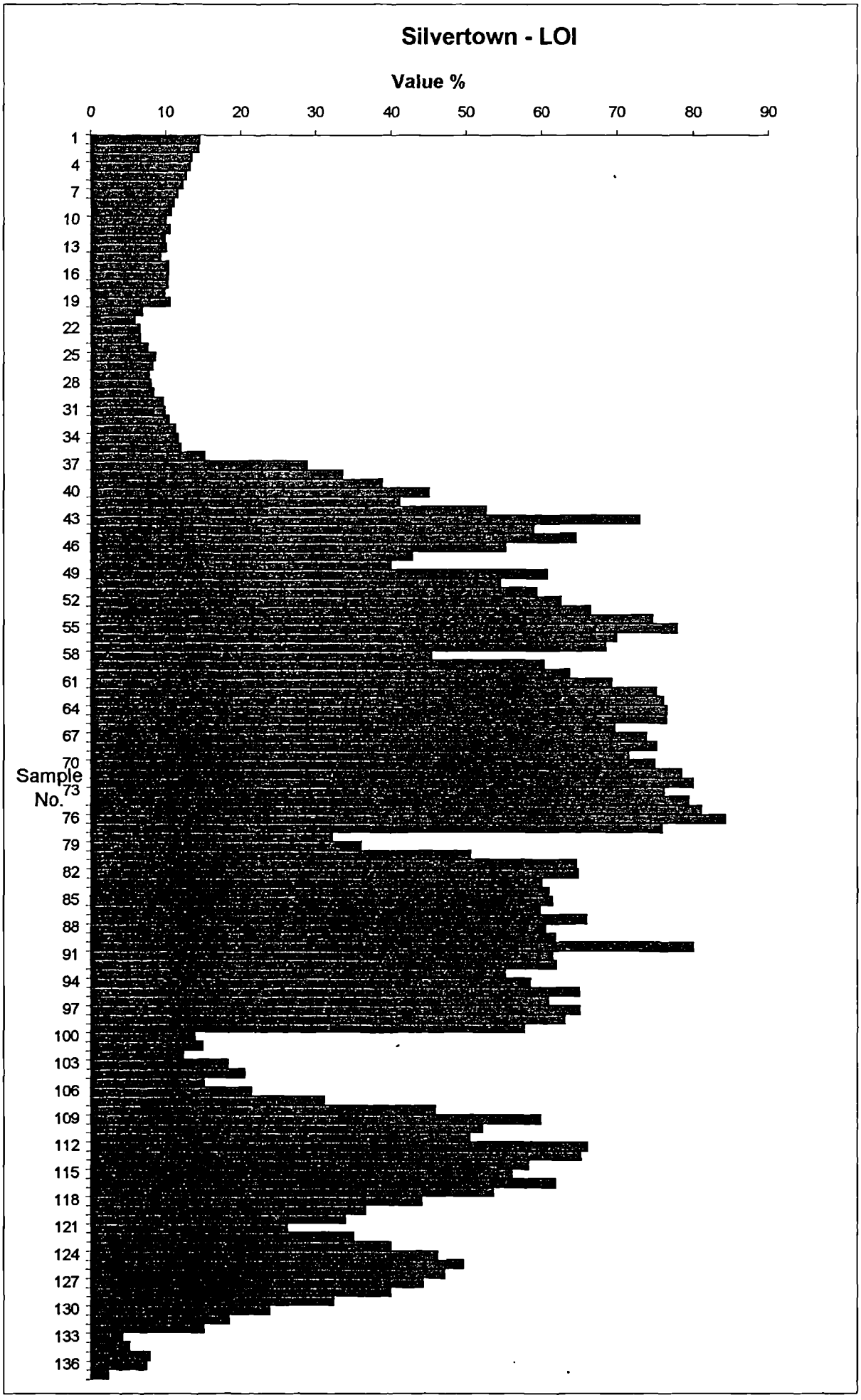

Figure 162. Silvertown percentage organic carbon graph

5.2 Chronology

Radiocarbon

Eighteen samples were submitted to Beta Analytic Inc., Miami for radiocarbon assay. The radiocarbon method is discussed in Chapter 3. The samples were cut from the U4/100 tins in a series of locations to establish a cross-site chronology.

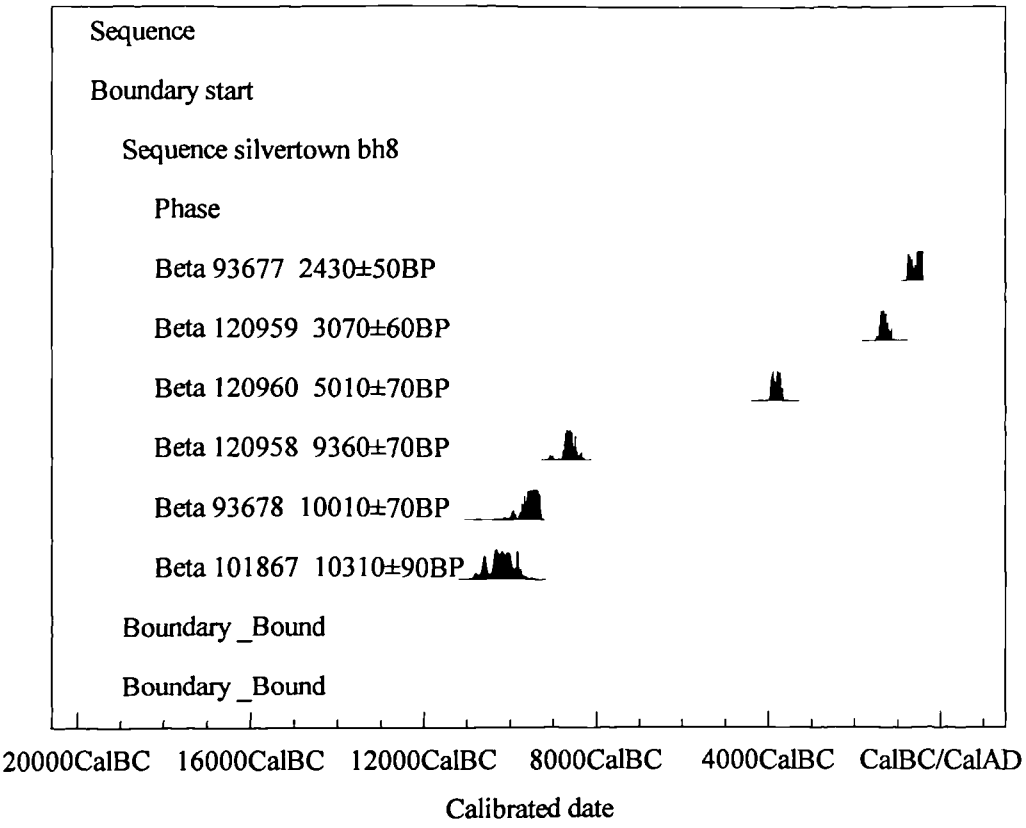

Figure 163. Silvertown radiocarbon measurements (BH8)

Laboratory code	Sample code	OD height	Material	Tendency	Tendency code (Shennan 1994)	Stratigraphic context	Radiocarbon years BP	$\delta^{13}C$ (‰)	Calendar years BP (2σ)	Calendar years BC (2 σ)
Beta-93677	BH8/1	+0.89 to+0.95	Degraded organics	None	8	Within mineral sediment	2430±50	-25 ‰ *	2726-2345	700-400
Beta-93678	BH8/2	-2.43 to -2.40	Black organic mud with wood and plant fragments with grey sand sitting on the Shepperton Terrace	None	9	On top of gravel	10010±70	-25 ‰ *	12075-11229	9900-9270
Beta-101867 #	BH8/3	-2.53 to -2.52	Dark grey/brown organic mud with wood and plant fragments within grey sands and gravels of the Shepperton Terrace	None	9	In top of gravel	10310±90	-34.6‰	12799-11694	10840-9740
Beta-120958	BH8/4	-2.26 to -2.20	Black organic mud with wood, plant fragments and undifferentiated organic matter.	None	9	Towards base of organic mud.	9360±70	-25 ‰ *	11035-10290	8800-8330
Beta-120959	BH8/5	+0.38 to+0.42	Highly humified black peat composed almost entirely of undifferentiated organic material with some moss, plant fragments and wood.	Positive	8	Top of organic unit	3070±60	-25 ‰ *	3438-3080	1450-1120
Beta-120960	BH8/6	-1.0 to –0.98	Wood within very dark brown/black organic rich sediment, with wood, plant fragments, moss and undifferentiated organic matter.	None	9	Towards base of peat	5010±70	-25 ‰ *	5914-5600	3960-3660
Beta-93679	BH7/1	-0.18 to -0.15	Very dark grey degraded organic mud, with *substantia humosa*.	Positive	8	Top of organic unit	3160±70	-25 ‰ *	3550-3212	1610-1250
Beta-93680	BH7/2	-1.30 to -1.27	Black/very dark grey humified organic mud, with *substantia humosa* and degraded wood fragments.	Positive	9	Organic mud on gravel	5180±70	-25 ‰ *	6171-5748	4230-3790
Beta-93681	BH6/1	+0.76 to+0.79	Dark brown, highly humified organic mud with some wood fragments but mainly *substantia humosa*.	Negative	8	Organic lens within major minerogenic unit	750±60	-25 ‰ *	786-565	AD 1160-1400
Beta-93682	BH6/2	-1.12 to -1.09	Dark brown, highly humified organic mud with some wood fragments but mainly *substantia humosa*.	None	8	Organic lens within major minerogenic unit	3700±50	-25 ‰ *	4222-3891	2280-1940

Beta-93683	BH6/3	-2.51 to -2.47	Very dark brown highly degraded wood peat, compose of wood mainly, with a matrix of *substantia humosa* with small degraded herbaceous plant fragments. Gravel and sand was also present within the unit.	Positive	9	Organics resting on gravel terrace	4750±70	-25 ‰ *	5607-5315	3660-3360
Beta-93684	BH5/1	-2.77 to -2.75	Black, badly humified peat, composed *of substantia humosa* mainly, with some woody fragments, *turfa herbacea*, clay and sand in very low quantities.	Negative	9	Base of basal peat	5430±80	-25 ‰ *	6400-5993	4450-4040
Beta-93685	BH4/1	-0.89 to -0.84	Organic mud with wood fragments	None	8	Top of sequence	3700±70	-25 ‰ *	4242-3835	2290-1880
Beta-93686	BH4/2	-2.12 to -2.08	Black, badly humified peat (*substantia humosa*) with small quantities *of turfa herbacea* and clay.	None	9	Within peat	4820±70	-25 ‰ *	5660-5329	3760-3370
Beta-93687	BH4/3	-2.18 to -2.12	Very dark brown/black badly humified peat (*substantia humosa* + *turfa herbacea*) with low quantities of clay, silt and sand.	Negative	9	Base of peat	5120±100	-25 ‰ *	6171-5652	4230-3690
Beta-93688	BH2/1	-1.49 to -1.45	Dark brown organic mud, with unlaminated clay silt and undifferentiated *substantia humosa*.	None	2	Within mineral deposit	2630±60	-25 ‰ *	2850-2549	930-540
Beta-93689	BH2/2	-3.30 to -3.26	Black sand and gravel with silt and undifferentiated *substantia humosa*.	Negative	9	Organics on the basal gravel	5660±100	-25 ‰ *	6719-6282	4770-4330
Beta-93690**	BH2/3	+1.59 to+1.64	Wood	None	8	Top of sequence	4450±70	-25 ‰ *	5311-4855	3350-2920

= AMS date

* = estimated

** There is an error with the record of the OD height at this point – the wood comes from the top of the sequence and is probably from *c.* +1.5m OD

Table 78. Silvertown radiocarbon results

5.3 Biostratigraphy

Diatoms

Subsamples were split from the monolith tins for examination of diatoms and preparation followed standard procedures (see Chapter 3). Three sets of slides were prepared, however, no valves were found in any of these samples. A few valves were found by Nigel Cameron during initial scanning - these are mentioned in volume I, Chapter 8.

Pollen

Dr. Rob Scaife undertook an assessment as part of the archaeological project on this site. The results have been used in the interpretative narrative (Section II, Chapter 8) and are also published (Wilkinson et al 2000). Extraction and counting methods are described in Chapter 3. A summary of the zonation may be found here.

Zone A (-2.52-2.46m OD)

This zone is characterized by alpine tundra species, including *Filipendula, Plantago media/major, P. lanceolata, P maritima* and *Dryas octopetala.* Tree species include *Betula and Pinus.* Noticeable absences are *Juniperus* and *Alnus,* both now viewed as characteristic components of the flora of this period.

Zone B (-2.46-1.9m OD)

This zone sees the expansion of *Pinus,* with massive dominance with up to 86% total land pollen, with Cyperaceae indicating marsh conditions in addition to the woodland.

Zone C (-1.9-0.9m OD)

There is thought to be a hiatus in the sequence at this point, with an abrupt transition to a spectra dominated by typical mid-Holocene woodland species: *Ulmus, Quercus, Tilia* and *Alnus. Pinus* is still present in low percentages, along with *Fraxinus* and *Tilia.* Some marsh species are also present indicating local alder carr conditions.

Zone D (-0.9-+0.1m OD)

This zone shows some similarities to the previous one, with continued presence of the woodland element. However, this zone sees a decline in *Ulmus* along with *Quercus* and *Tilia* in contrast with an expansion of Poaceae, *Pteridium aquilinum* and *Chenopodium* type. There is a subsequent re-expansion of *Ulmus* and *Tilia* with the appearance of *Taxus.* There is subsequent fluctuation in herbs and tree species throughout the zone and is considered to reflect the early impact of human population on untouched mid Holocene vegetation, with clearance, cultivation of economic crops, expansion of herb flora and some subsequent recolonization by tree species.

Zone E (+0.4-1.0 m OD)

Further evidence of woodland clearance is present in this zone, with reduction in tree species and expansion of cereal and ruderals. *Tilia* declines entirely, with significant reduction in *Quercus* and *Fraxinus.* Sedges and grasses increase, along with *Chenopodium* type, which has been taken to suggest evidence for rising sea level.

Appendix 6. Masthouse Terrace, Isle of Dogs, London Borough of Tower Hamlets, E13 (TQ 3750 7850)

Troels-Smith Classification Sheet																											
Site Code:		MHT95		**Address:**		Masthouse Terrace, Isle of Dogs/BH1																			**OD top:**	-2.00m OD
				Described by: ejs													**Date:**	27th September 1997							**OD base:**	-5.95m OD
Unit	**Tin**	**Meas**	**Physical Properties**							***Turfa***			***Detritus***			***Limus***			***Argilla***		***Grana***				**Accessory**	**Comment**
			Nl	ST	EL	Sl	COLOUR	Ll	Sh	Tb	Tl	Th	Dg	Dh	Dl	Ld	Lc	Lf	As	Ag	Ga	Gs	Gg	GG	**elements**	(inc. Structure, Lso)
1	8	0-3	4	0	0	3	10YR2/1black	0	1										1	1	1					
2	8	3-11	4	0	0	3	10YR2/1black	0	2										1	1	+					
3	8	11-16	4	0	0	3	10YR2/2 vdkbr	0	2										1	1	+					
4	8	16-19	4	0	0	3	10YR2/1black	4	1										2	1	+					
5	8	19-21		void				4																		
6	8	21-24	4	0	0	3	10YR2/1black	0	1										2	1	+					
7	8	24-45	4	0	0	3	10YR2/1black	x	+						+				2	2	+					
8	7	0-13	3	0	0	3	10YR3/1 vdkgr	1										+	2	2	+					
9	7	13-19	4	0	0	3	10YR2/1black	x	+									+	2	2						
10	6	0-21	3	0	0	3	2.5Y3/1 vdkgr	0											2	2	+					
11	6	21-24	4	0	0	3	10YR2/1black	0	2										1	1	+					
12	6	24-28	4	0	0	3	10YR2/1black	4	3									+	1	+	+					
13	6	28-29		void				4																		
14	6	29-38	4	0	0	3	10YR2/1black	0	3									+	1	+	+					
15	6	38-48	4	0	0	3	10YR2/1black	0	2									+	1	1	+					
16	5	0-11	4	0	0	3	10YR2/1black	0	2									+	1	1	+					
17	5	11-15	4	0	0	3	10YR2/1black	4	1									+	2	1	+					
18	5	15-17		void		3		4																		
19	5	17-27	4	0	0	3	10YR2/1black	4	1									+	2	1	+					
20	5	27-29		void		3		4																		
21	5	29-45	4	0	0	3	10YR2/1black	3	1										1	2	+					

22	4	0-5	4	0	0	3	10YR2/1black	3							4[2]										
23	4	5-10	4	0	0	3	10YR2/1black	1	1										2	1	+				
24	4	10-12	3	0	0	3	10YR2/1black		2						+				1	1	+				
25	4	12-25	4	0	0	3	7.5YR3/4vdkbr	3	2										1	1	+				
26	4	25-33	3	0	0	3	10YR2/1black	0	+						+				2	2	+				
27	4	33-41	3	0	0	3	2.5Y3/1 vdkgr	0	+										2	2	+				
28	4	41-48	4	0	0	3	10YR3/2 vd gb	x	+										+	1	3				
29	3	0-7	3	0	0	3	10YR2/1black	4	2						+				1	1	+				
30	3	7-10	4	0	0	3	2.5Y3/2vd gb	4	+										1	1	2				
31	3	10-25	4	0	0	3	10YR2/1 black	3	3						+			+	1	+	+				
32	3	25-30	4	0	0	3	7.5YR2.5/3vdb	3	1						3										
33	3	30-36	3	0	0	3	10YR2/1black	1	1						+				1	2	+				
34	3	36-43	4	0	0	3	2.5Y3/2 vd gb	0	+						+				+	2	2				v. fine sand
35	3	43-47	4	0	0	3	10YR2/1black	x	1						+				2	1	+				
36	2	0--7.5	4	0	0	3	10YR2/1 black	4	4					+	+				+	+	+				
37	2	7.5-10		void				4																	
38	2	10-10.5	4	0	0	3	10YR2/1 black	2	4					+	+				+	+	+				
39	2	10.5-15	3	0	0	3	2.5Y4/2 dk grb	2	+						+					1	3	+	+	+	ceramic
40	2	15-21	3	0	0	3	10YR4/3br	1	+										2	2	+				
41	2	21-22	2	0	0	3	2.5Y5/3l olbr	1											1	1	2				
42	2	22-29	3	0	0	3	10YR4/3br	1	+										2	2	+				
43	2	29-30	2	0	0	3	2.5Y5/3 l ob	1											1	1	2				
44	2	30-38	3	0	0	3	10YR4/3br	1	+										2	2	+				
45	2	38-46	2	1	0	3	2.5Y5/3 l obr	1											1	1	2				
46	2	46-48	3	0	0	3	2.5Y3/3 dk ob	x											1	1	2				
47	1	0-7	2	0	0	3	2.5Y 4/3 olbr	2											+	1	3				
48	1	7-17	3	0	0	3	2.5Y3/2vd gb	0											2	1	1				
49	1	17-21	2	0	0	3	2.5Y4/2dgr/ob	0											1	1	2				

50	1	21-29	3	0	0	3	2.5Y3/2 vdkgrb	0										1	2	1					
51	1	29-41	2	0	0	3	2.5Y6/3 lybr	x										+	1	3				v fine sand	

Table 79. Masthouse Terrace BH1 sedimentary log

Troels-Smith Classification Sheet																									
Site Code:	MHT95/BH2		**Address:**	Masthouse Terrace, Isle of Dogs																				**OD top:**	-1.95m
			Described by ejs														**Date:**	30th September 1997						**OD base:**	-5.58m
Unit	**Tin**	**Meas**	**Physical Properties**							***Turfa***			***Detritus***			***Limus***			***Argilla***		***Grana***				**Accessory**	**Comment**
			NI	ST	EL	SI	COLOUR	LI	Sh	Tb	Tl	Th	Dg	Dh	Dl	Ld	Lc	Lf	As	Ag	Ga	Gs	Gg	GG	**elements**	(inc. Structure, Lso)
1	16	0-4	3	0	0	3	2.5Y4/3obr	1	+						+				+	+	2	1	1			
2	16	4-4.5	4	0	0	3	10YR2/1black	4	4																	
3	16	4.5-8			0	3	VOID	4																		
4	16	8-46	4	0	0	3	10YR2/1black	0	1						+				2	1					Test mol +	
5	15	0-4	4	1	1	2	10YR3/2vdgrb	2	+						+				3	1						
6	15	4-45	1	2	0	3	2.5Y6/3lybr	2	+												4					
7	14	0-7	4	0	0	3	10YR2/1black	2							+				1	1	2					
8	14	7-25	3	0	0	3	2.5Y3/2vdky	X	+										1	1	2				.	
9	13	0-12	2	0	0	3	2.5Y6/2lbrgr	3							+			+	1	1	2					
10	13	12-15	4	0	0	3	10YR2/1black	3							4											
11	13	15-48	3	0	0	3	2.5Y3.5/3dobr	X											+	1	3					Fine sand
12	12	0-25	3	0	0	3	2.5Y3/2vdky	X	+										1	1	2					
13	11	0-27	3	0	0	3	2.5Y4/3olbr	2	+										+	1	3					Fine sand
14	11	27-29	3	0	0	3	2.5Y4/2dkgrbr	0											1	2	1					
15	11	29-42.5	3	0	0	3	2.5Y4/2dkgrbr	2											1	1	2					
16	11	42.5-45	4	0	0	3	10YR2/1black	X							4											
17	10	0-6	3	0	0	3	10YR3/4dkybr	0											1	2	1					
18	10	6-9	3	0	0	3	2.5Y3/2vdky	0											2	1	1					
19	10	9-11	3	0	0	3	2.5Y3/2vdky	0							+				1	1	2					

20	10	11-13	3	0	0	3	2.5Y3/2vdky	0										2	1	1					
21	10	13-20	3	0	0	3	2.5Y4/2dkgrbr	0										+	1	3					fine
22	10	20-28	3	0	0	3	10YR2/2vdkr	0	+						+			2	1	1					
23	10	28-45.5	2	0	0	3	2.5Y4/2dgrbr	0	+						+			+	1	3					
24	10	45.5-46	4	0	0	3	10YR2/1black	X	2									1	1	+					
25	9	0-4	2	0	0	2	10yr4/2dkgrbr	2										2	2	+					
26	9	4-9.5	4	0	1	2	10YR2/2 dkbr	2	4			+													
27	9	9.5-22	2	0	0	2	2.5Y3/2vdgrbr	1	+									1	2	1					
28	9	22-27	4	0	1	2	10YR2/2 dkbr	0	1						+			2	1	+					
29	9	27-45		0	1	2	10YR2/2 dkbr	x	2						1			1		+					

Table 80. Masthouse Terrace BH2 sedimentary log

Troels-Smith Classification Sheet																										
Site Code:		MHT95/BH3		**Address:**	Masthouse Terrace, Isle of Dogs																			**OD top:**	-1.51m
				Described by ejs													**Date:**	30th September1997						**OD base:**	-6.16m
Unit	**Tin**	**Meas**	**Physical Properties**							***Turfa***			***Detritus***			***Limus***			***Argilla***		***Grana***				**Accessory**	**Comment**
			Nl	ST	EL	Sl	COLOUR	Ll	Sh	Tb	Tl	Th	Dg	Dh	Dl	Ld	Lc	Lf	As	Ag	Ga	Gs	Gg	GG	**elements**	(inc. Structure, Lso)
1	25	0-5	4	0	0	3	10YR2/1 black	0	?+									+	2	2	+					
2	25	5-11.75	3	0	0	3	10Yr3/1 vdkgr	0	+						+			+	2	2	+					
3	25	11.75-14.5	4	0	0	3	10YR2/1 black	0	1						+				2	1						
4	25	14.5-33	4	0	0	3	10YR2/1 black	0	+						+				2	2						v. firm
5	25	33-39	4	0	0	3	10YR2/2vdkbr	x	2										1	1						
6	24	0-16	4	0	0	3	10YR2/1 black	1	2						+				1	1						
7	24	16-19	4	0	0	3	10YR2/1 black	2	3						+				1							
8	24	19-29	3	0	0	2	10YR3/3darkbr	3							4											
9	24	29-30	3	0	0	3	10Yr3/1 vdkgr	1											2	2						
10	24	30-42	4	0	0	3	10YR2/1 black	2	3						+				1							
11	24	42-44	3	0	0	3	10Yr3/1 vdkgr	2											2	2						
12	24	44-45	4	0	0	3	10YR2/1 black	x	3						+				1							
13	23	0-5	4	0	0	3	10YR2/1 black	0	3										1	+	+					
14	23	5-11	4	0	0	3	10YR2/1 black	3	2										1	1	+					
15	23	11-12	3	0	0	3	10YR2/2vdkbr	3							4											
16	23	12-18	3	0	0	3	2.5Y3/1vdk g	0	+										2	2	+					
17	23	18-27	3	0	0	3	2.5Y3/1vdk gr	0	1						+				2	1	+					
18	23	27-30	3	0	0	3	2.5Y3.5/1(v)dg	0	+										2	2	+					
19	23	30-43	3	0	0	3	2.5Y4/2 dkgrbr	x	+										1	1	2					
20	22	0-5	4	0	0	3	10YR2/1 black	1	+										2	2	+					

21	22	5-28	4	0	0	3	10YR2/1 black	0	2						+			+	1	1	+					
22	22	28-39	4	0	0	3	10YR2/1 black	0	+						+				2	2						less wood
23	22	39-44	3	0	0	3	10Yr3/1 vdkgr	x	+						+			+	2	2	+					
24	21	0-8	4	1	0	3	10YR2/1 black	0	+						+			+	2	2	+					
25	21	8-13	3	1	0	3	10YR2/2vdkbr	0	+						+			+	2	2	+					
26	21	13-17.5	3	1	0	3	10Yr3/1 vdkgr	2	+										1	2	1					
27	21	17.5-21	3	1	0	3	2.5Y3/2vdkg br	0							+				1	1	2					
28	21	21-40	2	0	0	3	2.5Y2/2-6/3 vdkgblybr	0											+	1	3					
29	21	40-43	3	0	0	3	2.5Y2.5/1-4/1 bl-dkgr	x	+										1	1	2					
30	20	0-38	4	0	1	2	10YR2/2vdkbr	0	2			1			1				+		+					
31	20	38-45	3	0	0	2	2.5Y4/2dkgrbr	x											3	1						
32	19	0-2	3	0	0	3	10YR3/3dkbr	3							4											
33	19	2-4	4	0	0	3	10YR2/2vdkbr	3	3					1^3					+	+						
34	19	4-8	3	0	0	3	10YR3/3dkbr	4							4											
35	19	8-10	4	0	0	3	10YR2/1bl	3	2					+					1	1						
36	19	10-12	3	0	0	3	10YR4/2dkgrb	3							4											
37	19	12-21	4	0	0	3	10YR2/1bl	0	2					+	+				1	1						
38	19	21-44	4	0	0	3	10YR2/1bl	x	4			+		+	+				+	+	+					
39	18	0-15	4	0	0	3	10YR2/1bl	0	4					+	+				+	+	+					
40	18	15-33	4	0	0	3	10YR2/1bl	0	2					+	+				1	1						
41	18	33-45	4	0	0	3	10YR2/1bl	x	4			+		+	+				+	+						
42	17	0-4	3	1	1	2	10YR3/2vdgrb	0	+						+				2	2	+					
43	17	4-6	4	0	1	2	10YR2/2vdkbr	0	2						+				2	+	+					
44	17	6-45	4	0	1	2	10YR2/2vdkbr	X	3						1				+		+					

Table 81. Masthouse Terrace BH3 sedimentary log

6.1 Lithology

BH1

Group 1, (unit 1, -5.95-5.92m OD)

This unit rested upon the Shepperton Gravel and consisted of a black sand/silt/clay with a small proportion of undifferentiated *substantia humosa*. Contact to the next unit was gradual.

Group 2, (units 2-7, -5.92-5.5m OD)

This group shows an increase in the proportion of *substantia humosa* compared with the amount of minerogenic sediment. However, the overall deposit should be classed as mixed one. Sand and wood are present throughout the deposit in small quantities. The uppermost unit, 7, contains low quantities of *substantia humosa* and almost completes the transition back to minerogenic sediment. Contact to the next group was gradual.

Group 3, (units 8-10, -5.5-5.01m OD)

This group is fine-grained silt clay with low quantities of sand and a small degree of *substantia humosa*, which may, however, have been eroded and washed in.

Group 4, (units 11-25, -5.01-3.94m OD)

This group represents another development of organic silts, generally with fluctuating levels of *substantia humosa* in comparison with the clay-silt. Sand is almost entirely present in low quantities. Wood fragments are occasionally present, including one substantial piece that filled the core (unit 22). Contact to the overlying unit is relatively sharp and may indicate some erosion.

Group 5, (units 26-28, -3.94-3.71m OD)

This group is a relatively narrow band of silt-clay with a low sand and *substantia humosa* content. There is a slight coarsening upwards trend with the sand content increasing which may indicate increased energy of flow leading to the accretion of this group. There is a gap between U4/100 samples at the interface between this group and the next.

Group 6, (units 29-35, -3.61-3.14m OD)

There is a change back to more organic-rich sediment, but still a mixed organic/minerogenic deposit; still mainly undifferentiated *substantia humosa* but with a higher wood content than previously seen. Sand is still present, in a couple of units getting to approximately 50% of the deposit (units 35 and 39) which suggests that there is still relatively high flow rates bringing water onto the site, also indicating that much of the organic content, especially in these units, may be derived. There is a gap between U4/100 samples at the interface between this group and the next.

Group 7, (units 36-38, -2.99- 2.785m OD)

There is a void at unit 42, however 41 and 43 are consistent as composed almost entirely of *substantia humosa*, with traces of minerogenic sediment and detrital woody fragments. There is a break in core between this group and group 8, so unfortunately the contact between the previous organic silts and this more organic group was lost.

Group 8, (units 39 – 51, -2.785-2.00m OD)

The contact to this group is relatively gradual, with the organic component decreasing to a few traces of *substantia humosa* whilst the minerogenic content is dominant. There are fluctuations in this, with sand occasionally being the dominant size fraction, however this is not consistent, i.e. the sequence does not show a consistently coarsening upwards trend, which indicates fluctuations in the energy of flow over the site.

BH2

Group 1, (units 1-3, -5.58-5.50m OD)

This group shows a transition to a more organic sequence, with *substantia humosa* as well as detrital wood fragments and a low mineral content. A small void was present at the contact to the next group.

Group 2, (units 4-5, -5.50-5.04m OD)

Although this group still maintains an organic content, this has decreased, and the two units are dominated by clay, with some detrital woody material and *substantia humosa.*

Group 4, (unit 6, -5.04-4.63m OD)

This unit is almost entirely sand, with a trace of degraded organic material. The contacts are relatively gradual and potentially non-erosive, although this does suggest a fairly high-energy flood event.

Group 5, (units 7-9, -4.63-4.21m OD)

This group still shows sand as the dominant grain size, but with a fining upwards by the inclusion of silt-clay. There are also traces of organic material in this group.

Group 6, (unit 10, -4.21-4.18m OD)

This unit is actually a single piece of wood (probably detrital), filling the core, with necessarily sharp contacts either side with no other inclusions.

Group 7, (units 11 – 15, -4.18-2.975m OD)

This group is similar to group 5, with a fluctuating series of clay-silt-sand units and occasional traces of organic debris. This indicates a constant pattern of inundation, but with no consistent trend.

Group 8, (unit 16, 2.975-2.95m OD)

This is a further single piece of probably detrital wood filling the core with necessarily sharp contacts at either side.

Group 9, (units 17-24, -2.95-2.45m OD)

As with groups 7 and 5, this group is also a series of minerogenic sediment demonstrating fluctuation in the dominant grain size, but showing no consistent trend of either fining up or down. There are traces of organic material, mainly small detrital wood fragments, with the

final unit exhibiting a larger *substantia humosa* content. There is a gap between the U4/100 samples at this point.

Group 10, (unit 25, -2.40-2.36m OD)

This unit is a minerogenic silt clay with some sand and no organic material. Contact is relatively sharp to the unit above.

Group 11, (unit 26, -2.36-2.305m OD)

This group also consists of a single unit; a thin degraded organic horizon with a few visible fragments of *Turfa herbacea).* Contact to the next unit was relatively gradual.

Group 12, (unit 27, -2.305-2.18m OD)

This unit consisted of a thin sandy silt with a very low proportion of undifferentiated organic material.

Group 13, (units 28-29, -2.18-1.95m OD)

This unit was sealed under modern debris and consisted of an organic mud with traces of woody material.

BH3

Group 1, (unit 1-2, -6.16-6.0425m OD)

These two units consist of clay-silt (sand) overlying the gravel terrace deposits. Both contain tiny amounts of *substantia humosa.* Both units have iron staining suggesting that although waterlain, these units were periodically exposed and have weathered slightly.

Group 2, (units 3–4, -6.0425-5.83m OD)

The organic component increases in this group, although the dominance still lies with the minerogenic sediment. No sand was present, however; neither was any iron staining. Contact to the next deposit was lost in the cutting shoe at this point.

Group 3, (unit 5-8, -5.83-5.23m OD)

This group is more heavily composed of degraded organic material with a low proportion of clay in addition. The upper contact lies just above a piece of wood, and is fairly sharp and potentially erosive.

Group 4, (unit 9-15, -5.23-4.93m OD)

This group is formed mainly of organic-rich sediment; mainly *substantia humosa* with detrital wood fragments, in some cases these latter filling the entire core. There are several apparent flood events where the sequence is interrupted by thin bands of clay-silt. The mineral content increases towards the top of the group, where a moderately sharp content marks the boundary to the next group.

Group 5, (units 16-26, -4.93-3.705m OD)

This group represents a substantial organic mud accumulation. There is a consistent presence of degraded material with detrital wood fragments, but on the whole, this forms a low proportion of the sediment. There is the appearance of sub-aerial weathering in the upper units, suggesting that the site was exposed at this point.

Group 6, (units 27-29, -3.705-3.25m OD)

This group sees a change to coarser sediment, with sand the dominant grain size and practically no organic content apart from a few flecks of degraded material. The contact from below was moderately gradual and does not suggest erosion although this would appear to represent a flood event over the site.

Group 7, (units 30, -3.25-2.87m OD)

This is a band of degraded organic material with very little mineral sediment. It contains woody and herbaceous fragments, the latter appearing to be *in situ*.

Group 8, (unit 31, -2.87-2.8m OD)

This unit is a further fine-grained mineral sediment; unfortunately the upper contact was within the cutting shoe deposit.

Group 9, (unit 32-44, -2.8-1.51m OD)

This final group is organic-dominated sediment with a low but constant presence of clay-silt. The organics are degraded but some woody fragments and herbaceous plant parts were also noted indicating some *in situ* growth as well as material almost certainly being washed in. The upper unit, which shows an increase in the proportion of organic to mineral, was sealed below modern sediment.

Magnetic susceptibility (low frequency)

Samples for magnetic susceptibility were split off from the monolith tins and processed according to the methods outlined in Chapter 3.

Sample number	m. OD	Pot number	Pot weight	Pot+sed weight (g)	Sediment weight (g)	1st blank	Magnetic sus.	2nd blank	Result	Value
1	-2.18	675	4.25	13.18	8.93	1.3	15.7	1.5	14.30	16.01
2	-2.20	700	4.35	13.82	9.47	1.7	22.5	1.8	20.75	21.91
3	-2.22	723	4.25	13.55	9.30	-0.9	19.7	-1.1	20.70	22.26
4	-2.24	631	4.26	12.88	8.62	0.0	17.7	0.0	17.70	20.53
5	-2.26	386	4.26	13.53	9.27	-1.1	17.6	-0.9	18.60	20.06
6	-2.28	364	4.25	13.18	8.93	1.3	15.7	1.5	14.30	16.01
7	-2.30	702	4.23	13.44	9.21	1.5	14.3	1.5	12.80	13.90
8	-2.32	229	4.37	13.40	9.03	1.4	14.1	1.6	12.60	13.95
9	-2.34	724	4.37	12.98	8.61	-0.9	13.4	-0.7	14.20	16.49
10	-2.38	354	4.11	12.46	8.35	0.0	15.1	0.2	15.00	17.96
11	-2.40	701	4.29	12.68	8.39	0.6	15.0	0.7	14.35	17.10
12	-2.42	111	4.25	12.60	8.35	0.2	14.5	0.4	14.20	17.01
13	-2.44	633	4.27	13.09	8.82	0.4	16.4	0.5	15.95	18.08
14	-2.56	60	4.28	13.72	9.44	1.8	15.6	2.0	13.70	14.51
15	-2.58	693	4.29	11.42	7.13	1.2	10.7	1.3	9.45	13.25
16	-2.60	251	4.25	12.60	8.35	0.2	14.5	0.4	14.20	17.01
17	-2.62	200	4.38	12.67	8.29	2.0	14.8	2.1	12.75	15.38
18	-2.64	120	4.28	13.63	9.35	1.3	15.4	1.4	14.05	15.03
19	-2.66	259	4.03	13.16	9.13	0.8	10.2	1.0	9.30	10.19
20	-2.68	35	4.21	12.96	8.75	1.6	12.3	1.7	10.65	12.17
21	-2.70	287	4.26	13.18	8.92	0.7	13.1	0.8	12.35	13.85
22	-2.72	722	4.25	11.57	7.32	1.0	11.6	1.0	10.60	14.48
23	-2.74	641	4.26	12.88	8.62	2.0	15.6	2.2	13.50	15.66
24	-2.76	370	4.24	15.49	11.25	1.2	12.3	1.3	11.05	9.82
25	-2.78	304	4.28	11.83	7.55	1.8	12.4	2.0	10.50	13.91
26	-2.80	301	4.27	13.08	8.81	0.6	10.3	0.8	9.60	10.90
27	-2.82	385	4.13	13.33	9.20	0.5	14.7	0.6	14.15	15.38
28	-2.84	261	4.29	12.01	7.72	0.8	13.5	1.0	12.60	16.32
29	-2.86	236	4.28	12.56	8.28	1.0	15.3	1.2	14.20	17.15
30	-2.88	370	4.24	15.49	11.25	0.1	16.0	0.3	15.80	14.04
31	-2.90	122	4.28	16.51	12.23	0.4	25.3	0.6	24.80	20.28

32	-2.92	302	4.27	11.81	7.54	1.5	13.1	1.8	11.45	15.19
33	-2.94	73	4.04	9.68	5.64	0.9	6.0	1.0	5.05	8.95
34	-2.98	206	4.14	10.45	6.31	0.5	4.2	0.6	3.65	5.78
35	-3.00	719	4.22	9.29	5.07	0.2	3.3	0.2	3.10	6.11
35	-3.27	53	4.18	10.89	6.71	0.1	4.4	0.1	4.30	6.41
36	-3.29	80	4.22	8.51	4.29	0.4	2.6	0.6	2.10	4.90
37	-3.31	12	4.28	11.3	7.02	-0.7	2.9	-0.6	3.55	5.06
38	-3.33	724	4.37	12.67	8.30	0.0	4.7	0.1	4.65	5.60
39	-3.35	104	4.26	12.08	7.82	0.0	4.3	0.0	4.30	5.50
40	-3.37	722	4.09	11.25	7.16	-0.6	4.2	-0.4	4.70	6.56
41	-3.39	223	4.37	7.03	2.66	0.8	1.4	0.8	0.60	2.26
42	-3.41	275	4.26	7.68	3.42	0.1	1.4	0.2	1.25	3.65
43	-3.43	51	4.26	7.47	3.21	-0.4	1.1	-0.3	1.45	4.52
44	-3.45	273	4.25	5.84	1.59	0.6	0.9	0.8	0.20	1.26
45	-3.47	678	4.20	7.03	2.83	0.3	1.8	0.3	1.50	5.30
46	-3.49	369	4.26	5.95	1.69	-0.3	0.5	-0.2	0.75	4.44
47	-3.51	662	4.21	8.65	4.44	-0.2	3.2	0.0	3.30	7.43
48	-3.53	96	4.05	6.35	2.30	0.1	1.9	0.3	1.70	7.39
49	-3.55	280	4.29	7.71	3.42	0.6	3.0	0.8	2.30	6.73
50	-3.59	711	4.25	7.87	3.62	0.0	2.2	0.2	2.10	5.80
51	-3.61	721	4.22	7.50	3.28	0.2	2.4	0.3	2.15	6.55
52	-3.63	215	4.00	7.69	3.69	2.2	4.2	2.2	2.00	5.42
53	-3.65	500	4.27	10.09	5.82	0.3	11.1	0.4	10.75	18.47
54	-3.67	732	4.24	11.26	7.02	0.3	13.4	0.4	13.05	18.59
55	-3.69	729	4.38	10.49	6.11	0.3	11.0	0.4	10.65	17.43
56	-3.71	673	4.27	10.09	5.82	0.4	12.7	0.4	12.30	21.13
57	-3.81	667	4.27	9.10	4.83	0.4	3.9	0.6	3.40	7.04
58	-3.83	47	4.24	12.69	8.45	1.5	20.6	1.7	19.00	22.49
59	-3.85	675	4.25	12.88	8.63	0.7	20.6	0.8	19.85	23.00
60	-3.87	635	4.27	10.53	6.26	0.0	9.7	0.1	9.65	15.42
61	-3.89	693	4.30	12.13	7.83	0.3	8.7	0.4	8.35	10.66
62	-3.91	695	4.27	10.93	6.66	-0.1	7.1	0.1	7.10	10.66
63	-3.93	87	4.26	10.20	5.94	-1.3	3.1	-1.2	4.35	7.32
64	-3.95	373	4.01	10.88	6.87	0.5	5.2	0.7	4.60	6.70
65	-3.97	302	4.25	10.18	5.93	-0.4	3.8	-0.2	4.10	6.91
66	-3.99	131	4.26	9.89	5.63	0.6	5.3	0.6	4.70	8.35
67	-4.01	679	4.38	7.33	2.95	0.5	2.3	0.7	1.70	5.76
68	-4.03	149	4.04	7.53	3.49	0.6	3.2	0.8	2.50	7.16
69	-4.05	695	4.27	6.65	2.38	-1.0	-0.3	-1.9	1.15	4.83
70	-4.07	78	4.06	6.00	1.94	0.0	1.1	0.1	1.05	5.41
71	-4.09	78	4.23	5.44	1.21	-0.7	-0.8	-0.4	-0.25	-2.07
72	-4.11	677	4.28	5.59	1.31	1.7	1.6	1.8	-0.15	-1.15
73	-4.13	654	4.29	5.49	1.20	0.2	0.1	0.3	-0.15	-1.25
74	-4.15	357	4.24	5.49	1.25	2.1	2.0	2.2	-0.15	-1.20
75	-4.17	672	4.37	5.72	1.35	1.0	1.3	1.1	0.25	1.85
76	-4.19	350	4.27	5.55	1.28	0.6	0.6	0.6	0.00	0.00
77	-4.21	696	4.01	6.79	2.78	0.6	2.5	0.8	1.80	6.47
78	-4.23	271	4.39	8.96	4.57	0.4	1.7	0.6	1.20	2.63
79	-4.25	33	4.21	6.89	2.68	1.2	2.4	1.4	1.10	4.10
80	-4.26	669	4.22	8.78	4.56	0.0	3.1	0.0	3.10	6.80
81	-4.28	386	4.26	10.35	6.09	1.4	8.4	1.5	6.95	11.41
82	-4.30	664	4.22	7.03	2.81	1.4	3.5	1.4	2.10	7.47
83	-4.32	668	4.22	8.10	3.88	0.1	4.6	0.5	4.30	11.08
84	-4.34	672	4.37	7.49	3.12	1.7	5.7	1.8	3.95	12.66
85	-4.36	688	4.20	8.40	4.20	0.1	5.3	0.3	5.10	12.14
86	-4.38	677	4.27	7.71	3.44	-0.9	2.4	-0.7	3.20	9.30
87	-4.40	130	4.26	8.98	4.72	-1.2	2.7	-0.9	3.75	7.94
88	-4.42	143	4.05	9.60	5.55	-1.9	3.6	-1.7	5.40	9.73
89	-4.44	35	4.02	12.40	8.38	1.7	14.6	1.7	12.90	15.39
90	-4.46	69	4.27	8.88	4.61	-1.5	4.8	-1.3	6.20	13.45
91	-4.48	9	4.37	7.82	3.45	1.1	4.2	1.3	3.00	8.70

92	-4.50	701	4.27	7.60	3.33	0.4	3.3	0.5	2.85	8.56
93	-4.52	678	4.23	8.01	3.78	1.4	4.9	1.4	3.50	9.26
94	-4.54	131	4.26	7.82	3.56	0.2	3.8	1.1	3.15	8.85
95	-4.56	666	4.20	7.33	3.13	-0.2	2.9	-0.1	3.05	9.74
96	-4.58	276	4.28	10.19	5.91	-0.1	5.9	0.0	5.95	10.07
97	-4.60	730	4.03	7.23	3.20	1.9	4.6	2.2	2.55	7.97
98	-4.62	664	4.22	8.99	4.77	0.9	4.7	1.1	3.70	7.76
99	-4.64	85	4.23	11.95	7.72	0.0	7.1	0.3	6.95	9.00
100	-4.66	390	4.21	8.97	4.76	1.1	6.1	1.4	4.85	10.19
101	-4.68	679	4.38	9.01	4.63	0.2	3.5	0.4	3.20	6.91
102	-4.81	126	4.24	7.74	3.50	-1.7	1.4	-1.5	3.00	8.57
103	-4.83	667	4.26	7.30	3.04	0.7	3.7	1.1	2.80	9.21
104	-4.85	679	4.37	7.68	3.31	2.3	5.2	2.6	2.75	8.31
105	-4.87	85	4.23	8.05	3.82	1.5	4.6	1.7	3.00	7.85
106	-4.89	74	4.27	7.56	3.29	0.4	3.6	0.7	3.05	9.27
107	-4.91	211	4.27	7.42	3.15	1.5	4.1	1.6	2.55	8.10
108	-4.93	23	4.39	6.82	2.43	2.0	3.0	2.3	0.85	3.50
109	-4.95	286	4.11	7.06	2.95	1.9	4.0	2.0	2.05	6.95
110	-4.97	212	4.23	7.04	2.81	0.7	2.6	1.0	1.75	6.23
111	-4.99	683	4.22	7.19	2.97	1.1	3.3	0.5	2.50	8.42
112	-5.01	51	4.25	8.66	4.41	1.2	5.5	1.5	4.15	9.41
113	-5.03	350	4.28	8.78	4.50	1.1	5.5	1.5	4.20	9.33
114	-5.05	235	4.23	9.29	5.06	1.8	7.5	2.0	5.60	11.07
115	-5.07	700	4.27	8.26	3.99	-0.7	3.3	-0.7	4.00	10.03
116	-5.09	202	4.27	10.21	5.94	0.3	7.4	0.3	7.10	11.95
117	-5.11	89	4.00	9.79	5.79	0.3	7.2	0.5	6.80	11.74
118	-5.13	15	4.23	10.55	6.32	1.7	9.2	1.9	7.40	11.71
119	-5.15	652	4.22	9.77	5.55	1.5	7.9	1.8	6.25	11.26
120	-5.17	707	4.28	10.82	6.54	0.9	7.9	1.1	6.90	10.55
121	-5.19	272	4.25	11.50	7.25	2.2	10.2	2.4	7.90	10.90
122	-5.21	713	4.36	10.48	6.12	0.3	6.6	0.4	6.25	10.21
123	-5.38	298	4.03	11.36	7.33	0.8	8.5	0.9	7.65	10.44
124	-5.40	57	4.27	8.82	4.55	0.0	6.1	0.0	6.10	13.41
125	-5.42	305	4.26	13.32	9.06	2.0	12.6	2.2	10.5	11.59
126	-5.44	207	4.29	9.11	4.82	0.0	5.9	0.0	5.90	12.24
127	-5.46	365	4.27	10.99	6.72	1.4	9.6	1.7	8.05	11.98
128	-5.48	44	4.24	14.47	10.23	0.5	12.3	0.5	11.8	11.53
129	-5.50	85	4.22	10.68	6.46	1.5	9.0	1.7	7.40	11.46
130	-5.52	85	4.22	6.83	2.61	1.3	6.2	1.5	4.80	18.39
131	-5.54	625	4.20	11.96	7.76	0.6	8.9	0.9	8.15	10.50
132	-5.57	28	4.26	11.48	7.22	0.6	8.7	0.9	7.95	11.01
133	-5.59	215	4.23	9.77	5.54	0.3	5.7	0.6	5.25	9.48
134	-5.61	612	4.22	8.90	4.68	1.6	6.3	1.6	4.70	10.04
135	-5.63	668	4.21	8.53	4.32	1.7	5.2	1.7	3.50	8.10
136	-5.65	663	4.22	8.62	4.40	0.4	3.0	0.5	2.55	5.80
137	-5.67	380	4.24	8.44	4.20	0.1	3.5	0.2	3.35	7.98
138	-5.69	149	4.04	7.42	3.38	1.5	3.9	1.7	2.30	6.80
139	-5.71	618	4.38	7.54	3.16	0.8	3.0	0.9	2.15	6.80
140	-5.73	267	4.17	8.41	4.24	0.9	4.3	1.0	3.35	7.90
141	-5.75	95	4.23	8.21	3.98	0.0	3.4	0.2	3.30	8.29
142	-5.77	390	4.21	9.97	5.76	0.2	4.8	0.3	4.55	7.90
143	-5.79	82	4.28	9.50	5.22	0.5	4.5	0.6	3.95	7.57
144	-5.81	117	4.18	9.26	5.08	0.9	5.0	1.2	3.95	7.78
145	-5.83	105	4.24	8.72	4.48	1.7	5.3	1.2	3.85	8.59
146	-5.85	104	4.08	8.48	4.40	0.5	5.2	1.4	4.25	9.66
147	-5.87	676	4.28	8.93	4.65	-0.1	4.2	0.1	4.20	9.03
148	-5.89	642	4.37	10.82	6.45	1.1	7.6	1.4	6.35	9.84
149	-5.91	669	4.22	8.85	4.63	1.4	5.6	1.5	4.15	8.96
150	-5.93	253	4.28	8.64	4.36	1.0	5.1	1.1	4.05	9.29
151	-5.95	13	4.39	10.46	6.07	1.1	7.2	1.1	6.10	10.05

Table 82. Masthouse Terrace magnetic susceptibility results (BH1)

Percentage organic carbon

The magnetic susceptibility samples were subsequently used to measure the organic carbon content. The results are presented below.

Sample number	m. OD	Pot number	Sediment weight (g)	Crucible number	Crucible weight (g)	Before firing (g)	After firing (g)	% Organic carbon
1	-2.18	675	9.07	246	9.07	18.45	18.20	2.67%
2	-2.20	700	8.59	235	8.59	18.14	17.64	5.24%
3	-2.22	723	8.68	237	8.68	17.96	17.33	6.79%
4	-2.24	631	9.00	212	9.00	17.61	16.74	10.10%
5	-2.26	386	8.99	177	8.99	18.24	17.53	7.68%
6	-2.28	364	8.61	159	8.61	17.52	16.81	7.97%
7	-2.30	702	8.72	244	8.72	17.87	17.29	6.34%
8	-2.32	229	9.05	221	9.05	17.79	17.04	8.58%
9	-2.34	724	8.65	171	8.65	17.26	16.50	8.83%
10	-2.38	354	9.61	1004	9.61	17.94	16.35	19.09%
11	-2.40	701	9.07	157	9.07	17.44	16.11	15.89%
12	-2.42	111	8.97	239	8.97	17.29	16.28	12.14%
13	-2.44	633	9.00	212	9.00	17.61	16.36	14.52%
14	-2.56	60	7.65	236	7.65	16.97	16.32	6.97%
15	-2.58	693	8.97	238	8.97	16.04	14.89	16.27%
16	-2.60	251	8.63	223	8.63	18.32	17.43	9.18%
17	-2.62	200	9.13	233	9.13	17.39	16.71	8.23%
18	-2.64	120	9.22	225	9.22	18.55	18.09	4.93%
19	-2.66	259	8.83	228	8.83	17.89	17.52	4.08%
20	-2.68	35	8.97	155	8.97	17.69	17.13	6.42%
21	-2.70	287	9.68	1000	9.68	18.55	17.40	12.97%
22	-2.72	722	8.43	241	8.43	15.72	14.70	13.99%
23	-2.74	641	7.63	214	7.63	16.07	15.07	11.85%
24	-2.76	-	8.47	245	8.47	16.41	15.54	10.96%
25	-2.78	304	8.73	226	8.73	16.26	15.14	14.87%
26	-2.80	301	11.12	1003	11.12	19.92	19.31	6.93%
27	-2.82	385	8.60	248	8.60	17.78	16.48	14.16%
28	-2.84	61	8.58	234	8.58	16.29	14.79	19.46%
29	-2.86	236	8.89	240	8.89	17.15	15.98	14.16%
30	-2.88	370	8.60	249	8.60	19.84	18.36	13.17%
31	-2.90	122	9.06	218	9.06	21.27	20.57	5.73%
32	-2.92	302	10.11	1001	10.11	17.67	16.50	15.48%
33	-2.94	73	8.99	217	8.99	14.63	12.15	43.97%
34	-2.96	206	6.30	206	8.33	14.62	11.19	54.53%
35	-2.98	719	8.33	111	5.16	9.49	7.42	47.81%
36	-3.00	53	5.16	160	8.48	15.17	11.75	51.12%
37	-3.27	80	8.48	25	5.30	9.55	8.32	28.94%
38	-3.29	12	5.30	193	8.54	18.76	16.44	22.70%
39	-3.31	724	8.54	216	8.17	16.45	15.41	12.56%
40	-3.33	104	8.17	222	8.62	16.42	15.52	11.54%
41	-3.35	722	8.62	180	8.59	15.75	12.20	49.58%
42	-3.37	223	8.59	1	5.40	8.05	6.48	59.25%
43	-3.39	275	5.40	40	5.36	8.78	7.22	45.61%
44	-3.41	51	5.36	56	5.39	8.59	7.22	42.81%
45	-3.43	273	5.39	73	5.58	7.15	6.01	72.61%
46	-3.45	678	5.58	33	5.21	8.03	6.70	47.16%
47	-3.47	369	5.21	37	5.49	7.18	5.96	72.19%
48	-3.49	662	5.49	166	8.58	18.70	15.92	27.47%
49	-3.51	96	8.58	62	5.52	7.81	6.39	62.01%
50	-3.53	280	5.52	194	8.64	12.07	9.81	65.89%
51	-3.57	711	3.51	75	5.34	8.85	6.80	58.4%

52	-3.59	721	5.34	121	5.59	8.66	6.90	57.33%
53	-3.61	215	5.59	73	5.58	9.23	7.10	56.71%
54	-3.63	500	5.58	74	5.64	10.71	9.54	23.08%
55	-3.65	732	5.64	211	8.06	15.07	13.29	25.39%
56	-3.67	729	8.06	162	7.74	13.84	10.53	54.26%
57	-3.69	673	7.74	114	5.28	10.19	9.32	17.72%
58	-3.81	47	8.59	222	8.62	17.07	16.45	7.34%
59	-3.83	675	8.62	114	5.29	9.72	9.41	7.00%
60	-3.85	635	5.29	250	8.77	15.01	14.27	11.86%
61	-3.87	693	8.77	59	5.30	9.86	9.26	13.16%
62	-3.89	695	5.30	30	5.32	10.00	9.43	12.18%
63	-3.91	87	5.32	42	5.67	10.19	9.64	12.17%
64	-3.93	373	5.67	122	5.62	10.41	9.89	10.86%
65	-3.95	302	5.62	2	5.34	9.52	8.93	14.11%
66	-3.97	131	5.34	247	9.12	14.73	13.22	26.92%
67	-3.99	679	9.12	56	5.39	8.35	6.95	47.30%
68	-4.01	149	5.39	124	5.42	8.90	7.61	37.07%
69	-4.03	695	5.42	23	5.41	7.78	6.30	62.45%
70	-4.05	78	5.41	8	5.18	7.10	5.75	70.31%
71	-4.07	78	5.18	51	5.23	6.43	5.31	93.33%
72	-4.09	677	5.23	68	5.40	6.70	5.46	95.38%
73	-4.11	654	5.40	110	5.52	6.71	5.63	90.76%
74	-4.13	357	5.52	57	5.54	6.78	5.62	93.55%
75	-4.15	672	5.54	74	5.64	6.97	5.80	87.97%
76	-4.17	350	5.64	116	5.43	6.70	5.55	90.55%
77	-4.19	696	5.43	66	5.43	8.19	6.42	64.13%
78	-4.21	271	5.43	215	8.68	13.25	9.53	81.40%
79	-4.23	33	8.68	13	5.28	6.67	5.37	93.53%
80	-4.25	669	5.28	4	5.44	9.99	8.08	41.98%
81	-4.26	386	5.44	26	5.32	10.00	9.43	12.18%
82	-4.28	664	5.32	38	5.28	8.08	6.39	60.36%
83	-4.30	668	5.28	41	5.37	8.88	7.54	38.18%
84	-4.32	672	5.37	49	5.27	8.39	7.36	33.01%
85	-4.34	688	5.27	73	5.58	8.72	7.59	35.99%
86	-4.36	677	5.58	778	5.43	8.85	7.55	38.01%
87	-4.38	130	5.43	11	5.36	9.31	7.67	41.52%
88	-4.40	143	5.36	150	5.06	8.85	7.43	37.47%
89	-4.42	35	5.06	31	5.48	9.63	8.61	24.58%
90	-4.44	69	5.48	3	4.98	9.21	8.14	25.30%
91	-4.46	9	4.98	43	5.16	8.62	7.30	38.15%
92	-4.48	701	5.16	67	5.55	8.87	7.48	41.87%
93	-4.50	678	5.55	116	5.43	9.21	7.71	39.68%
94	-4.52	131	5.43	111	5.16	8.71	7.21	42.25%
95	-4.54	666	5.16	1	5.40	8.53	7.25	40.89%
96	-4.56	276	5.40	180	8.59	14.50	12.2	38.92%
97	-4.58	730	8.59	60	5.41	8.60	7.18	44.51%
98	-4.60	664	5.41	172	7.95	12.69	10.34	49.59%
99	-4.62	85	7.95	230	8.91	16.42	13.15	43.54%
100	-4.64	390	8.91	39	5.63	10.37	8.50	39.45%
101	-4.66	679	5.63	52	5.43	9.27	6.97	59.90%
102	-4.68	126	5.43	4	5.44	8.93	7.22	49.00%
103	-4.81	667	5.44	65	5.41	8.45	7.23	40.13%
104	-4.83	679	5.41	150	5.05	8.37	7.04	40.06%
105	-4.85	85	5.05	71	5.69	9.50	7.73	46.46%
106	-4.87	74	5.69	2	5.34	8.65	7.12	46.22%
107	-4.89	211	5.34	36	5.48	8.62	7.22	44.59%
108	-4.91	23	5.48	116	5.44	7.85	6.29	64.73%
109	-4.93	286	5.44	19	5.36	8.30	6.39	64.97%
110	-4.95	212	5.36	120	5.40	8.20	6.33	66.79%
111	-4.97	683	5.40	110	5.52	7.91	6.24	69.87%
112	-4.99	51	5.52	22	5.51	9.91	8.25	37.73%

113	-5.01	350	5.51	19	5.36	9.84	6.39	77.01%
114	-5.03	235	5.36	14	5.34	10.38	8.95	28.37%
115	-5.05	700	5.34	77	5.39	9.37	8.31	26.63%
116	-5.07	202	5.39	42	5.67	11.58	10.41	19.80%
117	-5.09	89	5.67	71	5.68	11.42	10.28	19.86%
118	-5.11	15	5.68	21	5.68	11.14	10.01	20.70%
119	-5.13	652	5.68	27	5.51	11.04	9.42	29.29%
120	-5.15	707	5.51	59	5.31	11.08	9.77	22.70%
121	-5.17	273	5.31	23	5.40	11.35	9.91	24.20%
122	-5.19	713	5.40	118	5.35	11.45	10.06	22.79%
123	-5.21	298	5.35	209	7.60	14.92	12.76	29.51%
124	-5.38	57	7.60	68	5.39	9.92	8.10	40.18%
125	-5.40	305	5.39	205	8.32	17.37	14.66	29.94%
126	-5.42	207	8.32	122	5.62	10.42	9.37	21.88%
127	-5.44	365	5.62	24	5.34	11.52	10.26	20.39%
128	-5.46	44	5.34	193	8.55	18.76	16.44	22.72%
129	-5.48	85	8.55	27	5.51	11.49	10.01	24.75%
130	-5.50	85	5.51	12	4.98	9.49	8.51	21.73%
131	-5.52	625	4.98	194	8.64	16.39	14.63	22.71%
132	-5.56	28	7.21	201	8.19	15.40	13.72	23.30%
133	-5.57	215	8.19	21	5.68	11.21	10.01	21.70%
134	-5.59	612	5.68	64	5.58	10.25	9.24	21.63%
135	-5.61	668	5.58	117	5.5	9.81	8.49	30.63%
136	-5.63	663	5.50	5	5.53	9.93	8.50	32.50%
137	-5.65	380	5.53	112	5.52	9.71	8.27	34.37%
138	-5.67	149	5.52	55	5.23	8.61	7.05	46.15%
139	-5.69	618	5.23	67	5.54	8.69	7.28	44.76%
140	-5.71	267	5.54	123	5.49	9.71	8.16	36.73%
141	-5.73	95	5.49	45	5.17	9.15	7.8	33.92%
142	-5.75	390	5.17	13	5.28	11.03	9.36	29.04%
143	-5.77	82	5.28	57	5.54	10.74	9.26	28.46%
144	-5.79	117	5.54	191	5.47	10.54	9.08	28.80%
145	-5.81	105	5.47	41	5.38	9.85	8.13	38.48%
146	-5.83	104	5.38	17	5.36	9.76	8.1	37.73%
147	-5.85	676	5.36	43	5.16	9.79	7.73	44.49%
148	-5.87	642	5.16	219	9.03	15.48	12.95	39.22%
149	-5.89	669	9.03	28	5.53	9.13	7.38	48.61%
150	-5.91	253	5.53	115	5.39	9.75	8.09	38.07%
151	-5.93	13	5.39	194	8.64	14.70	12.43	22.92%
152	-5.95	708	8.64	213	8.31	15.79	12.43	44.92%

Table 83. Masthouse Terrace percentage organic carbon results (BH1)

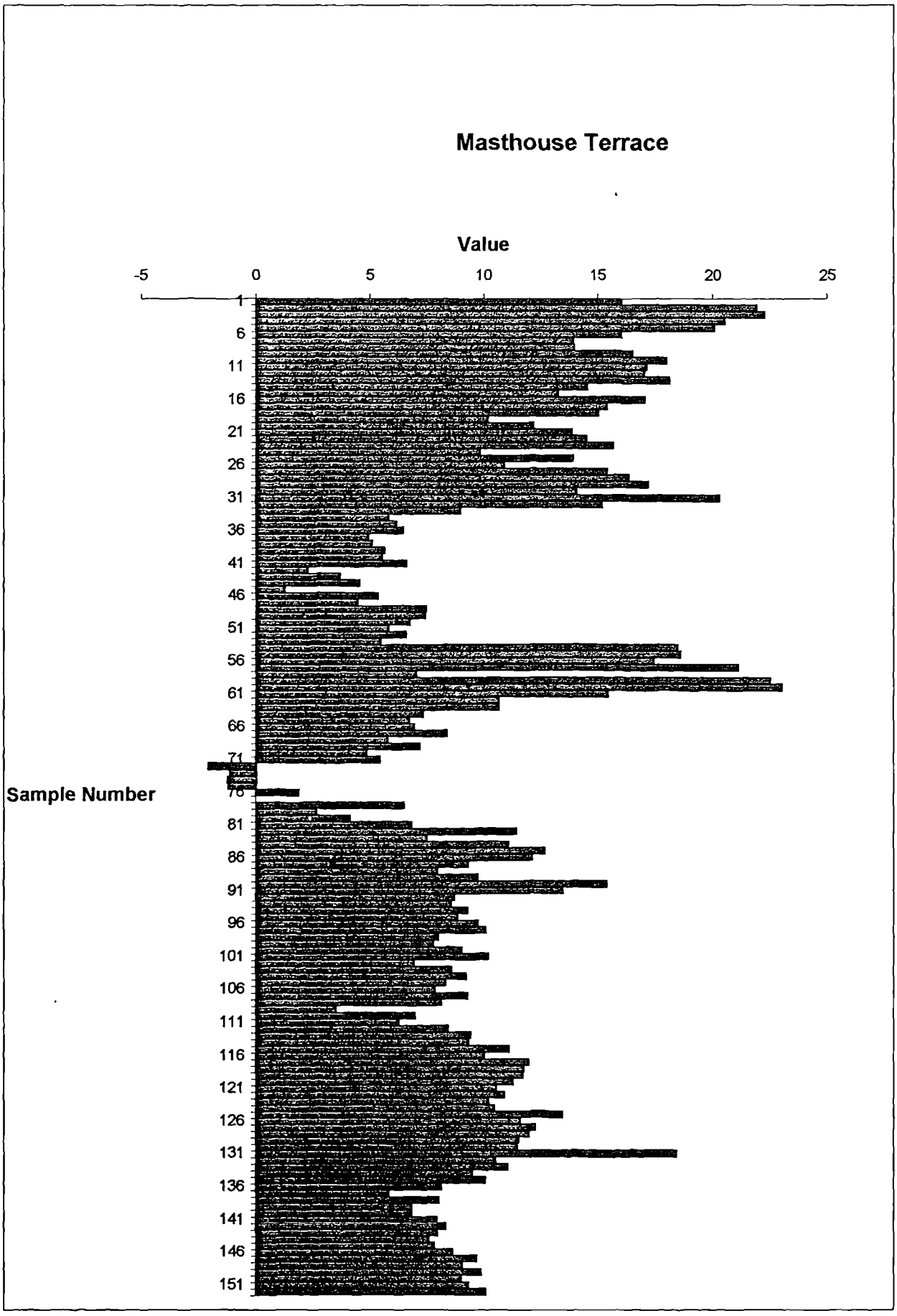

Figure 164. Masthouse Terrace magnetic susceptibility graph

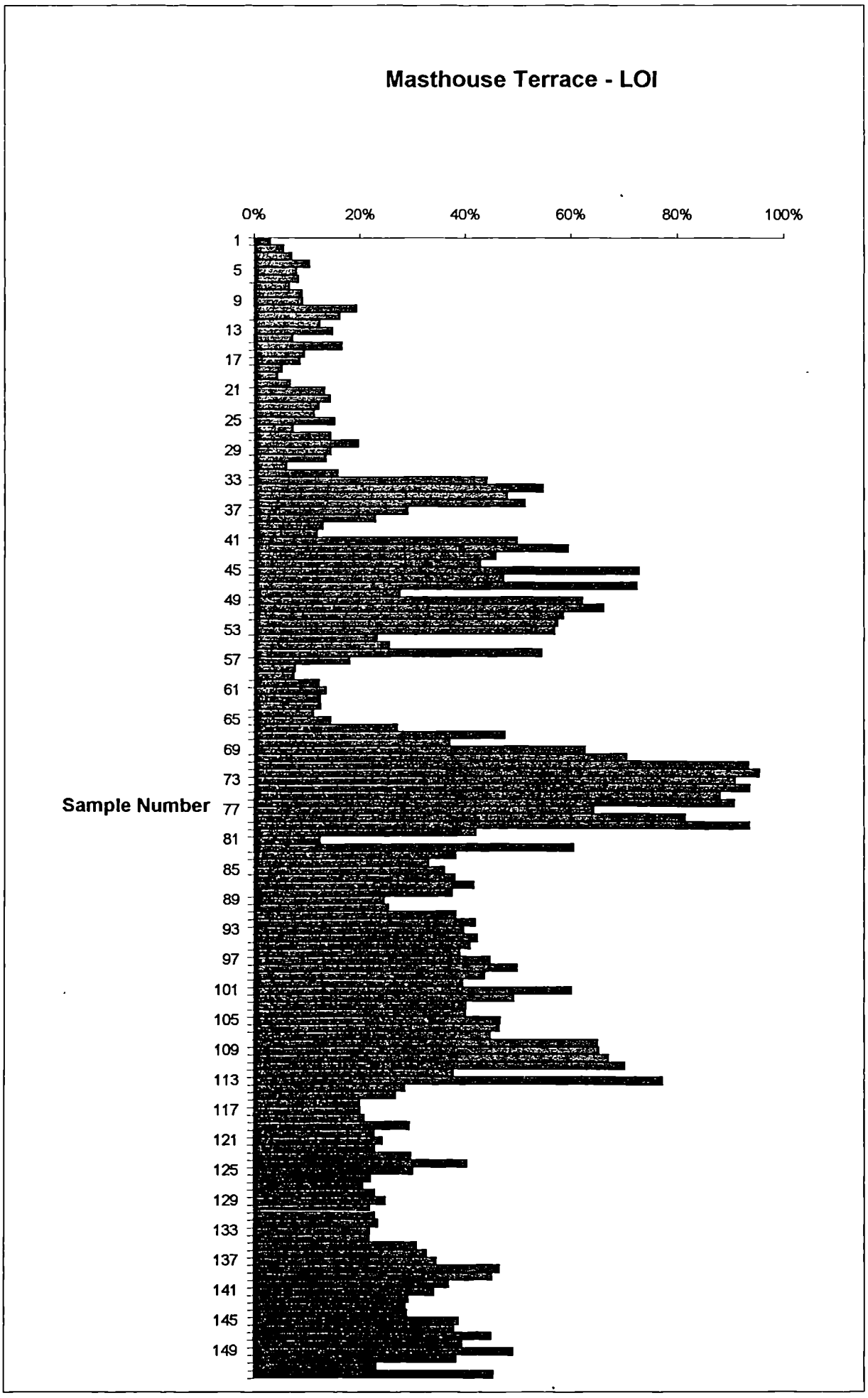

Figure 165. Masthouse Terrace percentage organic carbon graph

6.2 Chronology

Radiocarbon

Two samples were submitted to Beta Analytic Inc., Miami for radiocarbon assay. The samples were cut from the U4/100 tins towards the base and top of the major organic unit (i.e. where the deposit would yield sufficient material to date).

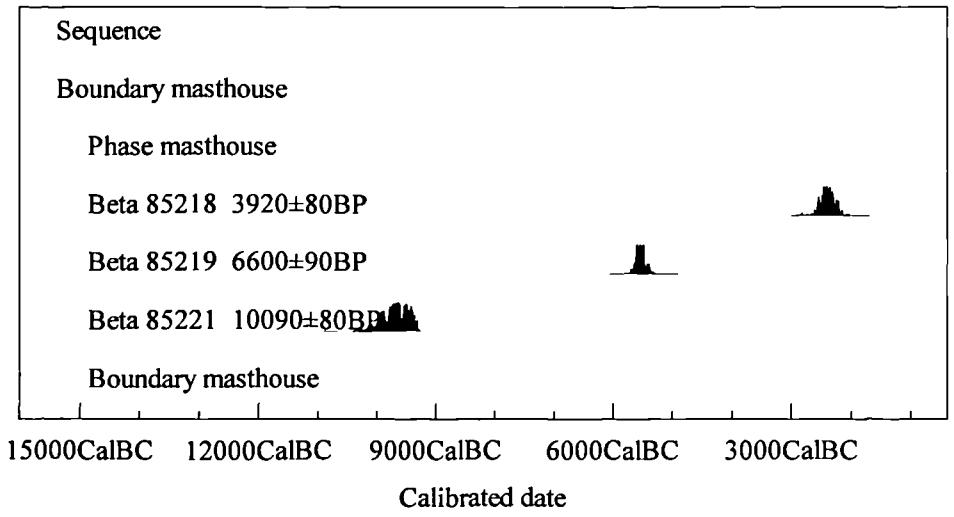

Figure 166. Masthouse Terrace radiocarbon measurements (BH1)

Laboratory number	Sample code	OD height	Material	Tendency	Tendency code (Shennan 1994)	Stratigraphic context	Radiocarbon years BP	$\delta^{13}C$ (‰)	Calendar years BP (2σ)	Calendar years BC (2σ)
Beta 85218	BH1/1	-2.79 –2.74m	Black degraded peat with much organic material and wood fragments. Some mineral sediment present.	Positive	1	Top of organic unit. Transgressive contact.	3920 ± 80	-25 ‰ estimated	4570-4090	2620-2140
Beta 85219	BH2/1	-5.54 – 5.49m	Black very degraded organic material.	Negative	6	Base of basal peat/organic mud. Regressive contact.	6600 ± 90	-25 ‰ estimated	7650-7320	5700-5370
Beta 85220	BH1/2	-4.39 –4.34m	Black degraded organic silt clay with low quantities of sand. Some iron staining.	None	8	Within organic muds.	5950 ± 80	-25 ‰ estimated	6990-6570	5040-4620
Beta 85221	BH1/3	-5.88 –5.83m	Black degraded organic silt clay with low proportions of sand	Negative	9	Base of basal organic mud.	10090 ± 80	-25 ‰ estimated	12280-11260	10330-9310

Table 84. Masthouse Terrace radiocarbon results

6.3 Biostratigraphy

Diatoms

Subsamples were split from the monolith tins for examination of diatoms. Samples were not split at equal distances throughout the sequence but were collected across contacts between organic and minerogenic sediments to examine the nature of aquatic conditions at these transitional periods.

Preparation followed standard procedures (see Chapter 3). As the samples were collected only across contacts between changing sediment types, no local assemblage zones have been allocated. The assemblages are instead discussed by groups of samples throughout the core with reference to the ecological classification systems of Hustedt (1953) and Vos and de Wolf (1993).

Sample	OD height	Diatom group	Sedimentary group
1	-2.76	4	7
2	-2.78	4	7
3	-2.80	4	7
4	-2.82	4	7
5	-2.86	4	7
6	-3.96	3	4
7	-3.98	3	4
8	-4.00	3	4
9	-4.02	3	4
10	-5.02	2	3
11	-5.04	2	3
12	-5.06	2	3
13	-5.08	2	3
14	-5.74	1	2
15	-5.76	1	2
16	-5.78	1	2
17	-5.80	1	2

Table 85. Masthouse Terrace diatom sample details

Diatom group 1 (samples 17-14, -5.80-5.74m OD)

No valves preserved in these samples with the exception of one valve identified as *Gomphonema acuminatum.*

Diatom group 2 (samples 13-10, -5.08-5.02m OD)

The base of group is dominated by *Pinnularia* sp., which forms over 50% of the sample (13), with only *Cyclotella meneghiniana* reaching figures greater than 5% of the total count. Other species present include *Cyclotella striata, Thallasiosira* sp, *Cocconeis disculus, Paralia sulcata, Rhaphoneis amphiceros* and *Rhoicosphenia abbreviata.* Within this group of 4 samples, the obvious change comes with the decrease in *Pinnularia* valves, to below 25%, matched by an increase in the freshwater species *Rhoicosphenia abbreviata* and *Cocconeis disculus.* The more obvious estuarine and marine species such as *Cyclotella striata* and *Paralia sulcata* are not present in large proportions, but sample 10 does show a more estuarine trend with species such as *Cocconeis scutellum, Cocconeis peltoides,* several *Melosira* species and *Pseudopodosira stelligera* all appearing for the first time.

Diatom group 3 (samples 9-6, -4.02—3.96m OD)

There are practically no valves recovered from either sample 9 or 6. The estuarine species *Paralia sulcata, Rhaphoneis amphiceros, Nitzschia navicularis* and *Pseudopodosira westii* heavily dominate samples 8 and 7. Only 6 valves of *Pinnularia* were counted. There is no real difference between the two samples, which seem to be a mixture of Vos and de wolfs (1993) *Melosira (Paralia) sulcata* group and also their *Rhaphoneis amphiceros* group.

Diatom group 4 (samples 5-1, -2.86-2.76m OD)

Sample 5 produced no valves. Full counts were obtained from samples 4-1 and show a significant change from Group 3. *N. navicularis* and *P. sulcata* are dramatically reduced to single figures and were not recorded at all in sample 1. The dominant species is *Cyclotella striata,* with a massive concentration in sample 1.

MASTHOUSE TERRACE DIATOMS																	
Sample No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Group	4	4	4	4	4	3	3	3	3	2	2	2	2	1	1	1	1
Traverses	1	4	5	6	3	3	16	21	3	9	12	22	19	3	3	3	1
Altitude (m. OD)	-2.76	-2.78	-2.8	-2.82	-2.86	-3.96	-3.98	-4.0	-4.02	-5.02	-5.04	-5.06	-5.08	-5.74	-5.76	-5.78	-5.9
Achnanthes lanceolata		1	2														
Achnanthes sp.		2	1														
Actinoptychus senarius			3	1													
Amphora copulata											1						
Amphora ovalis		2															
Amphora sp.	2	5															
Brachysira follis																	
Cocconeis disculus	1	1					1	4		14	10	8	5				
Cocconeis pediculus		2	4														
Cocconeis peltoides										2							
Cocconeis placentula	1	2		2			1	3			1		1				
Cocconeis scutellum	1	2	4				6	7		2							
Cocconeis sp.		4	6	1			4	5		6							
Coscinodiscus lacustris				1													
Coscinodiscus nodulifer				1													
Coscinodiscus perforatus										3							
Coscinodiscus sp.		1		1			3										
Coscinodiscus subsalsus			1														
Craticula cuspidata											1	3					
Cyclotella kuetzingiana											1	7	7				
Cyclotella meneghiniana		59	35	84			11	1		10			28				
Cyclotella radiosa		1															
Cyclotella sp.	8	51	44	18			13			2			2				
Cyclotella striata	301	10	65	13			6	6	1				9				
Cymatopleura sp.										1							
Cymatosira belgica	1	10	18	1				4									
Cymbella sp.		1	3	2						2		1					

Delphinius surirella	5	2	3	1			8	12	1		1						
Denticula sp.	1						1										
Diatoma sp.	6																
Diatoma vulgare		2															
Diploneis didyma			3	2			4	3									
Diploneis incurvata										1							
Diploneis interrupta								1									
Diploneis ovalis		1															
Diploneis sp.			1														
Diploneis didyma/ domblittensis										1							
Epithemia sp.											2						
Fragilaria brevistriata				1													
Fragilaria leptostauron		4															
Fragilaria pinnata		8	1	5			2			3		5	2				
Fragilaria sp.			1					1									
Gomphonema acuminatum															1		
Gomphonema angustum		1								2	31	20					
Gomphonema sp.	1	2	2							7	11	10					
Gyrosigma sp.				2			1			6	8	21					
Licmophora abbreviata											2						
Martyana martyi											2	1					
Melosira arenaria		3															
Melosira granulata										7							
Melosira islandica										2							
Melosira sp.										3							
Melosira/Aulacoseira																	
Navicula cuspidata													2				
Navicula finmarchia											1						
Navicula sp.	2	13		4				2		15	6	1	1				
Navicula subcostulata		1															
Navicula subtillisima										2	4	2	2				
Nitzschia navicularis		4	6	2			34	31	1								
Nitzschia sp.	1	1	2	1			2										

Nitzschia tryblionella		4	1	10													
Opephora marina							3										
Opephora olsenii				1									3				
Opephora sp.	1			1			1			2	1						
Orthoseria										40							
Paralia sulcata		5	5	2			40	55	1				3				
Pinnularia cardinalis										4			1				
Pinnularia sp.		1	1	4			1	5	1	44	95	102	111				
Pleurosigma sp.																	
Podosira stelligera			1				1			2							
Pseudopodosira westii							23	17									
Reimeria sinuata										3							
Rhaphoneis amphiceros	2	2	2	7			29	40					4				
Rhaphoneis minutissima		6	3				1	1		7			2				
Rhoicosphenia abbreviata											12	16	2				
Rhoicosphenia sp.											4						
Rhopalodia brebissoniii								1									
Rhopalodia sp.								1					1				
Staurosirella leptostauron		1															
Stephanodiscus sp.										1							
Surirella ovata			1														
Surirella sp.			2							1							
Synedra sp.											1						
Synedra ulna	1						2				1	4					
Thallasionema nitzschioides		3	2														
Thallasiosira decipiens		13	13	12			1						5				
Thallasiosira oestropi													1				
Thallasiosira sp.	9	6	12	21			6	3		1		4	8				
Tryblionella levidensis	2																
Tryblionella acuminata	1																
TOTAL	**347**	**237**	**248**	**201**	**0**	**0**	**205**	**203**	**5**	**204**	**196**	**205**	**201**	**0**	**1**	**0**	**0**

Table 86. Masthouse Terrace diatom counts (BH1)

Appendix 7. Suffolk House, 154-56 Upper Thames Street, City of London, EC4 (TQ 3271 8077)

Troels-Smith Classification Sheet																										
Site Code: SUF94				**Address:** SUFFOLK HOUSE/56																					**OD top:**	0.87m
				Described by: EJS													**Date:** 12th July 1997								**OD base:**	-0.46m
Unit	**TIn**	**Meas**	**Physical Properties**							***Turfa***			***Detritus***			***Limus***			***Argilla***		***Grana***				**Accessory elements**	**Comment**
			NI	ST	EL	SI	COLOUR	LI	Sh	Tb	Tl	Th	Dg	Dh	Dl	Ld	Lc	Lf	As	Ag	Ga	Gs	Gg	GG		(inc. Structure, Lso)
1	3	0-6	4	0	0	3	10YR2/1 bl	0							+				1	1	2		+	+		
2	3	6-13	3	0	0	3	10YR2/1/3/6 bl-dybr	0						+						1	1			2		gravel in matrix
3	3	13-17	4	0	0	3	10YR2/1 bl	0	+			+		+					2	2	+					
4	3	17-33	3	0	0	3	10YR2/1-5/2 bl-grbrown	0	+			+		+					1	1	+			2		gravel in matrix
5	3	33-50	3	0	0	3	10YR2/1 bl	x	2			+							1	1	+		+	+		
6	2	50-54	4	0	0	3	10YR2/1 bl	0	2						+				1	1	+			+		
7	2	54-62	4	0	0	3	10YR2/1 bl	2	2						+				2	+	+		+			
8	2	62-64	4	0	0	3	10YR2/1 bl	2							4[3]						+					
9	2	64-90	4	0	0	3	10YR2/1 bl	x	2			+			+				1	1	+					
10	1	90-92.5	4	0	0	3	10YR2/1 bl	0	2						+				1	1	+					
11	1	92.5-97	4	0	0	3	10YR2/2 vdk br	1	1						+				2	1	+					
12	1	97-103	4	0	0	3	10YR2/1 bl	1	2			+			+				1	1	+					
13	1	103-116	4	0	0	3	10YR2/2 vdk br	1	2						+				1	1	+					patchy
14	1	116-133	4	0	0	3	10YR2/1 bl	x	1										2	1	+		+		bone	loose

Table 87. Suffolk House sedimentary log, sequence 56, EN11

Troels-Smith Classification Sheet																												
Site Code: SUF94				**Address:** SUFFOLK HOUSE/72																							**OD top:**	-0.95m
				Described by: EJS														**Date:** 12th July 1997									**OD base:**	-2.0m
Unit	**Tin**	**Meas**	**Physical Properties**							***Turfa***			***Detritus***			***Limus***			***Argilla***		***Grana***					**Accessory**	**Comment**
			NI	ST	EL	SI	COLOUR	LI	Sh	Tb	TI	Th	Dg	Dh	DI	Ld	Lc	Lf	As	Ag	Ga	Gs	Gg	GG	**elements**	(inc. Structure, Lso)
1	3	0-16	4	0	0	3	10YR2/1 bl	0	2						+				1	1						
2	3	16-21	4	0	0	3	10YR2/1 bl	1	1						2				1							
3	3	21-34	4	0	0	3	10YR2/1 bl	0	2			+			+				1	1	+					
4	3/2/1	34-70	4	0	0	3	10YR2/1 bl	0	2						+				1	1	+					
5	1	70-79	4	0	0	3	10YR3/1 vdk gr	0	1						+				2	1	+					
6	1	79-105	4	0	0	3	10YR2/1 bl	x	1						+				2	1	+					

Table 88. Suffolk House sedimentary log, sequence 72, EN11

7.1 Lithology

The monolith tins were cleaned and described according to methods outlined in Chapter 3. A brief summary of the sedimentary grouping is given below.

Sequence 56, engineering pit 11

Group 1 (units 1-2, -0.46-0.33m OD)

These units are mineral dominated with an increase in grain size going up the sequence. Rare fragments of wood and plant fragments were incorporated into the sandy matrix. Contact to the overlying unit was gradual.

Group 2 (unit 3, -0.33-29m OD)

This unit shows a fining up tendency from the previous coarse deposit. Unit 3 is still mineral dominated, but a clay silt with wood, herbaceous plant fragments and also some unidentifiable organic matter. Contact to the overlying unit was gradual.

Group 3 (unit 4, -0.29-13m OD)

This unit shows a return to the slightly coarser deposits encountered lower down the sequence, with gravel forming half of the matrix content. The organic content is still present in this deposit with wood, herbaceous plant parts and some undistinguishable organic matter. The contact to the next unit is gradual.

Group 4 (unit 5-14, -0.13- +0.87m OD

This substantial group consists of organic muds, composed mainly of silt clay with undifferentiated organic matter and wood. There is some fluctuation in the grain size of the mineral component, with some larger clasts towards the base. Wood is almost ubiquitous, but other identifiable organic matter is in much shorter supply. Sampling ceased adjacent to a Roman intrusion in the sequence.

Sequence 72, engineering pit 20

This sequence can be broadly classified as one deposit. The units consist of organic muds. These are mainly silt clay, with a small proportion of sand above the lowest two units. The organic matter is mainly unidentifiable, although small quantities of detrital wood were noted almost entirely throughout. Although not collected within the sampled sequence, for logistical reasons of rapid water ingress, the field records indicate that below the organic mud, grey silt clay was present, apparently without any organic content. The upper levels of the organic mud were cut by Roman timbers (684 and 685), from -1.05m OD.

Magnetic susceptibility (low frequency)

Samples for magnetic susceptibility were split off from the monolith tins; full methodology can be found in Chapter 3.

Sample number	m. OD	Pot number	Pot weight	Pot+sed weight (g)	Sediment weight (g)	1st blank	Magnetic sus.	2nd blank	Result	Value
1	-0.20	700	4.25	11.52	7.27	-0.5	1.6	-0.5	2.10	2.89
2	-0.16	702	4.23	11.80	7.57	1.2	3.2	1.3	1.95	2.58
3	-0.14	641	4.28	12.09	7.81	0.2	2.5	0.4	2.20	2.82
4	-0.12	724	4.36	8.80	4.44	-0.1	1.1	0.1	1.10	2.48
5	-0.10	701	4.29	8.25	3.96	0.9	2.1	1.0	1.15	2.90
6	-0.08	261	4.28	8.61	4.33	-0.5	0.6	-0.5	1.10	2.54
7	-0.04	693	4.30	8.67	4.37	-0.5	0.8	-0.6	1.35	3.09
8	-0.02	635	4.26	7.93	3.67	-0.6	0.4	-0.7	1.05	2.86
9	0.00	732	4.20	8.80	4.60	-0.7	0.7	-0.8	1.45	3.15
10	0.02	696	4.23	8.63	4.40	-0.1	0.9	-0.1	1.00	2.27
11	0.04	722	4.09	8.74	4.65	0.7	1.9	0.6	1.25	2.69
12	0.06	384	4.13	8.26	4.13	-0.1	1.0	-0.2	1.15	2.78
13	0.08	303	4.28	9.30	5.02	0.2	1.8	0.5	1.45	2.89
14	0.10	696	4.23	8.63	4.40	-0.1	0.9	-0.1	1.00	2.27
16	0.12	104	4.04	8.89	4.85	1.3	2.8	1.5	1.40	2.89
17	0.14	116	4.23	7.40	3.17	-0.2	0.7	-0.2	0.90	2.84
18	0.16	302	4.26	8.42	4.16	0.5	1.6	0.3	1.20	2.88
19	0.18	96	4.27	8.59	4.32	-0.1	0.5	-0.2	0.65	1.50
20	0.20	209	4.25	7.70	3.45	0.7	1.3	0.9	0.50	1.45
22	0.22	297	4.11	6.77	2.66	-0.2	0.1	-0.3	0.35	1.32
23	0.24	73	4.27	7.69	3.42	-0.4	0.1	-0.4	0.50	1.46
24	0.26	143	4.27	7.47	3.20	0.1	0.6	0.2	0.45	1.41
25	0.28	14	4.10	6.84	2.74	0.7	1.0	0.6	0.35	1.28
26	0.30	105	4.24	6.72	2.48	0.8	2.7	1.2	1.70	6.85

27	0.32	47	4.24	6.66	2.42	-0.2	0.1	-0.1	0.25	1.03
28	0.34	353	4.24	6.55	2.31	0.6	1.2	0.8	0.50	2.16
29	0.38	385	4.27	7.37	3.10	0.0	0.6	-0.1	0.65	2.10
30	0.40	304	4.28	7.07	2.79	0.3	1.0	0.5	0.60	2.15
31	0.44	252	4.25	6.96	2.71	0.4	1.0	0.4	0.60	2.21
32	0.46	122	4.29	6.90	2.61	0.6	1.3	0.7	0.65	2.49
33	0.48	118	4.37	6.52	2.15	0.2	0.5	0.3	0.25	1.16
34	0.50	280	4.27	6.73	2.46	0.5	0.8	0.7	0.20	0.81
35	0.52	257	4.24	6.91	2.67	1.1	1.7	1.3	0.50	1.87
36	0.54	232	4.07	5.84	1.77	-0.4	-0.2	-0.6	0.30	1.69
37	0.56	77	4.04	5.68	1.64	-0.6	-0.3	-0.5	0.25	1.52
38	0.58	259	4.24	5.95	1.71	0.4	0.8	1.1	0.05	0.29
39	0.60	277	4.30	6.64	2.34	-0.3	0.2	-0.3	0.50	2.14
40	0.62	33	4.23	6.61	2.38	0.1	0.9	0.2	0.75	3.15
41	0.64	381	4.05	6.90	2.85	-0.1	1.4	-0.1	1.50	5.26
43	0.66	368	4.07	6.51	2.44	-0.2	1.9	-0.2	2.10	8.61
44	0.68	24	4.23	7.21	2.98	-0.3	2.0	-0.2	2.25	7.55
46	0.70	354	4.28	9.47	5.19	0.4	4.8	0.4	4.40	8.48
47	0.72	54	4.37	7.37	3.00	0.0	2.8	0.3	2.65	8.83
48	0.74	200	4.39	8.60	4.21	0.3	3.6	0.2	3.35	7.96
49	0.76	251	4.24	8.05	3.81	-0.2	3.3	0.1	3.35	8.79
50	0.78	217	4.23	7.65	3.42	0.1	3.4	0.4	3.15	9.21
51	0.80	370	4.24	8.05	3.81	0.4	4.8	0.6	4.30	11.29
52	0.82	687	4.22	8.81	4.59	0.6	5.8	0.7	5.15	11.22
53	0.84	149	4.24	9.28	5.04	0.8	8.3	0.9	7.45	14.78
54	0.86	208	4.23	7.41	3.18	0.3	5.3	0.2	5.05	15.88

Table 89. Suffolk House magnetic susceptibility results (sample 56 EN11)

Sample number	m. OD	Pot number	Pot weight	Pot+sed weight (g)	Sediment weight (g)	1st blank	Magnetic sus.	2nd blank	Result	Value
1	-2.00	157	4.28	13.98	9.70	0.9	2.8	1.0	1.85	0.56
2	-1.96	639	4.21	12.40	8.19	0.0	1.4	0.0	1.40	0.87
3	-1.92	35	4.23	10.82	6.59	0.4	1.7	0.7	1.15	1.32
4	-1.9	125	4.39	10.78	6.39	0.6	2.0	0.7	1.35	1.16
5	-1.88	291	4.24	10.93	6.69	1.1	2.2	1.1	1.10	1.36
6	-1.86	287	4.12	12.41	8.29	1.0	2.8	1.1	1.75	0.69
7	-1.84	299	4.23	9.21	4.98	0.4	1.3	0.4	0.90	2.23
8	-1.82	27	4.02	8.80	4.78	0.8	2.3	1.0	1.40	1.49
9	-1.8	229	4.39	9.32	4.93	0.7	2.0	0.7	1.30	1.56
10	-1.78	292	4.28	9.19	4.91	0.2	1.5	0.3	1.25	1.63
11	-1.76	69	4.26	9.85	5.59	0.5	2.1	0.6	1.55	1.15
12	-1.74	139	4.22	12.08	7.86	-0.1	5.2	0.1	5.20	6.61
13	-1.72	633	4.28	9.58	5.30	0.0	1.4	0.2	1.30	1.45
14	-1.70	123	4.22	11.13	6.91	1.0	5.8	1.5	4.55	6.58
15	-1.68	8	4.27	7.20	2.97	0.7	2.4	0.9	1.60	5.39
16	-1.66	631	4.24	8.62	4.38	0.9	4.9	0.9	4.00	9.13
17	-1.64	640	4.24	8.53	4.17	0.1	2.5	0.1	2.40	5.76
18	-1.62	16	4.27	8.06	3.79	-0.1	2.0	0.0	2.05	5.41
19	-1.60	626	4.06	8.60	4.54	-0.1	1.5	-0.1	1.60	1.38
20	-1.58	710	4.37	8.26	3.89	0.0	2.3	-0.1	2.35	6.04
21	-1.56	103	4.21	9.33	5.12	0.7	4.3	0.7	3.60	7.03
22	-1.54	260	4.24	8.08	3.84	0.1	2.4	0.3	2.40	6.25
23	-1.52	623	4.27	9.42	5.15	1.2	2.0	1.4	0.70	1.35
24	-1.50	109	4.39	8.99	4.60	1.0	4.1	1.1	3.05	0.71
25	-1.48	260	4.24	8.08	3.84	0.1	2.4	0.3	2.20	1.18
26	-1.46	643	4.25	8.30	4.05	0.4	2.8	0.6	2.30	1.07
27	-1.44	691	4.25	9.47	5.22	0.3	3.5	0.4	3.15	0.61
28	-1.42	38	4.27	12.38	8.11	0.6	7.1	0.6	6.50	0.19
29	-1.40	56	4.38	12.23	7.85	0.7	6.5	0.8	5.75	7.32
30	-1.38	278	4.19	11.94	7.75	-0.2	4.8	-0.1	4.95	0.26
31	-1.36	649	4.20	10.18	5.98	0.7	4.9	1.0	4.05	0.41
32	-1.34	671	4.25	13.37	9.12	-0.1	6.6	-0.1	6.70	0.16
33	-1.32	301	4.27	13.56	9.29	1.1	7.7	1.1	6.60	0.16
34	-1.30	205	4.06	11.66	7.60	0.4	5.8	0.7	5.25	0.25
35	-1.28	306	4.29	9.99	5.70	0.9	5.0	1.2	3.95	0.44
36	-1.26	646	4.26	11.62	7.36	0.1	5.6	0.1	5.50	0.25
37	-1.24	602	4.22	11.71	7.49	0.1	5.7	0.1	5.60	0.24
38	-1.22	60	4.29	11.92	7.63	1.2	6.6	1.0	5.50	0.24
39	-1.20	620	4.38	11.78	7.40	1.1	6.2	1.1	5.10	0.26
40	-1.18	733	4.14	11.86	7.72	1.1	6.4	1.2	5.25	0.25
41	-1.16	120	4.25	12.60	8.35	1.0	6.4	1.2	5.30	0.23
42	-1.14	685	4.23	8.60	4.37	1.1	3.7	1.2	2.55	0.90
43	-1.12	127	4.28	9.92	5.64	0.8	3.9	0.8	3.10	0.57
44	-1.10	615	4.37	9.18	4.81	0.1	2.8	0.1	2.70	0.77
45	1.08	296	4.29	7.18	2.89	1.2	2.4	1.2	1.20	2.88
46	-1.06	651	4.05	10.76	6.71	0.6	4.4	0.8	3.70	0.40
47	-1.04	160	4.37	9.35	4.98	0.6	3.0	0.7	2.35	0.85
48	-1.02	220	4.25	8.30	4.05	0.8	2.9	0.8	2.10	1.18
49	-1.00	699	4.22	8.80	4.58	-0.1	2.1	0.1	2.10	1.04
50	-0.98	627	4.26	8.42	4.16	0.4	2.9	0.6	2.40	1.00
51	-0.96	21	4.22	7.16	2.94	0.0	1.4	0.0	1.40	2.43
52	-0.94	678	4.22	9.48	5.26	0.1	4.5	0.1	4.40	0.43
53	-0.92	61	4.28	7.67	3.39	-0.1	1.6	0.4	1.45	2.03

Table 90. Suffolk House magnetic susceptibility results (sample 72 EN20)

Percentage organic carbon

The magnetic susceptibility samples were subsequently used to measure the organic carbon content; full methodology can be found in Chapter 3.

Sample number	m. OD	Pot number	Sediment weight (g)	Crucible number	Crucible weight (g)	Before firing (g)	After firing (g)	% Organic carbon
1	-0.20	700	7.27	203	7.88	15.14	13.95	16.39%
2	-0.16	702	7.57	227	9.20	16.77	15.53	16.38%
3	-0.14	641	7.81	176	8.71	16.51	15.14	17.56%
4	-0.12	724	4.44	112	5.52	9.48	8.62	21.72%
5	-0.10	701	3.96	121	5.59	9.54	8.57	24.56%
6	-0.08	261	4.33	122	5.63	9.94	8.85	25.29%
7	-0.02	635	3.67	35	5.32	9.00	7.96	28.26%
8	0.00	732	4.60	1004	9.61	14.2	12.72	15.42%
9	0.02	696	4.40	18	5.63	9.63	8.17	36.50%
10	0.04	722	4.65	54	5.44	10.07	8.37	36.72%
11	0.06	384	4.13	7	5.25	9.37	7.97	33.98%
12	0.08	303	5.02	113	5.47	9.95	8.53	31.70%
13	0.10	696	4.40	18	5.63	9.63	8.17	36.50%
14	0.12	104	4.85	67	5.54	10.37	8.97	28.99%
15	0.14	116	3.17	24	5.35	8.50	7.34	36.83%
16	0.16	302	4.16	35	5.32	9.46	7.57	45.65%
17	0.18	96	4.32	189	8.57	12.88	10.66	51.51%
18	0.20	209	3.45	5	5.54	8.97	7.08	55.10%
19	0.22	297	2.66	15	5.35	7.99	6.46	57.95%
20	0.24	73	3.42	117	5.50	8.91	7.09	53.37%
21	0.26	143	3.20	75	5.33	8.53	6.90	50.94%
22	0.28	14	2.74	123	5.48	8.20	6.88	48.53%
23	0.30	105	2.48	200	9.05	11.52	10.07	58.70%
24	0.32	47	2.42	43	5.16	7.57	6.06	62.66%
25	0.34	353	2.31	115	5.37	7.67	6.10	68.26%
26	0.38	385	3.10	46	5.53	8.60	6.49	68.73%
27	0.40	304	2.79	48	5.47	8.25	6.37	67.63%
28	0.44	252	2.71	11	5.36	8.06	6.23	67.78%
29	0.46	122	2.61	43	5.16	7.77	6.12	63.22%
30	0.48	118	2.15	39	5.63	7.76	6.37	65.26%
31	0.50	280	2.46	67	5.54	7.99	6.54	59.18%
32	0.52	257	2.67	4	5.44	8.10	6.69	53.01%
33	0.54	232	1.77	66	5.42	7.17	5.88	73.71%
34	0.56	77	1.64	34	5.41	7.04	5.83	74.23%
35	0.58	259	1.71	63	5.39	7.09	5.82	74.71%
36	0.60	277	2.34	12	4.98	7.31	5.68	69.96%
37	0.62	33	2.38	90	5.45	7.82	6.52	54.85%
38	0.64	381	2.85	59	5.31	8.15	6.70	51.06%
39	0.66	368	2.44	124	5.42	7.83	6.53	53.94%
40	0.68	24	2.98	37	5.49	9.54	7.12	59.75%
41	0.70	354	5.19	220	8.06	13.23	10.84	46.23%
42	0.72	54	3.00	244	8.72	11.72	10.44	42.67%
43	0.74	200	4.21	196	8.38	12.59	10.82	42.04%
44	0.78	217	3.42	10	5.34	8.75	7.39	39.88%
45	0.80	370	3.81	72	5.16	8.97	7.71	33.07%
46	0.82	687	4.59	248	8.60	13.18	11.66	33.19%
47	0.84	149	5.04	25	5.29	10.31	9.03	25.50%
48	0.86	208	3.18	50	5.48	9.54	8.52	25.12%

Table 91. Suffolk House percentage organic carbon results (sample 56 EN11)

Sample number	m. OD	Pot number	Sediment weight (g)	Crucible number	Crucible weight (g	Before firing (g)	After firing (g)	% Organic carbon
1	-2.00	157	9.70	185	8.84	18.54	18.13	4.23%
2	-1.96	639	8.19	217	9.00	17.17	16.79	4.65%
3	-1.92	35	6.59	190	8.95	15.52	15.09	6.54%
4	-1.9	125	6.39	7	5.25	11.63	11.14	7.68%
5	-1.88	291	6.69	245	8.48	15.15	14.49	9.90%
6	-1.86	287	8.29	1003	11.20	19.40	18.44	11.71%
7	-1.84	299	4.98	38	5.28	10.25	9.57	13.68%
8	-1.82	27	4.78	120	5.39	10.16	9.20	20.13%
9	-1.8	229	4.93	27	5.52	10.42	9.42	20.41%
10	-1.78	292	4.91	70	5.38	10.29	9.34	19.35%
11	-1.76	69	5.59	11	5.36	10.92	10.05	15.65%
12	-1.74	139	7.86	175	9.00	16.86	14.95	24.30%
13	-1.72	633	5.30	15	5.35	10.64	9.80	15.88%
14	-1.70	123	5.38	7	5.25	11.63	11.14	7.68%
15	-1.68	8	2.98	14	5.34	8.28	7.46	27.89%
16	-1.66	631	4.38	1001	10.11	14.49	12.92	35.84%
17	-1.64	640	4.28	165	9.01	13.29	10.95	54.67%
18	-1.62	16	3.78	71	5.68	9.46	7.87	42.06%
19	-1.60	626	4.54	66	5.42	9.95	8.74	26.71%
20	-1.58	710	3.87	250	8.76	12.63	10.58	52.97%
21	-1.56	103	5.10	162	7.74	12.84	10.53	45.29%
22	-1.54	260	3.84	167	9.22	13.06	10.88	56.77%
23	-1.52	623	5.15	124	5.42	10.54	8.77	34.57%
24	-1.50	109	4.60	45	5.17	9.74	8.76	21.44%
25	-1.48	260	3.84	167	9.22	13.06	10.88	56.77%
26	-1.46	643	4.05	58	5.39	9.43	7.98	35.89%
27	-1.44	691	5.22	179	8.90	14.10	12.02	40.00%
28	-1.42	38	8.11	191	8.80	16.90	14.90	24.69%
29	-1.40	56	7.85	208	8.03	15.87	13.77	26.79%
30	-1.38	278	7.75	154	8.78	16.50	14.39	27.33%
31	-1.36	649	5.98	174	8.84	14.81	13.12	28.31%
32	-1.34	671	9.12	182	8.86	17.95	15.33	28.82%
33	-1.32	301	9.29	195	8.64	17.90	15.29	28.19%
34	-1.30	205	7.60	157	9.08	16.65	14.00	35.01%
35	-1.28	306	5.70	221	9.06	14.72	12.56	38.16%
36	-1.26	646	7.36	226	8.74	16.08	13.60	33.79%
37	-1.24	602	7.49	202	8.18	15.67	13.40	30.31%
38	-1.22	60	7.63	199	8.88	16.49	14.19	30.22%
39	-1.20	620	7.40	152	8.53	15.92	13.41	33.96%
40	-1.18	733	7.72	170	8.17	15.89	13.30	33.55%
41	-1.16	120	8.35	233	9.13	17.47	14.59	34.53%
42	-1.14	685	4.37	156	8.47	12.82	10.55	52.18%
43	-1.12	127	5.64	164	8.06	13.69	10.73	52.58%
44	-1.10	615	4.81	300	8.19	12.99	10.62	49.38%
45	-1.08	296	2.89	151	8.72	11.60	9.98	56.25%
46	-1.06	651	6.71	237	8.69	15.38	12.14	48.43%
47	-1.04	160	4.98	9	5.58	9.94	7.82	48.62%
48	-1.02	220	4.05	36	5.47	9.52	7.80	42.47%
49	-1.00	699	4.58	110	5.52	10.06	7.82	49.34%
50	-0.98	627	4.16	76	5.02	9.17	7.25	46.27%
51	-0.96	21	2.94	114	5.28	8.21	6.56	56.31%
52	-0.94	678	5.26	68	5.40	10.31	7.93	48.47%
53	-0.92	61	3.39	120	5.39	8.77	7.09	49.70%

Table 92. Suffolk House percentage organic carbon results (sequence 72 EN20)

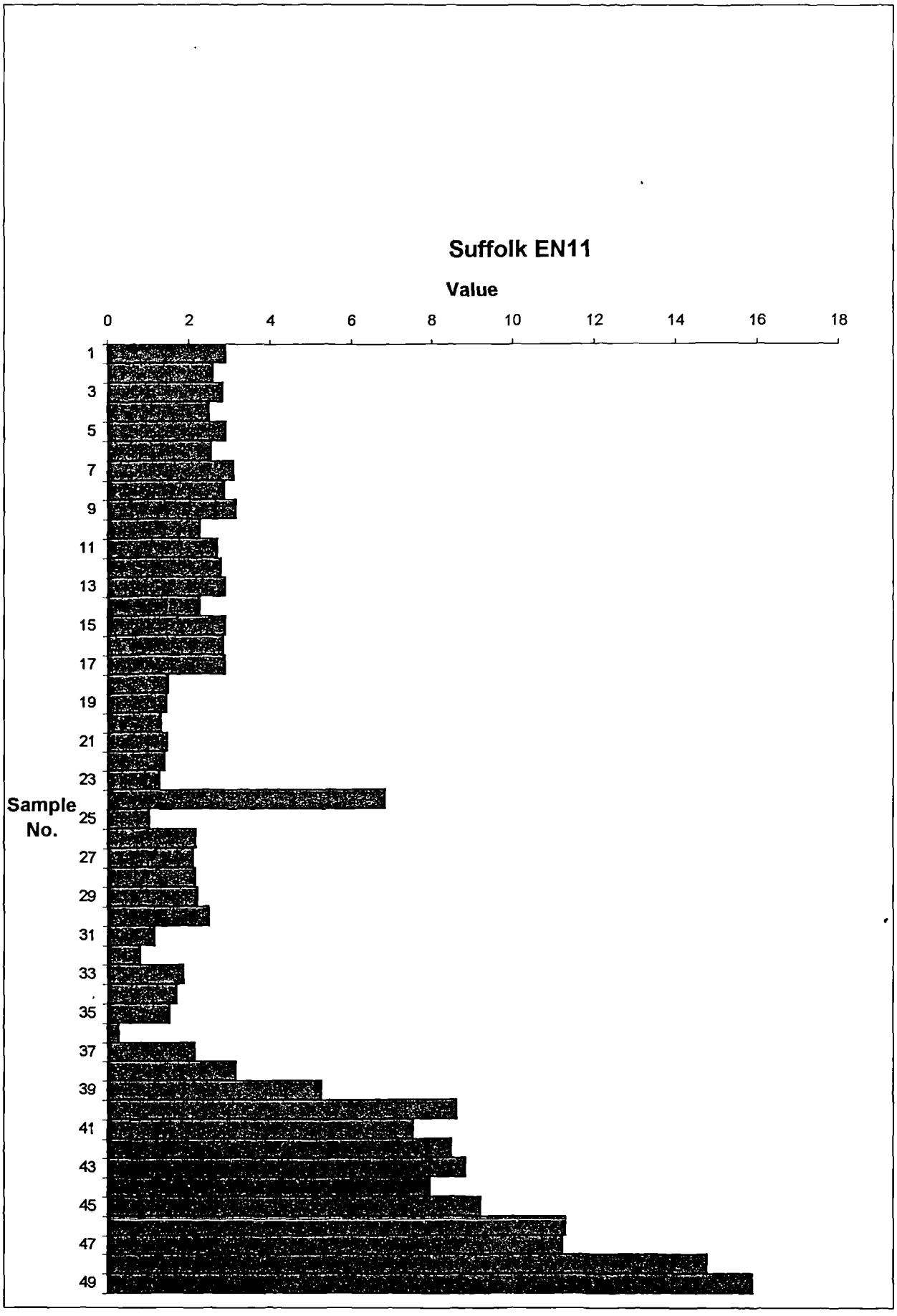

Figure 167. Suffolk House magnetic susceptibility graph (sequence 56 EN11)

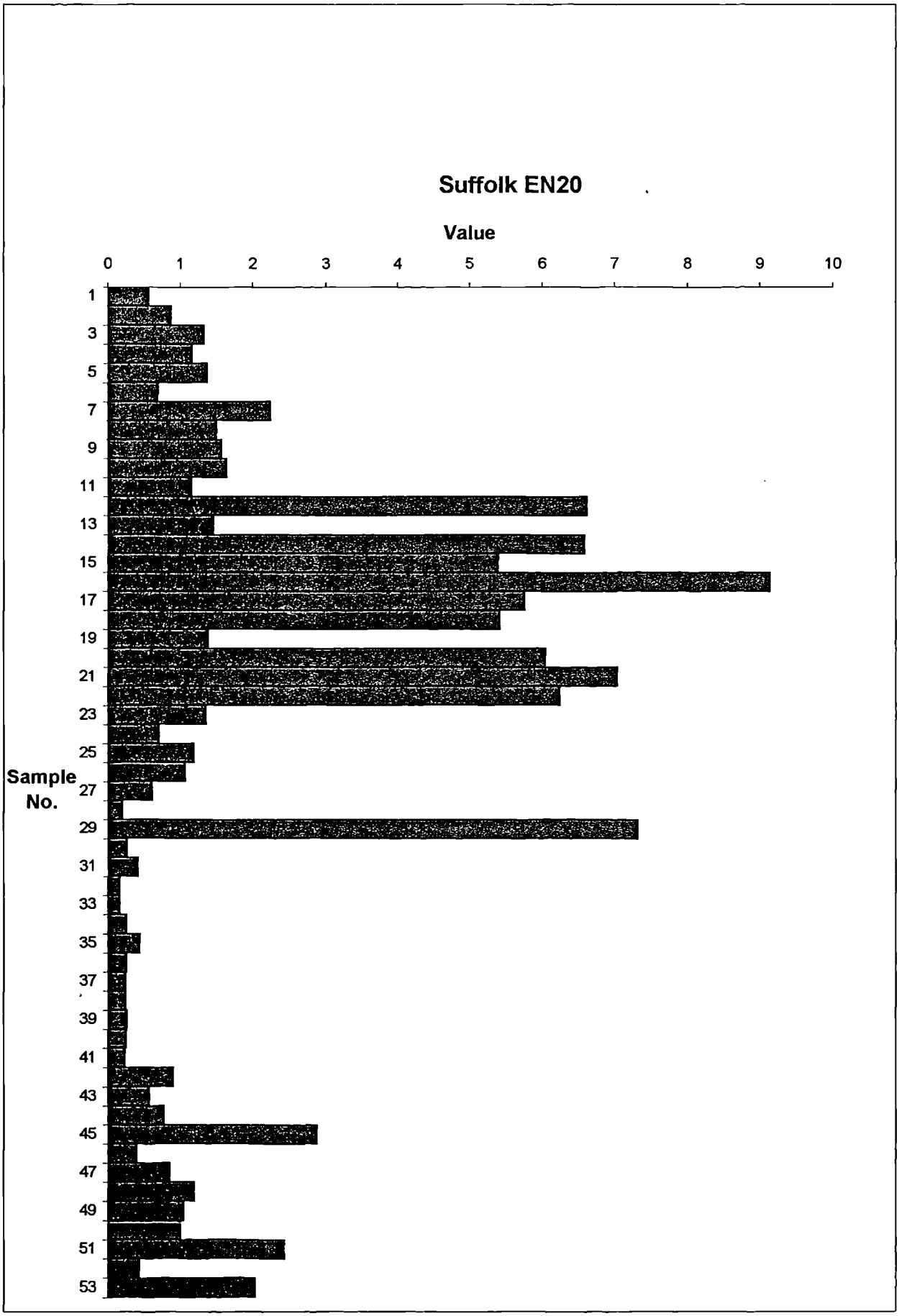

Figure 168. Suffolk House magnetic susceptibility graph (sequence 72 EN20)

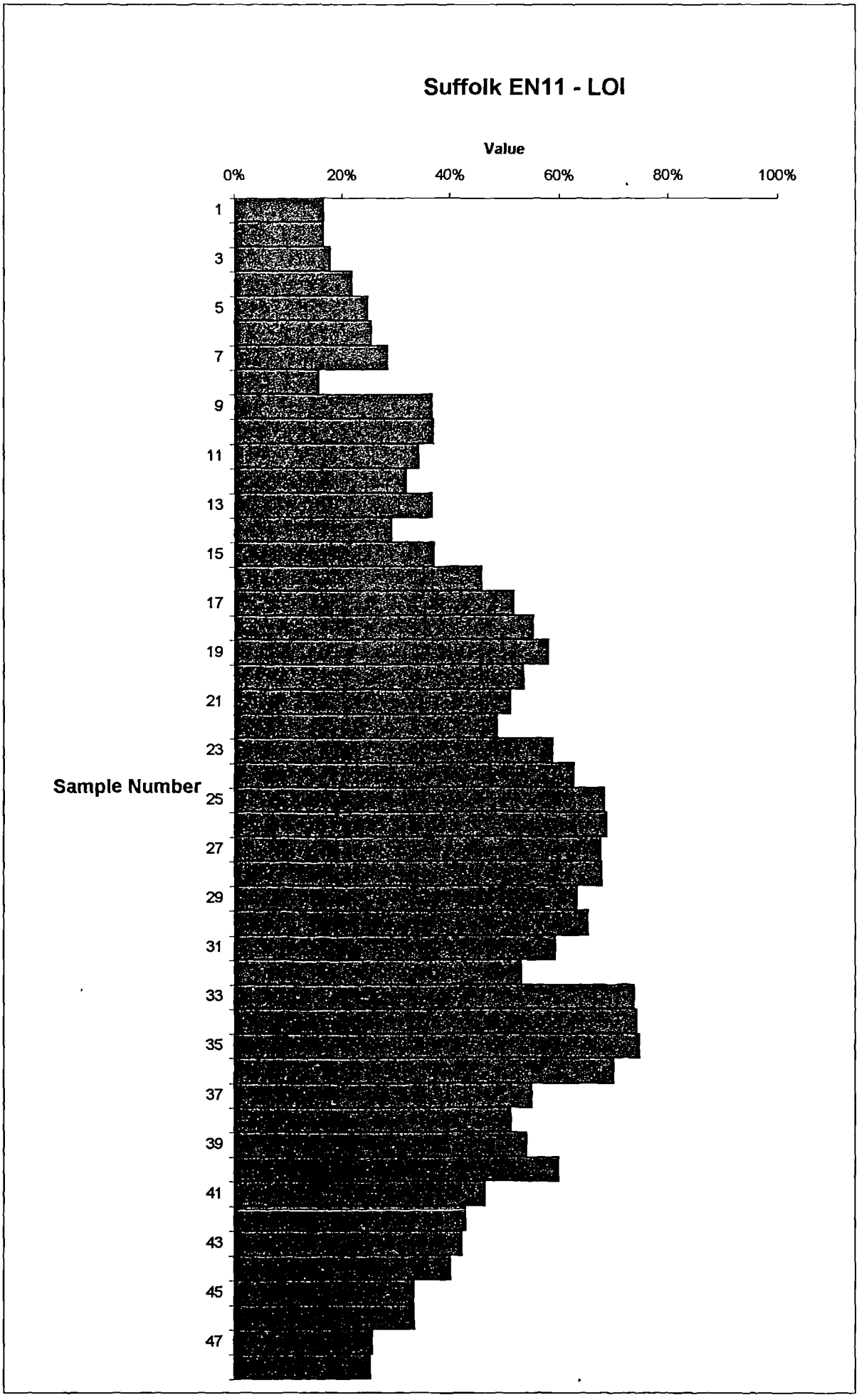

Figure 169. Suffolk House percentage organic carbon graph (sequence 56 EN11)

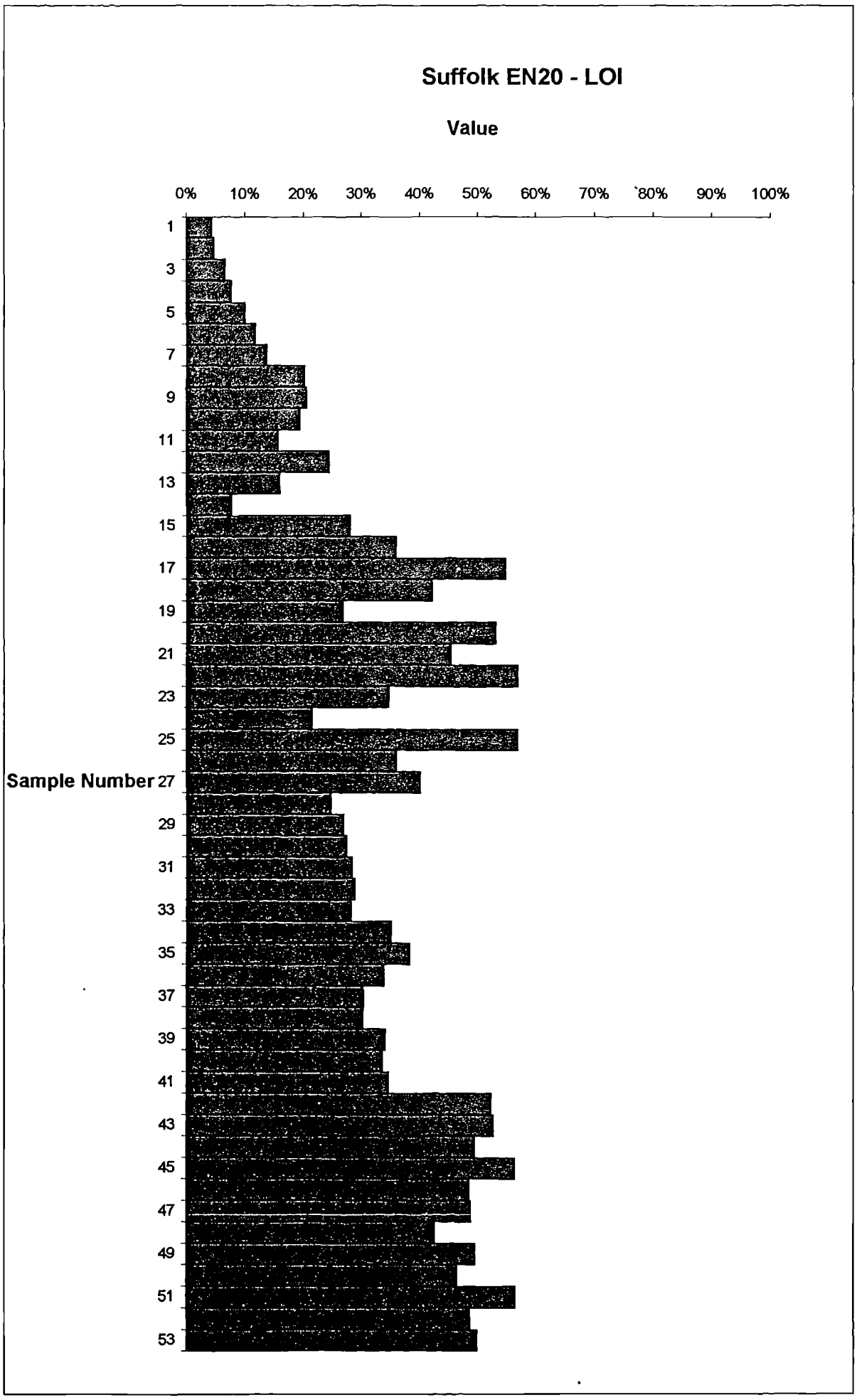

Figure 170. Suffolk House percentage organic carbon graph (sequence 72 EN20)

7.1 Chronology

Dendrochronology

A series of timbers from the Roman waterfronts were dated by dendrochronology, carried out by Ian Tyers of the University of Sheffield, and reproduced here with his permission.

Timber	Structure	End date	Sapwood present	Bark present
582	W2	AD 63	No	No
583	W2	AD 72	No	No
584	W2	AD 66	Yes	No
585	W2	AD 73	Yes	No
586	W2	AD 40	No	No
587	W2	AD 57	Yes	No
588	W2	AD 70	Yes	No
589	W2	AD 35	No	No
594	W2	AD 84	Yes	Yes
609/1	Drain	AD 68	No	No
609/2	Drain	AD 61	No	No
612	Drain	AD 102	Yes	No
614	Drain	AD 128	Yes	No
650	W3	AD 14	No	No
682	W3	AD 88	Yes	No
683	W3	AD 78	Yes	No
684	W3	BC 34	No	No
685	W3	AD 54	Yes	Yes

Table 93. Suffolk House dendrochronology results

Radiocarbon

Seven samples were submitted to Beta Analytic Inc., Miami for radiocarbon assay. The radiocarbon method is discussed in Chapter 3. Results are presented below.

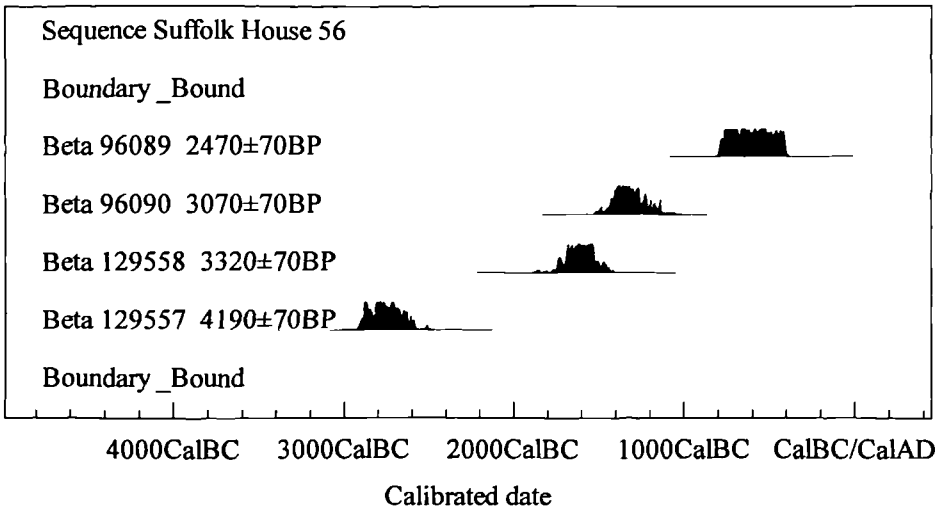

Figure 171. Suffolk House radiocarbon measurements (sequence 56, EN 11)

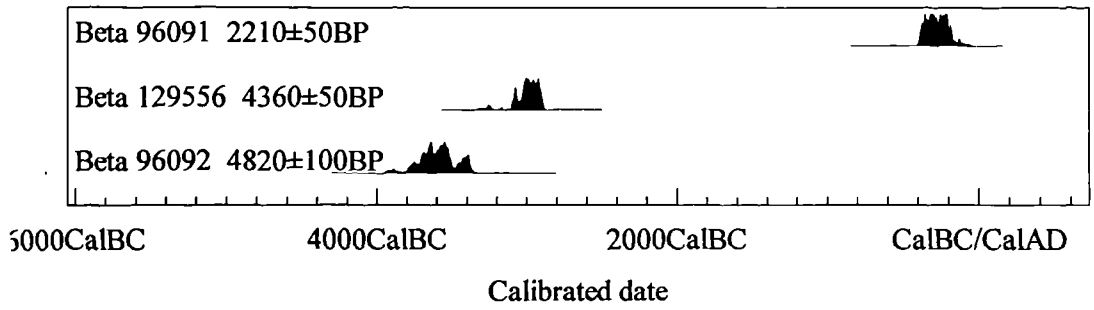

Figure 172. Suffolk House radiocarbon measurements (sequence 72, EN20)

Sample no.	Code	OD height	Material	Tendency	Tendency code (Shennan 1994)	Stratigraphic context	Radiocarbon years BP	$\delta^{13}C$ (‰)	Calendar years BP (2σ)	Calendar years BC (2 σ)
Beta 96089	56 - 569/57	+0.06-0.1m	Wood within organic silt clay	None	8	Within organic mud	2470±70	25 ‰ *	2740-2350 cal BP	790-400 cal BC
Beta 96090	56 - 569/67	-0.09-0.05m	Organic silt clay with undifferentiated organic matter and some wood fragments	? Negative	6	Towards base of organic mud	3070±70	25 ‰ *	3470-3080 cal BP	1520-1130 cal BC
Beta 96091	72 - 693/73	-0.95-0.9m	Organic sediment of silt, clay and humified organic matter	Positive	1	Top of organic sediment, sealed by Early Roman foreshore	2210±50	25 ‰ *	2210-1980 cal BP	260-30 cal BC
Beta 96092	72 - 693/81	-1.92-1.87m	Wood within matrix of organic sediment of silt, clay and humified organic matter	? Negative	6	Towards base of organic sedimentation.	4820±100	25 ‰ *	5850-5300 cal BP	3900-3350 cal BC
Beta 129556	72 - SUF5	-1.69-1.64	Organic sediment of silt, clay and humified organic matter	None	9	Middle of organic sedimentation	4360±50	25 ‰ *	5050-4840 cal BP	3100-2890 cal BC
Beta 129557	56 - SUF6	-0.08-0.03m	Organic silt clay with undifferentiated organic matter and some wood fragments	None	9	Within organic mud	4190±70	25 ‰ *	4860-4530 cal BP	2910-2580 cal BC
Beta 129558	56 - SUF7	+0.14-0.17m	Organic silt clay with undifferentiated organic matter and some wood fragments	None	9	Within organic mud	3320±70	25 ‰ *	3700-3390 cal BP	1750-1440 cal BC

*estimated

Table 94. Suffolk House radiocarbon results

7.3 Biostratigraphy

Diatoms

Subsamples were split from the monolith tins for examination of diatoms, however, no valves were found.

Pollen

Two spot samples were assessed during this stage of the archaeological project. The work was undertaken by Dr. Rob Scaife who has given permission for the data to be reproduced here.

The samples were collected from the base of sequence 72, and although reasonably well preserved, show a restricted flora of sixteen species. Tree and shrub pollen are dominant, with an indication that oak, lime and hazel were the principal elements of woodland on the valley sides, but with a possibility of oak and hazel reflecting fen carr woodland. Alder is thought to represent on-site vegetation with carr woodland on the floodplain or fringing the river channel. *Betula and Pinus* are thought to be interlopers rather than components of the local vegetation. *Taxus* has been tentatively identified and considered a possible local species. The paucity of herbs is thought to reflect the dominance of woodland elements and the lack of human impact upon the area. The absence of elm is thought to indicate that the primary elm decline had occurred by the time these sediments formed.

Suffolk House Pollen	Sample 1	Sample 2
	-1.98m OD	*-1.96m OD*
Betula		*1*
Pinus	2	1
Quercus	31	27
Tilia	3	2
Alnus	42	28
Taxus baccata		1
Corylus avellana type	22	34
Ranunculus type	1	
Dianthus type	1	
Chenopodiaceae	2	
Rosaceae	1	
Plantago lanceolata	*1*	*3*
Lactucae	5	4
Poaceae		1
Cyperaceae	1	3
Unidentified	1	1
Dryopteris type	*3*	*9*
Pteridium aquilinum	11	19
Total	127	133

Table 95. Suffolk House pollen counts

Appendix 8. Relative sea level calculations

8.1 Introduction

This appendix contains tabulated data, which were used to calculate the sea level index points and tendency data discussed in Chapter 11. These are, in the main, comparable with the British sea level database held at the University of Durham. Several things are different; for instance, the use of maximum intercept ranges in calendar years BC rather than a median cal BP value with errors. All dates are calibrated using OxCal v.3.5 (Bronk Ramsey 2000).

Site	Lab. code	Eastings	Northings	Altitude (mid point, m. OD)
Broadness Marsh	Q1283	56057	17664	-8.75
Broadness Marsh	Q1339	56057	17664	-8.57
Broadness Marsh	Q1340	56057	17664	-2.73
Broadness Marsh	Q1342	56057	17664	-4.81
Crossness	Q1282	54815	18051	-4.99
Crossness	Q1333	54810	18051	-1.96
Gallions Reach	Beta 100877	54490	17985	-1.71
Gallions Reach	Beta 100878	54490	17985	-4.22
Gallions Reach	Beta 100879	54490	17985	-2.22
Gallions Reach	Beta 100880	54490	17985	-6.13
Gallions Reach	Beta 100881	54490	17985	-1.58
Gallions Reach	Beta 100882	54490	17985	-2.83
Gallions Reach	Beta 100884	54490	17985	-3.32
Joan Street	Beta 119784	53250	18000	-0.50
Littlebrook	Srr274	55622	17584	-1.70
Littlebrook	Srr275	55622	17584	-3.95
Littlebrook	Srr276	55622	17584	-5.15
Littlebrook	Srr277	55622	17584	-4.60
Littlebrook	Srr278	55622	17584	-8.00
Littlebrook	Srr279	55622	17584	-1.88
Littlebrook	Srr280	55622	17584	-3.91
Masthouse terrace	Beta 85218	53750	17850	-2.76

Masthouse terrace	Beta 85220	53750	17850	-4.36
North Woolwich	Beta 103107	43450	17985	-1.07
North Woolwich	Beta 103108	43450	17985	-2.00
North Woolwich	Beta 103109	43450	17985	-2.42
North Woolwich	Beta 103110	43450	17985	-3.26
North Woolwich	Beta 103111	43450	17985	-4.12
Silvertown	Beta 93677	54100	18020	0.95
Silvertown	Beta 93679	54100	18020	-0.15
Silvertown	Beta 93681	54100	18020	0.79
Silvertown	Beta 93682	54100	18020	-1.09
Silvertown	Beta 93685	54100	18020	-0.75
Silvertown	Beta 93688	54100	18020	-1.45
Silvertown	Beta 120959	54100	18020	0.42
St Stephen's East	Beta 127616	53000	17800	-1.23
Stone Marshes	Q1281	55702	17594	-8.82
Stone Marshes	Q1284	55640	17572	-6.80
Stone Marshes	Q1334	55640	17572	-10.64
Stone Marshes	Q1335	55702	17594	-8.62
Stone Marshes	Q1336	55702	17594	-2.99
Stone Marshes	Q1337	55702	17594	-1.16
Stone Marshes	Q1338	55702	17594	-0.89
Storeys Gate	Beta 127739	53000	17800	0.08
Suffolk House	Beta 96091	53271	18077	-0.92
Tilbury	Q790b	56400	17600	-10.67
Tilbury	Q1426	56466	17540	-13.40
Tilbury	Q1427	56466	17540	-13.23
Tilbury	Q1428	56466	17540	-10.38
Tilbury	Q1429	56466	17540	-10.10
Tilbury	Q1430	56466	17540	-6.42
Tilbury	Q1432	56466	17540	-2.00
Tilbury	Q1433	56466	17540	-1.82
Union Street	Beta 119786	53250	18000	-0.55
Voyagers Quay	Beta 93673	47300	18130	-1.89
Voyagers Quay	Beta 93676	47300	18130	-3.92
Wennington Marsh	Beta 76902	54250	18025	-1.33
Wennington Marsh	Beta 76903	54250	18025	-2.51

Table 96. Locations of samples used in MSL calculations

Site	Lab. code	BP	Error	Max intercept (old, years BC)	Max intercept (young, years BC)	Max intercept (old, years BP)	Max intercept (young, years BP)
Broadness Marsh	Q1283	6882	90	5980	5620	7930	7570
Broadness Marsh	Q1339	6620	90	5720	5370	7670	7320
Broadness Marsh	Q1340	2836	85	1260	820	3210	2770
Broadness Marsh	Q1342	5410	85	4450	4000	6400	5950
Crossness	Q1282	5690	75	4710	4350	6660	6300
Crossness	Q1333	4195	100	3050	2450	5000	4400
Gallions Reach	Beta100877	3240	70	4540	4250	6490	6200
Gallions Reach	Beta100878	5560	70	1690	1320	3640	3270
Gallions Reach	Beta100879	2540	60	5300	4850	7250	6800
Gallions Reach	Beta100880	6150	70	830	410	2780	2360
Gallions Reach	Beta100881	3710	60	4320	3940	6270	5890
Gallions Reach	Beta100882	5260	80	2290	1920	4240	3870
Gallions Reach	Beta100834	5360	60	2460	2040	4410	3990
Joan Street	Be119784	2340	60	800	200	2750	2150
Littlebrook	Srr274	2650	50	920	760	2870	2710
Littlebrook	Srr275	4549	60	3500	3020	5450	4970
Littlebrook	Srr276	5460	60	4460	4050	6410	6000
Littlebrook	Srr277	5370	60	4770	4450	6720	6400
Littlebrook	Srr278	6820	60	5840	5620	7790	7570
Littlebrook	Srr279	2610	50	900	540	2850	2490
Littlebrook	Srr280	4220	50	2920	2620	4870	4570
Masthouse terrace	Beta 85218	3920	80	2620	2140	4570	4090

Masthouse terrace	Beta 85220	5950	80	5040	4620	6990	6570
North Woolwich	Beta103107	3060	70	1440	1130	3390	3080
North Woolwich	Beta103108	3980	70	2860	2210	4810	4160
North Woolwich	Beta103109	4640	70	3630	3100	5580	5050
North Woolwich	Beta103110	5510	70	4490	4170	6440	6120
North Woolwich	Beta103111	5800	70	4830	4460	6780	6410
Silvertown	Beta 93677	2430	50	770	400	2720	2350
Silvertown	Beta 93679	3160	70	1610	1250	3560	3200
Silvertown	Beta 93681	750	60	AD1160	AD 1400	790	550
Silvertown	Beta 93682	3700	50	2280	1940	4230	3890
Silvertown	Beta 93685	3700	70	2290	1880	4240	3830
Silvertown	Beta 93688	2630	60	930	540	2880	2490
Silvertown	Beta 120959	3070	60	1450	1120	3400	3070
St Stephen's East	Beta127616	3920	40	2560	2280	4510	4230
Stone Marshes	Q1281	6970	90	6020	5660	7970	7610
Stone Marshes	Q1284	5693	80	4720	4350	6670	6300
Stone Marshes	Q1334	7140	110	6230	5780	8180	7730
Stone Marshes	Q1335	6680	100	5780	5460	7730	7410
Stone Marshes	Q1336	4930	110	4000	3350	5950	5300
Stone Marshes	Q1337	4085	85	2890	2450	4840	4400
Stone Marshes	Q1338	2850	65	1260	820	3210	2770
Storeys Gate	Beta127739	2640	40	900	760	2850	2710
Suffolk House	Beta 96091	2210	50	3900	3350	5850	5300
Tilbury	Q790b	7120	120	6220	5740	8170	7690
Tilbury	Q1426	8170	110	7550	6750	9500	8700
Tilbury	Q1427	7830	110	7050	6450	9000	8400
Tilbury	Q1428	7050	100	6160	5720	8110	7670
Tilbury	Q1429	6575	95	5670	5320	7620	7270

Tilbury	Q1430	6200	90	5400	4850	7350	6800
Tilbury	Q1432	3240	75	1690	1310	3640	3260
Tilbury	Q1433	3020	65	1420	1040	3370	2990
Union Street	Be119786	2290	90	800	50	2750	2000
Voyagers Quay	Beta 93673	3020	60	1430	1020	3380	2970
Voyagers Quay	Beta 93676	4750	70	3660	3370	5610	5320
Wennington Marsh	Beta 76902	3220	70	1680	1320	3630	3270
Wennington Marsh	Beta 76903	5010	70	3960	3650	5910	5600

Table 97. Radiocarbon details of sea level index points

Site	Lab. code	Indicative Difference	Tendency Code	RWL Code (After Shennan 1994, P55)	Indicative range (After Shennan 1994)
Broadness Marsh	Q1283	-200 mm	8	Hat+Mhwst/2 - 100mm To Mhwst-200mm	200mm
Broadness Marsh	Q1339	0 mm	2	Mhwst-150mm	400mm
Broadness Marsh	Q1340	200 mm	2	Mhwst-150mm	200mm
Broadness Marsh	Q1342	0 mm	2	Mhwst-150mm	400mm
Crossness	Q1282	200 mm	2	Mhwst-150mm	200mm
Crossness	Q1333	0 mm	2	Mhwst-150mm	400mm
Gallions Reach	Beta100877	100 mm	1	Mhwst-150mm	200mm
Gallions Reach	Beta100878	100 mm	5	Hat+Mhwst/2 - 150mm	200mm
Gallions Reach	Beta100879	100 mm	1	Mhwst-150mm	200mm
Gallions Reach	Beta100880	400 mm	3	Mhwst	800mm
Gallions Reach	Beta100881	100 mm	1	Mhwst-150mm	200mm

Gallions Reach	Beta100882	400 mm	3	Mhwst	800mm
Gallions Reach	Beta100834	100 mm	5	Hat+Mhwst/2 - 150mm	200mm
Joan Street	Be119784	-200 mm	8	Hat+Mhwst/2 - 100mm To Mhwst-200mm	200mm
Littlebrook	Srr274	-200 mm	2	Mhwst-150mm	200mm
Littlebrook	Srr275	-200 mm	2	Mhwst-150mm	200mm
Littlebrook	Srr276	200 mm	2	Mhwst-150mm	200mm
Littlebrook	Srr277	0 mm	2	Mhwst-150mm	200mm
Littlebrook	Srr278	200 mm	8	Hat+Mhwst/2 - 100mm To Mhwst-200mm	200mm
Littlebrook	Srr279	0 mm	2	Mhwst-150mm	700mm
Littlebrook	Srr280	0 mm	2	Mhwst-150mm	700mm
Masthouse terrace	Beta 85218	100 mm	1	Mhwst-150mm	200mm
Masthouse terrace	Beta 85220	100 mm	8	Hat+Mhwst/2 - 100mm To Mhwst-200mm	200mm
North Woolwich	Beta103107	100 mm	1	Mhwst-150mm	200mm
North Woolwich	Beta103108	350 mm	8	Hat+Mhwst/2 - 100mm To Mhwst-200mm	700mm
North Woolwich	Beta103109	100 mm	5	Hat+Mhwst/2 - 150mm	200mm
North Woolwich	Beta103110	100 mm	1	Mhwst-150mm	200mm
North Woolwich	Beta103111	100 mm	1	Mhwst-150mm	200mm
Silvertown	Beta 93677	-200 mm	2	Mhwst-150mm	200mm
Silvertown	Beta 93685	-200 mm	8	Hat+Mhwst/2 - 100mm To Mhwst-200mm	200mm
Silvertown	Beta 120959	-200 mm	8	Hat+Mhwst/2 - 100mm To Mhwst-200mm	200mm
Silvertown	Beta 93679	0 mm	2	Mhwst-150mm	700mm
Silvertown	Beta 93688	0 mm	8	Hat+Mhwst/2 - 100mm To Mhwst-200mm	800mm
Silvertown	Beta 93681	200 mm	8	Hat+Mhwst/2 - 100mm To Mhwst-200mm	200mm
Silvertown	Beta 93682	0 mm	8	Hat+Mhwst/2 - 100mm To Mhwst-200mm	700mm
St Stephen's East	Beta127616	-200 mm	8	Hat+Mhwst/2 - 100mm To Mhwst-200mm	200mm
Stone Marshes	Q1281	200 mm	2	Mhwst-150mm	200mm
Stone Marshes	Q1284	-200 mm	2	Mhwst-150mm	200mm
Stone Marshes	Q1334	-200 mm	2	Mhwst-150mm	200mm
Stone Marshes	Q1335	0 mm	2	Mhwst-150mm	700mm

Stone Marshes	Q1336	200 mm	2	Mhwst-150mm	200mm
Stone Marshes	Q1337	0 mm	4	Mhwst	200mm
Stone Marshes	Q1338	200 mm	2	Mhwst-150mm	200mm
Storeys Gate	Beta127739	200 mm	8	Hat+Mhwst/2 - 100mm To Mhwst-200mm	200mm
Suffolk House	Beta 96091	100 mm	1	Mhwst-150mm	200mm
Tilbury	Q790b	200 mm	5	Hat+Mhwst/2 - 150mm	200mm
Tilbury	Q1426	400 mm	3	Mhwst	200mm
Tilbury	Q1427	0 mm	2	Mhwst-150mm	200mm
Tilbury	Q1428	200 mm	2	Mhwst-150mm	200mm
Tilbury	Q1430	0 mm	2	Mhwst-150mm	400mm
Tilbury	Q1432	200 mm	2	Mhwst-150mm	200mm
Tilbury	Q1433	0 mm	2	Mhwst-150mm	800mm
Tilbury	Q1429	0 mm	2	Mhwst-150mm	800mm
Union Street	*Be119786*	*-200 mm*	8	*Hat+Mhwst/2 - 100mm To Mhwst-200mm*	200mm
Voyagers Quay	Beta 93673	100 mm	2	Mhwst-150mm	>200mm
Voyagers Quay	Beta 93676	350 mm	8	Hat+Mhwst/2 - 100mm to Mhwst-200mm	700mm
Wennington Marsh	Beta 76902	100 mm	1	Mhwst-150mm	200mm
Wennington Marsh	Beta 76903	100 mm	5	Hat+Mhwst/2 - 150mm	200mm

Table 98. Details used to construct reference water levels

Site/Sample	Levelling error	Sample thickness	Tide level error	Compaction error	Calculated vertical error
Gallions Reach	50mm	50mm	200mm	2.5mm	130 mm
Gallions Reach	50mm	50mm	200mm	2.5mm	130 mm
Gallions Reach	50mm	50mm	200mm	2.5mm	130 mm
Gallions Reach	50mm	50mm	200mm	2.5mm	370 mm
Gallions Reach	50mm	50mm	200mm	2.5mm	130 mm
Gallions Reach	50mm	50mm	200mm	2.5mm	370 mm
Gallions Reach	50mm	50mm	200mm	2.5mm	130 mm
Masthouse Terrace	50mm	50mm	200mm	2.5mm	130 mm
Masthouse Terrace	50mm	50mm	200mm	2.5mm	130 mm
North Woolwich	20mm	80mm	200mm	0.0mm	130 mm
North Woolwich	20mm	50mm	200mm	0.0mm	330 mm
North Woolwich	20mm	60mm	200mm	0.0mm	130 mm
North Woolwich	20mm	40mm	200mm	0.0mm	130 mm
North Woolwich	20mm	40mm	200mm	0.0mm	130 mm
Suffolk House	20mm	50mm	200mm	0.0mm	130 mm
Voyagers Quay	50mm	50mm	200mm	2.5mm	130 mm
Voyagers Quay	50mm	50mm	200mm	2.5mm	330 mm
Wennington Marsh	20mm	100mm	200mm	0.0mm	130 mm
Wennington Marsh	20mm	80mm	200mm	0.0mm	130 mm

Table 99. Error values associated with the new samples

Site	Lab No	AD50	AD100	AD200	AD300	AD400	AD1000	AD1400	MODERN	OLD BC	YOUNG BC
Broadness marsh	Q1283	-10.71	-8.97	-8.67	-8.37	-9.28	-10.73	-10.93	-12.21	5980	5620
Broadness marsh	Q1339	-9.32	-8.02	-7.82	-7.62	-8.23	-9.57	-9.72	-11.83	5720	5370
Broadness marsh	Q1340	-3.28	-1.98	-1.78	-1.58	-2.19	-3.53	-3.68	-6.39	1260	820
Broadness marsh	Q1342	-5.56	-4.26	-4.06	-3.86	-4.47	-5.81	-5.96	-8.47	4450	4000
Crossness	Q1282	-5.54	-4.24	-4.04	-3.84	-4.45	-5.79	-5.94	-8.65	4710	4350
Crossness	Q1333	-2.83	-1.53	-1.33	-1.13	-1.74	-3.08	-3.23	-5.22	3050	2450
Gallions reach	Beta 100877	-5.70	-4.61	-4.41	-4.21	-4.81	-5.58	-5.71	-8.19	4540	4250
Gallions reach	Beta 100878	-2.60	-1.30	-1.10	-0.90	-1.50	-2.85	-3.00	-5.10	1690	1320
Gallions reach	Beta 100879	-6.89	-5.59	-5.39	-5.19	-7.29	-7.29	-7.29	-9.39	5300	4850
Gallions reach	Beta 100880	-3.12	-1.82	-1.62	-1.42	-2.02	-3.37	-3.52	-5.62	830	410
Gallions reach	Beta 100881	-3.58	-2.28	-2.08	-1.88	-3.98	-3.98	-3.98	-6.08	4320	3940
Gallions reach	Beta 100882	-2.48	-1.18	-0.98	-0.78	-1.38	-2.73	-2.88	-4.98	2290	1920
Gallions reach	Beta 100884	-3.90	-2.23	-1.93	-1.63	-2.53	-3.98	-4.18	-5.66	2460	2040
Joan Street	Beta 119784	-3.04	-1.30	-1.00	-0.70	-1.60	-3.05	-3.25	-4.20	800	200
Littlebrook	SRR274	-4.90	-3.60	-3.40	-3.20	-3.81	-5.15	-5.30	-7.41	3500	3020
Littlebrook	SRR275	-5.70	-4.40	-4.20	-4.00	-4.61	-5.95	-6.10	-8.61	4770	4450
Littlebrook	SRR276	-2.65	-1.35	-1.15	-0.95	-1.56	-2.90	-3.05	-5.16	900	540
Littlebrook	SRR277	-9.56	-7.82	-7.52	-7.22	-8.13	-9.58	-9.78	-11.46	5840	5620
Littlebrook	SRR278	-2.63	-1.33	-1.13	-0.93	-1.54	-2.88	-3.03	-5.34	920	760
Littlebrook	SRR279	-4.66	-3.36	-3.16	-2.96	-3.57	-4.91	-5.06	-7.37	2920	2620
Littlebrook	SRR280	-5.35	-4.05	-3.85	-3.65	-4.26	-5.60	-5.75	-8.06	4460	4050
Masthouse Terrace	Beta 85218	-3.91	-2.61	-2.41	-2.21	-2.81	-3.73	-3.88	-6.41	2620	2140
Masthouse Terrace	Beta 85220	-5.51	-4.21	-4.01	-3.81	-4.41	-5.33	-5.48	-8.01	5040	4620
North Woolwich	Beta 103107	-1.97	-0.67	-0.47	-0.27	-0.87	-2.22	-2.37	-4.47	1440	1130
North Woolwich	Beta 103108	-3.75	-2.01	-1.71	-1.41	-2.31	-3.70	-3.96	-5.44	2860	2210
North Woolwich	Beta 103109	-3.90	-2.81	-2.61	-2.41	-3.01	-3.78	-3.91	-6.39	3630	3100

North Woolwich	Beta 103110	-4.16	-2.86	-2.66	-2.46	-3.06	-4.41	-4.56	-6.66	4490	4170
North Woolwich	Beta 103111	-5.02	-3.72	-3.52	-3.32	-3.92	-5.27	-5.42	-7.52	4830	4460
Silvertown	Beta 93688	-2.65	-1.35	-1.15	-0.95	-1.55	-2.90	-3.05	-5.02	930	540
Silvertown	Beta 93685	-3.05	-1.31	-1.01	-0.71	-1.61	-3.06	-3.26	-4.32	2290	1880
Silvertown	Beta 93682	-1.51	0.23	0.53	0.83	-0.07	-1.52	-1.72	-4.66	2280	1940
Silvertown	Beta 93681	-1.79	-0.49	-0.29	-0.09	-0.69	-2.04	-2.19	-2.98	AD1160	1400AD
Silvertown	Beta 93679	-2.25	-0.51	-0.21	0.09	-0.81	-2.26	-2.46	-3.92	1610	1250
Silvertown	Beta 93677	-0.95	0.79	1.09	1.39	0.49	-0.96	-1.16	-2.62	770	400
Silvertown	Beta 120959	-1.68	0.06	0.36	0.66	-0.24	-1.69	-1.89	-3.35	1450	1120
St. Stephens East	Beta 127616	-3.77	-2.03	-1.73	-1.43	-2.33	-3.78	-3.98	-5.13	2560	2280
Stone marshes	Q1281	-9.77	-8.47	-8.27	-8.07	-8.68	-10.02	-10.17	-12.48	6020	5660
Stone marshes	Q1284	-7.75	-6.45	-6.25	-6.05	-6.66	-8.00	-8.15	-10.46	4720	4350
Stone marshes	Q1334	-11.19	-9.89	-9.69	-9.49	-10.10	-11.44	-11.59	-14.30	6230	5780
Stone marshes	Q1335	-9.37	-8.07	-7.87	-7.67	-8.28	-9.62	-9.77	-11.88	5780	5460
Stone marshes	Q1336	-3.54	-2.24	-2.04	-1.84	-2.45	-3.79	-3.94	-6.65	4000	3350
Stone marshes	Q1337	-2.06	-0.76	-0.56	-0.36	-0.97	-2.31	-2.46	-4.42	2890	2450
Stone marshes	Q1338	-1.44	-0.14	0.06	0.26	-0.35	-1.69	-1.84	-4.55	1260	820
Storeys Gate	Beta 127739	-2.06	-0.32	-0.02	0.28	-0.62	-2.07	-2.27	-3.62	900	760
Suffolk house	Beta 96091	-2.02	-0.72	-0.62	-0.32	-0.92	-2.27	-2.42	-4.52	260	30
Tilbury	Q790B	-11.61	-10.58	-10.39	-10.19	-10.78	-11.56	-11.69	-13.75	6220	5740
Tilbury	Q1426	-13.66	-12.48	-12.28	-12.08	-14.55	-14.40	-14.55	-15.54	7550	6750
Tilbury	Q1427	-14.45	-12.83	-12.54	-12.24	-13.14	-14.59	-14.79	-16.31	7050	6450
Tilbury	Q1428	-10.89	-9.71	-9.51	-9.31	-9.92	-11.26	-11.41	-13.86	6160	5720
Tilbury	Q1430	-6.73	-5.55	-5.35	-5.15	-5.76	-7.10	-7.25	-9.90	5400	4850
Tilbury	Q1432	-2.31	-1.13	-0.93	-0.73	-1.34	-2.68	-2.83	-5.48	1690	1310
Tilbury	Q1433	-2.33	-1.15	-0.95	-0.75	-1.36	-2.70	-2.85	-4.90	1420	1040
Tilbury	Q1429	-10.61	-9.43	-9.23	-9.03	-9.64	-10.98	-11.13	-13.18	5670	5320
Union Street	Beta119786	-3.09	-1.35	-1.05	-0.75	-1.65	-3.10	-3.30	-4.25	800	50
Voyagers quay	Beta 93673	-2.66	-1.36	-1.16	-0.96	-1.57	-2.91	-3.06	-5.16	1430	1020

Voyagers quay	Beta 93676	-5.51	-3.77	-3.22	-3.17	-4.90	-4.90	-4.90	-7.24	3660	3370
Wennington marsh	Beta 76902	-2.10	-0.80	-0.60	-0.40	-1.01	-2.35	-2.50	-4.60	1680	1320
Wennington marsh	Beta 76903	-3.88	-2.79	-2.34	-2.39	-2.22	-3.78	-3.90	-6.30	3960	3650

Table 100. MSL values, based on the use of ancient and modern calculations of MHWST and HAT