Settling the Ebbsfleet Valley

High Speed 1 Excavations at Springhead and Northfleet, Kent

The Late Iron Age, Roman, Saxon, and Medieval Landscape

Volume 4: Saxon and Later Finds and Environmental Reports

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Supplementary Tables

Chapter 4. Ceramic Building Materials Tables

Table 12 Shape, size (mm) and position of peg holes in the post-Roman roof tile from context 367, tile kiln 350 from Springhead, watching brief area ARC 342E02

Tile	Peg hole shape	Peg hole width top	Peg hole width base	Distance from top	Distance from side	Distance from 2nd peg hole
A	sub-square	15	8 x 10	35	45	-
B	diamond	12 x 13	7 x 8	26	38	-
C	diamond	14 x 13	8 x 12 (oval)	16	35	-
D	circular	15	-	20	68	-
E	circular	16	-	18	~	45
E	circular	16 x 18	-	18	47	45
F	circular	obscured	10	23	45	-
G	circular	12	-	15	50	-
H	circular at diagonal	12	-	26	40	-
J	circular	15 x 13	13 x 8	28	50	85
J	circular	14 x 13	10 x 8	28	20	85
K	circular	15	-	28	40+	50
K	square (skewed)	14 x 13	-	20	50	50
L	circular	18	13	25	-	65
L	square	14 x 14	10 x 9 (oval)	25	50	65
M	diamond	13 x 12	3 x 4 (oval)	20	40	50
M	diamond	13 x 13	9 x 9	30	57	50
N	sub-square	13 x 15	11 x 9 (oval)	20	30	100
N	diamond	11	-	20	20	100

Chapter 5. Human Bone Tables

Table 14 Springhead: summary of metric data from Saxon inhumations

	Female		Male	
	Range	Mean	Range	Mean
Platymeric index	-	-	80.2–82.5 *	-
Platycnemic index	73.8–75.3*	-	73.8–81.6	76.9 (SD 3.4)

(data derived from measurements both sides; * denotes same individual)

Table 16 Condition of the hand collected animal bone fragments (%)

Phase	Very Poor	Poor	Moderate	Good	Excellent	NISP
Northfleet	-	1	5	70	25	3741
Springhead	-	5	94	1	-	496

Chapter 6. Animal Bone Tables

Table 18 Epiphyseal fusion of all cattle bones from Northfleet (after Habermehl 1975)

Approx. fusing age	Element	F	UF	% F
7–10 mths	scapula d	7	1	–
	pelvis	2	2	–
Total 7–10 mths		9	3	75
12–15 mths	radius p	10	–	–
15–18 mths	ph2 p	7	–	–
15–20 mths	humerus d	12	2	–
20–24 mths	ph1 p	14	2	–
Total 12–24 mths		43	4	91
2–2.5 yrs	metapodial d	16	6	–
	tibia d	10	4	–
Total 2–2.5 yrs		26	10	72
3 yrs	calcaneus p	4	3	–
3.5 yrs	femur p	1	1	–
3.5–4 yrs	humerus p	2	3	–
	radius d	3	7	–
	ulna p/d	1	2	–
	femur d	–	1	–
	tibia p	4	2	–
Total 3–4yrs		15	19	44

Table 20 Epiphyseal fusion of all sheep/goat bones from Northfleet (after Habermehl 1975)

Approx. fusing age	Element	F	UF	% F
3–4 mths	humerus d	2	–	-
	radius p	4	–	-
Total 3–4 mths		6	–	100
5 mths	scapula d	–	–	-
	pelvis	–	–	-
5–7 mths	ph2 p	–	–	-
7–10 mths	ph1 p	–	–	-
Total 5–10 mths		3	–	100
15–20 mths	tibia d	–	–	-
20–24 mths	metapodial d	2	3	-
Total 15–24 mths		7	3	70
3 yrs	calcaneus p	1	1	-
3–3.5 yrs	ulna p	1	–	-
	femur p	–	1	-
3.5 yrs	humerus p	–	–	-
	radius d	2	–	-
	femur d	–	–	-
	tibia p	2	–	-
Total 3–3.5 yrs		6	2	75

Table 22 Epiphyseal fusion of all pig bones from Northfleet (after Habermehl 1975)

Approx. fusing age	Element	F	UF	% F
1 yr	scapula d	5	1	-
	pelvis	2	-	-
	humerus d	6	-	-
	radius p	4	1	-
	ph2 p	-	-	-
Total 1 yr		17	1	94
2 yrs	tibia d	5	4	-
	metapodial d	8	11	-
	ph1 p	6	-	-
2–2.5 yrs	calcaneus p	-	-	-
	fibula d	-	1	-
Total 2–2.5 yrs		19	16	54
3 yrs	ulna p	-	-	-
3.5 yrs	humerus p	-	1	-
	tibia p	-	2	-
	fibula p	-	1	-
	radius d	-	2	-
	ulna d	-	-	-
	femur p/d	-	2	-
Total 3–3.5 yrs		-	8	0

Chapter 7. Sedimentary Sequences and Landscapes Tables

Table 27 Sediment descriptions from Northfleet pre-mill landsurfaces

Feature		Pre-mill deposits		M12251 and M12252 (top of M12251 at +1.77 m OD)			
Section		118549 (P2)		Profile through sand bar, pre-mill deposits (intercalated silt-clays and humic horizons) and clay make-up of western millpond barrage			
Context	Sample	Depth (m)		Keyword (texture)	Upper contact	Description	Interpretation
		from	to				
19551	12251	0.000	0.080	Clayey silt	Na	Firm, plastic, mid-greyish olive (5Y 4/2) sandy clayey silt. Mixed deposit with irregular clasts of pale yellowish brown sand granule sized. Fe mottling, frequent flecks of daub and charcoal	Manmade barrage of redeposited alluvium
19551	12251	0.080	0.160	Clayey silt	Diffuse	Decreasing sand content and less Fe mottling	
19550	12251	0.160	0.220	Sandy clay	Diffuse	Firm, plastic, mid greyish olive (5Y 5/2) sandy clay	
19549	12251	0.220	0.375	Clayey silt	Clear	Firm, plastic, mid greyish olive (5Y 4/2) sandy clayey silt. Mixed deposit with irregular clasts of pale yellowish brown sand granule sized. Fe mottling, frequent flecks of daub and charcoal	
19548	12251/2	0.375	0.420	Peat	Clear	Dry desiccated, brownish black (7.5YR 3/2) humified peat, slightly clayey, Fe oxidation around roots. Finely aminated at lower contact	Truncated peat horizon
19547	12251/2	0.420	0.520	Silty clay	Clear	Dark greyish yellow (2.5Y 5/2) silty clay. Upper 2cm slightly darker (2.5Y 4/2). Soft and plastic. Sub-vertical root channels filled with pale yellow silty clay. Fe mottling in upper 5cm. Finely laminated with dark organic silty clay at lower contact	Fine very low-energy alluvial deposition, marginal from main channel activity with some soil incipient soil/peat formation
19497	12252	0.520	0.625	Organic silty clay	Clear	Brownish black (10YR 3/2) slightly organic silty clay. Moderate root disturbance with Fe oxidation around roots and channels infilled with pale yellow silty clay	
19496	12252	0.625	0.690	Organic silty clay	Clear	Greyish yellow brown (10YR 4/2) slightly organic silty clay	
19495	12252	0.690	0.760	Organic sandy silt	Clear	Firm dark brown (10YR 3/3) slightly organic sandy silt loam with much evidence of root disturbance	Alluvial soil developed on sand
19495	12252	0.760	0.820	Sandy silt	Diffuse	Firm pale greyish yellow brown (10YR 5/2) slightly organic sandy silt, mottled, some root disturbance	
19493	12252	0.820	0.900	Sandy silt	Diffuse	Pale yellowish grey sandy silt	Basal late Pleistocene/early Holocene high-energy sandy alluvium

Feature		Pre-mill surface		M12085 (top of M12251 at +1.67 m OD)			
Section		11850 (P5)		Profile through sand bar and pre-mill deposits, truncated by construction cut for wheelhouse			
Context	Sample	Depth (m)		Keyword (texture)	Upper contact	Description	Interpretation
		from	to				
12539	12085	0.000	0.100	Sandy clay	Na	Firm, dull yellowish brown (10YR 5/3), mixed slightly sandy clay (fine sand). Dull and diffuse Fe mottles throughout (threads, specks, and small diffuse patches, *c* 2–5%). Occasional small, darker, more clayey mottles (infilled channel voids)	Redeposited natural material, upcast deposited during mill's construction
12539	12085	0.100	0.150	Silty sand	Irregular	Lens of soft, dull yellow orange (10YR 6/4), mottled, fine sandy silt. Upper contact mixed with sandy clay from above. Rare (<1%) Fe mottles	
12539	12085	0.150	0.200	Sandy clay	Sharp, irregular	Firm, dull yellowish brown (10YR 5/3), mixed slightly sandy clay (fine sand). Dull and diffuse Fe mottles throughout (threads, specks, and small diffuse patches, *c* 2–5%). Occasional small, darker, more clayey mottles (infilled channel voids)	
12562	12085	0.200	0.210	Sandy silt	Sharp, irregular	Firm lens of light yellow (2.5Y 7/3) sandy silt	
12553	12085	0.210	0.240	Organic silty clay	Sharp, irregular	Firm brownish black (10YR 3/2) silty clay. Few very indistinct darker and lighter mottles. Very minor fine sand component	Fine very low-energy alluvial deposition, marginal from main channel activity (truncated Prehistoric

							horizon)
12553	12085	0.240	0.280	Organic (peaty) silty clay	Clear	Dark brown/strong brown (5YR 2.5/1) very well humified dry, homogenous, peat/organic silty clay. Tiny porous/crumb structure, easily collapsed. Remnant of fibrous organic structures. No identifiable organic remains. Minor very fine sand in matrix	Stabilisation horizon. Drying phase with soil formation
12554	12085	0.280	0.340	Clay	Clear	Soft, greyish yellow brown (10YR 4/2) clay. Very rare charcoal flecks. Possibly very weak horizontal laminations of darker brown clay (1–2 mm thick). Few strong orange Fe mottles, but otherwise featureless	Fine very low-energy alluvial deposition, marginal from main channel activity
1555/ 12556	12085	0.340	0.400	Silty clay	Sharp, irregular	Dark brownish grey (7.5YR 4/1) silty clay (with some fine sand). Upper *c* 1 cm is darker (7.5YR 3/2). Root based Fe mottles continue from above, but otherwise fabric restricted to small diffuse patches of slightly clayey and sandy textures	Alluvial soil developed on sand with thin, immature A-horizon
12556	12085	0.400	0.470	Sandy silty clay	Clear, irregular	Fine greyish yellow brown (10YR 4/2), sandy silty clay, becoming siltier down profile. Complex bioturbated mix of silts from below and silty clay as above. A few root based Fe mottles continue from above	
12556/ 12505	12085	0.400	0.510	Sandy silt	Diffuse	Firm, dense, light yellow (2.5Y 7/3) sandy silt (sand is fine). Root based Fe mottles continue from above. Small diffuse patches/specks of dull orange Fe staining throughout fabric	Basal late Pleistocene/early Holocene high-energy sandy alluvium

Table 28 Sediment descriptions from the Ebbsfleet channel

Feature		Ebbsfleet Channel		M12201, M12000 (top of M12201 at 1.56 m OD)			
Section		11866/18562 (P1)		Profile through minerogenic alluvial deposits. Includes basal humic silt with large dumped flint clasts/gravel representing truncated BA land-surface			
Context	Sample	Depth (m) from	Depth (m) to	Keyword (texture)	Upper contact	Description	Interpretation
12491	12201	0.00	0.12	Silty clay	Na	Brownish black (10YR 3/1), (organic) silty clay. Dry and firm. Some very fine sand in matrix. Only very faint/weakly expressed mottles	Organic enriched alluvial interface. deposit with overlying peat 12492 (Correlates with the Saxon-medieval 'Upper peat')
12491	12201/ 12200	0.12	0.98	Silty clay	Diffuse	Brownish grey (10YR 4/1) silty clay. Prominent and extensive dull reddish brown Fe mottles (root based, but also in more diffuse zones within matrix). Also faint/indistinct irregular paler grey mottles	Minerogenic low-energy alluvium representing phase of channel silting. Post-dates mill structure
19011	12200	0.98	1.09	Gravelly humic silt	Sharp, irregular	Dull yellowish brown (10YR 5/3) organic silt (with some fine sand). Abundant, chalk and flint gravel (sub-rounded, >100 mm). Decayed root/plant fragments. Flecks of dull reddish brown Fe staining throughout matrix	Humic alluvial silt (BA?). Disturbed by later activity associated with roman quay ie, gravel consolidation dumps
19010	12200	1.09	1.18	Silty sand	Clear	Firm, dense, light yellow (2.5Y 7/3) silty sand (sand is fine). Root based Fe mottles continue from above. Small diffuse patches/flecks of dull orange Fe staining throughout fabric	Basal late Pleistocene/early Holocene high-energy sandy alluvium

Feature		Ebbsfleet Channel		M12293 and M12294 (top of M12293 at 1.45 m OD)			
Section		118549 (P3)		Profile through minerogenic alluvial deposits abutting western mill barrage			
Context	Sample	Depth (m) from	Depth (m) to	Keyword (texture)	Upper contact	Description	Interpretation
19557	12293	0.00	0.20	Organic silty clay	Na	Brownish black (10YR 3/1). Organic silty clay, with very rare fine sand grains. Similar to 19552. Rare flecks of off-white flecks of carbonate precipitates associated with dull Fe stains. Rare, dispersed paler grey irregular mottles (indistinct). No clear sediment structure. Very rare charcoal flecks	Low energy alluvial silting
19557	12293 & 12294	0.20	0.36	Silty clay	Diffuse	Brownish grey (10YR 4/1) silty clay, with increased frequency of carbonate precipitate (*c*2%). Fe mottles/veins (*c* 2–5%). Very small charcoal flecks. Several thin horizontal lenses of compressed 'leafy' plant material noted	
19500	12293 & 12294	0.36	0.48	Silty clay	Diffuse	Brownish grey (10YR 4/1) silty clay. Occasional diffuse Fe staining throughout matrix	
19555	12294	0.48	0.54	Sandy clay	Diffuse	Brownish black (10YR 3/2) very slightly sandy humic clay (fine sand). Well-humified with no fibrous structures visible. Occasional flecks of carbonate associated with very dull Fe staining(*c* 1–2%). No apparent structure	Alluvial soil developed on sand (Prehistoric)
19555, 19493	12294	0.54	0.62	Sandy silt	Mixed, irregular	Mixed interface deposit, with complex mottled fabric, including irregular/sub-rounded patches (up to *c* 1.5 cm), and irregular veins. Very rare tiny charcoal flecks	
19493	12294	0.62	0.68	Sandy silt	Diffuse, irregular	Greyish brown (7.5YR 4/2), structureless sandy silt (fine sand)	
19491	12294	0.68	0.70	Sandy silt	Sharp, irregular	Dull brown (7.5YR 6/3) sandy silt (fine sand). No clear structure. A few fine rootlets present (slightly Fe stained)	Late Pleistocene/early Holocene high-energy alluvium

Table 29 Sediment descriptions from the Northfleet mill leat

Feature		P4 (mill leat)		M12217 (top at 0.78 m OD)			
Section		11874/18562		Profile through laminated minerogenic alluvial deposits banking up against revetment 19319			
Context	Sample	Depth (m) from	to	Keyword (texture)	Upper contact	Description	Interpretation
12580	12217	0.00	0.04	Silty Clay	Na	Brownish grey (10YR 4/1) silty clay, with faint pale grey mottles	Bedded silty clays, very low-energy alluvial deposition
12581	12217	0.04	0.10	Silty Clay	Diffuse	Brownish black (10YR 3/1)silty clay, with some weak dull Fe mottles (root based)	
12581	12217	0.10	0.14	Silty Clay	Diffuse	Similar to above but with an increase of faint fabric mottles (flecks and irregular small patches of pale grey and 'gritty' off-white mottles). Very rare charcoal flecks	
12582	12217	0.14	0.22	Silty Clay	Diffuse	Brownish grey (10YR 4/1) silty clay. Increasingly mixed/mottled, and with slight increase in fine sand content. Two sub-rounded flints (up to 15mm) and single abraded fragment of CBM. Rare charcoal flecks	
12583	12217	0.22	0.25	Sandy Clay	Diffuse	Similar to above, with smaller clasts (1 fragment of CBM, 2 sub-rounded flints *c* 5 mm). Weakly expressed irregular lenses of slightly sandy material	
12584	12217	0.25	0.31	Silty Clay	Clear	Brownish grey (10YR 4/1) silty clay. Clast free. No clear fabric structure/bedding	

Table 30 Sediment descriptions from the Northfleet mill undercroft (wheelhouse)

Feature		Mill undercroft		M12086 and M12085 (top of M12024 at 1.29 m OD)			
				Upper part of alluvial sequence (0–0.365 m, 1.66 m OD to +1.29 m OD) not sampled in this profile.			
Section		11850(P2)		Profile through minerogenic alluvial deposits infilling mill undercroft. Includes localised build up of bedded organic peaty deposits in front of nozzle block at one end of penstocks			
Context	Sample	Depth (m)		Keyword (texture)	Upper contact	Description	Interpretation
		from	to				
12524	12086	0.365	0.590	Silty clay	Na	Firm, plastic silty clay, yellowish grey (2.5Y 4/1). Frequent organic flecking, Fe oxidation in root channels. Massive and structureless	Renewed minerogenic alluvial deposition
12525	12086	0.590	0.630	(Organic) silty clay	Clear	Slightly darker lens of silty clay. Structurless	Reduced rate of sedimentation. Stabilisation horizon?
12526	12086	0.630	0.815	Silty clay	Clear	Firm plastic silty clay, yellowish grey (2.5Y 4/1). Frequent organic flecking, Fe oxidation in root channels. Faint horizontal laminations >0.5 cm	Renewed alluvial deposition. Relatively low-energy
12532–35	12086/12085	0.815	1.110	Organic detritus	Sharp	Dark reddish brown black mixed deposit of twigs, organic detritus and humic material, redeposited peat and rounded clasts of grey silty clay. Some evidence of bedding at 30 degree angle with intermittent lenses or laminations or light yellowish brown fine sandy silt. Some evidence of fine roots in lower 5 cm. Dry and very desiccated	Episodic deposition of organic detritus overflowing through the disused penstocks from the mill pond
12538	12085	1.110	1.400	Silty clay	Sharp	Firm plastic silty clay, yellowish grey (2.5Y 4/1). Frequent organic flecking, Fe oxidation in root channels and much decaying reedy material. Upper 0.10 m disturbed by rooting, large piece of timber at base of sequence	Basal alluvial silting

Feature		Mill undercroft		M12093, M12092 and M12091 (top of M12093 at 1.20 m OD)			
				Upper part of alluvial sequence (0–0.44 m, +1.64 to +1.20 m OD) not sampled in this profile.			
Section		11850 (P3)		Profile through backfill deposits and alluvial sequence through centre of undercroft			
Context	Sample	Depth (m)		Keyword (texture)	Upper contact	Description	Interpretation
		from	to				
12524	12093/92	0.440	0.600	Silty clay	Na	Very soft and plastic (5Y 5/2) silty clay mottled with darker bluish grey (5Y 4/1) silty clay. Occasional organic flecking. Structureless	Renewed minerogenic alluvial deposition
12525	12092	0.600	0.640	Silty clay	Diffuse	Dark greyish yellow (2.5Y 5/2) silty clay. Structurless	Reduced rate of alluvial sedimentation. Stabilisation horizon?
12526	12092	0.640	0.830	Silty clay	Diffuse	Very soft and plastic (5Y 5/2) silty clay mottled with darker bluish grey (5Y 4/1) silty clay. Occasional organic flecking. Structureless	Minerogenic alluvial deposition
12526	12092	0.830	0.890	Silty clay	Diffuse	As above though a little mixed with sandy silt (10YR 5/1)	
12536	12092/91	0.890	1.310	Silty clay	Clear	Mixed deposit of soft, plastic grey silty clay (5Y 5/2), and dark grey sandy silt (10YR 5/1). Much Fe oxidation around decaying small woody fragments, chalk flecks. Very disturbed	Redeposited slump or backfill deposits
12537	12091	1.310	1.420	Silty clay	Sharp	Very mixed deposit of pale yellow fine sand (2.5Y 6/4) and soft, plastic silty clay (5Y 5/2). Frequent charcoal flecks. Very disturbed	
12540	12091	1.420	1.540	Sandy silt	Very sharp, irregular	Firm, very sandy silt, brownish grey (10YR 5/1). Structureless. Occasional rounded flint clasts up to 20mm. Frequent small chalk fragments, organic flecks and small woody fragments. Occasional charcoal and CBM flecks. Some evidence of disturbance particularly towards the base of the unit	

Table 31 Sediment descriptions from the Northfleet millpond

Feature		Mill pond		M12024 and M12025 (top of M12024 at 1.46 m OD)			
Section		11830 (P2)/18563		Profile through mill pond deposits in front of penstock, associated with wattle panel 'filter'. Basal part of sequence may have been deposited during lifetime of the mill. Upper parts of sequence are likely to relate to later silting of mill pond possibly post abandonment			
Context	Sample	Depth (m) from	to	Keyword (texture)	Upper contact	Description	Interpretation
11667	12024/25	0.00	0.40	Silty clay	Na	Very soft and plastic dark grey (2.5Y 4/1) silty clay. Finely laminated horizontally with grey (2.5Y 5/1) silty clay. Very abundant fine organic detritus. Much vertical root disturbance above 0.20 m with Fe and decaying reed material	Minerogenic alluvial deposition
12205	12025	0.40	0.43	Silty clay	Clear	Dark grey (2.5Y 4/1) silty clay lens with horizontally laid decaying organics	Reduced rate of alluvial sedimentation.
12205	12025	0.43	0.47	Silty clay	Clear	Dark greyish brown (2.5Y 5/2) lens of silty clay, no inclusions, structureless	Stabilisation horizon
12205	12025	0.47	0.58	Silty clay	Clear	Very soft and plastic olive grey (5Y 5/2) silty clay. Moderate to frequent very fine organic flecking	Minerogenic alluvial deposition
12205	12025	0.58	0.81	Silty clay	Diffuse	Mottled olive grey (5Y 5/2), very soft and plastic silty clay Occasional very fine organic flecking	

Feature		Mill pond		M12034 (top at +1.46 m OD)			
Section		11830 (P3)/18563		Profile through alluvial deposits directly on front of mill chutes behind wattle panel 'filter'			
Context	Sample	Depth (m) from	to	Keyword (texture)	Upper contact	Description	Interpretation
12205	12034	0.00	0.20	Silty clay	Na	Soft, very plastic olive grey (5Y 5/2) silty clay. Frequent organic flecking. Much vertical root disturbance	Minerogenic alluvial deposition
12205	12034	0.20	0.44	Silty clay	Clear	Soft, very plastic olive grey (5Y 5/2) silty clay with faint laminations of greyish brown (2.5Y 5/2) clay. Frequent but faint fine organic flecking. Slightly mottled. Rare woody fragments and charcoal flecks	
12205	12034	0.44	0.55	Silty clay	Clear	Very soft and plastic greyish brown (2.5Y 5/2) silty clay. Occasional organic flecking and decaying reed material	
12205	12034	0.55	0.62	Silty clay	Clear	Very soft and plastic olive grey 5Y 5/2) silty clay	
12205	12034	0.62	0.85	Sandy silt	Clear	Very sandy (clay) silt, light olive brown (2.5Y 5/3). Structureless. Occasional organic flecking	

Feature		Mill pond		M12313 (top at 1.57 m OD)			
Section		118545 (P2)/18563		Profile through minerogenic alluvium infilling millpond			
Context	Sample	Depth (m) from	to	Keyword (texture)	Upper contact	Description	Interpretation
19424	12313	0.00	0.29	Silty clay	Na	Very dark grey (10YR 3/1) silty clay, with darker organic discontinuous laminations (*c* 1 mm). Occasional (*c* 2%) Fe mottles in fine root channels. Diffuse paler mottles also present but faint/indistinct	Minerogenic alluvial deposition
19426	12313	0.29	0.37	Silty clay	Diffuse	Very dark grey (10YR 3/1) silty clay. Faint yellowish/grey pale sub-circular mottles (up to 2 mm). Dull Fe mottles	
19582	12313	0.37	0.55	Silty clay	Diffuse	Very dark grey (10YR 3/1) silty clay. Decayed oyster shell fragment near base. Very rare charcoal flecks	

Feature	Mill pond	M12296 and M12295 (top of M12296 at +1.74 m OD)					
Section no.	118549(P1)	Profile through minerogenic alluvium infilling millpond, abutting western barrage					
Context	Sample	Depth (m)		Keyword (texture)	Upper contact	Description	Interpretation
		from	to				
19554	12296	0.00	0.06	Silty clay	Na	Firm, dark grey (7.5YR 4/1) silty clay (with minor fine sand). Frequent thread like very dull orange Fe mottles/veins – gives overall brownish hue to greyer matrix. Very small dark grey speckles (2–5%)	Minerogenic alluvial deposition
19554	12296	0.06	0.17	Silty clay	Diffuse	Firm dark grey (10YR 4/1) silty clay. Fewer Fe veins/mottles (*c* 2%) and increase of darker grey speckles, to give overall darker colour. Occasional irregular paler grey mottles are present	
19552	12296	0.17	0.46	Organic silty clay	Clear	Black (10YR 2/1) organic silty clay. Small off-white precipitated flecks throughout (*c* 2%). Rare charcoal flecks. Occasional horizontal bands of compressed organic matter	Organic alluvium
19552	12296 & 12295	0.46	0.74	Silty clay	Diffuse	Very dark grey (10YR 3/1) silty clay. Very rare charcoal flecks. Paler grey irregular faint mottles (*c* 5% up to *c* 15 mm), often with very dull orange Fe staining associated. Single *c* 10 mm fragment of abraded orange CBM at 0.50 m	Alluvium with cultural debris
19499	12295	0.74	0.77	Sandy silt	Abrupt	Brown (10YR 4/3) sandy silt, structureless, very rare charcoal flecks	(Redeposited?) Alluvium
19491	12295	0.77	0.89	Sandy clay	Abrupt	Firm, dense, brown (10YR 5/3) fine sandy clay, structureless, but with faint mottles, some dull Fe staining around rootlets	Late Pleistocene/early Holocene alluvium
19490	12295	0.89	1.00	Sandy silt gravel	Clear	Matrix supported. Matrix is brown (10YR 5/3) sandy silt. Gravel is sub-angular flint. Dull Fe stained rootlets	Basal Late Pleistocene/early Holocene high-energy fluvial deposit

Feature	Mill pond	M12323 (top at +1.15 m OD)					
Section no.	118545 (P1)	Profile minerogenic alluvium infilling millpond					
Context	Sample	Depth (m)		Keyword (texture)	Upper contact	Description	Interpretation
		from	to				
19427	12323	0.00	0.09	Organic silty clay	Na	Very dark grey (10YR 3/1) silty clay. Occasional horizontally bedded dark (organic rich) bands (*c* 1 mm thick). Rare Fe mottles	Minerogenic alluvial deposition
19427	12323	0.09	0.26	Silty clay	Diffuse	Very dark greyish brown (10YR 3/2), prominent Fe mottles. Angular burnt flint (4cm) at base of unit	
19427	12323	0.26	0.70	Silty clay	Diffuse	Dark grey (10YR 4/1) silty clay with rare Fe mottles. Weak dark (organic rich) bands, especially at *c* 0.35–0.45 m. Small stone (*c* 1 cm) at 0.67 m, but otherwise appears to be clast free	

Table 32 Northfleet Saxon mill: soil micromorphology – samples and counts

Sample	Layer	Sediment	MFT	SMT	Voids (%)	Roots traces	Burned flint	Charcoal	Fungal bodies	Textural	Gypsum	Pyrite	Secondary Fe	<500 μm burrows	Broad burrows
2	19549	Humic silty clay	D	4 & 5	25	a*	-	a*	-	a(aa)	-	-	aa	-	aa
2	19548	Humified peat	F2	7b (6)	35	a*	-	-	a*	a(aa)	-	a*	aaa	-	aa
3	19548	Peat	F1	7a	30	aa	-	a*	a	a(aa)	aa	a	aaaaa	-	-
3	19547	Silty clay	E	6	30	a	-	-	a	a(aaa)	-	a*	aaaa	-	-
4	19497	Humic silts & clay	D	4 & 5	15–20	aa	-	a(aa)	a*	a(aaa)	a*	aa	aa	-	a
5	19496	Soil	C	3	20	aaa	a-1	aa(aaaa)	a*	aaa	a	-	aa	-	aaaaa
5	19496	Humic silty clay	B	1b & 2	15–20	aaa	-	a(aaaa)	a	a	a	-	aa	-	-
6	19495	Alluvium	A	1a	10	aaaa	a-1	a*(aa)	a*	a*	a	aa	a	a*	-

* = very few 0–5%, f = few 5–15%, ff = frequent 15–30%, fff = common 30–50%, ffff = dominant 50–70%, fffff = very dominant >70%,
a = rare <2% (a*1%; a-1, single occurrence), aa = occasional 2–5%, aaa = many 5–10%, aaaa = abundant 10–20%, aaaaa = very abundant >20%

Table 33 Northfleet Saxon mill: soil micromorphology – descriptions and interpretations

Microfacies type (MFT)/Soil microfabric type (SMT)	Sample	Depth (relative depth) Soil micromorphology (SM)	Interpretation and comments
MFT G/SMT 4 and 5 (6)	2	0–40 mm SM: Heterogeneous; layers of (very dominant but impure SMT 4 [silty clay] and few impure SMT 5 [clayey muds]) and finely fragmented SMT 6 at the base; *Microstructure*: very fine (1–2 mm) and medium (10 mm) laminated; 25%, very fine to medium (2.5 mm) vertical (root) channels; fine horizontal fissures; *Coarse Mineral*: as SMT 4 and 5; *Organic and Anthropogenic*: rare plant fragments – examples up to 15 mm long; rare traces of charcoal; *Fine Fabric*: as SMT 4 and 5; *Pedofeatures*: *Textural*: many intercalations/panning (sedimentary) and broad void coatings and associated intercalations (rooting) and collapse of voids; *Amorphous*: rare thin (300 μm) iron hypocoatings and fabric impregnations; *Fabric*: occasional very broad (5 mm) burrows mixing 19548 & 19549; finely fragmented SMT 6 (peat) and plant fragment inclusions.	19549 Generally 'bedded' poorly humic poorly sorted (impure) silty clay and clays, with detrital organic matter and peat fragments at the base; occasional very broad burrows at base; minor rooting and wet sediment disruption/soft sediment features; weak secondary pyrite and iron staining. *Muddy dumps of silty clay and clay that include sandy, peat and large plant fragment inclusions; muddy dumping led to minor soft sediment deformation and structural collapse; secondary rooting, pyrite, and iron staining from later water table fluctuations and ground water effects.*
MFT F2/SMT 7b (SMT 6)		40–65 mm SM: generally homogeneous; *Microstructure*: massive/very finely bedded; 3 mm bed; 35% voids, medium (1–2 mm) fissures; *Coarse Mineral*: as Sample 3, 19548, C:F, 30:70 (silty peat), 60:40 (silt-fine sand bed); *Organic and Anthropogenic*: very abundant blackened (humified) plant fragments – poorly preserved cf. 19548 in Sample 3; rare traces of 1 mm-size fleshy roots; *Fine Fabric*: SMT 7b, as SMT 7a, but fewer organs; bed of SMT 6; *Pedofeatures*: *Textural*: many intercalations/panning (sedimentary) and void coatings and associated intercalations (rooting and burrows); *Amorphous*: rare traces of pyrite framboids; many iron layered fabric impregnations; *Fabric*: occasional broad (5 mm) burrows.	19548 Humified silty peat, intercalated peat and detrital organic matter, and silty clay; weakly rooted; minor pyrite and moderate iron impregnation. *Low energy silty peat formation and subaerial humification and iron impregnation (weak 'bog iron' formation).*
MFT F1/SMT 7a	3	0–65 mm 0–40 mm SM: heterogeneous with very broad (20 mm) burrow? fill of 19549 – see sample 2); *Microstructure*: massive/very finely bedded; 30% voids, fine (0.5 mm) fissures (post-dep drying out? and infilled with gypsum) and channels; *Coarse Mineral*: C:F, 30:70 (lower part – silty peat), 15:85 (upper part – peat), well sorted silt; *Organic and Anthropogenic*: occasional medium (1 mm) fleshy roots and flattened (compressed) roots – *in situ* semi-aquatic plants?; very abundant laminated plant fragments (max 5 mm long); rare traces of very fine charcoal; rare concentrations of fungal bodies; *Fine Fabric*: SMT 7a: red (PPL), isotic (very open porhyric, undifferentiated b-fabric; XPL), very dark reddish brown and red (OIL); very abundant horizontally layered organs, tissues and amorphous organic matter; pollen and spores present; *Pedofeatures*: *Textural*: occasional intercalations/panning (sedimentary) and broad void coatings and infills; *Crystalline*: many gypsum; *Amorphous*: rare concentrations of pyrite framboids; abundant iron organic fabric impregnations.	19548 Finely bedded silty clay and organic matter, becoming a plant layered peat, with fleshy *in situ* roots and compressed roots; strong iron impregnation with later gypsum and pyrite formation. *Silty clay peat becoming a peat upwards – undisturbed natural peat formation from monocotyledonous semi-aquatic plants; later partial 'bog iron' formation, some drying out and gypsum impregnation.*
MFT E/SMT 6		40–65 mm SM: homogeneous *Microstructure*: massive/very finely (100–200 μm) laminated and channel, 30% voids, coarse (5 mm) vertical/sub-vertical channels and fine (200 μm) horizontal planar voids; *Coarse Mineral*: (clayey silt) C:F, 10/20:90/80, very well sorted fine to coarse silt; *Organic and Anthropogenic*: rare remains of fine–coarse roots; rare fungal body concentrations and fine sclerotia; *Fine Fabric*: SMT 6: dusty pale yellowish brown (PPL), moderate interference colours (open porphyric, grano- and unistriate b-fabric; XPL), grey and greyish brown (OIL); thin humic staining, occasional very fine amorphous and tissue fragments, rare trace of charred OM, phytoliths present; *Pedofeatures*: *Textural*: many intercalations/panning (sedimentary), broad void coatings and associated intercalations (rooting); *Amorphous*: rare traces of pyrite framboids; abundant iron hypocoatings (1 mm) & fabric impregnations.	19547 Finely bedded clay and silty clays containing little organic matter, but rare amounts of fungal material; textural pedofeatures associated with bedding and root disturbance; traces of pyrite and much iron staining. *Low energy muddy sedimentation.*

MFT D/SMT 4 and 5	**4**	0–75 mm SM: Laminated (dominant SMT 4 [silty clay] and frequent SMT 5 [clayey muds]); *Microstructure*: very fine (1–2 mm) and medium (10 mm) laminated; 15–20%, very fine to medium (2.5 mm) vertical (root) channels; *Coarse Mineral*: SMT 4: C:F, 25:75, well sorted medium to coarse silt, with fine sand; few mica; SMT 5: C:F, 10:90, very well sorted fine silt, frequent mica; *Organic and Anthropogenic*: rare root traces; abundant tissue and rare organ fragments, most horizontally oriented; rare traces of fine and occasional very fine charcoal; rare traces of 0.5 mm size fleshy 'semi-aquatic'(?) roots – non-ferruginised; *Fine Fabric*: SMT 4: similar to SMT 1b, with higher percentage (very abundant) of fine organic matter and less (rare) charcoal, humified OM, fungal material and tissues present; SMT 5: very finely speckled pale brown/brown (PPL), moderately high interference colours (open porphyric, uni- and grano-striate b-fabric; XPL), pale brown and brown with horizontal streaks (detrital OM) (OIL); moderate humic staining, abundant detrital fine OM, rare phytoliths; *Pedofeatures*: *Textural*: very abundant intercalations/panning (sedimentary) and broad void coatings and associated intercalations (rooting); *Crystalline*: rare traces of gypsum; *Amorphous*: occasional concentrations of pyrite framboids; occasional thin (200 μm) iron hypocoatings and layered fabric impregnations; *Fabric*: rare patches of sandy microfabric in very broad (5 mm) burrows.	19497 Generally well-bedded humic silty clay and clays, with detrital organic matter, but little charred organic matter; rare broad burrows at base of thin section; rooting and wet sediment disruption; secondary gypsum, pyrite and iron staining. *Dominant low and very low energy humic silts and clay sedimentation (ponding?) – no evidence of 'soil' formation; secondary rooting, pyrite, gypsum and iron staining from later water table fluctuations and ground water effects.*
MFT C/SMT 3	**5**	0–60 mm 0–30 mm SM: homogeneous (very weak layering); *Microstructure*: massive with poorly developed medium subangular blocky (and very weak relict layering); 20%, fine (<0.5 mm) channels, chambers and poorly accommodated planar voids, with medium (2 mm) vertical root channels; *Coarse Mineral*: as 19495; C:F, 30:70; *Organic and Anthropogenic*: example of 750 μm-size angular burned flint, rare traces of rubefied mineral grains; abundant very fine charred organic matter; possible rare charred patches; very abundant plant fragments some poorly horizontally oriented (2 mm long); many root traces; *Fine Fabric*: SMT 3: dark reddish brown with few patches of blackish brown (PPL), moderately low interference colours (close porphyric, weakly unistrial and grano-strial b-fabric; XPL), brown with reddish brown and black (OIL); humic with very abundant amorphous OM, plant tissues, many fine charred OM; rare traces of fungal material, and phytoliths present; *Pedofeatures*: *Textural*: occasional laminated silty clays and organic channel coatings up to 750 μm; very abundant silty clay intercalations associated with burrowing; *Crystalline*: rare small (200 μm) acicular and poorly prismatic concentrations of gypsum part infilling root channels and chambers; *Amorphous*: occasional iron impregnations and 1 mm wide hypocoatings along root channels, and organic tissue replacement; *Fabric*: very abundant very broad (5 mm) burrows.	19496 upper Part homogenized once-layered organic silts, with much very fine charcoal, and humified organic matter and charred amorphous organic matter; broadly burrowed to form weakly subangular blocky structures; later medium rooting, gypsum formation and iron staining. *Short-lived subaerially biologically worked 'peaty' silts ('soil' layer), containing humified organic matter, fine charcoal and rare traces of burned mineral material; later rooting, and gypsum and iron deposition, related to water table fluctuations/effects of estuarine water(?)*
MFT B/SMT 1b and 2		30–60 mm SM: heterogeneous; *Microstructure*: massive, weakly very finely to medium (250 μm – 5 mm) layered; 15–20% voids, fine to medium channels; *Coarse Mineral*: as 19545, with burrow concentrations of fine and medium sand; SMT 1b C:F, 60:40; SMT 2, C:F, 30:70; *Organic and Anthropogenic*: occasional mainly fine (1–1.5 mm) root traces; very abundant max. 1 mm long horizontally oriented detrital plant tissues; abundant (in SMT 2) very fine (<100 μm) charcoal; fungal concentrations and burned fungal bodies; *Fine Fabric*: common SMT 1b: as SMT 1a, much humic staining, many tissue and amorphous organic matter fragments; rare charcoal and trace amounts of phytoliths; common SMT 2 (in layers): speckled and dotted dark reddish brown (PPL), moderately low interference colours (close porphyric, weakly unistrial and grano-strial b-fabric; XPL), dark greyish brown to dark brown with abundant fine black specks (OIL); humic with very abundant fine plant tissues mainly horizontally oriented, much fine charred organic	19496 lower Weakly layered dominant humic coarse silts, with horizontally oriented detrital (some charred and humified) organic matter, and clay and fine charcoal-rich laminae (some fungal bodies concentrations); rooted, and root mixing of sediments; later gypsum and iron impregnations along root channels. *Well-sorted humic silty alluviation interdigitated with weak 'peaty' fine silty clay deposition – the last containing fine charcoal concentrations; some burrow-mixing from above; later rooting, and gypsum and iron deposition, related to water table fluctuations/effects of estuarine water(?)*

		matter; rare phytoliths; fungal material and blackened organic matter concentrations; *Pedofeatures*: *Textural*: rare very thin (50–100 μm) dusty clay void coatings and laminae (sedimentary pans); *Crystalline*: rare small (200 μm) acicular and poorly prismatic concentrations of gypsum part infilling 2 mm wide root channels; *Amorphous*: occasional iron impregnations and 1 mm wide hypocoatings along root channels, and organic tissue replacement; *Fabric*: preferential sand infills along root channels; very abundant laminated organic and clayey deposits; occasional very broad (5 mm) burrows (from 1947 above – associated dusty clay intercalations).	

Table 40 Insect remains recovered from the Northfleet Saxon mill and millpond

		Saxon mill wheelhouse			Overflow chute to Saxon mill		Saxon tidal millpond		
Sample no.		**12120**	**12121**	**12171**	**12272**	**12278**	**12335**	**12336**	
Context no.		**12526**	**12561**	**12557**	**19403**	**19488**	**19427**		
	Ecol. codes								**Phytophage host plants (Koch 1992)**
DERMAPTERA									
Forficulidae									
Forficula auricularia (L.)		1	–	–	–	–	–	–	
HEMIPTERA									
Family, genus & spp. Indet.		–	–	–	1	1	3	–	
COLEOPTERA									
Carabidae									
Carabus spp.	oa	–	1	–	–	–	–	–	
Leistus ferrugineus (L.)	oa	–	–	–	–	1	1	–	
Clivina fossor (L.)	oa	–	1	1	1	1	1	–	
Loricera pilicornis (F.)	oa	1	–	–	–	–	–	–	
Dyschirius globosus (Hbst.)	oa	–	1	–	1	2	6	–	
Trechus quadristriatus (Schrk)	oa	–	–	–	–	–	3	–	
T. quadristriatus (Schrk)/ *T. obtusus* Er.	oa	1	1	1	–	–	–	–	
Bembidion lampros (Hbst.)	oa	–	–	–	–	–	1	–	
Bembidion varium (Ol.)	oc-c	–	–	–	1	–	–	–	
Bembidion normannum Dej	oa-c	1	–	–	–	2	1	–	
Bembidion iricolor Bedel	oa-c	–	–	–	–	–	1	–	
Bembidion spp.	oa	–	–	–	2	–	–	–	
Harpalus ?rupicola Sturm	oa	–	–	–	–	–	1	–	
Harpalus rufipes (Geer)	oa	–	–	–	–	–	1	–	
Harpalus spp.	oa	2	–	–	1	–	–	–	
Pterostichus nigrita (Payk.)	oa-d	–	–	–	–	–	1	–	
Pterostichus melanarius (Ill.)	oa	–	–	–	–	–	1	–	
Pterostichus spp.	oa	1	–	–	–	1	–	–	
Agonum viduum (Panz.)	oa-c	–	–	–	–	–	1	–	
Platynus assimilis (Payk.)	oa	1	1	–	–	–	2	–	
Platynus dorsalis (Pont.)	oa	–	–	–	–	–	1	–	
Amara spp.	oa	1	–	–	1	1	–	–	
Odacantha melanura (L.)	oa-ws	–	–	–	–	–	1	–	Usually on *Phragmites australis* (Cav.) Trin. ex Steud.
Dytiscidae									
Acilius spp.	oa-w	–	–	–	–	–	–	1	
Gyrinidae									
Gyrinus spp.	oa-w	–	–	–	–	–	1	–	
Hydraenidae									
Hydraena palustris Er.	oa-w	–	–	–	–	–	–	–	
Hydraena spp.	oa-w	1	–	–	–	2	1	1	
Ochthebius dilatatus Steph.	oa-c	1	–	–	–	2	–	–	
Ochthebius bicolon Germ.	oa-w	1	–	–	–	–	–	–	
Octhebius marinus (Payk.)	oa-c	1	–	–	–	1	–	–	
Octhebius spp.	oa-w	12	1	3	9	26	10	2	
Limnebius spp.	oa-w	2	–	–	–	1	1	–	
Helophorus aquaticus (L.)	oa-w	–	–	–	1	–	–	–	
Helophorus spp.	oa-w	3	2	1	3	2	2	2	
Hydrophilidae									
Coelostoma orbiculare (F.)	oa-w	–	–	–	–	–	1	–	
Cercyon unipuntatus (L.)	rf	1	–	–	–	–	–	–	
Cercyon analis (Payk.)	rt	–	1	–	–	–	–	–	
Cercyon tristis (Ill.)	oa-ws	–	–	–	1	4	–	–	
Cercyon convexiusculus Steph.	oa-ws	–	–	–	–	–	2	–	
Cercyon spp.	rt	–	1	1	–	–	–	1	
Megasternum boletophagum (Marsh.)	rt	–	3	–	1	–	2	–	
Cryptopleurum minutum (F.)	rf	–	1	–	–	–	–	–	
Hydrobius fuscipes (L.)	oa-w	1	–	–	1	1	–	–	

		Saxon mill wheelhouse			Overflow chute to Saxon mill		Saxon tidal millpond		
Sample no.		**12120**	**12121**	**12171**	**12272**	**12278**	**12335**	**12336**	
Context no.		**12526**	**12561**	**12557**	**19403**	**19488**	**19427**		
	Ecol. codes								**Phytophage host plants (Koch 1992)**
Laccobius spp.	oa-w	1	–	–	–	–	1	–	
Enochrus spp.	oa-w	1	–	–	–	–	3	–	
Cymbiodyta marginella (F.)	oa-w	–	1	–	–	–	1	–	
Histeridae									
Acritus nigricornis (Hoffm.)	rt	–	–	–	–	–	–	1	
Silphidae									
Phosphuga atrata (L.)	rf	–	–	–	–	1	–	–	
Silpha spp.	rt	–	–	–	1	–	–	–	
Catopidae									
Catops spp.		–	1	–	–	–	–	–	
Clamdidae									
Clambus spp.		–	1	–	–	–	–	–	
Scydmaenidae									
Scydmaenidae Gen. & spp. indet.		–	–	–	–	2	–	–	
Orthoperidae									
Orthoperus spp.	rt	1	3	–	1	–	–	–	
Ptiliidae									
Ptiliidae Genus & spp. indet.	rt	2	–	–	–	–	–	–	
Staphylinidae									
Micropeplus staphylinoides (Marsh.)	rt	–	1	–	–	–	–	–	
Phyllodrepa floralis (Payk.)	rt	–	–	–	1	1	–	–	
Omalium spp.	rt	–	4	1	–	–	–	–	
Xylodromus concinnus (Marsh.)	rt-h	–	4	–	–	–	–	1	
Lesteva longelytrata (Goeze)	oa-ws	3	–	2	3	4	6	1	
Lesteva spp.	oa-ws	1	–	–	–	–	–	–	
Trogophloeus corticinus (Grav.)	u	–	1	–	–	–	–	–	
Trogophloeus spp.	u	4	1	–	–	–	1	–	
Oxytelus sculptus Grav.	rt	–	–	1	–	–	–	1	
Oxytelus rugosus (F.)	rt	1	1	–	1	2	2	–	
Oxytelus scupturatus Grav.	rt	–	–	–	–	–	1	–	
Oxytelus nitidulus Grav.	rt-ws	6	–	–	1	2	2	2	
Oxytelus tetracarinatus (Block)	rt	–	1	–	–	–	–	–	
Platystethus nodifrons (Man.)	oa-ws	–	–	–	–	–	3	–	
Stenus spp.	u	3	3	–	4	5	3	3	
Paederus spp.	u	4	–	–	–	13	2	–	
Stilicus orbiculatus (Payk.)		–	–	–	–	1	–	–	
Lathrobium spp.	oa	–	1	–		–	1	–	
Leptacinus spp.	rt	–	–	–	–	–	–	–	
Xantholinus spp.		–	1	–	–	2	–	–	
Neobisnus spp.	rt	–	–	–	–	–	–	–	
Quedius spp.		–	–	–	1	–	4	2	
Staphylinus sp	u	1	–	–		–	–	–	
Philonthus spp.		1	–	–		–	–	–	
Tachyporus spp.		–	–	–	–	–	1	–	
Bolitobius spp.		–	–	–	–	–	1	–	
Tachinus spp.		1	1	–	–	–	–	–	
Aleocharinidae Genus & spp. Indet.		5	4	2	4	–	–	1	
Pselpahidae									
Rybaxis sp.		–	–	–	1	1	–	–	

		Saxon mill wheelhouse			Overflow chute to Saxon mill		Saxon tidal millpond		
Sample no.		**12120**	**12121**	**12171**	**12272**	**12278**	**12335**	**12336**	
Context no.		**12526**	**12561**	**12557**	**19403**	**19488**	**19427**		
	Ecol. codes								**Phytophage host plants (Koch 1992)**
Cantharidae									
Cantharis sp.	oa	–	–	–	2	–	1	–	
Rhagonycha spp.	oa	1	–	–	–	–	–	–	
Silis ruficollis (F.)	oa-ws	–	–	–	–	1	–	–	*Phragmites australis* (Cav.) Trin. ex Steud. (water reed)
Malachiidae									
Malachius ?bipustulatus (L.)	oa	–	–	–	–	–	–	–	
Elateridae									
Agriotes spp.	oa-p	–	–	–	–	1	–	–	
Adelocera murina (L.)	Oa-p	–	1	–	–	–	–	–	
Throscidae									
Throscus spp.	oa-ws	–	1	–	–	–	–	–	
Helodidae									
Helodidae Gen. & spp. Indet.	oa-w	–	2	–	1	–	1	–	
Dryopidae									
Dryops spp.	oa-w	1	–	–	–	3	5	–	
Elmis aenea (Müll.)	oa-w	–	–	–	–	1	2	–	
Esolus parallelepipedus (Müll.)	oa-w	–	–	–	–	1	–	–	
Oulimnius spp.	oa-w	1	–	–	–	–	1	–	
Riolus spp.	oa-w	1	–	1	–	–	–	–	
Byrrhidae									
Simplocaria semistriata (F.)	oa	–	–	–	1	–	–	–	
Nitidulidae									
Brachypterus urticae (F.)	oa-p	2	–	–		–	–	–	*Urtica dioica* L. (stinging nettle)
Meligethes spp.	oa	1	–	–	1	–	1	–	
Cucujidae									
Monotoma spp.	rt	–	–	–	1	–	–	–	
Oryzaephilus surinamensis (L.)	g	–	–	–	2	–	–	–	
Laemophloeus ferrugineus (Steph.)	g	–	1	2	8	–	–	1	
Cryptophagidae									
Cryptophagus spp.	rd-h	–	3	–	1	–	–	–	
Atomaria spp.	rd-h	3	1	–	2	–	–	1	
Phalacridae									
Phalacrus spp.	ws	–	–	–	1	–	1	–	
Lathridiidae									
Enicmus minutus (Group)	rd-h	1	2	1	1	–	–	–	
Corticaria/ corticarina spp.	rt	–	5	1	–	–	–	3	
Mycetophagidae									
Typhaea stercorea (L.)	rd	–	–	–	6	–	–	–	
Lyctidae									
Lyctus linearis (Goeze)	l-h	–	2	1	–	–	–	–	
Anobiidae									
Grynobius planus (F.)	l	1	–	–	–	–	–	–	
Anobium punctatum (Geer)	l-h	–	3	–	1	–	1	1	
Ptinidae									
Ptinus fur (L.)	rd-h	1	5	–	1	–	–	1	
Tenebionidae									
Palorus ratzeburgi (Wissm.)	g	–	–	–	3	–	–	–	

Sample no.		Saxon mill wheelhouse			Overflow chute to Saxon mill		Saxon tidal millpond		
Context no.		12120 12526	12121 12561	12171 12557	12272 19403	12278 19488	12335	12336 19427	
	Ecol. codes								Phytophage host plants (Koch 1992)
Scarabaeidae									
Onthophagus spp.	oa-rf	–	–	–	–	–	1	–	
Aphodius erraticus (L.)	oa-rf	–	–	–	1	–	1	–	
Aphodius contaminatus (Hbst.)	oa-rf	–	–	–	–	1	–	–	
Aphodius sphacelatus (Panz.) *or A. prodromus* (Brahm)	oa-rf	–	–	–	4	–	2	–	
Aphodius fimentarius (L.)	oa-rf	–	–	1	–	–	1	–	
Aphodius spp.	oa-rf	3	1	–	–	–	–	4	
Phyllopertha horticola (L.)	oa-p	–	–	–	1	–	–	1	
Cerambychidae									
Pogonocherus hispidulus (Pill.Mitt.)	l	–	1	–	–	–	–	–	Range of hardwood trees
Chyrsomelidae									
Donacia aquatica (L.)		–	–	–	–	–	1	–	Carex species (sedges)
Plateumaris braccata (Scop.)	oa-ws	–	–	–	–	1	1	–	*Phragmites australis* (Cav.) Trin. ex Steud. (water reed)
Plateumaris sericea (L.)	oa-ws	–	–	–	–	–	2	–	Usually on *Carex* spp. (sedges)
Lema ?cyanella (L.)	oa-p	–	–	1	–	–	–	–	*Cirsium* species often *C. arvense* (thistles)
Prasocuris phellandrii (L.)	oa-ws	1	–	–	–	–	1	–	On aquatic Apiacae (Umbellifers)
Phaedon spp. (Germar.)	oa-p	–	–	–	–	–	1	–	
Phyllotreta spp.	oa	3	1	–	3	4	3	1	
Haltica spp.	oa	–	–	–	–	1	1	1	
Chaetocnema concinna (Marsh.)	oa	1	–	–	2	–	3	–	
Chaetocnema spp.	oa	–	–	–	–	1	1	–	
Bruchidae									
Bruchus spp.	oa	–	–	–	–	–	1	–	
Scolytidae									
Scolytus intricatus (Ratz.)	oa-l	1	–	–	–	–	–	–	Usually on Quercus spp. (oak)
Phloeophthorus rhododactylus (Marsh.)	oa-l	2	4	–	–	–	1	–	Often on *Cytisus* species (Brooms)
Leperisinus varius (F.)	oa-l	–	1	–	–	–	–	–	Mainly on *Fraxinus* (Ash)
Cuculionidae									
Apion urticarium (Hbst.)	oa-p	–	–	–	–	–	1	–	*Urtica dioica* L. (stinging nettle)
Apion spp.	oa-p	1	1	–	1	2	4	1	
Phyllobius sp.	oa-p	1	–	–	–	–	1	–	
Barypeithes spp.	oa	–	–	1	–	–	–	–	
Strophosoma melanogrammum (Forst.)	oa-p	–	–	–	–	–		1	
Sitona lineatus (L.)	oa-p	–	–	–	–	–	2	–	*Trifolium* species (Clover)
Sitona flavescens (Marsh.)	oa-p	–	–	1	–	–	1	–	*Trifolium* species (Clover)
Sitona waterhousei Walt.	oa-p	–	–	–	–	–	1	–	*Lotus pedunculatus* Cav. and *L. corniculatus* L. (lesser and greater birds foot trefoil)
Sitona humeralis Steph.	oa-p	–	–	–	–	1	–	–	Often on medicks (*Medicago*) and clover (*Trifolium*)
Sitona spp.	oa	1	–	1	–	1	2	–	
Rhyncolus spp.	oa-l	–	–	–	1	–	–	–	
Bagous spp.	oa-ws	–	–	–	2	–	–	1	
Notaris spp.	oa-ws	–	1	–	–	1	3	–	
Thyrogenes spp.	oa-ws	–	–	–	1	1	–	–	
Leiosoma deflexum (Panz.)	oa-ws	–	–	–	–	–	1	–	*Caltha palustris* L. (Marsh marigold)
Hypera spp.	oa-p	–	–	–	1	–	1	–	Mainly *Trifolium* spp. (Clover)
Sitophilus granarius (L.)	g	–	–	–	4	–	–	–	
Rhinocus spp.	oa-p	1	–	–	–	–	–	–	Usually on *Polygonum* (knotweed)

		Saxon mill wheelhouse			Overflow chute to Saxon mill		Saxon tidal millpond		
Sample no.		**12120**	**12121**	**12171**	**12272**	**12278**	**12335**	**12336**	
Context no.		**12526**	**12561**	**12557**	**19403**	**19488**	**19427**		
	Ecol. codes								**Phytophage host plants (Koch 1992)**
Ceutorhynchus contratus (Marsh.)	oa-p	–	–	–	1	2	2	–	Usually associated with Resedaceae and Papaveraceae (migonettes and poppies)
Ceutorhynchus pollinarius Forst.	oa-p	–	–	–	1	–	–	–	*Urtica dioica* L. (stinging nettle)
Ceutorhynchus spp.	oa-p	–	–	–	1	–	–	–	
Cidnorhinus quadrimaculatus (L.)	oa-p	–	–	–	–	1	3	1	*Urtica dioica* L. (stinging nettle)
Mecinus pyraster (Hbst.)	oa-p	–	–	–	–	–	1	–	*Plantago lanceolata* L. (plantain)
Gymnetron pascuorum (Gyll.)	oa-p	–	–	–	–	–	–	1	*Plantago lanceolata* L. (plantain)
Gymnetron spp.	oa-p	–	–	–	–	–	3	–	*Plantago lanceolata* L. (plantain)
Rhamphus pulicarius (Hbst.)	oa-l	–	–	–	1	–	–	–	*Alnus* spp. (Alder)
DIPTERA SUBORDER CYCLORRHAPHA Family, genus & spp. indet.		2	1	2	8	5	8	10	
HYMENOPTERA Formicoidea Family Genus and spp. indet.		3	–	1	–		2	–	

Ecological coding (Kenward and Hall 1995): oa (& ob) = Species which will not breed in human housing; w = aquatic species; c = species associated with salt water and coastal areas; d = species associated with damp watersides and river banks; rd = species primarily associated with drier organic matter; rf = species primarily associated with foul organic matter often dung; rt = insects associated with decaying organic matter but not belonging to either the rd or rf groups; g = species associated with grain; l = species associated with timber; p = phytophage species often associated with waste areas or grassland and pasture; pu = species associated with pulses (peas and beans); h = members of the 'house fauna'; this is a very arbitrary group based on archaeological associations (Hall and Kenward 1990)

Table 41 Proportions of the ecological grouping of Coleoptera from Northfleet

Sample	12120	12121	12171	12272	12278	12335	12336
Total no individuals	95	92	25	99	105	136	41
No species	52	49	20	53	42	76	30
% oa	62.1	30.4	60.0	53.5	71.4	84.6	48.8
% a	26.3	6.5	20.0	15.2	35.2	22.1	14.6
% ws	5.3	2.2	8.0	8.1	11.4	16.2	4.9
% c	4.2	1.1	0.0	1.0	4.8	3.7	0.0
%rd	5.3	12.0	4.0	11.1	0.0	0.0	4.9
% rt	10.5	26.1	16.0	7.1	4.8	5.1	22.0
% rf	15.8	38.0	20.0	18.2	4.8	5.1	26.8
% p	5.3	2.2	8.0	6.1	6.7	15.4	12.2
% g	0.0	1.1	8.0	17.2	0.0	0.0	2.4
% l	4.2	12.0	4.0	3.0	0.0	1.5	2.4
% h	5.3	26.1	8.0	12.1	0.0	0.7	12.2

Ecological coding: see Table 40

Chapter 8. Environmental Evidence for Subsistance and Economy Tables

Table 48 Relative proportion of plant categories for all Saxon Northfleet samples (%)

	Sample	Sub-group	Feature	Context	Feature type	Cereal grain	Cereal chaff	Germinated grain/ coleoptile/ detached embryo	Pulses	Trees/ shrubs	Weed/ wild	Unident/ indet	Total ident-ifications	Seeds/litre
5th/6th century	11102	16638	10272	10272	SFB	27.1	39.0	3.4	1.0	0.0	9.2	20.2	292	14.600
	11106	16635	10533	10534	Hearth	26.3	5.0	5.0	0.0	0.2	39.0	24.6	505	50.500
6th/7th century	31114	30107	3971016/ 30084	3971013/ 30086	SFB	79.2	0.7	0.7	4.9	1.4	3.5	9.7	144	3.600
	31118	30107	3971016/ 30084	3971013/ 30086	SFB	68.5	3.4	4.5	1.1	0.0	10.1	12.4	89*	2.225
	31516	30009	30009	30012	Hearth	43.4	0.2	2.3	0.0	0.0	50.2	3.9	1328	33.200
	31520	30015	30015	30019	Pit	72.3	0.2	14.6	0.0	0.0	3.0	9.9	405	40.500
	31522	30107	30084	30086	SFB	60.4	8.3	0.0	4.2	0.0	14.6	12.5	48*	1.200
	31527	30057	30058	30060	SFB	71.1	0.3	11.5	0.3	0.0	11.2	5.6	322	32.200
	31530	30119	30081	30082	SFB	40.0	24.2	4.2	1.7	0.0	15.0	15.0	120*	4.000
	31531	30078	30078	30079	Hearth	7.7	1.2	0.0	0.0	0.0	75.0	16.1	168*	5.600
	31534	30119	30081	30082	SFB	45.6	13.6	2.4	3.2	0.0	16.8	18.4	125*	3.125

NB Grey shading indicates the dominant (i.e. accounting for >50% of all identifications) plant category for a particular sample, * indicates those samples with fairly small assemblages

Table 49 List of woody taxa for Saxon Springhead

Taxon	Common name	Comments
Acer campestre	Field maple	
Alnus glutinosa	Alder	
Betula pendula/pubescens	Silver/downy birch	
Corylus avellana	Hazel	
Fraxinus excelsior	Ash	
Pomoideae	Pomaceous fruits	Group of shrubs including *Cotoneaster, Sorbus, Pyrus, Crataegus*
Pomoideae (*Crataegus* type)	Pomaceous fruits (hawthorn type)	Sub-group of the Pomoideae includes *Pyrus, Crataegus, Malus*
Prunus avium	Bird cherry	
Prunus spinosa type	Blackthorn	Type includes *P. spinosa, P. domestica*
Prunus sp.	Cherries	
Quercus sp.	Oak	

Table 50 List of woody taxa for Saxon Northfleet

Taxon	Common name	Comments
Acer campestre	Field maple	
Alnus glutinosa	Alder	
Betula pendula/pubescens	Silver/downy birch	
Carpinus betulus	Hornbeam	
Cornus sp.	Dogwood	
Corylus avellana	Hazel	
Fagus sylvatica	Beech	
cf. *Frangula alnus*	Alder buckthorn	
Fraxinus excelsior	Ash	
Ilex aquifolium	Holly	
Pomoideae	Pomaceous fruits	Group of shrubs including *Cotoneaster, Sorbus, Pyrus, Crataegus*
Pomoideae *(Crataegus* type)	Pomaceous fruits (hawthorn type)	Sub-group of the Pomoideae includes *Pyrus, Crataegus, Malus*
Prunus avium	Bird cherry	
Prunus spinosa type	Blackthorn	*Prunus spinosa* type includes *P. spinosa, P. domestica*
Prunus sp.	Cherries	
Quercus sp.	Oak	
Rhamnus cathartica	Buckthorn	
Salix/Populus sp.	Willow/aspen or poplar	The two taxa are anatomically indistinguishable
Ulmus sp.	Elm	

Table 52 Saxon worked waterlogged wood identifications from Northfleet

Sample	Context	Notes	No identified	Species identification
4	19168	Bung from Saxon chute. Cone shaped worked wood; association with mechanism (CDT3)	1 of 1	Degraded hazel (*Corylus avellana*)
8	19141	Peg (a) from Saxon mill chute end (N end plate/door/gate of W chute (CDT3))	1 of 1	Hazel (*Corylus avellana*)
9	19141	Peg (b) from Saxon mill chute end (N end plate/door/gate of W chute (CDT3))	1 of 1	Oak (*Quercus* sp.)
12	19134	Saxon peg from sluice – E chute	1 of 1	Unidentifiable – degraded, mineralised & desiccated
13	12338	Saxon stake forming part of NE–SW revetment	1 of 1	Hazel (*Corylus avellana*)
14	19146	Peg	1 of 1	Degraded cf. hazel (*Corylus avellana*)/alder (*Alnus glutinosa*)
15	19139	Plant matter from top of chute – deliberate. Possible straw fibre – Saxon	1 of 1	Not wood
16	19139	Moss infilling chute join	N/A	Not wood
17	19139	Bung from horizontal hole – chute side	1 of 1	Oak (*Quercus* sp.)
18	19139	Side peg in lower end of chute	1 of 1	Hazel (*Corylus avellana*)
19	19139	Skew peg in chute, plan 69	1 of 1	Degraded hazel (*Corylus avellana*)
21	19147	Hardwood peg from Saxon beam	1 of 1	Yew (*Taxus baccata)*
22	19441	Wattle/wicker stake. Fishtrap? At channel end of bypass chute	1 of 1	Twig wood cf. hazel (*Corylus avellana*)
23	19441	Wattle/wicker stake. Fishtrap? At channel end of bypass chute	1 of 1	Alder (*Alnus glutinosa)*
24	19441	Wattle/wicker stake. Fishtrap? At channel end of bypass chute	1 of 1	Twig wood cf. hazel (*Corylus avellana*) – desiccated – 1 year old
12029	11695	Wood – timber from interface 11662	1 of 1	Field maple (*Acer campestre*)
12051	12239	Wood from revetment structure 12224	1 of 1	Roundwood hazel (*Corylus avellana*)
12052	12293	Wood from structure 12281, section 11853	1 of 1	Roundwood hazel (*Corylus avellana*)
12053	12294	Wood from structure 12281, section 11853	1 of 1	*c* 10 year oak (*Quercus* sp.) roundwood
12054	12295	Wood from structure 12281, section 11853	1 of 1	*c* 10 year roundwood hazel (*Corylus avellana*)
12055	12296	Wood from structure 12281, section 11853	1 of 1	Roundwood hazel (*Corylus avellana*)
12056	12289	Wood from structure 12281, section 11853	1 of 1	Degraded unidentifiable
12057	12290	Wood from structure 12281, section 11853	1 of 1	Roundwood birch (*Betula pendula/ pubescens*)
12058	12291	Wood from structure 12281, section 11853	1 of 1	Pomaceous fruit (Pomoideae) – roundwood
12059	12292	Wood from structure 12281, section 11853	1 of 1	Twisted, large branchwood Pomaceous fruit (Pomoideae)
12061	12348	Part of revetment E–W	1 of 1	*c* 10 year roundwood hazel (*Corylus avellana*)
12072	12401	Wood – revetment 12224	1 of 1	Mature ash (*Fraxinus excelsior*)
12073	12326	Wood – revetment 12224	1 of 1	Ash (*Fraxinus excelsior*)
12076	12342	Wood – collapsed revetment 12270	1 of 1	Oak (*Quercus* sp.)
12077	12343	Wood – collapsed wood revetment 12270	1 of 1	Mature alder (*Alnus glutinosa*)
12078	12398	Wood – collapsed wood revetment 12270	1	Hazel (*Corylus avellana*)
12122	12632	Stake – small stake pre-dating construction of revetment and mill; Highly fragmented and degraded	1 of 1	Hazel (*Corylus avellana*)
12132	12320	Wood – samples of wattle, section 11884, plan 11956	5 of 22	4 x *c* 6-12 year roundwood hazel (*Corylus avellana*) ; 1 x *c* 6 year willow (*Salix/Populus* sp.)
12133	12321	Wattle samples, plan 11956, section 12321	5 of 25	Dominated by small-medium rod-like roundwood hazel (*Corylus avellana*); 1 x unidentifiable

Sample	Context	Notes	No identified	Species identification
12134	12563	Wood – wattle structure; series of small rod-like roundwood and twigwood; one frag hewn to a tapered, flat point	7 of 63	Field maple (*Acer campestre*) – 2-5 years
12147	12320	Wood – wattle, section 11844	4 of 13	Dominated by hazel (*Corylus avellana*); 1 x degraded cf. birch (*Betula pendula/ pubescens*)
12148	19049	Wood – wattle, section 11844	4 of 17	Roundwood hazel (*Corylus avellana*)
12149	12689	Wood – revetment stake	1 of 1	Field maple (*Acer campestre*) – large roundwood
12151	12684	Wood – revetment stake	1 of 1	Roundwood hazel (*Corylus avellana*)
12152	19073	Wood – stake found in construction cut backfill	1 of 1	Ash (*Fraxinus excelsior*)
12158	19081	Wood – worked fragment	1 of 1	Mature oak (*Quercus* sp.)
12160	19083	Wood – wattle sample	1 of 1	Small roundwood hazel (*Corylus avellana*)
12161	19084	Wood – wattle sample	1 of 1	Hazel (*Corylus avellana*) roundwood – 5 years old
12162	19085	Wood – wattle sample	1 of 1	Roundwood hazel (*Corylus avellana*)
12163	19086	Wood – wattle sample	1	*c* 5 year hazel (*Corylus avellana*) roundwood
12177	12624	Wood – upright	1 of 1	Degraded downy/silver birch (*Betula pendula/ pubescens)*
12178	11596	Wood – upright, driven into alluvial clay (2nd most west in line)	1 of 1	Mature hazel (*Corylus avellana*)
12180	12629	Wood – horizontal timber pre-dating construction of revetment; fungal growth and crystalline mineral growth	1 of 1	Willow/aspen (*Salix/Populus* sp.)
12181	12628	Wood – horizontal timber predating construction of revetment	1 of 1	Degraded and with mineral redeposition along vessels cf. Hazel (*Corylus avellana*) / alder (A*lnus glutinosa*)
12197	12210	Wattle samples from hurdle 'filter' in front of mill chutes	10 of 40	1 degraded roundwood cf. willow/ aspen (*Salix/ Populus* sp.), 1 roundwood willow/ aspen, 8 small-medium roundwood hazel (*Corylus avellana*) with bark on
12250	19408	Wood – three sharpened stake points recovered from 19408 peat	3 of 3	Roundwood – oak (*Quercus* sp.), alder (*Alnus glutinosa*) & field maple (*Acer campestre*)
12253	19449	Wood from revetment structure 19430	1 of 1	Roundwood hazel (*Corylus avellana*)
12254	19450	Wood from revetment structure	1 of 1	*c* 10 year oak (*Quercus* sp.) roundwood
12256	19452	Wood from revetment structure 19430	1 of 1	*c* 10 year oak (*Quercus* sp.) roundwood
12257	19453	Wood from revetment structure 19430	1 of 1	Huge roundwood hazel (*Corylus avellana*) – complete diameter
12258	19468	Wood from revetment structure 19429	1 of 1	Mature oak (*Quercus* sp.)
12260	19470	Wood from revetment structure 19429	1 of 1	9 year oak (*Quercus* sp.) roundwood
12261	19471	Wood from revetment structure 19429	1 of 1	Large roundwood oak (*Quercus* sp.)
12262	19472	Wood from revetment structure 19429	1 of 1	Oak (*Quercus* sp.) roundwood – 6 years old
12263	19473	Wood from revetment structure 19429	1 of 1	*c* 10 year oak (*Quercus* sp.) roundwood
12264	19474	Wood from revetment structure 19429	1 of 1	*c* 10 year oak (*Quercus* sp.) roundwood
12265	19475	Wood from revetment structure 19429	1 of 1	Mature oak (*Quercus* sp.)
12328	19508	Wood – timber chute fragment	1 of 1	Mature oak (*Quercus* sp.)
12549	12127	Wattle structure 12549 A1-A126 sales and rods	25 of *c* 125	23 roundwood hazel (*Corylus avellana*), 1 roundwood Pomaceous fruit (Pomoideae) with oblique point, 1 degraded unidentifiable.

Sample	Context	Notes	No identified	Species identification
12771	19118	Wooden bowl	1 of 1	Hornbeam (*Carpinus betulus*)
	11668	Roundwood	1 of 1	Pomaceous fruit (Pomoideae) – 8 year roundwood
	19131	Stake – not *in situ*	1 of 1	Pomaceous fruit (Pomoideae) – mature
	19175	Roundwood stake associated with opening mechanism of gate/door	1 of 1	Hazel (*Corylus avellana*) – 10 year roundwood
	19439	Upright post to secure structure	1 of 1	Pomaceous fruit (Pomoideae) – mature
	19441	Roundwood	1 of 1	Small roundwood hazel (*Corylus avellana*)

Table 53 Shell assemblage from Saxon crop drier 300260 at Springhead

Contexts	2
Oyster LV	25
Oyster UMLV	60
Oyster RV	24
Oyster UMRV	67
Oyster MNI	107
Total	107

Table 54 The physical characteristics and traces of infestation on the measured shells

Oyster R V	24
Oyster L V	25
Polydora ciliata	5
Cliona celata	0
Barnacles	0
Polyzoa	0
Bore holes	0
Thin	3
Thick	7
Chambered	0
Chalky dep.	27
Worn	18
Flaky	13
Colour/stain	4
Oysters attached	0
Irreg. shape	10
Notches	1