

PRIORY ROAD, DARTFORD, KENT: ENVIRONMENTAL ARCHAEOLOGICAL ASSESSMENT REPORT

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INTRODUCTION

This report summarises the findings arising out of the environmental archaeological assessment undertaken by Quaternary Scientific (University of Reading) in connection with the proposed development at Priory Road, Dartford, Kent (National Grid Reference: TQ 5391 7492; OASIS ID: quaterna1-193393; Figure 1). The site is on the floodplain of the River Darent, to the west of the river and over 3km from its confluence with the River Thames. The site is approximately 1.29ha in size, and its eastern boundary lies adjacent to the present-day channel of the Darent.

The British Geological Survey (<http://mapapps.bgs.ac.uk/geologyofbritain/home.html>) shows the site underlain by Alluvium, described as comprising silty, sandy, clayey and peaty deposits, resting on Chalk bedrock. In fact, the Holocene alluvium of the Lower Thames and its tributaries is almost everywhere underlain by Late Devensian Late Glacial Gravels (in the Thames valley, the Shepperton Gravel of Gibbard, 1985, 1994), and this gravel is widely recorded in the geotechnical boreholes already put down across the site. Three geotechnical boreholes and seven window samples put down within the main part of the site by K F Geotechnical (2014; Figure 1) showed that the Gravel surface lies at between 3.2 and 4.0m below ground surface (bgs). Above this, a thick horizon of Peat is recorded, varying between 1.5 and 3m thick on the western side of the site (BHA, WS1, WS2, WS3, WS4, WS6, WS9), becoming thinner towards the east, and closer to the River Darent (1m in BHB & 1.2m in BHC). The Peat is shown to be capped by Made Ground in all boreholes which ranges between 0.7 and 2.5m in thickness.

A programme of geoarchaeological field investigations was recently carried out to clarify the sub-surface stratigraphy of the site and to capture sequence suitable for further laboratory-based investigation (Batchelor, 2014). The results of these investigations indicated an undulating Late Glacial Shepperton Gravel (between at least 0.76 and -0.52m OD) overlain by a complex sequence of alluvial deposits and Peat. However, the thickness of the Peat was markedly less than that indicated by the K.F Geotechnical records, and thus considered to contain considerably less palaeoenvironmental potential than originally anticipated.

Nevertheless, the stratigraphic sequence was similar to that recorded on the adjacent Unwins Distribution Centre where organic alluvium and Peat beds up to 20cm in thickness were identified (Wessex Archaeology, 2009; Archaeology South East, 2010). The sediment from the Unwins Distribution Centre did not undergo further palaeoenvironmental investigation or radiocarbon dating however, due to contamination and truncation. Thus, since the age of the Peat and its palaeoecological potential is unknown in this part of the Darent Valley, a limited programme of assessment was recommended incorporating radiocarbon dating and evaluation of the concentration and preservation of micro and macrofossil content. Not only would this provide further information about the site; it would also provide valuable information for future investigations within the local area.



Figure 1: Location of the geoarchaeological and geotechnical boreholes at Priory Road, Dartford, Kent

METHODS

Field investigations

Three geoarchaeological boreholes (<QBH1> to <QBH3>) were put down within the site in October 2014. These locations were chosen so as: (1) to provide a south-west to north-east transect of boreholes across the site, towards the position of the River Darent, and (2) to confirm the expected sedimentary sequences recorded across the site. Within the WSI, the positions of QBH2 & QBH3 were towards the centre of the site, however, these had to be moved to the southern margins of the site because of thick horizons of concrete, and demolition works taking place in this area. Despite this, a south-west to north-east transect of boreholes was achieved.

Borehole core samples were recovered using an Eijkelpamp windowless sampler and gouge set using an Atlas Copco TT 2-stroke percussion engine. This coring technique is a suitable method for the recovery of continuous, undisturbed core samples and provides sub-samples suitable for not only sedimentary and microfossil assessment and analysis, but also macrofossil analysis. The recovered core samples were wrapped in clear plastic to prevent moisture loss, labelled with the depth (metres from ground surface) and orientation (top and base) and returned to Quaternary Scientific for storage in a purpose built facility at 2°C. This temperature prevents fungal growth on the core surface, which may lead to anomalous radiocarbon dates, and moisture loss. The spatial attributes of each borehole were recorded using a Leica DGPS (Figure 1; Table 1).

Lithostratigraphic descriptions

The lithostratigraphy of the boreholes was described in the field and laboratory using standard procedures for recording unconsolidated sediment and organic sediments, noting the physical properties (colour), composition (gravel, sand, clay, silt and organic matter) and inclusions (e.g. artefacts) (Tröels-Smith, 1955). The procedure involved: (1) cleaning the samples with a scalpel to remove surface contaminants; (2) recording the physical properties, most notably colour using a Munsell Soil Colour Chart; (3) recording the composition; gravel (*Grana glareosa*; Gg), fine sand (*Grana arenosa*; Ga), silt (*Argilla granosa*; Ag) and clay (*Argilla steatoides*); and (4) recording the unit boundaries e.g. sharp or diffuse. The results are displayed in Tables 2 to 4.

Table 1: Spatial data for the new geoarchaeological boreholes at Priory Road, Dartford, Kent

Borehole number	Easting	Northing	Elevation (m OD)
<QBH1>	553872.981	174894.620	3.174
<QBH2>	553942.396	174909.576	3.391
<QBH3>	553975.176	174936.786	3.564

Deposit modelling

The reconstruction of the sedimentary architecture beneath the site was undertaken using records from the geoarchaeological and geotechnical investigations. No British Geological Society (BGS) boreholes are available in the area of the site. Due to the limited number of records, and lack of OD heights for the geotechnical boreholes, it is not possible to produce topographic models for the surface of each major stratigraphic unit. Instead, a west-east transect comprising the geoarchaeological boreholes is provided in Figure 2.

Radiocarbon dating

Sub-samples of unidentified twig wood (<5 years old) were extracted towards the top and base of the Peat in borehole <QBH1> for radiocarbon dating. Both samples were submitted for AMS radiocarbon dating to the Beta Analytic Radiocarbon Dating Facility, Miami, Florida. The results have been calibrated using OxCal v4.2 Bronk Ramsey (1995, 2001) and IntCal13 atmospheric curve (Reimer *et al.*, 2013). The results are displayed in Table 5 and in Figure 2.

Pollen assessment

Ten samples were extracted from boreholes <QBH1> and <QBH3>. The pollen was extracted as follows: (1) sampling a standard volume of sediment (1cm³); (2) adding two tablets of the exotic clubmoss *Lycopodium clavatum* to provide a measure of pollen concentration in each sample; (3) deflocculation of the sample in 1% Sodium pyrophosphate; (4) sieving of the sample to remove coarse mineral and organic fractions (>125µ); (5) acetolysis; (6) removal of finer minerogenic fraction using Sodium polytungstate (specific gravity of 2.0g/cm³); (7) mounting of the sample in glycerol jelly. Each stage of the procedure was preceded and followed by thorough sample cleaning in filtered distilled water. Quality control is maintained by periodic checking of residues, and assembling sample batches from various depths to test for systematic laboratory effects. Initially, an assessment of the samples was carried out, to record the concentration, preservation and main taxa of pollen and spores recorded on 10% of the slide. Pollen grains and spores were identified using the University of Reading pollen type collection and the following sources of keys and photographs: Moore *et al* (1991); Reille (1992). The concentration of microscopic charred particles is also recorded. The results are displayed in Table 6.

Macrofossil assessment

A total of four small bulk samples from borehole <QBH1> were extracted for the recovery of macrofossil remains including waterlogged plant macrofossils, waterlogged wood, insects and Mollusca. The extraction process involved the following procedures: (1) removing a sample up to 10cm in thickness; (2) measuring the sample volume by water displacement, and (3) processing the sample by wet sieving using 300µm and 1mm mesh sizes. Each sample was scanned under a stereozoom microscope at x7-45 magnifications, and sorted into the different macrofossil classes. The concentration and preservation of remains was estimated for each class of macrofossil (Table 7). Preliminary identifications of the waterlogged seeds have been made using modern comparative material and reference atlases (e.g. Cappers *et al.* 2006). Nomenclature used follows Stace (2005) (also shown in Table 7).

RESULTS AND INTERPRETATION OF THE GEOARCHAEOLOGICAL BOREHOLE INVESTIGATIONS & RADIOCARBON DATING

The results of the geoarchaeological borehole investigations are recorded in Tables 2 to 4, and plotted as a south-west to north-east transect in Figure 2. A summary of the stratigraphic information derived from the K.F. Geotechnical borehole and window sample logs is recorded in Table 5. As outlined in the methodology, it was not possible to place the boreholes in the positions outlined in the WSI (Batchelor, 2014). This was for two reasons: (1) previous development across much of the site left substantial thicknesses of concrete truncating the sedimentary sequence, and (2) the position of plant and demolition rubble on site created a health and safety concern in these areas. Nevertheless, a transect of boreholes was achieved and sedimentary sequences obtained.

The results of the investigations indicate a sequence of Sands and Gravels overlain by a complex sequence of Alluvial deposits and Peat. The Sands and Gravels are interpreted as representing the Shepperton Gravel surface, laid down under high energy conditions during the Late Glacial. Within the three boreholes, the surface of these deposits varies between 0.76 and -0.52m OD (2.40 to 3.69m bgs). Unfortunately it is not possible to map the surface of the Shepperton Gravel across the entire site due to both a lack of location data for the K.F. Geotechnical boreholes, and the distribution of these boreholes across the site. Nevertheless, these records indicate the surface ranges between 2.8 and 4.0m bgs, thus correlating well with the new geoarchaeological borehole records. It is important to note however that demolition and levelling works have taken place on the site since the K.F. Geotechnical boreholes were put down, and thus the below ground surface depths may no longer be correct.

The Alluvial sediments overlying the Shepperton Gravel consist of: (1) fine-grained mineral-rich deposits (clays, silts and sands); (2) organic-rich clay, and (3) moderate to well-humified wood and herbaceous Peat. The fine-grained mineral-rich sediments are indicative of deposition within slow to moderately fast moving water. The organic-rich clay is indicative of deposition within a semi-aquatic environment, and the Peat is indicative of accumulation within a semi-terrestrial environment supporting the growth of trees, shrubs and/or herbs. The varying distribution of the different Alluvial sediments in the three boreholes indicates both spatial and temporal variations in environmental conditions across the site, which are fairly typical of a small floodplain valley.

The thickness of the Alluvial sediments (and certainly the Peat) is however markedly less than that indicated by the K.F Geotechnical Records (see Table 5). This could be due to one

or more of the following: (1) the varying nature of truncation across the site by previous development/demolition; (2) differences in the coring and descriptive methodology, and (3) the spatial distribution of the two sets of boreholes across the site.

Despite the thinness of the alluvial sediments, the results of the radiocarbon dating do indicate that it accumulated over a substantial period. The base of the <QBH1> sequence provided an age of 11,770-11,340 cal BP (9820-9390 cal BC) indicating accumulation commenced during the late Palaeolithic - early Mesolithic transition, whilst the top of the sequence was radiocarbon dated to 4090-3880 cal BP (2140-1930 cal BC), (early Bronze Age). Whether accumulation commenced uninterrupted is unknown due to the void in the sequence.

Table 2: Lithostratigraphic description of borehole <QBH1>, Priory Road, Dartford, Kent

Depth (m OD)	Depth (m bgs)	Composition
3.17 to 0.59	0 to 2.58	Made Ground
0.59 to 0.17	2.58 to 3.00	2.5YR 2.5/1; Sh3 Tl ³ 1, Th+; Humo 2; Reddish black well humified wood peat with herbaceous peat inclusions; diffuse contact into:
0.17 to -0.43	3.00 to 3.60	No recovery
-0.43 to -0.52	3.60 to 3.69	10YR 2/1; Sh3 Tl ² 1, Th+ As+; Humo 3-4; Black well-humified wood peat with herbaceous peat and clay inclusions; sharp contact into:
-0.52 to -0.53	3.69 to 3.70	10YR 5/1; Gg2, Ga2; Grey sandy gravel.

Table 3: Lithostratigraphic description of borehole <QBH2>, Priory Road, Dartford, Kent

Depth (m OD)	Depth (m bgs)	Composition
3.39 to 1.77	0 to 1.62	Made Ground
1.77 to 1.63	1.62 to 1.76	10YR 5/1; As3, Ag1; Grey silty clay; diffuse contact into:
1.63 to 1.39	1.76 to 2.00	10YR 4/3; Sh2, Ag2; Humo 4, Th+, Gg+, Ga+; Brown well humified very organic-rich silt with herbaceous peat, sand and gravel inclusions; diffuse contact into:
1.39 to 1.34	2.00 to 2.05	10YR 3/2; Sh3, Th31; Humo 3-4; Very dark greyish brown well humified herbaceous and unidentifiable peat; diffuse contact into:
1.34 to 1.29	2.05 to 2.10	10YR 3/2 to 10YR 4/2; As2, Ag1, Sh1, Dh+, Dl+; Very dark greyish brown organic-rich silty clay with detrital wood and plant inclusions; diffuse contact into:
1.29 to 1.02	2.10 to 2.27	10YR 5/1; Ag2, As2, Gg+, Dl+; Grey silty clay with traces of gravel and detrital wood; sharp contact into:
1.02 to 0.97	2.27 to 2.42	Gley 1 10Y/7; Ag2, Ga1, As1, Gg+; Light bluish grey clayey sandy silt with gravel inclusions; diffuse contact into:
0.97 to 0.76	2.42 to 2.63	Gley 1 10Y/7; Ag2, Ga1, As1, Gg+; Light bluish grey clayey sandy silt with gravel inclusions and routes traversing vertically through the sediment; diffuse contact into:
0.76 to 0.58	2.42 to 2.81	10YR 5/1; Ga2, Gg2, Dh+; Grey sandy gravel with detrital plant remains and
0.58 to 0.39	2.81 to 3.00	10YR 6/6; Ga2, Gg2; Brownish yellow sandy gravel.

Table 4: Lithostratigraphic description of borehole <QBH3>, Priory Road, Dartford, Kent

Depth (m OD)	Depth (m bgs)	Composition
3.56 to 1.14	0 to 2.42	Made Ground
1.14 to 0.69	2.42 to 2.87	10YR 5/1; As3, Ag1, Sh+, Mollusca+, DI+, Dh+; Grey silty clay with traces of organic remains, Mollusca, detrital wood and plant remains; sharp contact into:
0.69 to 0.60	2.87 to 2.96	10YR 6/1; As3, Ag1; Grey silty clay; very sharp contact into:
0.60 to 0.56	2.96 to 3.00	10YR 2/1; Sh3, TI31; Humo 4; well humified herbaceous and unidentifiable peat; sharp contact into
0.56 to 0.46	3.00 to 3.10	10YR 3/1; As3; Sh1; Very dark grey organic-rich clay; sharp contact into:
0.46 to 0.22	3.10 to 3.34	10YR 6/1; As2, Ag2, Ga+, DI+; Grey silty clay with sand and detrital wood inclusions; sharp contact into:
0.22 to 0.14	3.34 to 3.42	10YR 6/1; Gg2, Ga1, As1; Grey clayey sandy gravel; diffuse contact into:
0.14 to -0.44	3.42 to 4.00	10YR 6/6; Ga2, Gg2; Brownish yellow sandy gravel.

Table 5: Summary stratigraphic information from the K.F. Geotechnical borehole and window sample logs (2014), Priory Road, Dartford, Kent

Borehole/Window sample number	Top of Peat / Clay and Peat (m BGL)	Thickness of Peat / Clay and Peat	Top of Sands and Gravels (m BGL)
BHA	>1.0	3m	>4.0
BHB	>2.5	1m	>3.5
BHC	>2.0	1.2m	>3.2
WS1	>0.8	2.4m	>3.6
WS2	>1.5	2m	>3.5
WS3	>1.5	2.3m	>3.8
WS4	>1.6	1.7m	>3.3
WS5	Borehole abandoned		
WS6	>0.7	2.1m	>3.8
WS9	>1.0	2.8m	>2.8

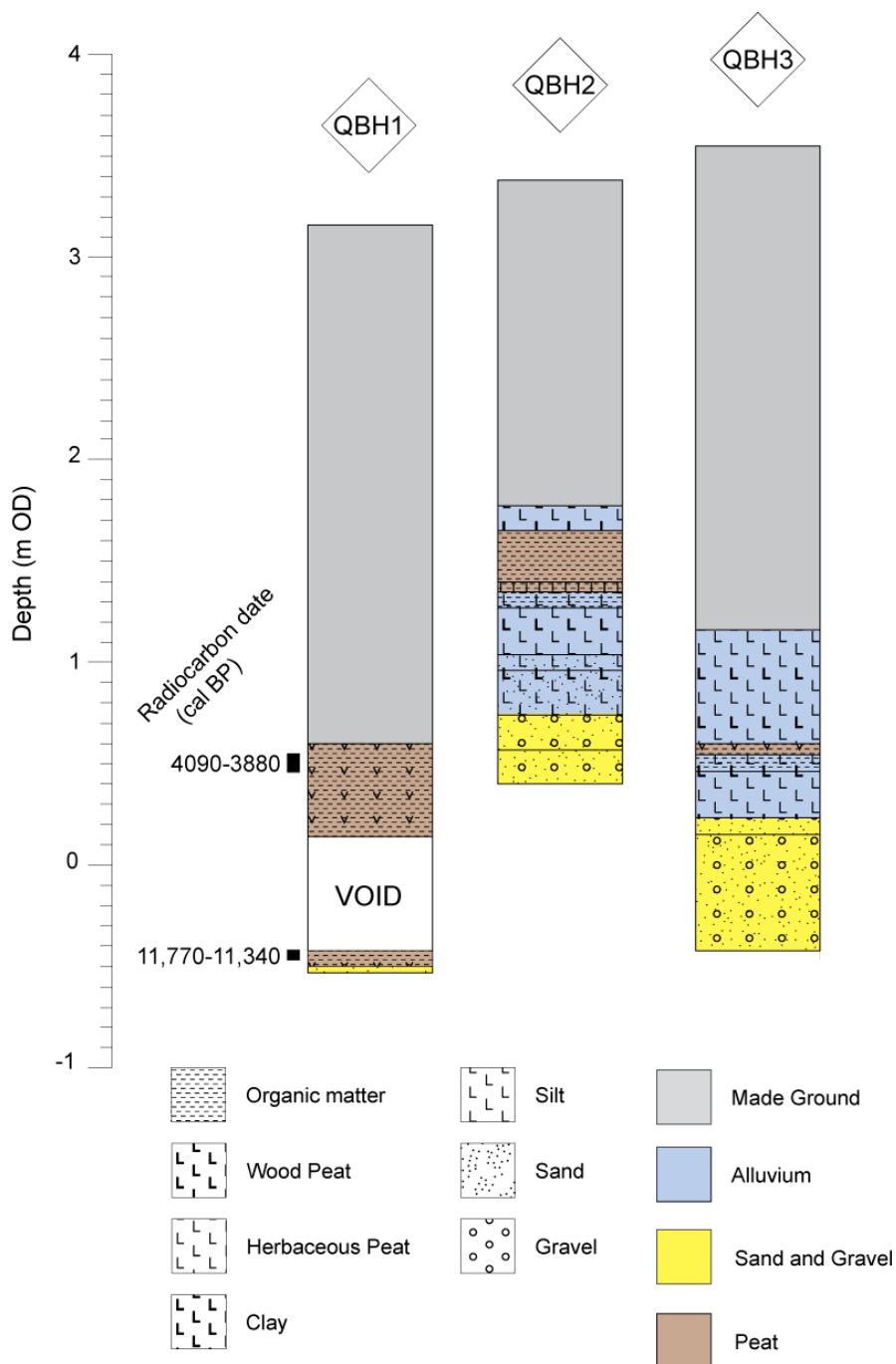


Figure 2: West-east borehole transect across the Priory Road site incorporating the radiocarbon dates from <QBH1>

Table 5: Results of the radiocarbon dating of samples from borehole <QBH1>, Priory Road, Dartford, Kent

Laboratory code / Method	Material and location	Depth (m OD)	Uncalibrated radiocarbon years before present (yr BP)	Calibrated age BC/AD (BP) (2-sigma, 95.4% probability)	δ13C (‰)
BETA 401958 (AMS)	Twig wood	0.57 to 0.47	3650 ± 30	2140-1930 cal BC (4090-3880 cal BP)	-26.2
BETA 401959 (AMS)	Twig wood	-0.43 to -0.48	10,050 ± 40	9820-9390 cal BC (11,770-11,340 cal BP)	-29.3

RESULTS AND INTERPRETATION OF THE POLLEN ANALYSIS

The results of the assessment indicate a generally moderate to high concentration of pollen in a good state of preservation in the samples from <QBH1>. The samples from <QBH3> however, contained a very low concentration of pollen in a poor to moderate state of preservation.

Within the three lowermost samples from <QBH1> (-0.43 to -0.51m OD), the assemblages are characterised by high values of herbaceous taxa including Cyperaceae (sedges) and Poaceae (grasses) with *Artemisia* (mugwort), Caryophyllaceae (pinks), *Chenopodium* type (e.g. fat hen), *Thalictrum* (rue) and *Filipendula* (meadowsweet). Tree and shrub taxa were present, but relatively limited; *Pinus* (pine), *Betula* (birch) and *Corylus* type (hazel) were the most commonly recorded, with single occurrences of *Ulmus* (elm) and *Quercus* (oak). This assemblage is indicative of an open and damp floodplain environment. During this period, grasses, sedges and other herbaceous taxa typical of grasslands dominated the wetland environment with birch and pine woodland either growing nearby, or as part of the regional vegetation. This assemblage is indicative of cold weather conditions.

The sample taken at 0.37-0.27m OD was characterised by high values of tree and shrub pollen. *Pinus* strongly dominates the assemblage with *Corylus* type, *Betula* and *Ulmus*. Lower herbaceous values include Cyperaceae, Poaceae, *Artemisia* (mugwort) and Apiaceae (carrot family). During this period, the increase of pine and birch pollen values clearly indicate the expansion of woodland growing nearby to the site, and the persistence of cold climatic conditions.

The final two samples contain a lower concentration and preservation of pollen. However, the uppermost sample at 0.57 to 0.47m OD contains a mixture of *Alnus* (alder), *Quercus*, *Tilia* (lime), and *Corylus* pollen grains with mixed herbaceous taxa. This assemblage is suggestive of a transition towards warmer conditions and the colonisation/expansion of mixed deciduous woodland. This particular sample is very similar in nature to 0.43m OD in <QBH3>.

No definitive evidence of human activity was recorded during the course of the assessment within either borehole. However, the occurrence of microcharcoal was noted, indicative of burning within the river catchment. Whether this was of natural or anthropogenic origin is not possible to determine.

Table 5: Results of the pollen assessment of samples from Boreholes <QBH1> & <QBH3>, Priory Road, Dartford, Kent

	Depth (meters OD)	<QBH1>						<QBH3>			
		0.57 to 0.47	0.47 to 0.37	0.37 to 0.27	-0.43 to 0.44	-0.47 to 0.48	-0.51 to 0.52	0.43 to 0.42	0.40 to 0.39	0.35 to 0.34	0.27 to 0.26
Latin name	Common name										
Trees											
<i>Alnus</i>	alder	1						3	1	1	
<i>Quercus</i>	oak	1	1		1			1	1		
<i>Pinus</i>	pine	1		19	3		2	1	1		
<i>Ulmus</i>	elm	1		4		1					
<i>Tilia</i>	lime	3						1			
<i>Betula</i>	birch			5	2	1	1				
Shrubs											
<i>Corylus</i> type	e.g. hazel	1	2	9		2	4	1			
<i>Hedera</i>	ivy			1							
Herbs											
Cyperaceae	sedge family			3	10	17	20	1			
Poaceae	grass family	1		1	9	6	7		1		
Lactuceae	dandelion family		1					2	1		
Asteraceae	daisy family	2						1	1		
<i>Artemisia</i>	mugwort			2		1	4				
Apiaceae	carrot family			1							
Caryophyllaceae	pinks						1				
<i>Cirsium</i> type	thistle	1									
<i>Chenopodium</i> type	e.g. fat hen						2		1		
<i>Plantago</i> type	plantain	1									
<i>Filipendula</i>	meadowsweet				1						
<i>Thalictrum</i>	rue						1				

Aquatics											
<i>Myriophyllum</i> type	water milfoil					2					
Spores											
<i>Filicales</i>	ferns	2	11	4				3	5	7	
<i>Sphagnum</i>	moss									1	
<i>Pteridium aquilinum</i>	bracken							6	1	1	
<i>Polypodium vulgare</i>	polypody			1							
Unknown		1	1	1		2	2		1		
Total Land Pollen (grains counted)		13	4	45	26	28	41	11	7	1	0
Concentration*		2	1	5	4	4	5	3	1	1	0
Preservation**		3-4	2-3	3-4	4-5	4	4	3-4	3	2	0
Microcharcoal Concentration***		4	3	2	0	1-2	1-2	1	1	3	0
Suitable for analysis		NO	NO	YES	YES	YES	YES	NO	NO	NO	NO

Key:

*Concentration: 0 = 0 grains; 1 = 1-75 grains, 2 = 76-150 grains, 3 = 151-225 grains, 4 = 226-300, 5 = 300+ grains per slide

**Preservation: 0 = absent; 1 = very poor; 2 = poor; 3 = moderate; 4 = good; 5 = excellent

***Microcharcoal Concentration: 0 = none, 1 = negligible, 2 = occasional, 3 = moderate, 4 = frequent, 5 = abundant

RESULTS AND INTERPRETATION OF THE MACROFOSSIL ASSESSMENT

A total of four small bulk samples were extracted from borehole <QBH1> for the recovery of macrofossil remains including waterlogged plant macrofossils, waterlogged wood, insects and Mollusca (Table 6). The results of the assessment indicate that waterlogged wood is present in low to moderate quantities in all samples. Waterlogged seeds were recorded in only one sample (0.27 to 0.17m OD); this contained one specimen of *Ranunculus fluitans* (river water crowfoot) and *Sambucas nigra/racemosa* (elder). The limited assemblage prevents any further environmental interpretation of the samples. No charred remains, bone, Mollusca or insects were recorded during the assessment.

Table 6: Results of the macrofossil assessment of samples from Borehole <QBH1>, Priory Road, Dartford, Kent

Depth (m OD)	Volume sampled (l)	Volume processed (l)	Fraction	Charred					Waterlogged		Mollusca		Bone			
				Charcoal (>4mm)	Charcoal (2-4mm)	Charcoal (<2mm)	Seeds	Chaff	Wood	Seeds Main taxa (quantity)	Whole	Fragments	Large	Small	Fragments	Insects
260-270	0.15	0.10	>300µm	-	-	-	-	-	2	-	-	-	-	-	-	-
290-300	0.04	0.10	>300µm	-	-	-	-	-	2	1 <i>Sambucas nigra/racemosa</i> <i>Ranunculus fluitans</i> (1)	-	-	-	-	-	1
3.60 to 3.65	0.05	0.05	>300µm	-	-	-	-	-	1	-	-	-	-	-	-	-
3.65 to 3.70	0.05	0.05	>300µm	-	-	-	-	-	2	1	-	-	-	-	-	-

Key: 0 = Estimated Minimum Number of Specimens (MNS) = 0; 1 = 1 to 25; 2 = 26 to 50; 3 = 51 to 75; 4 = 76 to 100; 5 = 101+

CONCLUSION AND RECOMMENDATIONS

The aim of the geoarchaeological investigations was to clarify the nature of the sub-surface stratigraphy across the site, and to determine the age of the Peat and its palaeoecological potential. This was achieved by putting down three boreholes at selected locations, and using the stratigraphic data from the new locations and existing records to produce a deposit model of the major depositional units across the site. In addition, a limited programme of assessment incorporating radiocarbon dating and evaluation of the concentration and preservation of micro and macrofossil content was carried out.

The results of the investigations indicate a sequence of Late Glacial Shepperton Gravel overlain by a complex sequence of Alluvial deposits and Peat. The Shepperton Gravel surface appears to undulate, resting between approximately 2.8 and 4.0m BGL (between at least 0.76 and -0.52m OD). The Alluvial sediments resting on the Shepperton Gravel surface are indicative of deposition within slow to moderately fast moving water, semi-aquatic, and semi-terrestrial environments. Spatial and temporal variations between these environments are indicated by the complex distribution of the Alluvial sediments; these variations are fairly typical of a small floodplain valley.

Radiocarbon dating of the deposits in <QBH1> indicates that the deposits date from the late Palaeolithic - early Mesolithic transition, whilst an early Bronze Age date was recorded at the top of the sequence. Whether accumulation continued uninterrupted is unknown. The results of the pollen and macrofossil assessment reveal the presence of remains in an often moderate to good state of preservation. The assemblages suggest cold climatic conditions, with the growth of herbaceous taxa on the floodplain and nearby occurrence of pine and birch woodland through much of Peat, with a transition to warmer mixed deciduous woodland.

The assessment has thus demonstrated that the organic-rich sediments have good potential to provide a detailed reconstruction of past environments in the Darent Valley. Indeed, the results of the radiocarbon dating indicate a rare opportunity to reconstruct environments during the late Palaeolithic - early Mesolithic period. Unfortunately, however the potential for providing a detailed reconstruction of the environmental conditions on this particular site are substantially diminished due to the truncation of the Peat and poor retention of borehole core material; thus no further work is recommended. Nevertheless, the results of the assessment provide valuable information for future investigations within the local area.

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