

Archaeological Services & Consultancy Ltd

WATCHING BRIEF: BARKING RIVERSIDE LONDON BOROUGH OF BARKING AND DAGENHAM ESSEX

NGR: TQ 4705 8250

on behalf of

BARKINGRIVERSIDE



Gareth Shane BSc (Hons)

May 2011

ASC: 1248/BRS/04

ISO 9001:2008
REGISTERED FIRM

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Site Data

ASC project code:	BRS		ASC Project No:	1248			
OASIS ref:	Archaeol2-100259		Event/Accession no:	RWC10			
County:		Essex					
Village/Town:		Barking					
Civil Parish:		Barking					
NGR (to 8 figs):		TQ 4705	8250				
Extent of site:		179 hecta	ares				
Present use:		Brownfie	eld				
Planning proposal:		Mixed de	evelopment				
Planning application	ref/date:	04/01230	O/OUT				
Local Planning Author	ority:	London Borough of Barking and Dagenham					
Date of fieldwork:		March – April 2010					
Client:		Barking Riverside Ltd					
		Renwick Road					
			Barking				
			Essex				
		IG11 0XF					
Contact name:		Ian Milla	rd				

Internal Quality Check

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Revisions:		Date:	
Edited/Checked By:	A Hancock	Date:	16 th May 2011

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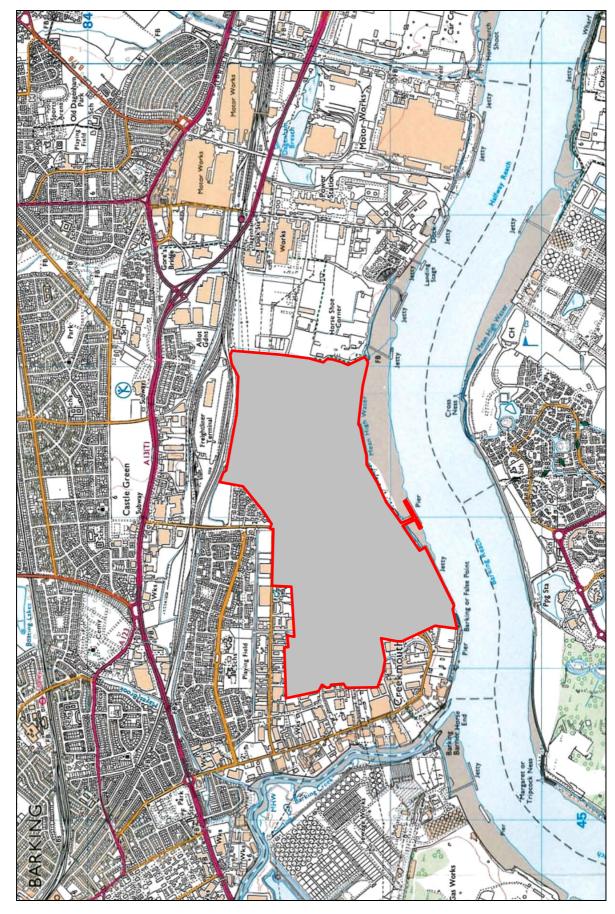


Figure 1: General location (scale 1:25,000)

Summary

In February 2011 an archaeological watching brief was undertaken at Barking Riverside, London Borough of Barking and Dagenham, Essex, during the excavation of two deep shafts. The focus of the archeological work was to establish the presence or absence of structural or artefactual remains within intercalated Holocene sediments and to appropriately mitigate the impact of the development on any identified heritage assets. Excavation of the shafts revealed stratigraphic profiles broadly consistent with those logged during nearby geoenvironmental and geoarchaeological investigations. No archaeological features or artefacts were encountered during excavation of the natural sediments.

1. Introduction

1.1 In February 2011 Archaeological Services and Consultancy Ltd (ASC) carried out a watching brief at Barking Riverside, Essex. The project was commissioned by Barking Riverside Ltd, and was carried out according to a mitigation strategy prepared by ASC (Hancock 2010) and approved by Greater London Archaeological Advisory Service (GLAAS), archaeological advisor to the planning authority, London Borough of Barking and Dagenham (LBBD).

1.2 Planning Background

This watching brief was required under the terms of *Planning Policy Statement 5* (PPS5), as a condition of planning permission for the development of the site. The relevant planning application reference is 04/01230/OUT.

1.3 Archaeological Services & Consultancy Ltd

ASC is an independent archaeological practice providing a full range of archaeological services including consultancy, field evaluation, mitigation and post-excavation studies, historic building recording and analysis. ASC is recognised as a *Registered Organisation* by the Institute for Archaeologists and is also accredited ISO 9001, in recognition of its high standards and working practices.

1.4 The Site

1.4.1 Location & Description

The Barking Riverside development is located within an area of former flood plain situated on the north side of the estuarine River Thames, 2km south of Barking town centre (Fig 1). The entire development area encompasses 179 hectares, it is located within the London Borough of Barking and Dagenham, centred at National Grid Reference TQ 4705 8250. As a consequence of the scale of the site the development is to be carried out in four phases. The monitored groundwork comprised excavation of two deep shafts within the Phase 1 development area, which is located at the northwest of the site (Fig 2).

1.4.2 Geology & Topography

The geology of the site comprises a sequence of intercalated strata comprising Holocene alluvium and peat overlying Pleistocene terrace gravels. Beneath the Holocene and Pleistocene deposits lie the Thames Group, Lambeth Group and Thanet Sand of Palaeocene age (BGS, Sheet 257). The solid geology of the site comprises Cretaceous Chalk. The site occupies an area of former flood plain which incorporates the majority of the Barking Level. Since the mid 1990's significant volumes of material have been imported and deposited across the site as engineered fill, surcharge and a capillary break layer and cap designed to seal pulverised fuel ash and other ground contaminants. Consequently the surface of the site now lies above the original ground level of c.0m AOD, mainly at levels between 7.0m AOD and 9.0m AOD, rising to c.17m AOD at the east over the former Renwick Road landfill and falling to 4.0m AOD at the north.

1.4.3 Development

The development comprises construction of housing, commercial property, infrastructure and associated landscaping.

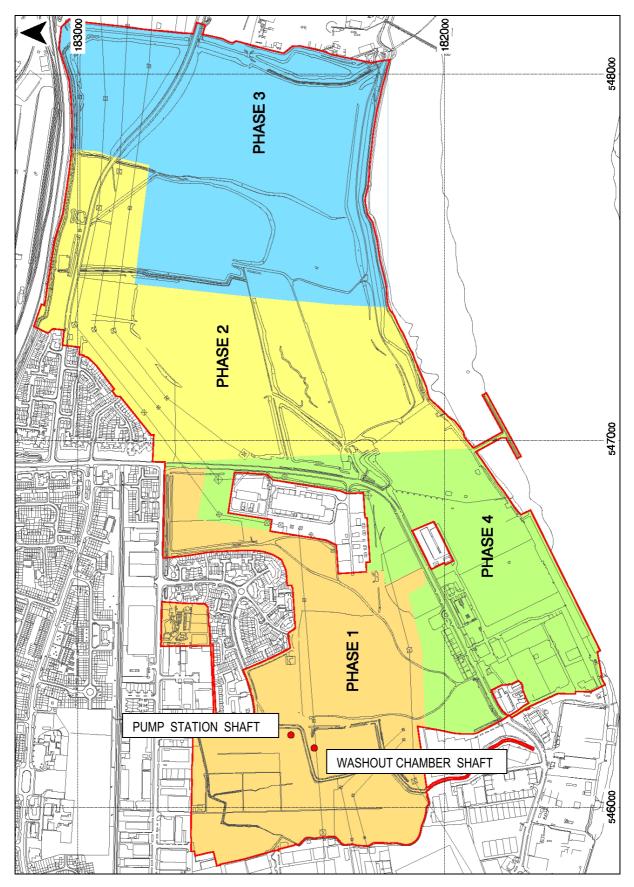


Figure 2: Location of monitored shafts within phase 1 development (scale 1:10000)

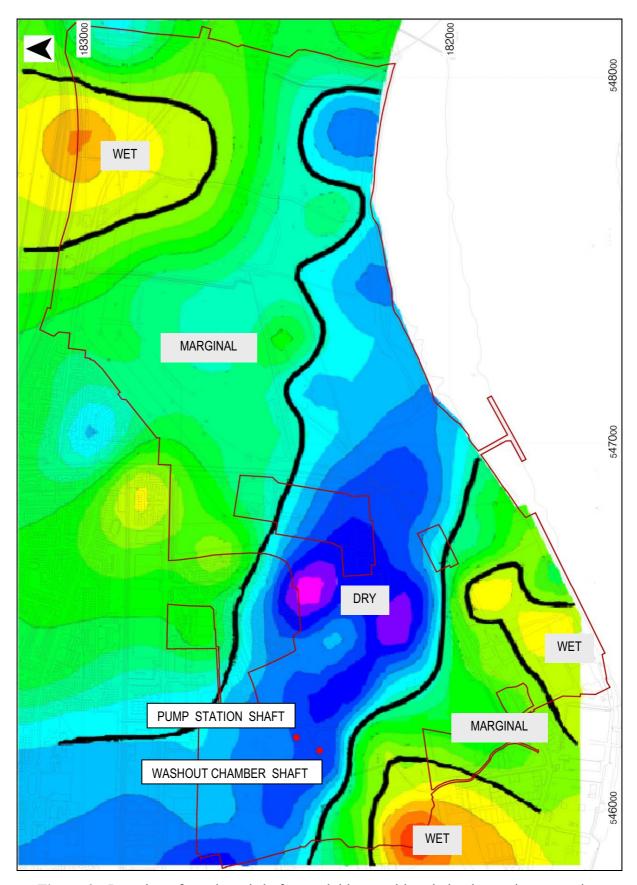


Figure 3: Location of monitored shafts overlaid on prehistoric landscape interpretation *(scale 1:10000)*

2. Aims & Methods

2.1 *Aims*

The aims of the watching brief were:

- To ensure the archaeological monitoring of all aspects of the development programme likely to have an impact upon heritage assets.
- To secure the adequate excavation and recording of any archaeological remains revealed by the development programme.
- To secure the analysis, conservation and long-term storage of any artefactual/ecofactual material recovered from the site.
- To provide an adequately detailed project report placing the project findings in their local and regional context.

2.2 Methods

The methods used were:

- Continuous archaeological observation during excavation of natural strata from the shafts
- Hand excavation and recording of any exposed archaeological remains, including adequate provision of both drawn and photographic records.
- The stratigraphic profile was recorded using standard procedures for recording unconsolidated sediment and peat.
- Rapid examination of spoil-heaps for archaeological artefacts.
- An appropriate programme of post-fieldwork analysis, archiving, and publication.

2.3 Standards

The work conformed to the relevant sections of the Institute for Archaeologists' *Code of Conduct* (IFA 2000) and *Standard & Guidance Notes* (IFA 2001), to the Association of Local Government Archaeological Officers East of England Region *Standards for Field Archaeology in the East of England* (ALGAO 2003), to English Heritage guidelines (EH 1991), and to the relevant sections of ASC's own *Operations Manual*.

2.4 Constraints

No constraints were encountered during the watching brief.

3. Archaeological & Historical Background

3.1 *Introduction*

The following sections are largely based on the findings of archaeological desk based assessment and building assessment (CgMs 2004a, 2004b) submitted as appendices to an Environmental Statement (Hyder Consulting 2004) Publications addressing the wider Historic Environment of the Thames estuary (e.g. CBA 2004) were consulted as appropriate. A geoarchaeological desk based assessment (MoLAS 2005) and a site wide geological deposit model (Hyder Consulting 2007) were also examined. The development site overlies a buried Holocene landscape whose archaeological potential has resulted in designation of site as an Area of Archaeological Significance by the London Borough of Barking and Dagenham. As part mitigation of the impact of the development a site wide programme of geoarchaeological investigation, analysis and modelling has been commissioned by Barking Riverside (Green et al 2010) and final reporting is currently nearing completion (Green et al forthcoming). Baseline conditions indicate that the site may contain ephemeral evidence of later periods, but that the focus of interest is likely to lie in the prehistoric period.

3.2 *Palaeolithic* (before 8000BC)

The gravel terrace located immediately north of the site is of the East Tilbury Marshes Formation, which is correlated with Oxygen Isotope Stage (OIS) 5 (Bridgland 1994). A wealth of archaeological artefacts of the Lower/Middle Palaeolithic have been recovered from Thames gravel terraces dated to earlier Oxygen Isotope Stages (e.g. 11, 9 and 7) but pre-modern human activity appears absent during and after Oxygen Isotope Stage 6 and it is unlikely that *in situ* artefacts of the Lower/Middle Palaeolithic will be present. A braided river channel reworked and redeposited gravels (Shepperton Gravels) across the site during the late glacial period (MoLAS 2005, Green et al forthcoming). Late glacial palaeoenvironmental evidence and scarce Late Upper Palaeolithic artefacts could be present at the interface of the river terrace gravel and the lower alluvium.

3.3 *Mesolithic* (8000-4000BC)

Finds of the period have not been recovered within or immediately adjacent to the development area but scattered evidence has been recovered from the wider Barking area, *e.g.* during dredging at Beckton Sewage Works (GLSMR 061 749). The environment at the site may have been quite diverse during this period, although perhaps remaining relatively dry, especially across a northwest – southeast aligned topographic high (gravel bar?) located at the western half of the development area (Fig 3, MoLAS 2005, Green et al forthcoming). It is probable that resources present would have attracted Mesolithic hunter-gatherers. Early Holocene palaeoenvironmental evidence and occasional Mesolithic artefacts could be present within the lower alluvium.

3.4 **Neolithic** (4000-2000BC)

Evidence for Neolithic activity is scant, but isolated lithic artefacts (GLSMR 060192) and a wooden doll named the "Dagenham Idol" (GLSMR 060178) have been found in nearby floodplain deposits. The first sedentary farming communities would probably have settled on the dry gravel terrace to the north of the current development area, but the floodplain may have been exploited seasonally and could have attracted ritual activity. Palaeoenvironmental evidence and limited artefactual evidence may be present at the surface of the lower alluvium and deeper areas of the overlying peat, which started to develop in the early Neolithic (Green et al forthcoming).

3.5 **Bronze Age** (2000-600BC)

The peat became more expansive during and the majority was perhaps formed during this period (Green et al forthcoming). Settlement is likely to have remained focussed on the gravel terrace to the north of the development area. However, the floodplain was exploited in a number of ways; discovered trackways and structural evidence suggest that the floodplain was exploited at least seasonally and recovery of two bronze socketed axes (GLSMR 060193, 060194) and a bronze sword from the lower reaches of the river Roding (Barking Creek) may identify ritual deposition of votive objects. The area adjacent to the edge of the gravel terrace, *i.e.* immediately south of Ripple Road (A13) perhaps possesses the highest potential for recovery of structural evidence and artefacts of this period. The potential probably drops with increasing distance from the terrace edge although structural and artefactual evidence could be present within the development site, especially at or adjacent to a northwest-southeast aligned topographic high located at the western half of the development area, (Green et al forthcoming).

3.6 *Iron Age* (600BC-AD43)

The Iron Age saw rising sea level and consequent marine transgressions which affected the low lying area to the south of the gravel terrace; peat formation ceased and thick deposits of clay and silty alluvium were laid down. Evidence of human activity of this period has not been recovered from the site or its immediate surrounds, perhaps an accurate reflection of limited Iron Age exploitation of this area.

3.7 **Roman** (AD43-450)

Marine transgression continued to affect the low lying area south of the gravel terrace. Evidence of this period has not been recovered from the levels and the presence of significant structural or artefactual evidence is unlikely.

3.8 **Saxon** (450-1066AD)

Marine transgression continued to render the area regularly, if not permanently, underwater. Finds or other forms of evidence have not been recovered from the site or its environs and the presence of significant structural or artefactual evidence is unlikely.

3.9 *Medieval* (1066-1500)

Reclamation of the Levels through construction of marsh walls and excavation of ditched drainage systems began during the 12th century. However, breaches of the defences occurred regularly. Settlement of the period focussed on the edge of the gravel terrace to the north and the reclaimed levels appear to have been used as seasonal grazing for cattle and sheep. Infilled boundary/drainage ditches and preserved environmental information is probably present within the upper alluvium.

3.10 *Post-Medieval* (1500-1900)

The Levels continued in agricultural use although breaches to the sea defence remained a relatively common occurrence. Early mapping shows a landscape of mainly rectilinear fields bounded by drainage ditches.

3.11 *Modern* (1900-present)

The site remained agricultural land until the mid 1920's. A stone sea wall was constructed, land raising had commenced on the landward side and piers had been built along the seaward side of the wall but little else had changed. By the late 1920's and 1930's land raising extended northward to Renwick Road and Barking Power Station's A and B had been constructed at the Thames frontage (GLSMR 800016. RCHME 1995). Barking Power Station C and a sub-station were added in the early 1950's. Widespread dumping of pulverised fuel ash (PFA) derived from the power station took place and a landfill site for domestic rubbish was present at the east of the development area during the second half of the 20th century. The power station closed in 1981 and many station buildings were demolished during the late 1980's. The office and control room of Station A and the switch house of Stations B remain standing within the development area; they will be demolished as the development progresses.

4. Results

4.1 *Introduction*

Natural deposits were machine excavated from two deep shafts (Plates 1 and 2) located within the Phase 1 construction area under continuous archaeological supervision. The method of excavation comprised mechanical removal of deposits using a large grab (Plate 3) although occasional hand digging occurred (Plate 4). Successive 3 metre diameter x 1m high concrete rings were inserted into the excavation as sufficient material was removed. Contacts between the strata and brief descriptions of the sediment were recorded as the excavation progressed but insertion of the concrete rings meant that it was not possible to observe a full profile through the natural strata.

4.2 Pump station shaft

The shaft was located at TL 546197 182418, on the northern side of Buzzards Mouth Creek. Ground level was at 3.30m OD and the 3m wide shaft was excavated to a depth of -3.00m OD; the following stratigraphic profile was observed.

NB: All heights are OD

- 3.30m to -0.80m (101). Made ground.
- -0.80m to -1.30m (102) Peat. Humified, dark brown.
- -1.30m to -2.70m (103) Lower alluvium. Light brownish grey silt.
- -2.70m to -3.00m (104) Very fine sand and gravel..

4.3 *Washout chamber shaft*

The shaft was located at TL 546161 182355, on the southern side of Buzzards Mouth Creek. Ground level was at 2.00m OD and the shaft was excavated to a depth of -2.90m OD; the following stratigraphic profile was observed

NB: All heights are OD

- 2.00m to 1.20m (200) Made ground.
- 1.20m to 0.70m (201) Pulverised Fuel Ash (?).
- 0.70m to 0.35m (202) Upper alluvium. Light grey brown.
- 0.35m to -0.05m (203) Upper alluvium. Orange- brown.
- -0.05 to -0.45m (204) Upper alluvium. Greenish grey.
- -0.45m to -1.90m (205) Peat. Humified, dark brown.
- -1.90m to -2.90m (206) Lower alluvium. Light brownish grey silt, grading to light green grey silt.
- 4.4 Archaeological features or artefacts were not observed during the removal of deposits or during examination of the upcast spoil



Plate 1: Pump station shaft



Plate 2: Washout chamber shaft



Plate 3: Mechanical excavation of lower alluvium at pump station shaft



Plate 4: Peat at washout chamber shaft

5. Conclusions

- 5.1 The position of the two shafts was correlated with the location of a northwest-southeast aligned topographic high of the underlying Shepperton gravels; a geomorphological feature interpreted as a broad gravel bar formed by a high energy late Pleistocene braided channel system (Green et al forthcoming). The gravel bar would have been one of the driest areas of the site during the subsequent Holocene period; the high ground overlying the gravel bar and immediately adjacent marginal areas may have the greatest potential for preservation of prehistoric archaeological remains.
- 5.2 The upper alluvium had been removed and the peat perhaps truncated at the area impacted by the pump station shaft. The surface of the peat was observed at a depth of approximately -0.80m OD, directly below modern made ground. The extent of truncation to the peat is uncertain, but it is noted that the surface of the peat was encountered at -0.45m OD at the washout chamber shaft 70m to the south.
- 5.3 The full natural sediment profile defined by earlier geoarchaeological investigations (Green et al 2010, forthcoming) was present at the washout chamber shaft. Upper alluvium, peat and lower alluvium were recorded although the Shepperton gravels had not been reached at the final excavation depth of -2.90m OD..
- 5.4 Archaeological features or artefacts were not observed during excavation of the shafts. The existence of archaeological features or artefacts away from the shafts cannot be specifically excluded but it is unlikely that the monitored groundwork has had a significant impact on heritage assets

5.1 *Confidence rating*

The work was undertaken in dry, overcast weather conditions and full cooperation was received from the client. Accordingly, a high confidence rating is attached to the results of this watching brief.

6. Acknowledgements

The project was commissioned by Ian Millard of Barking Riverside Ltd. The project was monitored by Jane Sidell of the Greater London Archaeological Advisory Service on behalf of the local planning authority, London Borough of Barking and Dagenham.

The project was managed for ASC by Alastair Hancock BSc PgDip MIfA. Fieldwork was carried out by Andrew Hunn. The report was prepared by Gareth Shane BSc (Hons) and edited by A Hancock.

7. Archive

- 7.1 The project archive will comprise:
 - 1. Brief
 - 2. Project Design
 - 3. Initial Report
 - 4. Clients site plans
 - 5. Site Monitoring Sheets
 - 6. Site record drawings
 - 7. List of photographs
 - 8. B/W prints & negatives
 - 9. Original specialist reports and supporting information
 - 10. CDROM with copies of all digital files.
- 7.2 The archive will be deposited with :London Archaeological Archive and Research Centre (LAARC)

8. References

Standards & Specifications

- ALGAO 2003 Standards for Field Archaeology in the East of England. East Anglian Archaeology Occasional Paper 14.
- EH 1991 The Management of Archaeological Projects, 2nd edition. English Heritage (London).
- IFA 2000a Institute of Field Archaeologists' Code of Conduct.
- IFA 2000b Institute of Field Archaeologists' Code of Approved Practice for the Regulation of Contractual Arrangements in Field Archaeology.
- IFA 2001 Institute of Field Archaeologists' Standard & Guidance documents (Desk-Based Assessments, Watching Briefs, Evaluations, Excavations, Investigation and Recording of Standing Buildings, Finds).
- EH 2002 Environmental Archaeology: A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post Excavation. English Heritage (London).
- EH 2004 Geoarchaeology: Using Earth Sciences to Understand the Archaeological Record. English Heritage (London).
- EH 2006 The Management of Research Projects in the Historic Environment. English Heritage (London).
- Hancock, A. 2010 Archaeological Mitigation Strategy on behalf of Barking Riverside Ltd. ASC Ltd Unpublished Report. Ref: 1248/BRS/02.

Secondary Sources

- BGS British Geological Survey 1:50,000 Series, Solid & Drift Geology.
- Soil Survey 1983 1:250,000 Soil Map of England and Wales, and accompanying legend (Harpenden).
- Green, C.P., Batchelor, C.R. & Young, D.S. 2010 Geoarchaeological Assessment, Barking Riverside. ASC Ltd Report No. 1248/BRS/03.
- Green, C.P., Batchelor, C.R, Young, D.S, Brown, A. Austin, P. Cameron, N, and Elias, S. forthcoming *Geoarchaeological Report, Barking Riverside*.
- Halsey, C. & Lymer, K. 2005 Barking Riverside Areas Phase 2B and 2C: geoarchaeological assessment. MoLAS Unpublished Report.
- Whitaker, W. 1889 *The Geology of London and parts of the Thames Valley*. Memoir of the Geological Survey of Great Britain.

Appendix 1: Monitoring Sheets

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Client/Developer /	FDL							
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Completed by:	A.P. Houn	ı						
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A.S.C. LTD	ARCHA	EOLOGICAL F	IELD MON	ITORING RECORD
Project: Berlevy Riverside	Project	Project No/Code:	BRS	Sheet: 多4 of 4
		Date of 22 -	2.11	`
Client/Developer			· · · · · · · · · · · · · · · · · · ·	
Contact: Ian Dilare	A1 .	Phone	•	
Contact: I am Rale of Agim / Gann Duration of Visit Start: 0'11	ttunt S	Finish:	1800	
(inc. travel): Completed by: AP. Hurr				
χτ.ααρι-	Develop	ment Type:		
Footings Services Roads	Levelling Q	uarrying Pipelines	Other (sp	ecify): bashout or shaft anation
Site & weather conditions:	. dull, ove	Cook.		
Observations:	·····		·	
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Comments:				- "
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For sketch plan, use separate sheet

©ASC 2007

Appendix 2: List of Photographs

SITE NAM	/IE: Barki	ng Rivers	side	SITE NO/CODE: 1248/BRS	
Shot	B&W	Digital	Subject		
1		✓	View east down Thames from BRS offi	ices	
2		✓	General shot east down Thames		
3		✓	General shot of excavation of pumping	station shaft	
4		✓	During excavation of pumping station s	shaft #1	
5		✓	During excavation of pumping station s	shaft #2	
6		✓	During excavation of pumping station s	shaft #3	
7		✓	General shot of completed pumping sta	ation shaft	
8		✓	General shot of excavation of washout	chamber shaft	
9		✓	During excavation of washout chambe	r shaft #1	
10		✓	During excavation of washout chambe	r shaft #2	
11		✓	During excavation of washout chambe	r shaft #3	
12		✓	General shot of completed washout ch	amber shaft	

Appendix 3: ASC OASIS Form

PROJECT DETAILS							
Project Name:	Barking Riverside		OASIS reference:				
Short Description: In February 2011, an archaeological watching brief was undertaken at Barking Riverside, London Borough of Barking and Dagenham, Essex, during the excavation of two deep shafts. The focus of the archeological work was to establish the presence or absence of structural or artefactual remains within the natural sediments and to appropriately mitigate the impact of the development on any discovered heritage assets. Excavation of the shafts revealed stratigraphic profiles broadly consistent with those logged during nearby geo-environmental and geoarchaeological investigations. No archaeological features or artefacts were encountered during excavation of the natural sediments.							
Project Type:	Watching brief						
Previous work: (eg. SMR refs)	Geoarchaeological investigations		Site status: (eg. none, SAM, listed)	Area of archaeological significance			
Current land use:	Brownfield		Future work: (yes/no/unknown)	unknown			
Monument type:			Monument period:	-			
Significant finds: (artefact type & period)	None						
	PROJECT	LOCATIO	N				
County:	Essex	OS refe	rence: (8 figs min)	TQ 4705 8250			
Site address: (+ postcode if known)	Barking Riverside, London Boroug	gh of Bark	ing and Dagenham, E	Essex			
Study area: (sq. m. / ha)	179 ha	Height (DD: (metres)	3m OD			
	PROJECT (CREATO	RS				
Organisation:	Archaeological Services & Consu	Itancy Ltd					
Project brief originator:	na	Project	design originator:	Alastair Hancock			
Project Manager:	Alastair Hancock	Director	/Supervisor:	Andy Hunn			
Sponsor / funding body:	Barking Riverside Ltd			,			
	PROJEC	CT DATE					
Start date:	14/04/2011	End dat	e:	22/04/2011			
	PROJECT	ARCHIVE	S				
	Location (Accession no.)	Content	(eg. pottery, animal	bone, files/sheets)			
Physical:		none					
Paper:	RWC10	London	Archaeological Archiv	ve and Research Centre			
Digital:		London	Archaeological Archiv	ve and Research Centre			
BIBLIOGRA	APHY (Journal/monograph, publish	ned or fort	hcoming, or unpublisl	ned client report)			
Title:	Watching Brief: Barking Riverside	,					
Serial title & volume:	Unpublished. ASC Ltd Report. Re	ef: 1248/B	RS/4				
Author(s):	Gareth Shane						
Page nos	1-23	Date:		16 th May 2011			