C305 – Eastern Running Tunnels

Chatham Segment Manufacturing Facility Archaeological Watching Brief

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1.0	14-06-2012	[redacted]	[redacted]	[redacted]	For information

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Stakeholder submission required: LU ☐ NR ☐ DLR ☐ RfL ☐ LO ☐ Other: _____

Purpose of submission: For no objection ☐ For information ☐

This document has been reviewed by the following individual for coordination, compliance, integration and acceptance and is acceptable for transmission to the above stakeholder for the above stated purpose.

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2b. Review by Stakeholder (if required):

Stakeholder Organisation	Job Title	Name	Signature	Date	Acceptance
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					☐

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Cotswold Archaeology

Tunnel Segment Manufacturing and Transhipment Facility Chatham Docks Medway, Kent

Archaeological Watching Brief

for

Dragados-Sisk JV

CA Project: 660032
CA Report: 12134

June 2012

Tunnel Segment Manufacturing and Transhipment Facility
Chatham Docks
Medway, Kent

Archaeological Watching Brief

CA Project: 660032
CA Report: 12134

prepared by	[redacted], Project Manager
date	6 June 2012
checked by	[redacted], Project Manager
date	9 June 2012
approved by	[redacted], Regional Manager
signed	
date	14 June 2012
issue	01

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LIST OF ILLUSTRATIONS

SUMMARY

Project Name:	Tunnel Segment Manufacturing Facility, Chatham Docks
Location:	Chatham, Medway, Kent
NGR:	TQ 7697 6977
Type:	Watching brief
Date:	6 June 2012
Location of Archive:	Kent Museum
Site Code:	CRL12

In April and May 2012, an archaeological watching brief was undertaken by Cotswold Archaeology at the construction site for a tunnel segment manufacturing and transhipment facility at Chatham Docks, Medway, Kent. The facility forms part of the construction infrastructure for the Crossrail Eastern Running Tunnels, being built by Dragados-Sisk JV, which will comprise the construction of three sections of twin 6.2m diameter bored tunnel beneath the East End of London. The watching brief, which was commissioned by Dragados-Sisk JV, comprised the observation and recording of deposits excavated by a continuous flight auger during the sinking of concrete piles to support a gantry crane, to be housed inside an existing building.

Gravel, possibly River Terrace gravel, was encountered at the base of three adjacent piles at a depth of *c.* 9m below current ground level. The sequence of overlying deposits was fairly uniform across the site, generally comprising black to dark grey alluvial silty clay or silt, up to 5m thick, overlain by thick deposits of modern made-ground between 3m and 9m thick. The variation in the thickness of the made-ground indicates extensive truncation to the alluvial sediments within the site.

1. INTRODUCTION

1.1 In April and May 2012, Cotswold Archaeology (CA) carried out an archaeological watching brief at the construction site for a tunnel segment manufacturing and transhipment facility at Chatham Docks, Medway, Kent (centred on NGR: TQ 7697 6977; Fig 1). The facility forms part of the construction infrastructure for the Crossrail Eastern Running Tunnels, being built by Dragados-Sisk JV, which will comprise the construction of three sections of twin 6.2m diameter bored tunnel beneath the East End of London. The watching brief, which was commissioned by Dragados-Sisk JV, forms part of a programme of archaeological investigation of the site, an earlier stage of which was the preparation of an archaeological desk-based assessment prepared by Cotswold Archaeology (CA 2011a).

1.2 The desk-based assessment (CA 2011a) was submitted in support of a planning application for the change of use of an existing dock storage building, to be adapted for the manufacture of tunnel lining segments. In response, Ben Found, Kent County Council's Planning Archaeologist, requested mitigation works, in the form of a watching brief, to investigate any archaeological or palaeoenvironmental remains that may be impacted during construction work.

1.3 The project was undertaken in accordance with the approved *Written Scheme of Investigation* (WSI) prepared by CA (2011b), the Institute for Archaeologists' *Standard and Guidance for Archaeological Watching Briefs* (IfA 2008), and the English Heritage procedural documents *Management of Archaeological Projects 2* (EH 1991) and the *Management of Research Projects in the Historic Environment (MoRPHE): Project Manager's Guide* (EH 2006).

The site

1.4 The site, which covers an area of approximately 0.76ha, is located to the north of Pier Road (A289), approximately 2km north-east of Chatham town centre and 1km south of the River Medway (Fig. 1). It comprises a single steel-built industrial unit and a large area of hard standing, approximately 100m to the south-west of Basin No. 3. The geology comprises Cretaceous rocks of the Upper Chalk Formation, overlain by superficial deposits of river gravel and alluvial sediments deposited by the River Medway (http://www.bgs.ac.uk/geoindex). Alluvium has been recorded to

a depth of 15m below modern ground level by previous palaeoenvironmental investigations to the north of the site, and peat beds have also been encountered.

1.5 The northern boundary of the site extends along an area of hardstanding to the north of the single industrial unit within the site. The eastern site boundary extends across an area of hardstanding dividing the site from further industrial units. The southern boundary is formed by a brick wall that separates the site from Pier Road (A289). The western boundary extends across a further area of hard standing and divides the site from a narrow emergency access lane.

Historical and archaeological background

1.6 The historical and archaeological background to the site and its environs has been presented in detail in the DBA prepared by CA (2011a), from which the following summary is taken. The site, which was formerly located on the banks of St Mary's Creek, off the River Medway, is situated over deposits of river gravel which can date back to the early Holocene or late Pleistocene, and subsequent alluviation provides evidence for successive episodes of marine regression and transgression throughout the prehistoric period and into historic times. Highly significant palaeoenvironmental and prehistoric remains have been recorded at the eastern approach to the Medway Tunnel, 450m west of the site (GSF 1994; 2002), and there is some potential for similar deposits to exist within the site, although to date, no such deposits have been recorded. A flint-rich deposit, possibly the remains of a Bronze Age burnt mound, has been identified *c.* 160m to the west of the site (ASE 2000).

1.7 Throughout the Roman, early medieval and medieval periods the site lay at the edge of the River Medway, in an area of salt marsh and mudflats. Land reclamation may have been undertaken in the 17th and 18th centuries as a map dated to 1768 shows a network of small fields extending into the site and a possible flood defence bank lay to the north.

1.8 The naval dockyards at Chatham expanded extensively during the 17th and 18th centuries. The site of Gillingham Fort, which was built in 1669 to defend the eastern approaches to the dockyards following the Dutch attack on Chatham in 1667, lies *c.* 650m to the east of the site. The fort was subsequently replaced by the Brompton Lines, the 18th- and 19th-century defences to Chatham Docks, part of which formerly extended into the eastern part of the site. These were removed during the

construction of the 19th-century basins and infrastructure at St Mary's Creek and within the site it is likely that any remains associated with these defences would have been significantly impacted upon by the later construction of the soldiers' bathing pool. The bathing pool itself was removed during the early 20th century to accommodate military structures.

1.9 The site has been subject to extensive modern development during the late 19th and 20th centuries, primarily associated with the expansion of the naval dockyards, and deep deposits of modern made-ground have been recorded in the vicinity. A recent evaluation by CA (2011c), 650m to the east of the site, recorded extensive truncation of alluvial deposits by modern development. The site is located within the buffer zone of the Chatham Docks Tentative World Heritage Site.

Archaeological objectives

1.10 The objective of the archaeological watching brief was to identify, record and investigate, so far as is reasonably practicable, any archaeological features, deposits or finds revealed during construction works for the new development.

Methodology

1.11 The fieldwork comprised the observation and recording of deposits encountered during the sinking of piles within the converted industrial storage unit (Fig. 2). The piles, which will support an internal gantry crane, were excavated using a continuous flight auger (CFA) to a depth of *c.* 10m. The descriptions of excavated deposits were recorded on CA borehole logs, in accordance with *Technical Manual 1: Fieldwork Recording Manual* (CA 2007).

1.12 No deposits were encountered that were suitable for palaeoenvironmental assessment and there were no significant archaeological finds. Modern material from the made-ground was noted for dating purposes but not retained.

1.13 The archive from the watching brief, currently held by CA at their offices in Milton Keynes, will eventually be deposited with an appropriate registered museum in Kent. A summary of information from this project will be entered onto the OASIS online database of archaeological projects in Britain.

2. FIELDWORK RESULTS

2.1 The sequence of deposits encountered during the sinking of the piles inside the building (Fig. 3), which were taken down to a depth of *c.* 10m, was relatively uniform. It generally comprised black to dark grey alluvial silty clay or silt, overlain by thick deposits of modern made-ground between 3m and 9m thick. Gravel, possibly River Terrace gravel, was encountered at the base of three adjacent piles (Piles 5-7) at a depth of *c.* 9m below current ground level. No archaeological remains or artefacts and no peat deposits were encountered during the watching brief.

2.2 The piles were sunk in pairs at ten locations (a and b) inside the building, so twenty piles were observed during the course of the watching brief. Measurement of deposit depths and thicknesses could only be approximate due to the nature of the intervention, with excavated material arriving at the surface with a 'slurry-like' consistency (Fig. 4). The recorded deposits are detailed below:

Piles 1a & b

Context	Type	Description	Thickness (m)	Depth (m)
100	Made-ground	Stone chippings and brick rubble.	1	0-1
101	Made-ground	Layer of modern building rubble, containing brick, pieces of stone and chalk, wood, timber and glass, in a black silt matrix.	2	1-3
102	Alluvium	Soft greyish-brown sandy clayey silt with moderate chalk pebbles.	3	3-6
103	Alluvium	Soft mid to dark grey sandy clayey silt with occasional to moderate chalk and flint pebbles.	4+	6-10+

Piles 2a & b

Context	Type	Description	Thickness (m)	Depth (m)
200	Made-ground	Stone chippings, with brick and concrete rubble.	1	0-1
201	Made-ground	Layer of modern building rubble, containing brick, concrete, timber and glass, in a black silt matrix.	4	1-5
202	Alluvium	Soft dark grey clayey silt with occasional chalk pebbles.	5+	5-10+

Piles 3a & b

Context	Type	Description	Thickness (m)	Depth (m)
300	Made-ground	Stone chippings, with brick and concrete rubble.	1	0-1
301	Made-ground	Layer of modern building rubble, containing brick, pieces of stone and chalk, wood, timber and glass, in a black silt matrix.	2	1-3
302	Made-ground	Layer of modern brick and stone rubble in a dark grey silt matrix.	4	3-7
303	Alluvium	Soft dark grey clayey silt with occasional to moderate chalk pebbles.	3+	7-10+

Piles 4a & b

Context	Type	Description	Thickness (m)	Depth (m)
400	Made-ground	Stone chippings, with brick and concrete rubble.	1	0-1
401	Made-ground	Layer of modern building rubble, containing brick, concrete, pieces of stone and chalk, wood, timber and glass, in a black silt matrix.	3	1-4
402	Alluvium	Soft dark grey clayey silt with occasional to moderate chalk pebbles.	4.5	4-8.5
403	River terrace gravels?	Coarse gravel in a brownish-grey sandy clay matrix, with occasional flint nodules.	1.5+	8.5-10+

Piles 5a & b

Context	Type	Description	Thickness (m)	Depth (m)
500	Made-ground	Stone chippings, with brick and concrete rubble.	1	0-1
501	Made-ground	Layer of modern building rubble, containing brick, concrete, pieces of stone and chalk, wood, timber and glass, in a black silt matrix.	4	1-5
502	Alluvium	Soft dark grey clayey silt with occasional to moderate chalk pebbles.	4	5-9
503	River terrace gravels?	Coarse gravel in a brownish-grey silty sand matrix.	1+	9-10+

Piles 6a & b

Context	Type	Description	Thickness (m)	Depth (m)
600	Made-ground	Stone chippings, with brick and concrete rubble.	1	0-1
601	Made-ground	Layer of modern building rubble, containing brick, concrete, dumps of coke, chalk rubble, wood, timber and glass, in a black silt matrix.	6	1-7
602	Alluvium	Soft dark grey clayey silt with occasional to moderate chalk pebbles.	2	7-9
603	River terrace gravels?	Coarse gravel in a brownish-grey silty sand matrix.	1+	9-10+

Piles 7a & b

Context	Type	Description	Thickness (m)	Depth (m)
700	Made-ground	Stone chippings, with brick and concrete rubble.	1	0-1
701	Made-ground	Layer of modern building rubble, containing brick, concrete, chalk rubble, wood, timber, metal and glass, in a black silt matrix.	8	1-9
702	River terrace gravels?	Coarse gravel in a brownish-grey silty sand matrix.	1+	9-10+

Piles 8a & b

Context	Type	Description	Thickness (m)	Depth (m)
800	Made-ground	Stone chippings, with brick and concrete rubble.	1	0-1
801	Made-ground	Layer of modern building rubble, containing brick, concrete, chalk rubble, wood, timber, metal and glass, in a black silt matrix.	4.5	1-5.5
802	Alluvium	Soft dark grey clayey silt with occasional to moderate chalk pebbles.	4.5+	5.5-10+

Piles 9a & b

Context	Type	Description	Thickness (m)	Depth (m)
900	Made-ground	Stone chippings, with brick and concrete rubble.	1	0-1
901	Made-ground	Layer of modern building rubble, containing brick, concrete, pieces of stone and chalk, wood, timber and glass, in a black silt matrix.	2	1-3
902	Made-ground	Layer of modern building rubble, containing brick and stone rubble in a dark grey silt matrix.	3	3-6
903	Alluvium	Soft dark grey clayey silt with occasional to moderate chalk pebbles.	4+	6-10+

Piles 10a & b

Context	Type	Description	Thickness (m)	Depth (m)
1000	Made-ground	Stone chippings and brick rubble.	1	0-1
1001	Made-ground	Layer of modern building rubble, containing brick, pieces of stone and chalk, wood, timber, granite sets and glass, in a black silt matrix.	3	1-4
1002	Alluvium	Soft black 'sticky' clayey silt.	3	4-7
1003	Alluvium	Soft black 'sticky' clayey silt. with occasional chalk pebbles.	3+	7-10+

3. DISCUSSION

3.1 The sequence of deposits encountered during the watching brief was relatively uniform and consistent with a riverside location. The earliest deposit, coarse gravel in a brownish-grey silty sand matrix, was encountered at a depth of *c.* 9m in three adjacent piles. This gravel is probably River Terrace gravel at the edge of the proto-Medway river channel, later St Mary's Creek, and probably dates to the early Holocene or late Pleistocene.

3.2 The gravel was overlain by black to dark grey alluvial silty clay or silt, which in places, where it was not truncated by modern activity, was over 5m thick. A radiocarbon date obtained from the base and the top of the alluvium at a site 300m to the north suggests that silting there began around 6,500BC, in the Mesolithic, and continued into the Iron Age (AC 1996). However, the complexity of floodplain deposits, especially in an area that has been so heavily developed in modern times, precludes any direct chronological comparison.

3.3 The alluvium was overlain by thick deposits of modern made-ground, which was between 3m and 9m thick and contained modern building debris and refuse. The made-ground dates to the period when Chatham Docks were expanded and the basins were constructed for steam-powered naval ships in the mid to late 19th century, and to 20th century activity associated with the naval docks. No archaeological remains or artefacts predating the modern period and no peat deposits were encountered during the watching brief.

4. CA PROJECT TEAM

The fieldwork was undertaken by [redacted] and the report was written by [redacted]. The illustrations were prepared by [redacted]. The archive will be compiled and prepared for deposition by [redacted]. The project was managed for CA by [redacted].

5. REFERENCES

AC (ArchaeoScape Consulting) 1996 *Chatham Dockyards Palaeoenvironmental Assessment*

ASE (Archaeology South East) 2000 *Geoarchaeological and archaeological monitoring of the Gillingham Northern Link, Kent*

BGS (British Geological Survey) http://www.bgs.ac.uk/geoindex, accessed 30 April 2012

CA (Cotswold Archaeology) 2011a *Tunnel Segment Manufacturing and Transhipment Facility, Chatham Docks, Medway: Archaeological Desk-Based Assessment*, CA Report, **11244**

CA (Cotswold Archaeology) 2011b *Tunnel Segment Manufacturing and Transhipment Facility, Chatham Docks, Medway: Written Scheme of Investigation for an Archaeological Watching Brief*

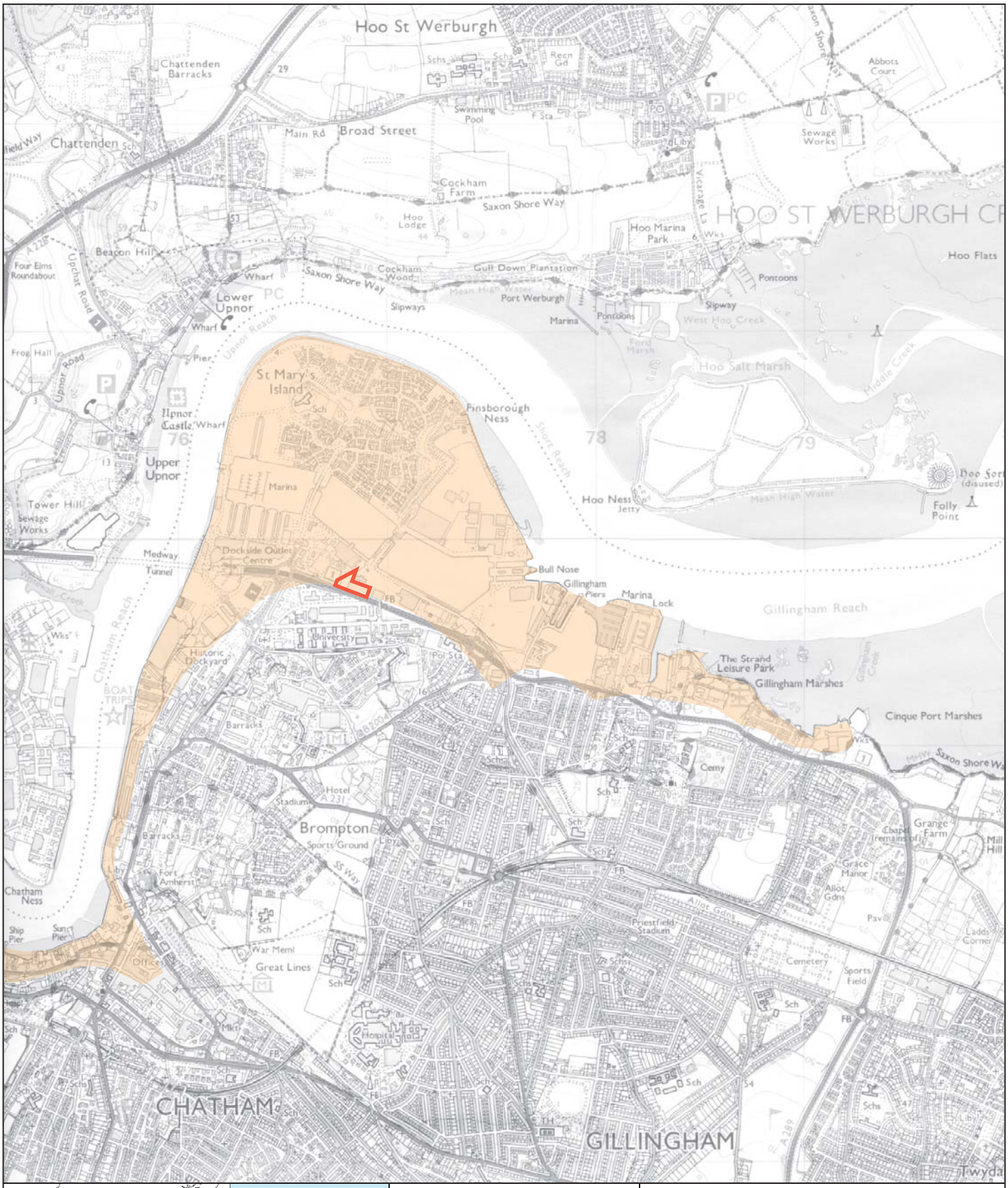
CA (Cotswold Archaeology) 2011c *Land at Chatham Docks, Medway, Kent: Archaeological Evaluation,* CA Report, **11224**

GSF (Geoarchaeological Service Facility) 1994 *Assessment Report on Geoarchaeological and Environmental Archaeological Aspects of the Medway Tunnel Engineering Scheme: Archaeological Evaluation*

GSF (Geoarchaeological Service Facility) 2002 *Archaeological Works on the Eastern Approach to the Medway Tunnel*

APPENDIX A: OASIS REPORT FORM

PROJECT DETAILS		
Project name	Tunnel Segment Manufacturing and Transhipment Facility, Chatham Docks, Medway	
Short description (250 words maximum)	The watching brief comprised the observation and recording of deposits excavated by a continuous flight auger during the sinking of concrete piles to support a gantry crane, to be housed inside an existing building. The sequence of deposits was fairly uniform across the site, generally comprising black to dark grey alluvial silty clay or silt, overlain by thick deposits of modern made-ground between 3m and 9m thick. Gravel, possibly River Terrace gravel, was encountered at the base of three adjacent piles at a depth of *c.* 9m below current ground level. The variation in the thickness of the made-ground indicates extensive truncation to the alluvial sediments.	
Project dates	30 April to 10 May 2012	
Project type	Watching brief	
Previous work	Desk-based assessment (CA 2011)	
Future work	Unknown	
Monument type	None	
Significant finds	None	
PROJECT LOCATION		
Site location	Chatham Docks, Medway, Kent	
Study area	0.76ha	
Site co-ordinates (8 Fig Grid Reference)	TQ 7697 6977	
PROJECT CREATORS		
Name of organisation	Cotswold Archaeology (CA)	
Project Brief originator	-	
Project Design (WSI) originator	CA	
Project Manager	[redacted]	
Project Supervisor	[redacted]	
PROJECT ARCHIVES (Accession no. *)		
Physical	n/a	None
Paper	tbc	Site archive
Digital	Kent HER	Report, digital photographs
BIBLIOGRAPHY		
CA (Cotswold Archaeology) 2012 *Tunnel Segment Manufacturing and Transhipment Facility, Chatham Docks, Medway: Archaeological Watching Brief.* CA typescript report **12134**		



N

site

Alluvium

0 1km

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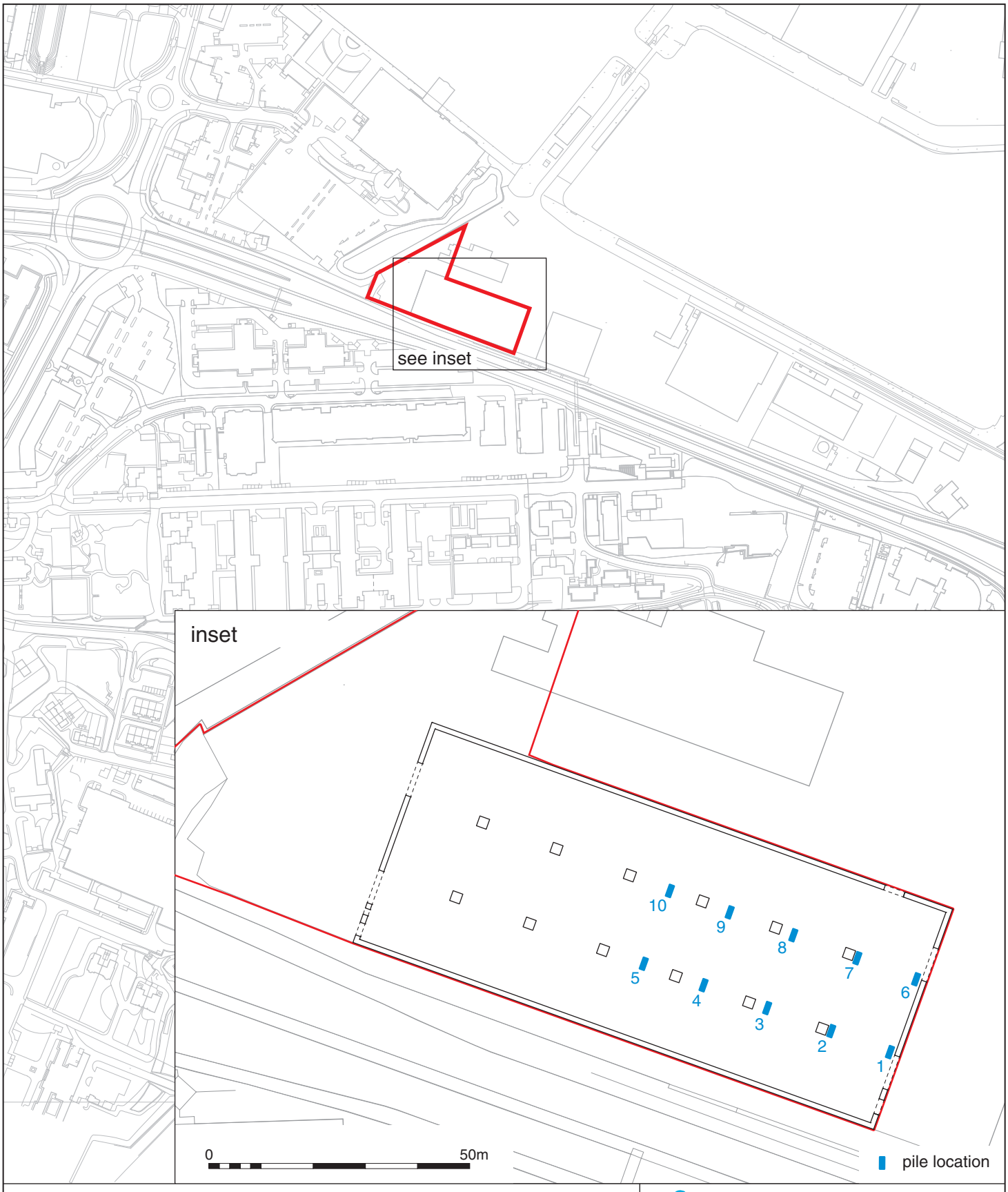
PROJECT TITLE

Chatham Docks, Kent

FIGURE TITLE

Site location plan

PROJECT NO.	660032	DATE	12-06-2012	FIGURE NO.
DRAWN BY	IA	REVISION	00	1
APPROVED BY	PJM	SCALE@A4	1:25,000	



N

site

0 250m

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PROJECT TITLE
Chatham Docks, Kent

FIGURE TITLE
Pile location plan

PROJECT NO.	660032	DATE	12-06-2012	FIGURE NO.
DRAWN BY	IA	REVISION	00	2
APPROVED BY	PJM	SCALE@A4	1:5000 & 1:1000	

3

3. **Interior of tunnel segment, main factory building looking north-west**

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PROJECT TITLE
Chatham Docks, Kent

FIGURE TITLE
Photograph

PROJECT NO.	**660032**	*DATE*	**12-06-2012**	*FIGURE NO.*
DRAWN BY	**IA**	*REVISION*	**00**	**3**
APPROVED BY	**PJM**	*SCALE@A4*	**N/A**	

4

4. **Arisings from Pile 8**

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PROJECT TITLE
Chatham Docks, Kent

FIGURE TITLE
Photograph

PROJECT NO.	**660032**	*DATE*	**12-06-2012**	*FIGURE NO.*
DRAWN BY	**IA**	*REVISION*	**00**	**4**
APPROVED BY	**PJM**	*SCALE@A4*	**N/A**	