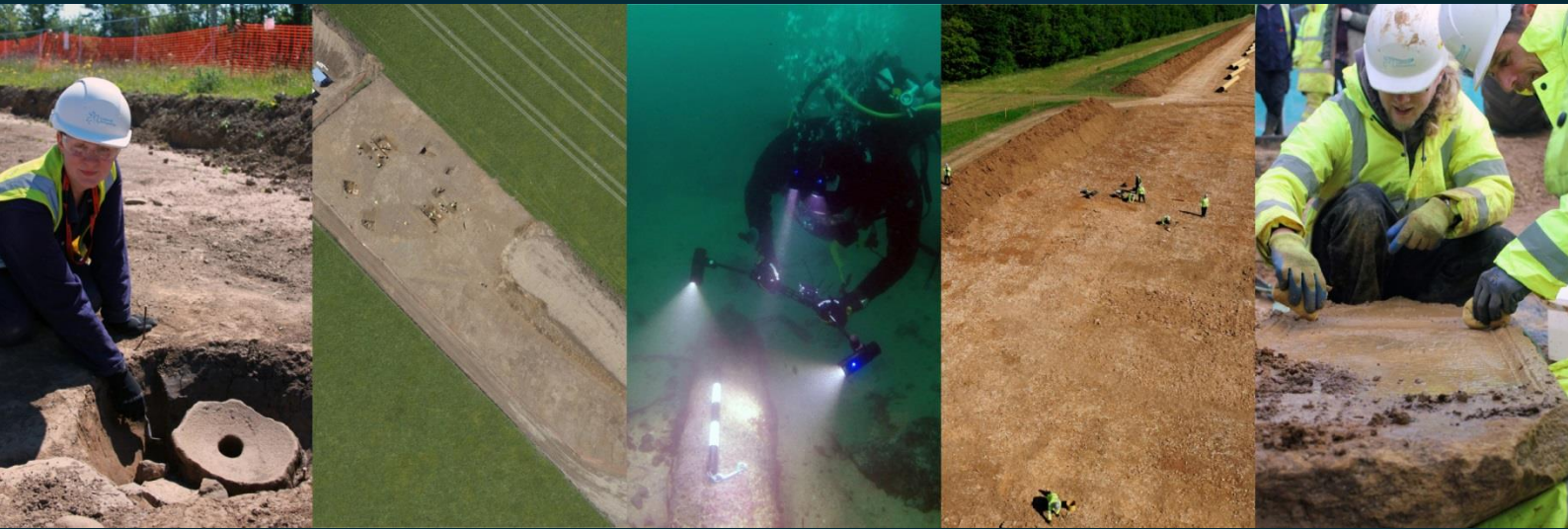


Final Effluent Rising Main Swanscombe Kent

Archaeological Watching Brief



for
Metropolitan Infrastructure Limited

on behalf of
Independent Water Networks Limited (IWNL)

CA Project: 770693
CA Report: 18096

January 2018



Final Effluent Rising Main Swanscombe Kent

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A	14.03.18	JCC	Adam Howard	Internal review	General Edit	Richard Greatorex

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SUMMARY

Project Name: Final Effluent Rising Main
Location: Swanscombe, Kent
NGR: 559575 175526
Type: Watching Brief
Date: 09-10 January 2018
Planning Reference: DA/15/887/EC
SMC:
Location of Archive: Dartford Borough Museum
Accession Number:
Site Code: WWT 18

An archaeological watching brief was undertaken by Cotswold Archaeology during investigative geotechnical groundwork at the outfall section associated with the construction of a 1.2km surface water/wastewater pipeline (Final Effluent Rising Main) running from the tunnel at Craylands Lane in the south-west, to the River Thames in the north (Swanscombe, Kent).

No features or deposits of archaeological interest were observed during groundworks, and no significant artefactual material pre-dating the post-medieval period was recovered. An initial walkover of the intertidal zone was also undertaken at low tide but no significant *'in situ'* timbers were identified.



1. INTRODUCTION

- 1.1 In January 2018 Cotswold Archaeology (CA) carried out an archaeological watching brief for the Metropolitan Infrastructure Limited on behalf of the Independent Water Networks Limited (IWNL) at the Final Effluent Rising Main, Swanscombe, Kent centred on National Grid Reference (NGR) 559575 175526 (Figure 1). The watching brief was undertaken to fulfil a condition attached to a planning consent for the construction of a 1.2km surface/wastewater pipeline running from the tunnel at Craylands Lane at the south-west, to the River Thames in the north (Planning ref: DA/15/887/EC). These initial works were to monitor some geotechnical pits and have a geo-archaeological review of geotechnical pits and bore holes.
- 1.2 The watching brief was carried out in accordance with a brief prepared by Simon Mason, the Principal Archaeological Officer and archaeological advisor to the Kent County Council (KCC), and with subsequent consultation with Dr Francis Wenban-Smith, Palaeolithic expert based in the Department of Archaeology, University of Southampton and detailed *Written Scheme of Investigation* (WSI) produced by CA (2018) and approved by the KCC acting on the advice of Simon Mason. The fieldwork also followed *Standard and guidance: Archaeological watching brief* (CIfA 2014).

The site

- 1.3 The Site lies on an area of higher ground on the south side of the Thames Estuary, 2km east of the Dartford crossing within an area of 0.21ha. Here, the south side of the Thames is defined by two large flood-defence banks which vary in level from 1-11m above Ordnance Datum (aOD). The route for the proposed pipeline crosses London Road roundabout in the south, and continues along Tiltman Avenue, crossing an area of woodland before reaching the River Thames in the north where the current outfall is planned.
- 1.4 The underlying geology of the Site comprises bedrock of Seaford Chalk Formation, laid down approximately 89 to 71 million years ago during the Cretaceous Period. Superficial deposits recorded within the Site comprise alluvium in the north-west and a band of Head (i.e. clay, silt, sand and gravel) deposit covering the environs around the roundabout on Manor Way. These superficial deposits were formed during the

Quaternary Period, approximately 3 to 2 million years ago, and are associated with a local environment previously dominated by rivers and subaerial slopes (BGS 2017).

2. ARCHAEOLOGICAL BACKGROUND

2.1 An archaeological desk-based assessment by Cotswold Archaeology (CA) was carried out on the Site in 2017 and its findings are summarised below.

Prehistoric

2.2 The Site is situated in a key area for Lower and Middle Palaeolithic remains in Britain. The Middle Pleistocene Boyn Hill/Orsett Heath Formation is present immediately to the north of Eastern Quarry, underlying Swanscombe. This Formation is preserved on the south side of the Lower Thames as an intermittent east–west trending series of deposits from Dartford Heath through Dartford, Stone, Greenhithe and Swanscombe to Northfleet.

2.3 Lower Palaeolithic remains comprising flint handaxes, cores, waste flakes and faunal remains have been found in situ at numerous sites in this Formation (Wymer 1968; Wessex Archaeology 1993; Wymer 1999). The most important site is Barnfield Pit (Fig. 3, 1), which is the old chalk pit immediately to the north of Eastern Quarry through which the Craylands Gorge tramway passes. Here, as well as abundant lithic artefacts and faunal remains (many from undisturbed palaeo-landsurfaces), three conjoining fragments of early human skull were recovered (the ‘Swanscombe skull’), classified as *Homo heidelbergensis*. The Barnfield Pit sequence (Conway 1996) therefore provides a reference framework not just for the regional Lower Palaeolithic, but also for the national picture (Table 3.1).

2.4 There is also evidence for the Late Upper Palaeolithic (c. 12,000 BP) remains in the area. Several distinctive Long Blade artefacts (a large flint blade and a core) were collected as surface finds from the Swanscombe area by Henry Stopes in the late 19th century, over c. 790m to the east, 1.6km to the south-east and 1.7km south-west of the Site (Wenban-Smith 2004).

Romano-British

2.5 A number of Roman remains were recorded in the vicinity of Ingress Abbey, c. 300m south-west of the Site. During late 20th century, Roman-period ditches were excavated and suggested to possibly have bound a settlement, either military or

domestic in character, and substantial building material was recorded in the fills. Further Roman remains include a Roman cremation urn c. 430m to the south-west of the Site, and a denehole or ritual shaft containing large quantities of animal bone, human remains and pottery (CA 2017).

- 2.6 Evidence of known settlement activity has also been recorded within the wider environs, at Northfleet c. 1.8km and Vagniacis c. 2.5km south-east of the Site. Vagniacis, a Scheduled Monument and small Roman town, is situated on the Roman Road (Watling Street) running from the London (Londinium) to Dover (Dubis), c. 2.3km south of the Site (List Entry no. 1005140; Museum of London Archaeology n.d.).

Medieval

- 2.7 Although there is no known evidence of medieval activity within the Site, when Dartford Priory was established by Edward III in 1363, and he was endowed with a farm called 'Ingrycy' (later known as Ingress Abbey) located 460m south-west of the Site (CA 2017).

Post-Medieval to Modern

- 2.8 The post-medieval and modern period saw large scale development of the surrounding landscape, with housing developments extending out from the main cores in all directions, and along the seafront. Ingress Abbey, c. 460m south-west of the Site, was subject to alteration and developed into an 18th century estate with associated parkland. Evidence of occupation until its decline in the 20th and 21st century was recorded during investigations by AOC Archaeology in the early 21st century.
- 2.9 By the end of the 19th century, much of the marshland within Swanscombe that had been used for grazing dairy cattle and livestock since at least the 16th century had been drained for arable cropping. Industries developed, including paper mills (notably Empire Mills originally known as Ingress Abbey Paper Mills), chalk extraction and cement works, and new transport links, including road, tram and rail, facilitated the movement of both people and goods.
- 2.10 There are also many records relating to World War II. The east Kent Coastline was heavily defended against possible invasion by German forces. Evidence of these

defences are scattered across the landscape and within the study area include battle headquarters, air raid shelters/tunnels and a temporary mortuary.

3. AIMS AND OBJECTIVES

3.1 The objectives of the archaeological works were:

- to monitor groundworks, and to identify, investigate and record all significant buried archaeological deposits revealed on the site during the course of the development groundworks;
- geo-archaeological assessment of geo-technical bore holes and test pits
- at the conclusion of the project, to produce an integrated archive for the project work and a report setting out the results of the project and the archaeological conclusions that can be drawn from the recorded data.

4. METHODOLOGY

4.1 The fieldwork followed the methodology set out within the WSI (CA 2018). An archaeologist was present during intrusive groundworks comprising a 2m x 2m observation pit (**Trench 1**) in the immediate flood defence to the river Thames and a 2m x 3m observation pit (**Trench 2**) 14m to the south of this (Figure 2).

4.2 Where archaeological deposits were encountered written, graphic and photographic records were compiled in accordance with CA Technical Manual 1: *Fieldwork Recording Manual*.

4.3 The archive and artefacts from the evaluation are currently held by CA at their offices in Andover. Subject to the agreement of the legal landowner will be deposited with Dartford Borough Museum under accession number (TBC), along with the site archive. A summary of information from this project, set out within Appendix C, will be entered onto the OASIS online database of archaeological projects in Britain.

5. RESULTS (FIGURES 2-4)

Stratigraphy

- 5.1 The natural geological substrate (**205**) consisting of Chalk bedrock was revealed in **Trench 2** at a depth of 2.1m below present ground level. This was overlain by dark bluish grey and black humic silty sand with inclusions of chalk and CBM (**204**) measuring 0.5m in thickness, which was in turn sealed by 1.45m of dark bluish-grey (**203**) and mid yellowish-brown clays (**201, 202**) before being overlain by 0.05m of topsoil (**200**). Only made ground was revealed in **Trench 1 (100)** to a depth of more than a metre.
- 5.2 No features or deposits of archaeological interest were observed during groundworks and, despite visual scanning of spoil, no significant artefactual material pre-dating the post medieval period was recovered.

6. THE FINDS

- 6.1 Artefactual material recovered from the evaluation is listed in Appendix B and discussed further below. Finds of a modern date will not be retained.

CBM

- 6.2 Two fragments of ceramic building material were recovered from two deposits. One probable drainpipe fragment, recovered from 'pond' layer **204**, is of post-medieval or modern date (late 18th century onwards). Of similar dating was a fragment of tile, buff coloured and with moulded keying on one face, recovered from redeposited clay layer **201**.

7. DISCUSSION

- 7.1 Despite the archaeological potential of the application area (see archaeological background above) the watching brief identified no archaeological remains within the area of observed groundworks. The absence of archaeological deposits might be partly a product of immediate flooding at the level of the chalk, but also that creation of the flood defence may have removed archaeological contexts, such that the date of the strata above the chalk is at its earliest post-medieval and probably all re-

deposited. It may also be that significant archaeological remains do not extend as far as or were not exposed by the development footprint.

- 7.2 The geo-archaeological assessment report of the geotechnical investigations (ARCA 2018) confirmed no archaeological deposits within the 16 boreholes and two trial pits. The made ground varied in depth between 7.5m (CP02) and 4.6m (CP03) below ground level. Within this watching brief **Trench 1** only contained made ground and **Trench 2** encountered made ground which was 2.1m thick over the chalk bedrock. Again, the construction of the flood defences may have removed any existing archaeology.
- 7.3 Humic layer **204** is likely to be associated with a pond and drainage basin that existed between the 1950s and 60s, visible on old maps before the flood defence was extended south.

8. CA PROJECT TEAM

Fieldwork was undertaken by Jeremy Clutterbuck. The report was written by Jeremy Clutterbuck. The finds and biological evidence reports were written by Katie Marsden. The illustrations were prepared by Rosanna Price. The archive has been compiled by Richard Paxford and prepared for deposition by Hazel O'Neill. The project was managed for CA by Oliver Good.

9. REFERENCES

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APPENDIX A: CONTEXT DESCRIPTIONS

Trench No	Context	Type	Context Interpretation	Context Description	Length (m)	Width (m)	Depth/thickness (m)
1	100	Layer	Made Ground	Mid brown and dark grey sandy clay with patches of chalk, 50% ≤600mm concrete blocks	2	2	1
2	200	Layer	Topsoil	Dark brownish-grey clayey silt	3	2	0.05
2	201	Layer	Redeposited Clay?	Mid yellowish-brown silty clay with rare charcoal flecks and chalk flecks, also bioturbation	3	2	0.61
2	202	Layer	Redeposited Clay?	Mid yellowish brown looser silty clay	3	2	0.44
2	203	Layer	Redeposited Clay?	Dark bluish-grey clay	3	2	0.4
2	204	Layer	Pond remains?	Dark bluish grey and black humic silty sand with moderate chalk inclusions and occasional CBM	3	2	0.5
2	205	Layer	Natural	Chalk	3	2	>2.1

APPENDIX B: THE FINDS

Context	Class	Description	Ct.	Wt.(g)
201	CBM	curved, probable drain	1	17
204	CBM	tile	1	54

APPENDIX C: OASIS REPORT FORM

PROJECT DETAILS	
Project Name	Final Effluent Rising Main, Swanscombe, Kent
Short description	An archaeological watching brief was undertaken by Cotswold Archaeology during groundworks associated with the construction of a 1.2km wastewater pipeline running from the tunnel at Craylands lane at the south-west, to the River Thames in the north at the Final Effluent Rising Main, Swanscombe, Kent. No features or deposits of archaeological interest were observed during groundworks, and no significant artefactual material pre-dating the post-medieval period was recovered.
Project dates	09-10 January 2018
Project type	Watching Brief
Previous work	Desk-Based Assessment (CA 2017)
Future work	Unknown
PROJECT LOCATION	
Site Location	Final Effluent Rising Main, Swanscombe, Kent, DA9 9XN
Study area (M ² /ha)	0.21ha
Site co-ordinates	559575 175526
PROJECT CREATORS	
Name of organisation	Cotswold Archaeology
Project Brief originator	Simon Mason, Principal Archaeological Officer, Kent County Council
Project Design (WSI) originator	Cotswold Archaeology
Project Manager	Oliver Good
Project Supervisor	Jeremy Clutterbuck
MONUMENT TYPE	None
SIGNIFICANT FINDS	None
PROJECT ARCHIVES	Dartford Borough Museum / Accession no.
Physical	ceramics
Paper	Context sheets, matrices etc
Digital	Database, digital photos etc
BIBLIOGRAPHY	
CA (Cotswold Archaeology) 2018 Final Effluent Rising Main, Swanscombe, Kent: <i>Archaeological Watching Brief</i> CA Report No. 18096	

APPENDIX D: GEO-ARCHAEOLOGICAL ASSESSMENT

March 2018

Report Number: 1718_9

**FINAL EFFLUENT RISING
MAIN, SWANSCOMBE,
KENT:
GEOARCHAEOLOGICAL
REPORT**

Prepared for Cotswold
Archaeology

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Version	Date	Status*	Prepared by	Author's signature	Approved by	Approver's Signature
01	12/03/18	E	Nick Watson	<i>N.M. Watson</i>		

*I – Internal draft; E – External draft; F - Final

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FIGURE LIST

Figure 1. Plan of the site. The boreholes and trial pit that are shown in the lithostratigraphic cross section (Figure 2 below) are marked in red. (Adapted figure courtesy of CET. Infrastructures).	4
Figure 2. Lithostratigraphic cross-section. Vertical exaggeration x7. ..	6

SUMMARY

In January 2018, at the request of Cotswold Archaeology Ltd, ARCA reviewed the ground investigation work (borehole cores and trial pits) carried out at the site of the Ebbsfleet Outfall, Eastern Quarry which is part of the Final Effluent Rising Main, Swanscombe, Kent. Made Ground outcropped in all the boreholes and trial pits. A maximum of 7.50m of Made Ground was recorded in CP02, the base of the core was at an elevation of -1.11m OD. The minimum logged thickness of Made Ground was 4.60m where it overlay fine grained Alluvium in CP03. Alluvium was recovered in two boreholes at a minimum elevation of +0.08m OD (5.10m bgl) in CP01. No deposits of archaeological significance were present on the site.

1 INTRODUCTION

- 1.1 On 17th January 2018, at the request of Richard Greatorex of Cotswold Archaeology Ltd, ARCA visited CET. Infrastructure at Northdown House, Ashford Road, Harrietsham, Maidstone, Kent, ME17 1QW to inspect superficial geological strata recovered from a geotechnical ground investigation (boreholes and trial pits) at the Ebbsfleet Outfall, Eastern Quarry, henceforth known as the 'site'. The ground investigation was carried out by Erith Contractors Ltd. The site is centred at NGR 559607 175636.
- 1.2 Independent Water Networks Limited (IWNL) are proposing to construct a 1.2km waste water pipeline (outfall) that will terminate at the River Thames in the area of the site. The area of the site runs approximately 65m north to south from the north embankment on the foreshore of the River Thames to the southern side of the south embankment.
- 1.3 Erith Contractors Ltd drilled three boreholes to a maximum of 7.5m below ground level (bgl) by the cable and percussion method (CP01, CP02 and CP03). A further 13 boreholes were drilled to a maximum of 5m bgl by the windowless sampling method (WSA1–WSA3, WSB2, WSC2, WSD2, WSE1–WSE3, WSF2, WSG2 and WSH1–WSH3), and two trial pits (OP01 and OP02) were excavated to a maximum of 2.5m bgl. The locations (see Figure 1 below) and the results of this work are listed in Appendices 1 and 2.
- 1.4 This document presents the results of the ground investigation work. It is arranged as follows: first an account is provided of the local geology and site context, then the test pit and boreholes are described, followed by a discussion of the results.

2 GEOLOGY AND SITE CONTEXT

- 2.1 The British Geological Survey (BGS 1:50,000, 2016) map the site as located on Made Ground (Undivided). This is an artificial deposit of variable composition and dates to the Holocene Epoch (11.4ka to the present). It overlies Alluvium predominantly composed of silt that also dates to the Holocene. The bedrock is composed of the Seaford Chalk Formation that dates to the Upper Cretaceous (100.5 – 66Ma).

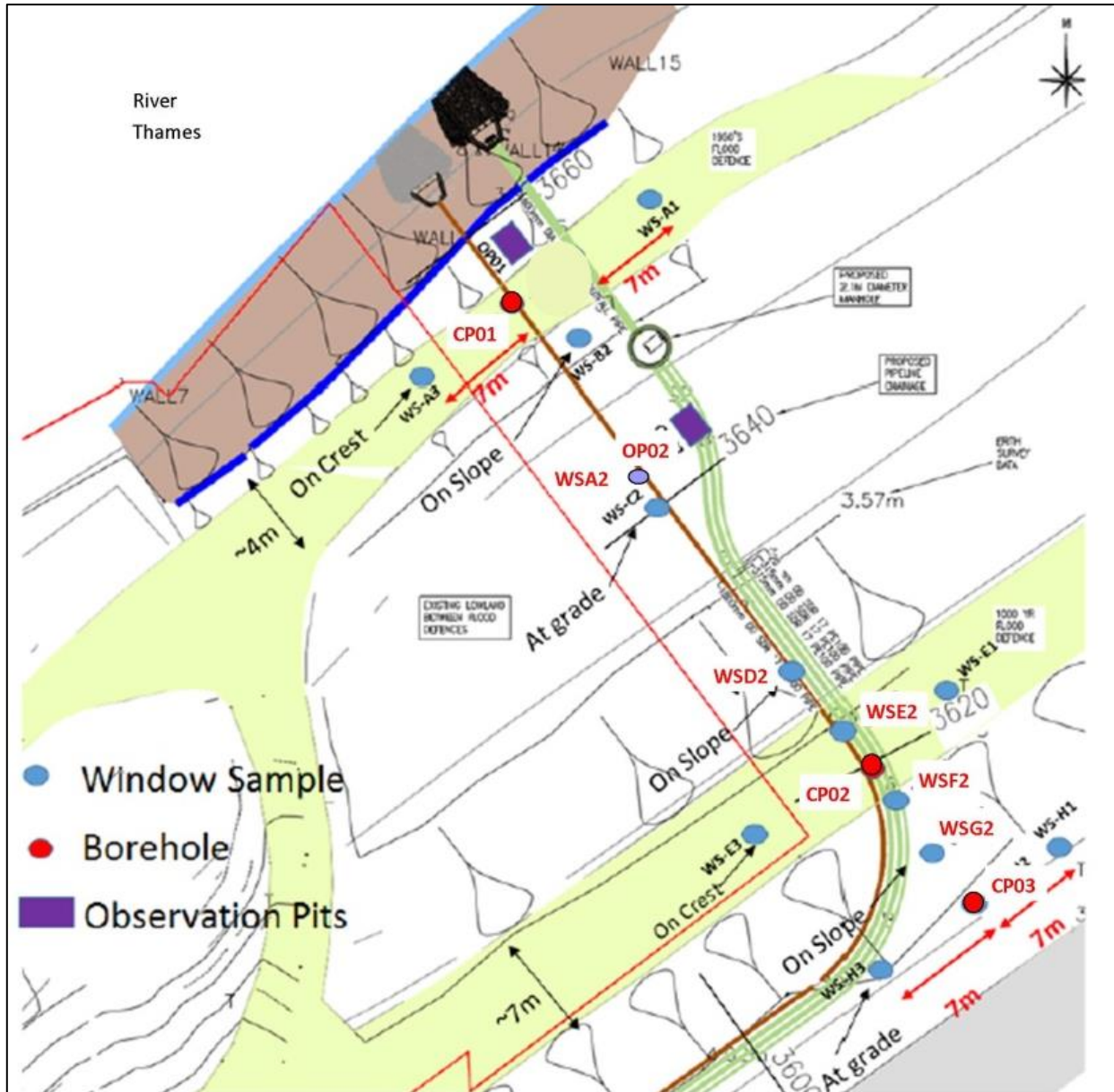


Figure 1. Plan of the site. The boreholes and trial pit that are shown in the lithostratigraphic cross section (Figure 2 below) are marked in red. (Adapted figure courtesy of CET. Infrastructures).

3 RESULTS

The stratigraphic units identified from youngest to oldest are:

1. Made Ground (topsoil developed in the top of the unit)
2. Alluvium (silt/clay).

These units are discussed below in stratigraphic order (see Figure 2).

3.1 Alluvium

- 3.1.1 The Alluvium was recorded at +0.08m OD (5.10m bgl) and at -0.53m OD (4.6m bgl) in CP01 and CP03, respectively. No other borehole recorded the Alluvium. The lithology was a dark olive grey (Munsell 5 Y 3/2) soft silt/clay with rare sand-sized fibres of plant matter and occasional grains and granules of rock of unknown lithology including rare, possible ceramic building material (cbm). The maximum thickness of the Alluvium was 2.85m in CP03.
- 3.1.2 Made Ground overlay the Alluvium. In CP03 a membrane marks the boundary.

3.2 Made Ground

- 3.2.1 Made Ground was recorded in all the boreholes and trial pits. It outcropped in all the boreholes. A maximum thickness of 7.50m was recorded in CP02 and a minimum thickness of 1m was recorded in OP01, in neither case was the base of the deposit reached. The minimum logged thickness of Made Ground was 4.60m recorded overlying the Alluvium in CP03, the base of the Made Ground was at an elevation of -0.53m OD. Brick and sandstone were recorded in CP02 at the base of the core. The lithology included clay mixed with sand and gravels with clasts of flint, chalk, concrete, clinker, brick, granite and sandstone.
- 3.2.2 Topsoil was tentatively recorded in eight boreholes (OP01, WSH3, WSG2, WSB2, WSA2, WSA1, CP03 and CP01). It had a minimum thickness of 0.05m in OP01 and a maximum thickness of 0.30m in WSH3, WSA1, and CP03.

4 CONCLUSIONS

- 4.1 Made ground outcropped in all the boreholes and was recorded to a depth of 7.50m bgl (-1.11m OD) in CP02 located on the crest of the southern embankment. At grade, between the two embankments, Made Ground was logged to a depth of 4.4m bgl (-0.81m OD). The least amount of Made Ground determined to be overlying the Alluvium was 4.60m in CP03. Alluvium was only recovered in two boreholes and sub-cropped at a minimum depth of 5.10m bgl (+0.08m OD) in CP01.
- 4.2 No deposits of archaeological significance were present on the site.

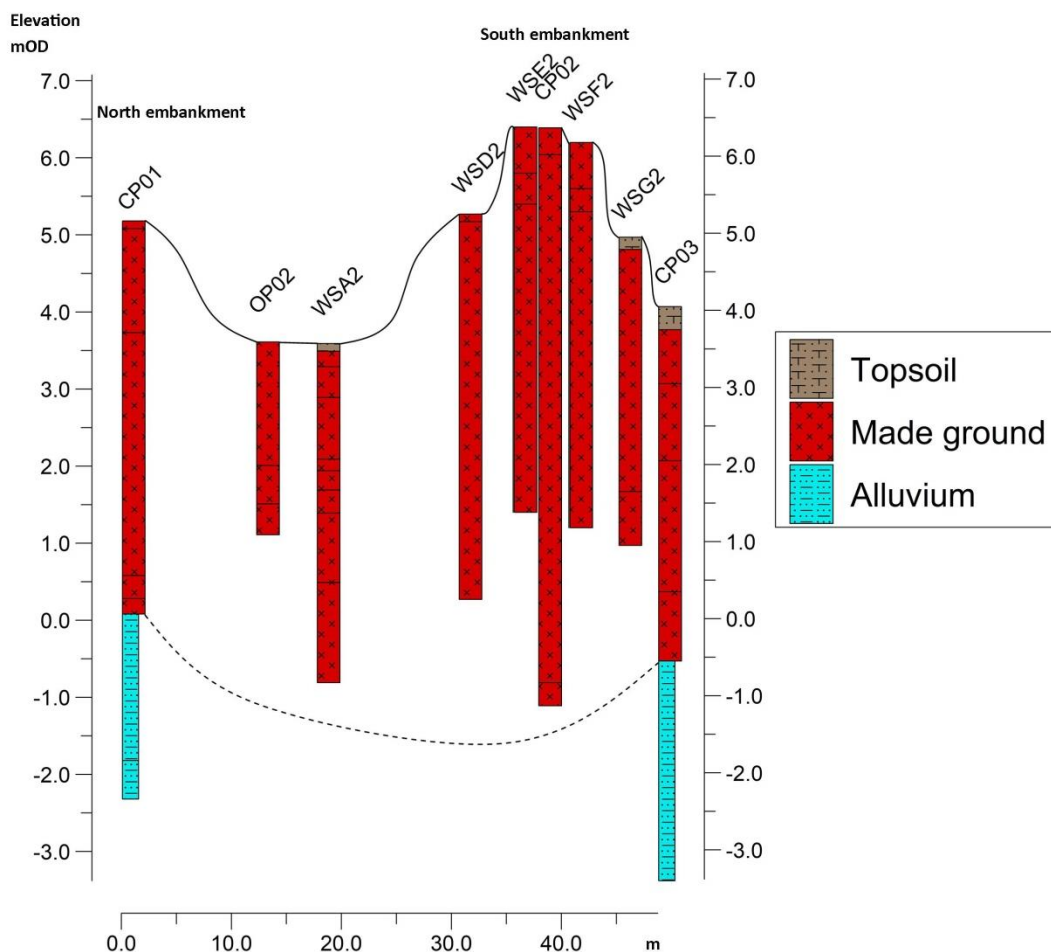


Figure 2. Lithostratigraphic cross-section. Vertical exaggeration x7.

5 ACKNOWLEDGMENTS

ARCA would like to thank Oliver Tatham Geotechnical Engineer at CET. Infrastructure; Richard Greatorex of Cotswold Archaeology Ltd; and Dr Eleanor Standley of the University of Oxford for their help with the project.

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APPENDIX 1 BOREHOLE AND TEST PIT LOCATIONS

Bore	Easting	Northing	Elevation
CP01	559554.000	175535.000	5.180
CP02	559575.000	175507.000	6.390
CP03	559581.000	175498.000	4.070
WSA1	559562.000	175541.000	5.130
WSA2	559562.500	175522.700	3.590
WSA3	559548.1	175530.4	4.94
WSB2	?	?	4.4
WSC2	559562	175523	3.56
WSD2	559571	175513	5.27
WSE1	559580	175511	6.38
WSE2	559574	175509	6.4
WSE3	559568	175503	6.39
WSF2	559577.000	175505.000	6.200
WSG2	559579.000	175501.000	4.970
WSH1	559587	175502	4.060
WSH3	559576	175494	4.000
OP01	?	?	4.730
OP02	559564	175528	3.610

APPENDIX 2 LITHOLOGY (AS RECORDED BY ERITH CONTRACTORS LTD)

Bore	Top	Base	Lithology	Comments
CP01	0.00	0.10	Topsoil	Dark brown slightly gravelly slightly sandy SILT. Gravel is sub-rounded to rounded fine to coarse flint. Sand is fine to coarse. (TOPSOIL?)
CP01	0.10	1.45	Made ground	Brown mottled orangish brown slightly gravelly fine to coarse SAND. Gravel is sub-rounded to rounded, fine to medium flint. (MADE GROUND)
CP01	1.45	4.60	Made ground	Interbedded strata of structureless CHALK recovered as cream mottled brown melange comprising 10% - 20% angular to sub-angular, fine to coarse chalk gravel set in 80% - 90% slightly sandy chalk silt matrix. Sand is Fine to coarse. Occasional gravel of sub-rounded to rounded flint interbedded with dark grey mottled cream, slightly sandy slightly gravelly chalky CLAY. Gravel is angular to sub angular, fine to coarse chalk and flint. Sand is fine to coarse. (MADE GROUND)
CP01	4.60	4.90	Made ground	Soft, dark bluish grey slightly gravelly CLAY. Gravel is angular fine chalk. (MADE GROUND)

CP01	4.90	5.10	Made ground	Structureless CHALK recovered as cream mottled brown melange comprising 70% - 80% angular to sub-angular fine to coarse chalk gravel set in a 20% - 30% slightly sandy, chalk clay matrix. Sand is fine to coarse. Occasional gravel content of sub-rounded to rounded flint. (MADE GROUND)
CP01	5.10	7.00	Alluvium	Soft, dark bluish grey, slightly gravelly CLAY. Gravel is angular, fine chalk.
CP01	7.00	7.50	Alluvium	Soft, dark blue grey, slightly gravelly CLAY. Gravel is angular, fine chalk. End of BH
CP02	0.00	0.35	Made ground	Slightly sandy angular fine to coarse granite and concrete GRAVEL. Sand is fine to coarse. Frequent cobbles of angular concrete and granite. Occasional boulder content of angular concrete. (MADE GROUND)
CP02	0.35	7.20	Made ground	Firm brown mottled orange brown becoming greyish brown CLAY. Rare fine orangish brown and brown sand pockets. Slightly sandy, locally slightly gravelly. Sand is fine to coarse. Gravel is sub-angular to sub-rounded fine to coarse flint. (MADE GROUND)

CP02	7.20	7.50	Made ground	Firm dark grey slightly sandy slightly gravelly CLAY. Gravel is angular fine to coarse chalk brick and sandstone . Sand is fine to coarse. (MADE GROUND) End of BH
CP03	0.00	0.30	Topsoil	Dark brown slightly gravelly silty fine to coarse SAND. Gravel is angular to sub-rounded fine to coarse flint, chalk, sandstone and brick. (TOPSOIL?)
CP03	0.30	1.00	Made ground	Dark brown mottled brown clayey slightly gravelly fine to coarse SAND. Gravel is angular to rounded fine to coarse flint, brick, concrete and chalk. (MADE GROUND)
CP03	1.00	2.00	Made ground	Firm brown mottled orangish brown CLAY. Rare pockets of fine sand. (MADE GROUND)
CP03	2.00	3.70	Made ground	Structureless CHALK recovered as cream mottled brown melange comprising 70% - 80% angular to sub-angular fine to coarse chalk gravel set in a 20% - 30% slightly sandy chalk clay matrix. Sand is fine to coarse. Occasional gravel of sub-rounded to rounded flint. (MADE GROUND)

CP03	3.70	4.60	Made ground	Grey slightly sandy sub-rounded and rounded fine to coarse flint GRAVEL. Membrane at the base. (MADE GROUND)
CP03	4.60	7.45	Alluvium	Firm dark blue grey CLAY with high organic matter content. Slightly sandy, locally slightly gravelly. Sand is fine to coarse. Gravel is sub-angular to sub-rounded flint. End of BH
WSA1	0.00	0.30	Topsoil	Dark brown slightly gravelly slightly sandy SILT. Gravel is sub-rounded to rounded, fine to coarse flint. Sand is fine to coarse. (TOPSOIL?)
WSA1	0.30	0.50	Made ground	Brown mottled orange brown slightly gravelly fine to coarse SAND. Gravel is sub-rounded to rounded, fine to medium flint. (MADE GROUND)
WSA1	0.50	0.70	Made ground	Grey and white mottled black gravelly clayey fine to coarse SAND. Gravel is angular to sub-angular fine to coarse chalk and clinker. (MADE GROUND)
WSA1	0.70	1.35	Made ground	Firm brown mottled orange brown slightly sandy slightly gravelly CLAY. Rare fine sand pockets. (MADE GROUND)

WSA1	1.35	1.45	Made ground	Black slightly gravelly fine to coarse ashy SAND. Gravel is sub-angular to sub-rounded clinker. (MADE GROUND)
WSA1	1.45	2.30	Made ground	Loose white mottled grey and black clayey slightly sandy angular fine to coarse chalk, concrete, flint and brick GRAVEL. Sand is fine to coarse. (MADE GROUND)
WSA1	2.30	3.20	Made ground	Very loose black mottled white and grey clayey slightly gravelly fine to coarse SAND. Gravel is angular to sub-angular fine to coarse brick, concrete, clinker and chalk. (MADE GROUND)
WSA1	3.20	4.00	Made ground	Soft locally firm dark grey mottled white slightly sandy CLAY. Sand is fine. (MADE GROUND) End of BH
WSA2	0.00	0.10	Topsoil	Dark brown slightly gravelly slightly sandy SILT. Gravel is sub-rounded to rounded fine to coarse flint. Sand is fine to coarse. (TOPSOIL?)

WSA2	0.10	0.30	Made ground	Brown mottled orange brown slightly gravelly fine to coarse SAND. Gravel is sub-rounded to rounded, fine to medium flint. (MADE GROUND)
WSA2	0.30	0.70	Made ground	Structureless CHALK recovered as a cream mottled brown melange comprising 70% - 80% angular to sub-angular fine to coarse chalk GRAVEL set in a 20% - 30% slightly sandy chalk clay matrix. Sand is fine to coarse. Occasional gravel of sub-rounded to rounded flint. (MADE GROUND)
WSA2	0.70	1.50	Made ground	Firm, brown mottled orange brown, slightly gravelly CLAY. Gravel is rounded, fine flint. Rare fine sand pockets. (MADE GROUND)
WSA2	1.50	1.65	Made ground	Medium dense structureless CHALK recovered as a cream mottled brown melange comprising 70% - 80% angular and sub-angular fine to coarse chalk gravel set in a 20% - 30% slightly sandy chalk clay matrix. Sand is fine to coarse. Occasional gravel of subrounded to rounded flint. (MADE GROUND)

WSA2	1.65	1.90	Made ground	Loose black mottled brown slightly gravelly fine to coarse SAND to sandy GRAVEL. Gravel is angular fine to coarse brick and clinker. Rare clay lenses. (MADE GROUND)
WSA2	1.90	2.20	Made ground	Structureless CHALK recovered as a cream mottled brown melange comprising 70% - 80% angular to sub-angular fine to coarse chalk gravel set in a 20% - 30% slightly sandy chalk clay matrix. Sand is fine to coarse. (MADE GROUND)
WSA2	2.20	3.10	Made ground	Loose black mottled red brown gravelly fine to coarse SAND. Gravel is angular fine to coarse brick, sandstone, clinker and chalk. Rare bands of chalk gravel. (MADE GROUND)
WSA2	3.10	4.40	Made ground	Soft locally firm, dark grey mottled white, slightly sandy CLAY. Sand is fine. (MADE GROUND) End of BH
WSA3	0.00	0.10	Made ground	Dark brown slightly gravelly slightly sandy SILT. Gravel is sub-rounded to rounded fine to coarse flint. Sand is fine to coarse. (MADE GROUND)

WSA3	0.10	0.35	Made ground	Black mottled white slightly gravelly clayey fine to coarse SAND. Gravel is angular fine to coarse chalk and flint. (MADE GROUND)
WSA3	0.35	0.50	Made ground	Structureless CHALK recovered as a cream mottled brown melange comprising 70% - 80% angular to sub-angular, fine to coarse chalk gravel set in a 20% - 30% slightly sandy, chalk clay matrix. Sand is fine to coarse. Occasional gravel of sub-rounded to rounded flint. (MADE GROUND)
WSA3	0.50	1.30	Made ground	Firm brown mottled grey brown slightly sandy CLAY. Sand is fine. (MADE GROUND)
WSA3	1.30	1.60	Made ground	Structureless CHALK recovered as a cream mottled brown melange comprising 70% - 80% angular to sub-angular fine to coarse chalk gravel set in a 20% - 30% slightly sandy chalk clay matrix. Sand is fine to coarse. Rare gravel of sub-rounded to rounded flint. (MADE GROUND)

WSA3	1.60	2.30	Made ground	Medium dense black gravelly fine to coarse ashy SAND and sandy SILT. Gravel is angular to sub-angular fine to coarse brick, clinker and chalk. Rare bands of chalk. Low cobble content of angular brick. (MADE GROUND)
WSA3	2.30	2.90	Made ground	Medium dense black gravelly fine to coarse ashy SAND and sandy SILT. Gravel is angular to sub-angular fine to coarse brick, clinker and chalk. Rare bands of chalk. Low cobble content of angular brick. (MADE GROUND)
WSA3	2.90	3.20	Made ground	Structureless CHALK recovered as a cream mottled brown melange comprising 70% - 80% angular to sub-angular fine to coarse chalk gravel set in a 20% - 30% slightly sandy chalk clay matrix. Sand is fine to coarse. (MADE GROUND)
WSA3	3.20	3.70	Made ground	Soft locally firm dark grey mottled white slightly sandy CLAY. Sand is fine. (MADE GROUND) End of BH
WSB2	0.00	0.10	Topsoil	Dark brown slightly sandy SILT. Sand is fine. (TOPSOIL?)

WSB2	0.10	0.50	Made ground	Firm dark brown slightly gravelly slightly sandy CLAY. Gravel is angular to sub-angular fine to coarse flint and brick. Sand is fine to coarse. (MADE GROUND)
WSB2	0.50	1.70	Made ground	Loose black mottled white gravelly clayey coarse SAND and silty, sandy Gravel. GRAVEL is angular fine to coarse chalk, clinker, brick and flint. White mottled brown angular chalk cobble between 0.80m to 1.00m. (MADE GROUND)
WSB2	1.70	2.20	Made ground	Very loose structureless CHALK recovered as a cream mottled brown melange comprising 70% - 80% angular to sub-angular fine to coarse chalk gravel set in a 20% - 30% slightly sandy chalk clay matrix. Sand is fine to coarse. Occasional gravel of sub-rounded to rounded flint. (MADE GROUND)
WSB2	2.20	3.00	Made ground	Black, clayey, fine to coarse SAND and gravelly slightly sandy SILT. Gravel is angular, fine and medium, clinker and rare brick. (MADE GROUND) End of BH

WSC2	0.00	1.50	Made ground	Soft becoming firm with depth brown CLAY. Rare fine orange brown sand pockets. (MADE GROUND)
WSC2	1.50	2.30	Made ground	Medium dense black mottled white and brown gravelly clayey fine to coarse SAND. Gravel is angular fine to coarse chalk, clinker and brick. (MADE GROUND)
WSC2	2.30	2.70	Made ground	Black mottled white clayey gravelly fine to coarse ashy SAND. Gravel is angular fine to medium chalk, flint and clinker. (MADE GROUND) End of BH
WSD2	0.00	0.10	Made ground	Soft dark brown mottled white slightly gravelly CLAY. Gravel is angular fine and medium chalk. (MADE GROUND)
WSD2	0.10	5.00	Made ground	Soft becoming firm with depth, brown CLAY. Rare fine orange brown sand pockets. Rare fine gravel. Becoming dark brown from 2.00m to 3.00m. (MADE GROUND)
WSE1	0.00	0.30	Made ground	Grey angular coarse granite GRAVEL. High cobble content of angular granite. (MADE GROUND)

WSE1	0.30	1.00	Made ground	Firm, brown mottled grey brown, slightly gravelly, slightly sandy CLAY. Gravel is angular, fine to coarse, granite, brick, chalk, flint and clinker. Sand is fine to coarse. (MADE GROUND)
WSE1	1.00	5.00	Made ground	Firm brown mottled orange brown CLAY. Rare fine sand pockets. Becoming grey brown below 2.20m. (MADE GROUND) End of BH
WSE2	0.00	0.60	Made ground	Brown mottled grey slightly sandy angular fine to coarse granite and concrete GRAVEL. Sand is fine to coarse. Numerous cobble of angular concrete and granite. Low boulder content of angular concrete. (MADE GROUND)
WSE2	0.60	1.00	Made ground	Firm dark brown, slightly sandy, slightly gravelly CLAY. Gravel is angular, fine to coarse, brick, chalk and granite. Sand is fine to coarse. (MADE GROUND)
WSE2	1.00	5.00	Made ground	Firm brown CLAY. Rare fine orange brown sand pockets. Becoming grey brown below 2.00m. (MADE GROUND)

WSE3	0.00	0.40	Made ground	Grey slightly sandy angular fine to coarse granite and concrete GRAVEL. Sand is fine to coarse. Numerous cobbles of angular concrete and granite. Rare boulder content of angular concrete. (MADE GROUND)
WSE3	0.40	1.00	Made ground	Firm dark brown slightly sandy slightly gravelly CLAY. Gravel is angular fine to coarse brick, chalk and granite. Sand is fine to coarse. (MADE GROUND)
WSE3	1.00	5.00	Made ground	Firm brown CLAY. Rare fine orange brown sand pockets. Becoming grey brown below 2.00m. (MADE GROUND) End of BH
WSF2	0.00	0.60	Made ground	Grey slightly sandy angular fine to coarse granite and concrete GRAVEL. Sand is fine to coarse. Numerous cobbles of angular concrete and granite. (MADE GROUND)
WSF2	0.60	0.90	Made ground	Firm dark brown slightly sandy slightly gravelly CLAY. Gravel is angular fine to coarse brick, chalk and granite. Sand is fine to coarse. (MADE GROUND)

WSF2	0.90	5.00	Made ground	Firm brown mottled orange brown CLAY. Rare fine orange brown sand pockets. Becoming grey brown mottled brown below 2.20m. (MADE GROUND)
WSG2	0.00	0.16	Topsoil	Grass over dark brown, slightly sandy, SILT. Sand is fine. (TOPSOIL?)
WSG2	0.16	3.30	Made ground	Firm becoming stiff below 2.00m, brown mottled orange brown CLAY. Rare orange brown fine sand pockets. (MADE GROUND)
WSG2	3.30	4.00	Made ground	Medium dense structureless CHALK recovered as a cream mottled brown, melange comprising 70% - 80% angular to sub-angular, fine to coarse chalk gravel set in a 20% - 30% slightly sandy, chalk clay matrix. Sand is fine to coarse. Medium gravel content of sub-rounded and rounded flint. (MADE GROUND)
WSH1	0.00	0.30	Made ground	Dark brown slightly gravelly, silty, fine to coarse SAND. Gravel is angular to sub-rounded, fine to coarse, flint, chalk, sandstone and brick. (MADE GROUND)

WSH1	0.30	0.90	Made ground	Brown mottled white, clayey gravelly, fine to coarse SAND. Gravel is angular to sub-angular, flint, chalk and brick. Rare low cobbles of angular to sub-angular chalk and flint. Rare metal fragments. (MADE GROUND)
WSH1	0.90	1.90	Made ground	Firm, brown mottled orange brown CLAY. Rare orange brown fine sand pockets. (MADE GROUND)
WSH1	1.90	3.00	Made ground	Loose structureless CHALK recovered as a cream mottled brown, melange comprising 70% - 80% angular to sub-angular, fine to coarse chalk gravel set in a 20% - 30% slightly sandy, chalk clay matrix. Sand is fine to coarse. Occasional gravel of sub-rounded to rounded flint. (MADE GROUND) End of BH
WSH3	0.00	0.30	Topsoil	Dark brown slightly gravelly silty fine to coarse SAND. Gravel is angular to sub-rounded fine to coarse flint, chalk, sandstone and brick. (TOPSOIL?)

WSH3	0.30	0.90	Made ground	Dark brown mottled orange brown slightly gravelly clayey fine to coarse SAND. Gravel is angular to sub-angular fine to coarse chalk, brick and flint. Rare cobble of angular concrete. (MADE GROUND)
WSH3	0.90	2.20	Made ground	Firm brown mottled orange brown, slightly sandy slightly gravelly CLAY. Rare fine orange brown sand pockets. (MADE GROUND)
WSH3	2.20	3.00	Made ground	Medium dense structureless CHALK recovered as a cream mottled brown, melange comprising 70% - 80% angular to sub-angular fine to coarse chalk gravel set in a 20% - 30% slightly sandy chalk clay matrix. Sand is fine to coarse. Occasional gravel of sub-rounded to rounded flint. (MADE GROUND) End of BH
OP01	0.00	0.05	Topsoil	Dark brown slightly sandy slightly gravelly SILT. Gravel is rounded fine flint. Sand is fine to coarse. (TOPSOIL?)
OP01	0.05	0.40	Made ground	Grey angular granite concrete and sandstone COBBLES and BOULDERS. (MADE GROUND)

OP01	0.40	0.80	Made ground	Firm, brown mottled orange brown locally grey brown, slightly sandy slightly gravelly CLAY. Gravel is sub-angular to rounded, fine to coarse flint, sandstone, brick and concrete. Sand s fine to coarse. (MADE GROUND)
OP01	0.80	1.00	Made ground	Firm greyish brown mottled orangish brown slightly gravelly slightly sandy CLAY. Gravel is angular to sub-angular fine to coarse concrete, brick, flint and sandstone. Sand is fine to coarse. (MADE GROUND) End of TP
OP02	0.00	1.60	Made ground	Soft becoming firm brown CLAY. Rare fine sand pockets. (MADE GROUND)
OP02	1.60	2.10	Made ground	Black slightly gravelly clayey fine to coarse SAND. Gravel is sub-angular to rounded fine to coarse brick, flint, chalk, clinker and sandstone. Rare cobbles of rounded flint. (MADE GROUND)
OP02	2.10	2.50	Made ground	Structureless CHALK recovered as cream mottled brown melange comprising 70% - 80% angular to sub-angular fine to coarse chalk gravel set in a 20% - 30% slightly sandy, chalk clay matrix. Sand is fine to coarse. Occasional cobbles of angular chalk. Occasional gravel and cobbles of sub-rounded to rounded flint. (MADE GROUND) End of BH

APPENDIX E: KCC SPEC B FOR ARCHAEOLOGICAL WATCHING BRIEFS

MITIGATION – ARCHAEOLOGICAL MONITORING WATCHING BRIEF

1. Introduction

- 1.1 Where archaeological potential is likely to be present or known to be present at a proposed development site, but believed to be of a character and significance not appropriate for mitigation through formal open-area excavation (or is agreed to be almost fully preservable *in situ* beneath a development site) an archaeological watching brief involving an experienced archaeologist monitoring the development and investigating and recording any remains revealed during groundworks, is often considered an appropriate method of mitigating the development impact. It may also be implemented as part of a wider programme of work, alongside an excavation on sites with variable archaeological potential or alongside buildings or earthworks recording for example.
- 1.2 During a watching brief, the priority for the investigation is on safely investigating and recording archaeological remains revealed within the confines of foundation and service trenches or otherwise exposed during a time-constrained development programme. If significant remains are discovered during this work, then it is often necessary to undertake additional work before development may continue in that area.
- 1.3 Key elements of a monitoring watching brief are:
- The careful monitoring of the site excavations with the developer using a flat-bladed machine bucket, excavating in shallow spits where possible. If modern, highly compacted or rubble deposits are being excavated then a toothed bucket may be used to remove these deposits.
 - Immediate examination of exposed surfaces while the uncovered surface is fresh. If groundworks are interrupted, the site should still be regularly checked subsequently to see if weathering reveals further features and the plan updated.
 - Investigation and recording of any archaeological features revealed
 - Where significant remains are encountered, the County Archaeologist should be informed immediately and appropriate measures for mitigation agreed
- 1.4 Watching briefs that produce only negative results are still valuable additions to a wider understanding of the scope and range of past activity provided they are undertaken and written up following a thorough, robust and consistent standard.
- 1.5 Attendance on site should be maintained throughout the groundworks programme, unless previously agreed in writing with the County Archaeologist. Any proposals to intermittently attend a site should be accompanied by a written works programme from the developer.

2. General Requirements

- 2.1 The archaeological watching brief will be carried out by archaeological organisations (from here on referred to as 'the Archaeological Contractor') acceptable to the relevant Local Planning Authority, with recognised experience and expertise in the specified type of work to be undertaken. Registration with the Institute of Field Archaeologists (IFA) as a Registered Archaeological Organisation (RAO) will normally be considered as an indicator, but not a prerequisite, of such expertise and experience. A good working knowledge of the archaeology of Kent will also be considered necessary.
- 2.2 Prior to any work being undertaken in Kent, the Archaeological Contractor will inform the County Archaeologist and communicate details of the proposed team, including (if required) CVs for senior staff and specialists. Such staff will be able to demonstrate an appropriate level of experience and expertise and should preferably, where appropriate, be Members of the Institute of Field Archaeologists (IFA).
- 2.3 Prior to undertaking the watching brief the Archaeological Contractor will demonstrate that appropriate provision has been made for the resources needed to undertake the work, through to and completion of reporting. The Archaeological Contractor will have available appropriate specialists necessary to support the successful completion of the archaeological fieldwork and post excavation work.
- 2.4 During fieldwork, the Archaeological Contractor will be represented on site at all times by a member of staff with the required level of experience and who will be responsible for the conduct of on-site work.

3. Pre-fieldwork Requirements

- 3.1 Prior to undertaking the investigation the Archaeological Contractor will have gathered and considered the following information:
- Relevant information on the Kent County Council Historic Environment Record (HER) maintained by the Heritage Conservation Team;
 - Any earlier reports of fieldwork relevant to the site;
 - Any heritage asset assessment or statement of significance produced as part of the planning process
 - Solid and drift geology;
 - Geotechnical site investigation data (if available);
 - Any desk based studies of the site.
- 3.2 In certain circumstances the following will also be considered:
- Relevant published secondary documentary sources;
 - Relevant historic maps held at the Centre for Kentish Studies at Maidstone;

- Aerial photographs where cropmarks are considered to indicate archaeology on or close to the site.
- 3.3 The Archaeological Contractor will ensure that all reasonable measures have been taken to identify any constraints to undertaking the investigation. The Archaeological Contractor will seek information on access, the presence of services, any ecological constraints, the presence of contaminated land or any other risks to health and safety.
- 3.4 The Archaeological Contractor will make provisional arrangements for the deposition of the site archive with an appropriate museum or suitable repository agreed with the County Archaeologist. The Archaeological Contractor will obtain a provisional accession number for the site archive from the recipient museum (except where the museum prefers to issue an accession number following completion of fieldwork) and any guidelines from the recipient museum regarding deposition of the site archive.
- 3.5 Full copies of the Specification must be issued to the field officer responsible for on-site work and a copy of the agreed Specification and any additional method statements must be available on site at all times. The team carrying out the investigation must be familiar with the Specification and have access on site to any previous evaluation or survey reports.
- 3.6 The Archaeological Contractor will inform the County Archaeologist of their appointment, the start date (at least two working weeks before) and arrange for monitoring visits to be undertaken, using the Site Fieldwork Notification Form (see Appendix II). The Archaeological Contractor will continue to keep the County Archaeologist informed of the progress of work and will notify the County Archaeologist immediately if particularly important archaeological remains are encountered.

4. Objectives

- 4.1 The objectives of the archaeological watching brief are to contribute to heritage knowledge of the area through the recording of archaeological remains that are exposed as a result of excavations in connection with the groundworks
- 4.2 Particular attention should be paid to ascertaining the date, character, importance and depth relative to Ordnance Datum of remains identified.
- 4.3 The work must also place the results in the context of existing archaeological knowledge as part of the final report and provide reliable guidance on future heritage management decisions in the area.

5 Groundworks

- 5.1 The groundworks known to be in need of monitoring are detailed in Part A and may include foundation excavations plus any associated ground

reduction, compound creation, landscaping, access or service works. Further, unplanned works on site may also be proposed during the programme and the Contractor should liaise closely with the site manager or developer on site to ensure that a monitoring presence is maintained appropriately.

- 5.2 If no details of groundworks have been provided in the specification, then the archaeological contractor should clarify the extent of the works with the developer before work begins.

6. Method

- 6.1 The archaeological contractor will monitor the excavations for all groundworks unless otherwise agreed with the County Archaeologist. Excavation should be undertaken using a flat bladed bucket and preferably in a single direction to enable archaeological remains to be recorded prior to disturbance from being driven over. **If possible archaeological remains are encountered, machine excavation will cease to allow the remains to be investigated further.**
- 6.2 The archaeologist will inspect the surfaces revealed. Any archaeological structures or features revealed will be recorded in plan and section as appropriate according to Section 6 below. **The main contractor will allow the archaeological contractor reasonable time and resources to undertake any inspection or recording required.**
- 6.3 Further limited excavation may be necessary to clarify the extent and nature of some archaeological deposits. In this case, the archaeological contractor will undertake the excavation by hand unless overburden removal by machine is necessary.
- 6.4 If significant remains are unexpectedly encountered the archaeological contractor will inform the County Archaeological Officer and the developer immediately and further mitigation measures will be agreed.

7. Recording

- 7.1 All structures, deposits and finds are to be recorded according to accepted professional standards.
- 7.2 All recording points used should be accurately tied into the National Grid, preferably by theodolite, and located on to the 1:1250 map of the area.
- 7.3 Plans indicating the location of all archaeological features encountered are to be drawn at an appropriate scale, located on the site plan and levelled with respect to OD. An overall site plan is to be maintained at a scale of 1:100.
- 7.4 All plans are to be accurately tied in to the site grid. All plans and sections are to be drawn on polyester based drafting film and clearly labelled.
- 7.5 All archaeological contexts are to be recorded individually on context record

sheets. A further more general record of the work comprising a description and discussion of the archaeology is to be maintained as appropriate.

- 7.6 A full black and white and colour (35mm transparency) photographic record of the work is to be kept. The photographic record is to be regarded as part of the site archive. The archaeological contractor is to provide the County Archaeological Officer with a selection of photographic images which reflect the archaeological findings and investigations undertaken on this site. Digital photography may be used for working shots and site setting shots.
- 7.7 All artefacts recovered during the excavations on the site are the property of the Landowner. They are to be suitably bagged, boxed and marked in accordance with the United Kingdom Institute for Conservation, Conservation Guidelines nos. 2 and on completion of the archaeological post-excavation programme the landowner will arrange for them to be deposited in a museum or similar repository agreed with the County Archaeological Officer and the Local Planning Authority.
- 7.8 The site archive, to include all project records and cultural material produced by the project, is to be prepared in accordance with *Guidelines for the preparation of excavation archives for long-term storage (UKIC 1990)*. On completion of the project the Applicant will arrange for the archive to be deposited in a suitable museum or similar repository to be agreed with the County Archaeological Officer and the Local Planning Authority.

8. Reporting

- 8.1 On completion of the archaeological watching brief the archaeological contractor will agree with the County Archaeologist a programme for the reporting of the results of the work. The reporting of the watching brief will be commensurate with the results but as a minimum must stand as a sufficiently detailed report on the archaeological monitoring to serve both future research and inform future planning decisions taken on the site.
- 8.2 Where the watching brief is being undertaken following an earlier evaluation, the results of the evaluation should be fully integrated within the report of the watching brief.

Report circulation

- 8.3 Copies of all reports are to be provided to:
- the Developer
 - the County Archaeologist
 - the Local Planning Authority
 - Local Historical or Archaeological Society (See Part A for details)
 - the project archive.
- 8.4 When submitting the report to the County Archaeologist the archaeological

contractor should provide written confirmation that the report has been submitted to the above parties.

- 8.5 If the archaeological contractor is required, contractually, to only submit reports directly to the developer or their agent, the archaeological contractor must inform the County Archaeologist in writing that they have completed the report and to whom it has been forwarded to. The archaeological contractor must ensure that the developer is made aware of the need to circulate the report as in 7.3 above.

Reporting of watching briefs with limited remains

- 8.6 If the watching brief has resulted in limited archaeological remains being recorded then the archaeological contractor will complete the necessary post excavation works and produce a '**Watching Brief Report**' within 4 weeks of the completion of the watching brief (**see sections 8.8 to 8.12 below**).

Reporting of watching briefs with significant archaeological remains

- 8.7 If significant archaeological remains are recorded then within 3 months of completion of the watching brief the archaeological contractor will undertake an assessment of the results and produce a MAP2 '**Post-excavation Assessment Report**'. This report will set out a programme of post excavation works through to completion of a '**Full Report**' and '**Publication**' of the findings (**see sections 8.13 to 8.17 below**).

Contents of a 'Watching Brief Report'

- 8.8 The archaeological contractor may determine the general style and format of the Watching Brief Report but it must be completed in accordance with this specification. The report must provide sufficient information and assessment to enable the County Archaeologist and the Local Planning Authority to stand as a detailed report on the archaeological fieldwork for future research and to inform on any future planning decisions for the site.
- 8.9 Reports that do not provide sufficient information or that have not been compiled in accordance with the relevant sections of this specification will be returned to the archaeological contractor for revision and resubmission.
- 8.10 The report is to include as a minimum:
- 8.10.1 An **Abstract** summarising the scope and results of the archaeological watching brief.
- 8.10.2 An **Introduction** including:
- the location of the site including National Grid Reference;
 - an account of the background and circumstances of the work;

- a description of the development proposals, planning history and planning reference together with the planning condition (where appropriate);
- the scope and date of the fieldwork, the personnel involved and who commissioned it;
- the nature of potential impacts arising from the proposals;

8.10.3 An account of the **Archaeological Background** of the development site including:

- geology, soils and topography;
- any known existing disturbances on the site;
- background archaeological potential of the site. This should include a summary of the known Historic Environment Record entries generally within a 500m radius of the boundaries of the site. The HER entries should be quoted with their full identifier (e.g TR36NW 12);
- summary of any previous phases of archaeological investigation at the development site;
- any constraints on the archaeological monitoring.

8.10.4 The **Methodology** employed during the watching brief must be detailed in the report. Simply referring to the methodology outlined in the specification is not acceptable. Any aims and objectives specified in the specification should be included as should any further objectives identified during the course of the watching brief. The frequency of monitoring visits, ground works observed and any constraints experienced while carrying out the monitoring should be detailed.

8.10.5 The report should include a quantification of the archive contents, their state and future location.

8.10.6 A description of the **Results** of the archaeological monitoring. This description must include for each area observed:

- the dimensions of the area observed;
- the nature and depth of overburden soils encountered;
- description of all archaeological features and finds encountered in each area observed, their dimensions, states of preservation and interpretation;
- a description of the geological subsoil encountered across the site;
- heights related to Ordnance Datum should be provided for each feature and deposit.
- For complex remains a Harris Matrix diagram should be provided.

8.10.7 The **Finds** recovered during the course of the watching brief should be described, quantified and assessed by artefact type within the report. The report should also provide an indication of the potential of each category of artefact for further analysis and research. For each category of artefact the report should describe the method of processing, any sub-sampling, conservation and assessment undertaken. Where appropriate local reference collections will be referred to for descriptive and analytical consistency. Any

implications for future archive, conservation or discard of the artefacts should also be detailed.

- 8.10.8 The report should include a table showing the contexts, classes and quantity of artefacts recovered, together with their date and interpretation.
- 8.10.9 The report must include an assessment of the **Environmental** potential of the site. Details should be provided of any environmental sampling undertaken in connection with the fieldwork and the results of any processing and assessment of the samples. The report should describe the method of processing, any sub-sampling and assessment. Any potential for future analysis of the samples or environmental remains recovered from the evaluation should be described. Implications for future archive, conservation or discard of environmental samples or remains should be detailed.
- 8.10.10 The report should include, as appropriate, tables summarising environmental samples taken, together with the results of processing and assessment.
- 8.10.11 Any results from the watching brief involving the application of archaeological scientific techniques e.g. specialist dating should be included in the watching brief report.
- 8.10.12 The report will include an **Interpretation** of the archaeology of the site, including its location, extent, date, condition, significance and importance. This should include, even if no archaeology is identified as present on the site, description of areas of disturbance, non-archaeological deposits and changes in geological subsoil where appropriate.
- 8.10.13 A **Conclusion** with a summary of the archaeological results and how any archaeology observed relates to the development site. The effects of the development works on the archaeological remains should also be described. The report should highlight any areas of significant archaeological deposits that remain preserved within the development site. Particular note should be made of any variations in the depth of overburden covering any archaeological deposits revealed.
- 8.10.14 The report should include comments on the effectiveness of the methodology employed and the confidence of the results and interpretation.
- 8.10.15 Figures / illustrations – The report should include sufficient illustrations to support descriptions and interpretations within the report text. Figures are to be fully cross-referenced within the document text. As a minimum the report should include the following figures:
- a site location plan tied into the Ordnance Survey at 1:1250 or in the case of larger sites at 1:2500. The plan should also include at least two National Grid points and show the site boundary;

- a plan at 1:100 or 1:200 showing the layout of the development groundworks clearly indicating the areas observed. The plan should show significant archaeological features, coloured by phases or period as related to the development site. Where possible, projection of archaeological features outside of the areas observed should be included on the plan. This plan should also include two National grid points;
- plans of the features revealed in each of the excavation areas at a larger scale e.g. 1:20 or 1:50; such plans are to also illustrate areas of disturbance, change in subsoil and location of sections; The location of significant finds and samples taken should also be indicated;
- relevant section drawings and soil trench profiles as appropriate;
- illustrations and/or photographs of significant finds should be included where appropriate.

8.10.16 All report illustrations must be fully captioned and scale drawings must include a bar scale. Standard archaeological drawing conventions must be used. Plan and section illustrations must include the numbers of all contexts illustrated. North must be included on all plans and should be consistent. Sections must indicate the orientation of the section and the Ordnance Datum height of the section datum.

8.10.17 Black & White or Colour photographs should be included where appropriate to illustrate the archaeology of the site, the development operations or the range of soil profiles encountered. All photographs should be appropriately captioned.

8.11 The report will be submitted to the County Archaeologist in a thermal bound hard-copy and in digital format. The digital copy will be supplied for preference in .pdf format or alternatively in .rtf format accompanied by digital copies of images, plans and maps in .bmp, .tif or .jpg format. The medium should be either on a PC-formatted floppy disk, on a PC CD-ROM (CD-R format only). Whichever software is used the digital files must be supplied in a PC readable format.

Contents of a 'Watching Brief Assessment Report'

8.12 The 'Archaeological Watching Brief Assessment Report' will follow the format and requirements detailed in 8.8 to 8.11 above.

8.13 In addition the report will include an assessment of the results of the archaeological monitoring and their potential to address both the original research aims and objectives of the project and any further research objectives identified during the course of the on-site and post excavation works.

8.14 The report will detail any further analysis necessary on the project records, artefact and environmental assemblages to achieve the research potential

identified in the assessment. A justification should be included for each analysis proposed.

- 8.15 The report will set out a timetable for completion of analysis and reporting, detailing all individual tasks to be completed, resources required and the key personnel involved. The proposal should set out arrangements for monitoring of the post excavation process.
- 8.16 The report should include a synopsis of the proposed '**Full report**' and '**Publication**' and identify the likely destination of the publication.

9. General

- 9.1 The archaeological contractor is to allow the site records to be inspected and examined at any reasonable time, during or after the watching brief, by the developer, the County Archaeological Officer or any designated representative of the Local Planning Authority.
- 9.2 In undertaking the work the archaeological contractor is to abide by :
- all statutory provisions and by-laws relating to the work in question, especially the Health and Safety at Work *etc.* Act 1974;
 - the Institute for Archaeologist's *Code of Conduct*;
 - the Institute for Archaeologist's *Code of Approved Practice for the Regulation of Contractual Arrangements in Field Archaeology*.
- 9.3 On completion of the watching brief the archaeological contractor will prepare a consideration of the methodology used, including a confidence rating.
- 9.4 The archaeological contractor is to include with their report a completed copy of the Kent County Historic Environment Record Report Form (see Appendix 1)
- 9.5 The archaeological contractor is to provide the County Archaeological Officer with a representative selection of transparencies illustrating the archaeology of the site and the operations of the investigation. These will be deposited with the County HER and will be used for presentations on aspects of the archaeology of Kent.

10. Archive Preparation & Deposition

- 10.1 The site archive, to include all project records and cultural material produced by the project, is to be prepared in accordance with *Guidelines for the preparation of excavation archives for long-term storage (UKIC 1990)*. On completion of the project the Archaeological Contractor will arrange for the archive to be deposited in accordance with the provisional arrangements made with a suitable museum or repository at the onset of fieldwork. Any alternative arrangements will be agreed with the County Archaeologist and the Local Planning Authority.

11 Monitoring and Liaison

- 11.1 The Archaeological Contractor is to allow the site records to be inspected and examined at any reasonable time, during or after the excavation, by the client/developer, the County Archaeologist or any designated representative of the Local Planning Authority
- 11.2 Once the site has been stripped and mapped and an initial assessment of the archaeology carried out, there will be an on-site meeting with the County Archaeologist to determine the scope of subsequent investigation.
- 11.3 The Archaeological Contractor will liaise closely with the County Archaeologist throughout the course of the investigation and will arrange for on-site meetings at key decision points.
- 11.4 The Archaeological Contractor is to make contact with the local archaeological society and keep them informed on the progress of the investigation. Subject to health and safety constraints the Archaeological Contractor will afford opportunity to the local archaeological society to visit the investigation site. Copies of all reports will be provided to the local archaeological society.
- 11.5 The Archaeological Contractor is to circulate a completed Fieldwork Notification Form (Appendix 2) at the start and completion of fieldwork and at the completion of post excavation reporting stages.

12. Copyright and data protection

- 12.1 Information submitted to the County Archaeologist in conjunction with planning applications automatically becomes publicly accessible and can be viewed by anyone at any time. In addition, the Local Planning Authority and Kent County Council are subject to the requirements of the Freedom of Information Act (2000) and Environmental Information Regulations (2004). Information may be subject to FoI or EIR requests and any documentation submitted in connection with the project may be made publicly available unless doing so contravenes the Data Protection Act (1998).
- 12.2 While copyright of reports and other information arising from the fieldwork remains with the originator, the Archaeological Contractor will undertake to make this information available to interested parties. The Archaeological Contractor will agree to allow reports of the fieldwork to be copied and made available to interested parties for archaeological research. The reports may be made available on the Internet no sooner than three months after the submission of the report. Archaeological Contractors who believe that there are special reasons for not publishing the report on the Internet should reach a separate agreement with the County Archaeologist.

13. Health and Safety

- 13.1 The Archaeological Contractor will conduct the work in compliance with the Health and Safety at Work etc Act 1974. The Archaeological Contractor will also follow the guidance set out in “Health and Safety in Field Archaeology” Standing Conference of Archaeological Unit Managers 1997.
- 13.2 The Archaeological Contractor is expected to maintain a Health and Safety Policy and a procedures manual and have available appropriate expertise in Health and Safety advice. Site staff will have an appropriate level of training to enable them to carry out fieldwork safely.
- 13.3 The Archaeological Contractor will maintain the site in a safe condition. All hazards will be appropriately identified and managed. Deep excavations will be appropriately fenced.
- 13.4 The Archaeological Contractor will carry out a risk assessment prior to commencement of fieldwork and where appropriate a COSHH assessment. Risks and measures to reduce risk will be communicated to all working on and visiting the site.
- 13.5 The Archaeological Contractor will have available suitable site accommodation, welfare and toilet facilities.

14. General

- 14.1 In carrying out the work the Archaeological Contractor is to abide by:
- all statutory provisions and by-laws relating to the work in question,
 - the Institute of Field Archaeologists *Code of Conduct*
 - the Institute of Field Archaeologists *Code of Approved Practice for the Regulation of Contractual Arrangements in Field Archaeology*.

15. KCC HER

- 15.1 The Archaeological Contractor is to provide the Kent Historic Environment Record with copies of all reports in both hard copy and digital format (see 11.6 above).
- 15.2 Upon completion of the excavation the Archaeological Contractor will supply the Kent Historic Environment Record with a completed HER form (see Appendix 1 – Part D)
- 15.3 The Archaeological Contractor will supply the Kent Historic Environment Record with the following digital datasets:
- A .dxf file containing polygon data that describes in detail all excavated/

watched area boundaries, whether trenches, test pits, excavated areas or areas examined by watching brief. This .dxf file must be internally geo-referenced (i.e. the co-ordinate system used in the file must be the Ordnance Survey co-ordinate system).

- A separate .dxf file that contains a number of Layers. Each Layer should represent a different phase of the archaeological remains on site. The name of each Layer must be the phase number used on the site accompanied by a date range (e.g. “2 from –2000 to –800”, “7A from 410 to 700” etc). Each layer must contain only the features relevant to that phase digitized as polylines. Where the dating is based on scientific dating methods such as radiocarbon, the dates must be calibrated calendar dates.
- 15.4 A guidance document has been produced for Kent County Council that will inform contractors as to how this information can be produced within AutoCad. This document is available from the County Archaeologist and Kent County Council Historic Environment Record.
- 15.5 The Archaeological Contractor should also provide a representative selection of digital site photographs illustrating the archaeology of the site and the operations of the investigation. These will be in .jpg format at a minimum 300dpi. These will be deposited with the County HER and will be used for presentations on aspects of the archaeology of Kent.
- 15.6 It is to be understood that photographs and notes taken by KCC Archaeological Officers in connection with the work that do not identify individuals or site locations may be used by KCC for outreach and publicity purposes, including on social media sites such as Facebook, Twitter etc. The Archaeological Contractor should, **preferably in advance** of the works, raise with the KCC Archaeological Officer any concerns that they or their client may have over the use and dissemination of images or information for outreach purposes. In such cases the Archaeological Contractor and their client will agree a protocol with the KCC Archaeological Officer for the appropriate dissemination and use of images and information which balances the concerns of the contractor and/or client with the objective of ensuring that the people of Kent are kept informed of the archaeological discoveries in the county.'

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