

**A Geoarchaeological Borehole Survey  
at Land to The North Side Of Royal Eagle Close at the Junction with  
Anthony's Way, Medway City Estate, Rochester, Kent, ME2 4NS**

**NGR: 575256 169465  
(TQ 75256 69465)**

**ASE Project no. 190651  
Planning Reference: MC/19/1156**

**Site Code: MCE 19**

**ASE Report No: 2019369  
OASIS id: archaeol6-377037**

**By Letty Ingrey, MA  
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## **Abstract**

*This report presents the results of a Geoarchaeological Borehole Survey carried out by Archaeology South-East at Land to The North Side of Royal Eagle Close at the Junction with Anthony's Way, Medway City Estate, Rochester, Kent, on 14/11/20 and the subsequent recording of samples in the ASE lab.*

*Based on this geoarchaeological work and the previous site investigation work c.20m of Quaternary deposits have been seen to be present on the site overlying the chalk bedrock at depth.*

*The Geoarchaeological Borehole Survey showed there to be a complicated sequences of alluvial and peat deposits overlaying the gravels at the site. There were a total of three distinct peat units and several different alluvial units, some showing clear structure or abundant shell remains.*

*U100 core samples have been taken of 6m of these deposits, representing the entire alluvial and peat sequence encountered on the site. This sequence possibly spans much of the Holocene and the samples will likely contain palaeoenvironmental indicators that can enable better understanding of environmental change in the region during the Holocene.*

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## **1.0 INTRODUCTION**

### **1.1 Site Background**

1.1.1 Archaeology South-East (ASE) was commissioned by Architecture Design Ltd. (hereafter 'the client') to undertake a Geoarchaeological Borehole Survey Land to The North Side Of Royal Eagle Close at the Junction with Anthony's Way, Medway City Estate, Rochester, Kent, ME2 4NS and hereafter referred to as 'the site' (NGR. 575256 169465; Figure 1).

1.1.2 The site comprises a rectangular-shaped plot of land bounded by Antony's Way to the west, Royal Eagle Close to the south and industrial units to the east and north. The natural topography of the site is flat at c. 6m OD.

1.1.3 A planning application was submitted to Medway Council in August 2019 (reference MC/19/1156) who granted approval for the development of builder's merchant warehouse and storage yard (use class B8) with associated vehicular access and 16no on site car parking spaces. KCC's Archaeological Officer recommended that the following condition applied:

*No development shall take place until the applicant, or their agents or successors in title, has secured the implementation of a programme of archaeological work in accordance with a written specification and timetable which has been submitted to and approved by the Local Planning Authority.*

*Reason: To ensure that features of archaeological interest are properly examined and recorded.*

1.1.4 Following discussion between ASE and KCC, the KCC Archaeological Officer accepted that substantial made ground had been placed on the site and that the impact below this (piled foundations) would be best mitigated by a geoarchaeological borehole survey.

1.1.5 A Written Scheme of Investigation (WSI) was prepared for a Geoarchaeological Borehole Survey at the site. All work was carried out in accordance with this document, relevant Chartered Institute for Archaeologists (CIfA) procedural documents (CIfA 2014a and 2014b) and the Kent County Council Manual of Specification for Evaluation and the Draft Specification for Preliminary Evaluation of Quaternary Deposits and Palaeolithic Potential, which outlines the methodology to be used in the field, and in reporting and archiving of the results.

1.1.6 The project is being managed by Jon Sygrave (Project Manager) and by Jim Stevenson (Post-Excavation Manager).

## **1.2 Geology and Topography**

- 1.2.1 Geological mapping (BGS 2019) shows solid geology at the site to comprise Lewes Nodular Chalk Formation, Seaford Chalk Formation and Newhaven Chalk Formation (undifferentiated) - Chalk. Superficial geological deposits are mapped as undifferentiated Beach and Tidal Flat Deposits of clay, silt and sand.
- 1.2.2 A Site Investigation report was provided for the site (Carr 2019) based on a series of boreholes and window samples (Fig. 2). This showed a thick layer of made ground (up to 4m) overlying several metres of soft grey silty clay across much of the site with localised horizons of dark brown peat. In BH1 river terrace deposits were encountered at c. 12.20m bgl (c. – 6.20m OD). While in WS1 (Carr 2019) structure less chalk was recorded at 3.5m OD, this was only recorded in one of the site investigation interventions and could represent a made ground deposit only having been proved for c. 0.5m.

## **1.3 Scope of Report**

- 1.3.1 This report will detail the results of the Geoarchaeological Borehole Survey and includes observations made both on site and from subsequent work recording samples in the ASE lab. It will consider the geoarchaeological potential of the deposits encountered and their potential to understand the wider landscape.

## 2.0 GEOARCHAEOLOGICAL BACKGROUND

- 2.1 The River Medway drains from the central Weald and today joins the Thames in the tidal zone, having previously in the Pleistocene flowed further north before joining the Thames. While historically less researched than the Thames, The Medway is known to have a well-developed system of terraces along much of its route that likely extend into the Lower Pleistocene. The younger terraces in the Lower Medway are buried beneath Holocene alluvium (Bridgland 2003, Bates 2002) and no terrace is currently mapped at the site location.
- 2.2 The alluvial sequence, in particular the peat and organic deposits, encountered during the geotechnical works has the potential to preserve palaeoenvironmental proxies and evidence of palaeoclimate, palaeoenvironment, and landscape development in the area during the Holocene. Palaeoenvironmental work has previously taken place on alluvial and peat sequences in the area. In particular work on the Hoo Peninsular and the Lower Thames estuary, where there are sequences of Holocene alluvium of silts and clays with seams of peat and where remains of plants, pollen and microfauna are common (English Heritage 2011). Geoarchaeological cores in this area have shown a history of Holocene marine transgression and regression and produced extensive records of pollen, diatoms and microfossils showing environmental change through time, in particular the work of Devoy (Devoy 1979).
- 2.3 Specific to the Medway and closer to the current site the alluvial sequence at Chatham is known to start at c. -10m OD (English Heritage 2011). The Holocene sediments here are typified by complex intercalated clay-silts, sands and peat/organic layers deposited during periods of sea level rise and regression. Further to this, the cutting of the Medway tunnel c. 500m to the north east of site produced a peat layer dated to the Mesolithic at c. 7,000 BP along with possible Neolithic and Iron Age peats (English Heritage 2011) (Pine et al 1995).

### 2.1 HER Search

- 2.1.1 An HER search was commissioned from the KCC HER. The table below lists an edited version of the HER search results. Given the focus of the Geoarchaeological Borehole Survey relates to the site's palaeoenvironmental potential all records relating the built environment, ship wrecks and WWII sites have been removed.

Scheduled Ancient Monuments		
DesigUID	Record Type	Name
DKE19335	SM	Chatham Dockyard, engine or boiler house
DKE19341	SM	Chatham Dockyard, Medway House

DKE19342	SM	Chatham Dockyard, Assistant Queen's Harbour Master's office
DKE19343	SM	Chatham Dockyard, Queen's Stairs
DKE19344	SM	Chatham Dockyard, the Main Offices
DKE19345	SM	Chatham Dockyard, Naval Store Department
DKE19347	SM	Chatham Dockyard, No 3 Boat Store
DKE19348	SM	Chatham Dockyard, No 61 Boat Store, Nos 4 and 5 Slips
DKE19349	SM	Chatham Dockyard, covered slip to N of No 5 Slip
DKE19365	SM	Chatham Dockyard, Rigging House No 1 and Storehouse No 2
DKE19373	SM	Chatham Dockyard, South Pumping Station
DKE19379	SM	Site of 17th century dockyard
DKE19384	SM	Chatham Dockyard, Dry Docks Nos 2, 3 and 4

Find Spots				
MonUID	Name	MonType	Date Range	Period Rang
MKE16828	Site of Frindsbury limeworks, Frindsbury	LIME KILN	1842 to 1842	Post Medieval
MKE17069	Crown cement works, Frindsbury	CEMENT WORKS	1540 to 1900	Post Medieval
MKE17073	Whitewall Creek cement works, Frindsbury	CEMENT WORKS	1862 to 1907	Post Medieval to Modern
MKE17077	Phoenix Portland Cement Company, Frindsbury	CEMENT WORKS	1868 to 1907	Post Medieval to Modern
MKE17078	Globe Cement Works, Frindsbury	CEMENT WORKS	1880 to 1901	Post Medieval to Modern
MKE17079	Bridge Cement Works, Frindsbury	CEMENT WORKS	1886 to 1930	Post Medieval to Modern
MKE17084	Quarry Cement Works, Frindsbury	CEMENT WORKS	1889 to 1907	Post Medieval to Modern
MKE2249	Mid Bronze Age dagger and late Bronze Age swords, near Upnor Reach?, Rochester	FINDSPOT	-1600 to -701	Middle Bronze Age to Late Bronze Age
MKE2286	Bronze Age rapier, Chatham Reach	FINDSPOT	-2350 to -701	Bronze Age
MKE2288	Bronze sword, Chatham Reach	FINDSPOT	-2350 to -701	Bronze Age
MKE2325	Roman-vessel and possible graves, Pipers House, Frindsbury Extra	BURIAL?; FINDSPOT	43 to 409	Roman
MKE2328	Romano British house and associated finds, Quarry house, Frindsbury Extra	HOUSE; PIT; STATUE	43 to 409	Roman
MKE2369	Coin of Dubnovellaunus, near Quarry House, Frindsbury	FINDSPOT	-800 to 42	Iron Age
MKE2634	Socketed axe, near Upnor Castle, Frindsbury	FINDSPOT	-2350 to -701	Bronze Age
MKE2655	Two bronze socketed axes, Upnor	FINDSPOT	-1000 to -701	Late Bronze Age
MKE39954	Curel's Barge Yard, Frindsbury	BOAT YARD	1800 to 2008	Post Medieval to Modern
MKE40044	Frindsbury Electric Power Company	POWER STATION	1900 to 1930	Post Medieval to Modern
MWX18378	Rectangular feature, near Tower Hill, Frindsbury	FEATURE	Undated	Unknown
MWX18379	Circular cropmark feature, near Tower Hill, Frindsbury	FEATURE	Undated	Unknown
MWX19146	Site of a Wharf, Whitehall Creek, Frindsbury Extra	WHARF	1858 to 1940	Post Medieval to Modern
MKE39865	Lower/Middle Palaeolithic flint-knapping workshop on valley-side above chalk quarry, east of All Saints Church, Frindsbury	LITHIC WORKING SITE	-500000 to -40001	Lower Palaeolithic to Middle Palaeolithic

Events				
FID	Name	Organisation	Date	EventTypes



EKE10221	A Geoarchaeological Assessment Report on the Investigation of the Rochester Riverside Area Development	Department of Archaeology and Anthropology, University of Wales Lampeter	2007	GEOTECHNICAL SURVEY; BOREHOLE SURVEY
EKE10961	Geoarchaeological assessment at Plot 1, Anthony's Way, Medway City Estate	Wessex Archaeology	2010	BOREHOLE SURVEY
EKE13260	Watching brief at the Armour Plate Shop, Historic Dockyard, Chatham	Alan Ward. Freelance Archaeologist and Historian	2009-10	WATCHING BRIEF
EKE13841	Farmstead Survey, Rochester, Frindsbury Extra, Manor Farm	Kent Farmsteads Survey	1990	DESK BASED ASSESSMENT; FIELD VISIT
EKE8459	Geotechnical survey at Plot L Medway City Estate, Rochester, Kent	Mott Macdonald Ltd	1997	GEOTECHNICAL SURVEY
EKE8733	Geotechnical survey at Anthony's Way, Rochester	Structural Soils Limited	2001	GEOTECHNICAL SURVEY
EKE8734	Ground investigation at Medway City Estates Rochester	Soiltechnics	1998	WATCHING BRIEF
EKE9521	Frindsbury Church, Medway Valley Palaeolithic Project review of existing information			
EKE9522	Chalk quarry east of Frindsbury Church, Medway Valley Palaeolithic Project review of existing information		2005	
EWX6621	Geoarchaeological and Environmental Evaluation of the Medway Tunnel Engineering Scheme	Institute of Archaeology, University of London	1994	BOREHOLE SURVEY; ENVIRONMENTAL SAMPLING; EVALUATION

<b>Reports</b>					
<b>ID</b>	<b>Pub. number</b>	<b>Report ref.</b>	<b>Title</b>	<b>Author</b>	<b>Type</b>
10325	2016	2016/4	Proposed Retail Development, Frindsbury, Rochester, Kent, An Archaeological Impact Assessment	RPS	Evaluation
5	1982	1982/2	CHATHAM HISTORIC DOCKYARD (INITIAL STUDY)	R ELLIS, H WILSON AND L WOMERSLEY	DBA
1914	2001	2001/191	An Archaeological Evaluation at The McDonalds Restaurant, Anthony's Way, Frindsbury, Rochester, Kent	Pre-Construct Archaeology	Evaluation
7624	2010	2010/161	Sainsbury's Site, Frindsbury, Rochester, Kent: Archaeological Desk-Based Assessment	Wessex Archaeology	DBA
1823	2001	2001/108	Geotechnical survey at Anthony's Way, Rochester	STRUCTURAL SOILS LIMITED	Geotechnical Report
1826	2001	2001/111	Ground investigation at Medway City Estates Rochester	SOILTECHNICS	Geotechnical Report
758	1996	1996/148	Number. 8 Slipway, Chatham Maritime Chatham, Kent: Archaeological Fabric Survey	Oxford Archaeological Unit	Survey
1161	1996	1999/52	COVERED SLIPS 3-7 FORUM, CHATHAM HISTORIC DOCKYARD	THE ARCHITECTURE CENTRE	
2176	1993	2002/147	Preliminary Stratigraphic Evaluation And Environmental Archaeological Assessment Of The Western Approach To The Medway Tunnel	Canterbury Archaeological Trust	Report
5129	1997	2004/39	MONUMENTS PROTECTION PROGRAMME: THE GAS INDUSTRY	MPP	Survey
7265	2009	2009/430	RSME Upper Upnor, Frindsbury, Kent	Canterbury Archaeological Trust	Evaluation
5036	1999	2003/251	Condition Survey of Building Nos 67 To 71 For The 3 Ships Attraction At Chatham Historic Dockyard	Weeks	Report
8096	2011	2011/156	An archaeological watching brief at the Armour Plate Shop, Historic Dockyard, Chatham	Alan Ward	Watching Brief
5035	1999	2003/250	PLANNING APPLICATION FOR THE 3 SHIPS ATTRACTION AT THE HISTORIC	WEEKS	Report

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			DOCKYARD DRY DOCKS 2, 3 & 4 FOR CHATHAM DOCKYARD		
9424	1991	2014/342	Pembroke Road, Chatham: Preliminary ground investigation	Soil Mechanics	Report
7598	2010	2010/138	Plot 1, Anthonys Way, Medway City Estate, Rochester: Geoarchaeological Assessment Report	Wessex Archaeology	Geoarchaeological Assessment
1109	1998	1998/150	Plot L MEDWAY CITY ESTATE, ROCHESTER, KENT	MOTT MACDONALD	Geotechnical Report
420	1994	1994/106	Assessment Report on Geoarchaeological and Environmental Archaeological Aspects of the Medway Tunnel Engineering Scheme Archaeological Evaluation	Geoarchaeological Service Facility	Geotechnical Report
6788	2007	2008/242	A Geoarchaeological Assessment Report On The Investigation Of The Rochester Riverside Area Development	University of Wales Lampeter	Evaluation

### **3.0 RESEARCH AIMS AND OBJECTIVES**

#### **3.1 Aims**

3.1.1 The general aims of the geoarchaeological evaluation were to:

- Establish the broad presence/absence, nature, character, distribution, extent and depth of Quaternary deposits across the site and, where necessary, to correlate these as a deposit model
- Develop an assessment of the possible Holocene potential of the site

3.1.2 The broad aims of the archaeological evaluation, in keeping with previous similar projects are:

- To assess the character, extent, preservation, significance, date and quality of any such remains and deposits
- To assess how they might be affected by the development of the site
- To establish the extent to which previous groundworks and/or other processes have affected archaeological deposits at the site

#### **3.2 Specific Geoarchaeological Aims**

3.2.1 More-specific aims of the evaluation were to:

- ascertain (where Quaternary deposits are encountered) their extent, depth below ground surface, character, date and potential
- establish the extent to which previous development and/or other processes have affected Quaternary deposits at the site
- establish the likely impact on any surviving Quaternary deposits of the proposed development
- determine the presence and potential of palaeoenvironmental evidence in the sediments encountered
- establish correlations of any deposits found with reference to adjacent and regional sequences and to national frameworks

3.2.2 The work also sought to address the following aims from the South East Regional Framework:

- *C.1.3: Targeted prospective survey of valley edge, flood plain and periglacial landforms to recover further palaeoenvironmental sequences and establish derived regional models for environmental change, such as that undertaken by Simmonds (2017) at wetland-dryland interfaces in Surrey across the Late Glacial and Early Holocene boundary.*
- *C.7.1: Enhancing, within developer-funded archaeology, the provision for targeted, detailed work aimed at the recovery of Mesolithic material, with particular attention paid to the potential for buried land surfaces and primary context assemblages.*
- *C.12: Now geoarchaeological and palaeoenvironmental studies are well-established and valued disciplines within archaeology, what standardised*

*provision for their assessment can be delivered within the planning process,  
irrespective of direct human evidence?*

#### **4.0 GEOARCHAEOLOGICAL METHODOLOGY**

- 4.1 A Risk Assessment and Method Statement were produced prior to the commencement of the work. Service plans for the site were provided by the client and accredited ASE staff undertook a CAT survey at the location of the borehole prior to the commencement of drilling.
- 4.2 One cable percussion borehole (CP1) was drilled at the location shown in Fig. 2. Drilling was carried out by an experienced contractor using an A-Frame rig under the primary supervision of the drilling operative. Drilling was constantly monitored by a Geoarchaeologist.
- 4.3 Regular, accurate depth measurements were made by the driller and communicated to the Geoarchaeologist. These were made whenever arisings were logged and sampled, and at each recorded interface between two sedimentary units. Each unit encountered was logged and described in terms of colour and lithological make up.
- 4.4 Where fine-grained deposits with apparent or demonstrated palaeoenvironmental or archaeological potential were encountered, sealed U100 samples were taken. For this reason continuous U100 tubes were taken of the sequence of silt, clay and peat deposits between 6m and 12m below ground level.
- 4.5 The U100 cores were subsequently opened off site in controlled conditions in the ASE lab. The sediments collected within the U100 cores were cleaned and a record was made including detailed descriptions of colour, lithological make up, and structure. A photograph was taken of each U100 core (Fig.s 3 and 4).

## 5.0 RESULTS

5.1 The descriptions and depths of each unit have been compiled in Table 1 below. This has been compiled using both field observations and more detailed descriptions of samples examined in the ASE lab.

Depth (m)		Description	Notes	Sample
0.00-2.00	Made Ground	Sandy silty clay with CBM fragments		<i>Not sampled</i>
2.00-4.50	Made Ground	Clay silt, dark grey. Soft with organic fragments. Fragments of CBM and chalk. Occasional R flint gravel.	-	<i>Not sampled</i>
4.50-6.00	Silt	Very wet dark grey silt with SR-R flint gravel	Not possible to collect sample	<i>Not sampled</i>
6.00-6.04		Not recovered		6.00-6.45m
6.04-6.29	Alluvium	Mid bluish grey silty clay. Occasional fine sandy lenses. Soft. Malleable. Frequent small organic flecks. Structureless.	Sharp lower boundary	
6.29-6.34	Alluvium	Bluish brown/bluish grey silty clay. Soft. Malleable. Fine laminations visible. Slightly darker more organic laminations with paler siltier laminations. Organic flecks. Peat/wood? At base.	Sharp lower boundary	
6.34-6.45	Peat	Compact organic silt with more peaty/organic layer. Dark bluish brown. Plant fragments visible. More organic with depth. Structured		
6.45-6.50	Peat	Greenish brown clay silt. Well humified. Frequent rootlets. Larger organic fragments present. Reeds?		6.45-6.50 (bag)
6.5-6.95	Alluvium	Bluish grey/bluish brown silty clay. Frequent organic fragments. Alluvial with more organic/peaty laminations.		6.50-6.95m
7.0-7.24	Alluvium	Bluish grey silty clay with frequent organic flecks	Diffuse lower boundary	7.00-7.45m
7.24-7.39	Alluvium	Bluish brownish grey silty clay. Occasional organic flecks and occasional larger organic fragments		
7.39-7.45		Not recovered		
7.50-7.95	Alluvium	Bluish brownish grey silty clay. Soft. Malleable. Structureless. Occasional organic fragments		7.50-7.95m

8.00-8.32	Alluvium	Bluish grey silty clay, soft and malleable. Occasional small shell fragments. Occasional organic fragments/ flecks.		8.00-8.45m
8.32-8.35	Alluvium	As above but with larger more frequent peaty fragments. Large shell fragment at 8.32m	Sharp lower boundary	
8.35-8.39		Dark bluish brown organic silty clay. With fine more organic laminations.		
8.39-8.45	Peat	Very dark bluish brown well humified peat. Some plant fragments visible		8.50-8.95m
8.50-8.67	Peat	Very dark bluish brown well humified peat. Well stratified. Occasional larger organic fragments visible	Sharp lower boundary	
8.67-8.73		Blue grey silty clay with frequent (20%) organic/peat fragments	Sharp lower boundary	
8.73-8.95	Alluvium	Blue grey silty clay. Organic fragments (5%) and flecks. Structureless		
9.00-9.07		Not recovered		
9.07-9.14		Blue grey silty clay (as above). Small shell fragments visible		9.00-9.45m
9.14-9.17	Peat	Layer of very dark well humified peat.	Diffuse upper and lower boundary	
9.17-9.45		Blue grey silty clay. Soft and malleable. Fine darker more organic/peaty laminations. Finely structured		
9.50-9.95	Alluvium	Blue grey sift silty clay. Fine laminations with fine silty sand. Occasional organic fragments and laminations. Finely structured with laminations 0.5-1mm thick		9.50-9.95m
10.00-10.45	Alluvium	Greyish blue silty clay. Finely laminated. Darker organic flecks. Some sandier clayey laminations		10.00-10.45m
10.50-10.71	Alluvium	Mid bluish grey silty clay. Occasional fine sandy lenses/laminations. Frequent organic flecks		10.50-10.95m
10.71-10.95	Alluvium	Mid blue grey silty clay. Frequent fine sandy laminations. Occasional dark organic laminations		
11.00-11.45	Alluvium	Mid blue grey silty clay with fine sandy laminations and organic flecks		11.00-11.45m

11.50-11.88	Alluvium	Mid blue grey compact silty clay. Occasional organic flecks. No structure visible. Frequent shell fragments, increasing with depth		11.50-11.95m
11.88-11.95	Fluvial gravel	Grey/greyish yellow silty clay. 50% SA-SR flint gravel		
11.95-12.00	Fluvial gravel	Dark grey clayey sand. 50% SA-SR flint gravel 1-30mm		11.95-12.00m (bag)

Table 1: Table showing descriptions and depths for all units encountered in CP1.

- 5.2 The lowest deposit encountered was a fluvial gravel at -6.60m OD. This consisted of 50% sub-angular to sub-rounded flint gravel in a matrix of dark grey clayey sand. It was not possible to sample this deposit in the U100 cores, however a bulk sample was recovered.
- 5.3 Directly overlying the fluvial gravel was an alluvial deposit with frequent shell fragments from -6.23m OD. This was a mid-bluish grey compact silty clay with occasional organic flecks. No structure was visible, but the quantity of shell fragments was seen to increase with depth. Overlying this from -0.77m OD was a sequence of alluvial and peat deposits. The alluvium was a bluish grey silty clay which was soft and malleable, containing occasional small shell fragments and organic flecks. With depth the alluvial deposits become more structured with fine sandier or more organic laminations visible.
- 5.4 Within the sequence of alluvium three units of peat were recorded. These were encountered at -3.87-3.90m OD, -3.12-3.40m OD, and -1.07-1.23m OD and consisted of dark brown well humified peat with occasional larger organic fragments visible. The entire sequence of peat and alluvial deposits was sampled using U100 cores.
- 5.5 Above the sequence of peats and alluviums was a very wet silt with some gravel. It was not possible to collect samples from this unit. At the top of the sequence was c.4.5m of made ground, a mixed deposit with frequent fragments of CBM.



## 6.0 THE PALAEOENVIRONMENTAL SAMPLES

6.1 Palaeoenvironmental samples were taken throughout the sequence of peats and alluviums and are detailed below in Table 2.

Sample	Type
6.00-6.45m	U100
6.45-6.50m	Bulk
6.50-6.95m	U100
7.00-7.45m	U100
7.50-7.95m	U100
8.00-8.45m	U100
8.50-8.95m	U100
9.00-9.45m	U100
9.50-9.95m	U100
10.00-10.45m	U100
10.50-10.95m	U100
11.00-11.45m	U100
11.50-11.95m	U100
11.95-12.00m	Bulk

Table 2: Samples collected during Geoarchaeological Borehole Survey.

## 6.2 Proposal for assessment of palaeoenvironmental samples

6.2.1 The following sub-samples are suggested for assessment for the sequence of alluviums and peats. These sub-samples to be taken at regular intervals throughout the sequence of deposits collected in U100 cores in order to show environmental and landscape change through time.

- Micropaleontology – samples taken approximately every 40cm through all units, a total of 18 samples.
- Pollen – samples taken approximately every 40cm through all units, with additional samples for peat layers. A total of 20 samples.

6.2.2 Further to this targeted subsamples are proposed from specific units for palaeoenvironmental proxies.

- Molluscs – a sample from each unit seen to preserve, or likely to preserve shell. A total of 5 samples.
- Plant macros – a sample in each major peat unit. A total of 2 samples.

6.2.3 It is also proposed that scientific dating takes place in order to date the sequence, in particular each peat unit.

- C14 – a sample in each peat unit, and a final sample from the shelly deposit at the base of sequence. A total of 4 samples.

## **7.0 DISCUSSION AND CONCLUSIONS**

### **7.1 Overview of lithological sequence**

7.1.1 The Geoarchaeological Borehole Survey showed there to be a complicated sequences of alluvial and peat deposits overlaying the gravels at the site. There were a total of three distinct peat units and several distinct alluvial units, some showing clear fine laminations, and others with abundant shell remains. At the top of the sequence was c. 4.5m of made ground.

### **7.2 Deposit survival and existing impacts**

7.2.1 Based on this geoarchaeological work and the previous site investigation work (Carr 2019) it can be seen that there is a thick sequence of c.20m of Quaternary deposits on the site overlying the chalk bedrock at depth. The Geoarchaeological Borehole Survey has focussed on the likely Holocene alluvial and peat deposits, which overlie the fluvial terrace. Of these it was seen that c. 6m remain intact below the made ground, with at least one part of the site having three distinct peat horizons preserved within the alluvium.

### **7.3 Discussion of deposits**

7.3.1 The samples collected in the U100 cores contain alternating alluvial and peat sediments. While the age of these sediments is not known it is possible that they could cover much of the Holocene. The three peat layers indicate at least three periods of partial stabilisation and vegetation cover.

7.3.2 The gravel at the base of the core is likely to be the top of one of the younger Medway terraces. Due to its position beneath the alluvium this is possibly the Halling Terrace, however it is not possible to ascertain exactly which terrace based on the current data and the limited mapping of Medway terraces in the area.

7.3.3 The deposits encountered and sampled have clear palaeoenvironmental potential. The organic nature of many of the deposits may preserve plant remains and pollens and the alluviums are seen to contain frequent shell remains. These samples have to potential to inform us of the palaeoenvironmental history of the area through proxies such as pollen and microfauna preserved in the samples. Through this they can add to our understanding of the River Medway, its history, and associated deposits. Sequences from similar samples (e.g. Devoy 1979) from the Hoo Peninsular have been shown to contain abundant pollen and other palaeoenvironmental indicators and proxies. It is likely that the samples recovered as part of this work have potential for comparable results and to extend our knowledge of the area.

7.3.4 Deposits associated with the River Medway have been historically less studied than those associated with the Thames. Holocene deposits associated with the Lower Medway are known to be complicated and the need for further study and analysis in the area has been identified (English Heritage 2011). While the sequence is as yet undated the quality of the samples and the possible time depth mean the deposits and encountered have potential to help understanding of environmental change and development of the area through the Holocene. Due to its position in the landscape it is possible this area has gone from tidal flats to fresh water and it is likely that this transition would be preserved in the cores. The intact nature of these deposits mean that further assessment and analysis has the potential to greatly increase our knowledge of The Lower Medway region and it is possible that some of the units may be correlated with units from the wider landscape, such as the Mesolithic peat layer in samples taken nearby.

#### **7.4 Consideration of research aims**

7.4.1 The Geoarchaeological Borehole Survey has attempted to address the following general aims of the geoarchaeological evaluation as outlined in the WSI.

- Establish the broad presence/absence, nature, character, distribution, extent and depth of Quaternary deposits across the site and, where necessary, to correlate these as a deposit model  
*Over six metres of fine grained Quaternary deposits were seen for be present on site below the made ground. Below this were Quaternary terrace deposits to a depth of c. 20m bgl.*

- Develop an assessment of the possible Holocene potential of the site

*An assessment proposal has been developed in order to date the sequence and establish its palaeoenvironmental potential.*

7.4.2 The survey has also attempted to address the more-specific aims of the evaluation:

- ascertain (where Quaternary deposits are encountered) their extent, depth below ground surface, character, date and potential

*Several metres of Quaternary deposits have been recorded. These have potential for palaeoenvironmental indicators and to add to understanding of the environmental and archaeological history of the area. Further assessment and dating is needed but it is possible that the deposits could span much of the Holocene.*

- establish the extent to which previous development and/or other processes have affected Quaternary deposits at the site  
*The upper part of the sequence was seen to be made ground and has possibly truncated the upper part of the Holocene sequence.*
- determine the presence and potential of palaeoenvironmental evidence in the sediments encountered  
*The organic nature of the deposits and the frequent shell contained in the alluvial deposits mean that the likelihood of these preserving palaeoenvironmental evidence and proxies is high.*
- establish correlations of any deposits found with reference to adjacent and regional sequences and to national frameworks  
*Dating and palaeoenvironmental assessment can help to correlate these deposits with the regional sequence. This includes correlation with sequences encountered during work on the Medway Tunnel and at Chatham. Further to this understanding the deposits in relation to palaeoenvironmental work on The Hoo Peninsular will enable a greater understanding of the environmental history of the region and how this relates with human occupation through the Holocene.*

## **7.5 Updated Research Agenda**

7.5.1 While the original research questions are still relevant or further work the deposits encountered and samples taken have potential to address further research questions, in particular:

- Understanding the dates of the sequence, particularly those of the three peat horizons, and correlating these dates with deposits known from the wider region.
- Using palaeoenvironmental proxies such as pollen, microfauna, molluscs and plant remains to understand the environmental history of the region.

7.5.2 The following aims from the South East Regional Framework may also be addressed:

- *C.1.3: Targeted prospective survey of valley edge, flood plain and periglacial landforms to recover further palaeoenvironmental sequences and establish derived regional models for environmental change, such as that undertaken by Simmonds (2017) at wetland-dryland interfaces in Surrey across the Late Glacial and Early Holocene boundary.*
- *C.7.1: Enhancing, within developer-funded archaeology, the provision for targeted, detailed work aimed at the recovery of Mesolithic material, with particular attention paid to the potential for buried land surfaces and primary context assemblages.*

- *C.12: Now geoarchaeological and palaeoenvironmental studies are well-established and valued disciplines within archaeology, what standardised provision for their assessment can be delivered within the planning process, irrespective of direct human evidence?*

## **7.6 Conclusions**

- 7.6.1 The Geoarchaeological Borehole Survey has been successful in recovering intact samples of several metres of an alluvial and peat sequence. This sequence possibly spans much of the Holocene and the samples will likely contain palaeoenvironmental indicators that can enable better understanding of environmental change in the region during the Holocene.

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**HER Summary**

<b>HER enquiry no.</b>						
<b>Site code</b>	MCE19					
<b>Project code</b>	190651					
<b>Planning reference</b>	MC/19/1156					
<b>Site address</b>	Land to The North Side Of Royal Eagle Close at the Junction with Anthonys Way, Medway City Estate, Rochester, Kent, ME2 4NS					
<b>District/Borough</b>						
<b>NGR (12 figures)</b>	575256 169465					
<b>Geology</b>	Allium and peats overlying fluvial gravels and chalk at depth					
<b>Fieldwork type</b>	Eval	Excav	WB	HBR	Survey	<b>Other</b>
<b>Date of fieldwork</b>	14/11/2019					
<b>Sponsor/client</b>	Architecture Design Ltd					
<b>Project manager</b>	Jon Sygrave					
<b>Project supervisor</b>	Letty Ingrey					
<b>Period summary</b>	Palaeolithic	<b>Mesolithic</b>	<b>Neolithic</b>	<b>Bronze Age</b>	<b>Iron Age</b>	
	Roman	Anglo-Saxon	Medieval	Post-Medieval	Other	
<b>Project summary (100 word max)</b>	Geoarchaeological Borehole Survey. C.20m of Quaternary deposits are present overlying the chalk bedrock at depth with a complicated sequences of alluvial and peat deposits overlaying the gravels. U100 core samples have been taken of 6m of these deposits, representing the entire alluvial and peat sequence encountered on the site. This sequence possibly spans much of the Holocene and the samples will likely contain palaeoenvironmental indicators that can enable better understanding of environmental change in the region during the Holocene.					
<b>Museum/Accession No.</b>						

**OASIS ID: archaeol6-377037**

**Project details**

Project name	A Geoarchaeological Borehole Survey at Land to The North Side Of Royal Eagle Close
Short description of the project	This report presents the results of a Geoarchaeological Borehole Survey carried out by Archaeology South-East at Land to The North Side of Royal Eagle Close at the Junction with Anthonys Way, Medway City Estate, Rochester, Kent, on 14/11/20 and the subsequent recording of samples in the ASE lab. Based on this geoarchaeological work and the previous site investigation work c.20m of Quaternary deposits have been seen to be present on the site overlying the chalk bedrock at depth. The Geoarchaeological Borehole Survey showed there to be a complicated sequences of alluvial and peat deposits overlaying the gravels at the site. There were a total of three distinct peat units and several different alluvial units, some showing clear structure or abundant shell remains. U100 core samples have been taken of 6m of these deposits, representing the entire alluvial and peat sequence encountered on the site. This sequence possibly spans much of the Holocene and the samples will likely contain palaeoenvironmental indicators that can enable better understanding of environmental change in the region during the Holocene.
Project dates	Start: 14-11-2019 End: 14-11-2019
Previous/future work	Not known / Not known
Type of project	Field evaluation
Current Land use	Other 15 - Other
Monument type	NONE None
Significant Finds	NONE None
Methods & techniques	"Gravity-core"
Development type	Not recorded
Prompt	Planning condition
Position in the planning process	Not known / Not recorded

**Project location**

Country	England
Site location	KENT MEDWAY ROCHESTER Land to The North Side Of Royal Eagle Close at the Junction with Anthonys Way, Medway City Estate
Postcode	ME2 4NS
Study area	50 Square metres
Site coordinates	TQ 75256 69465 51.396566380887 0.519565836521 51 23 47 N 000 31 10 E Point
Height OD / Depth	Min: -6.73m Max: 6m

**Project creators**

Name of Organisation Archaeology South East

Project brief originator Architecture Design Ltd

Project design originator Archaeology South East

Project director/manager Jon Sygrave

Project supervisor Letty Ingrey

Type of sponsor/funding body Client

Name of sponsor/funding body Architecture Design Ltd

**Project archives**

Physical Archive recipient ASE

Physical Contents "Environmental"

Digital Archive recipient ASE

Digital Contents "Stratigraphic"

Digital Media available "Images raster / digital photography", "Spreadsheets"

Paper Archive recipient ASE

Paper Contents "Stratigraphic"

Paper Media available "Notebook - Excavation', ' Research', ' General Notes"

**Project bibliography 1**

Publication type Grey literature (unpublished document/manuscript)

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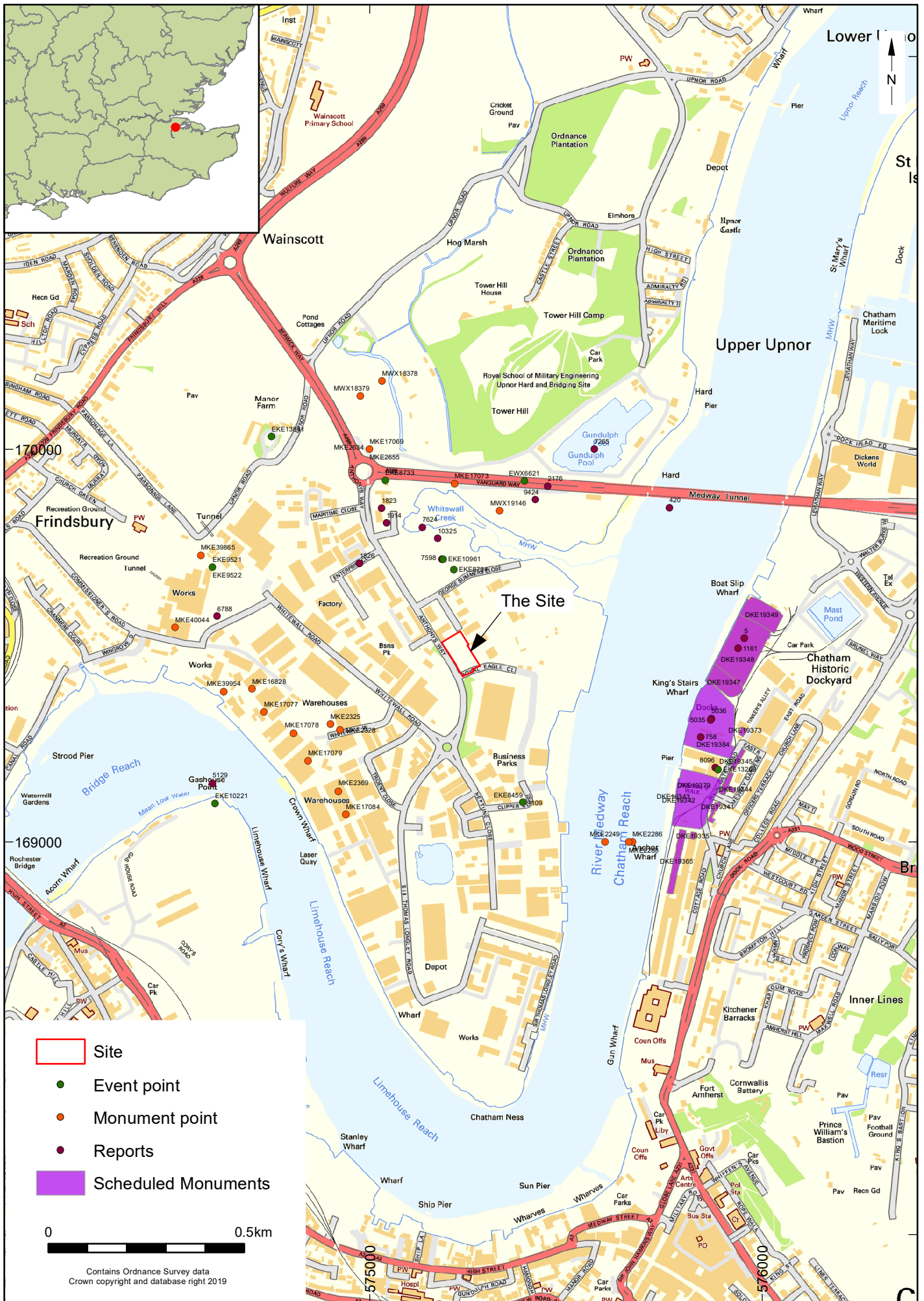
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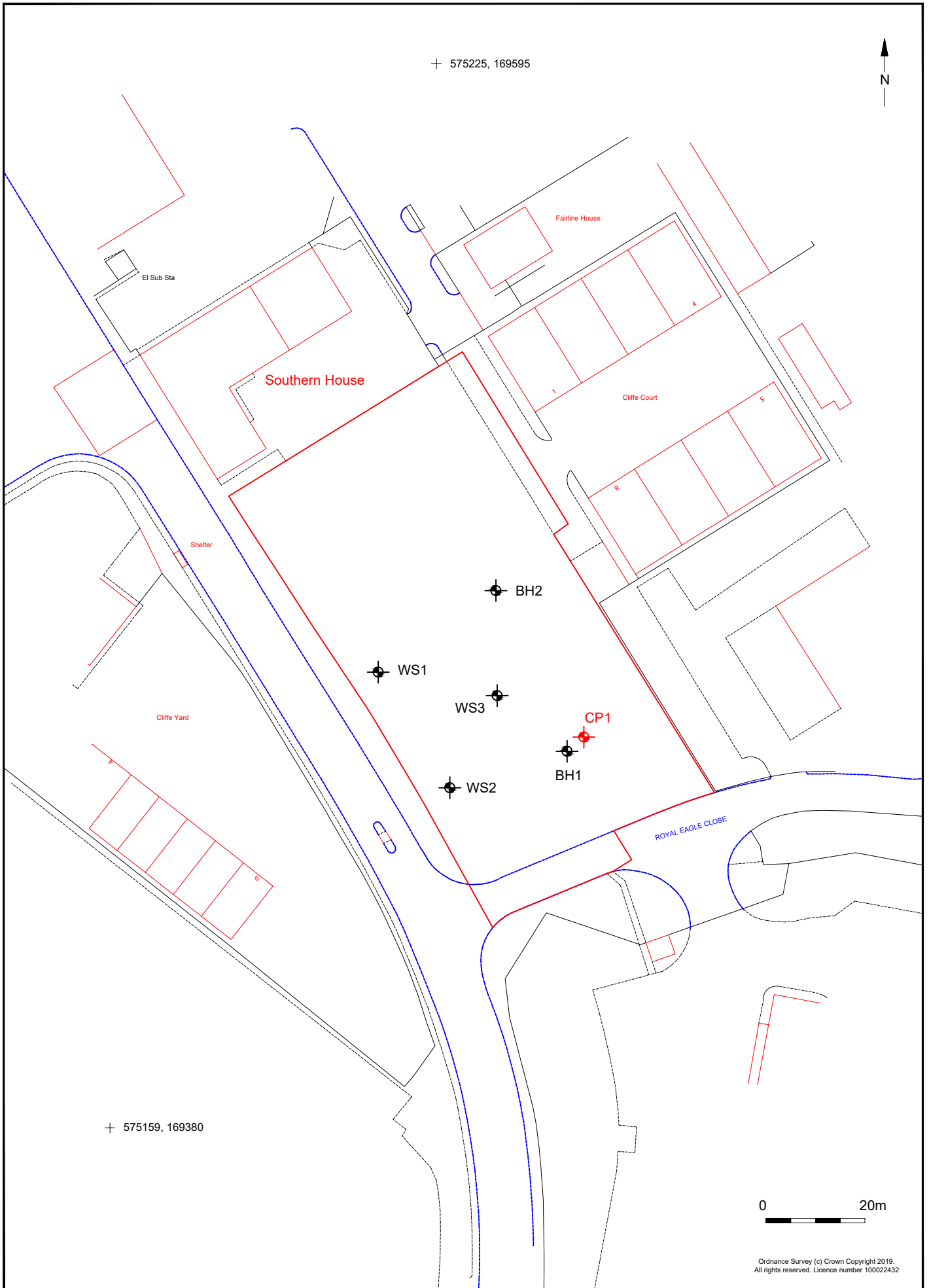
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© Archaeology South-East		Medway City Estate, Rochester		Fig. 1
Project Ref: 190651	Dec 2019	Site location and HER data		
Report Ref: 2019369	Drawn by: AR			



© Archaeology South-East		Medway City Estate	Fig. 2
Project Ref: 190651	Dec 2019	Site plan showing location of boreholes	
Report Ref: 2019369	Drawn by: AR		

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