

**LAND ADJACENT TO EAST DRIVE,
ORPINGTON, KENT BR5 2BY**

**AN ARCHAEOLOGICAL
EVALUATION**

**LOCAL PLANNING AUTHORITY:
LONDON BOROUGH OF BROMLEY**

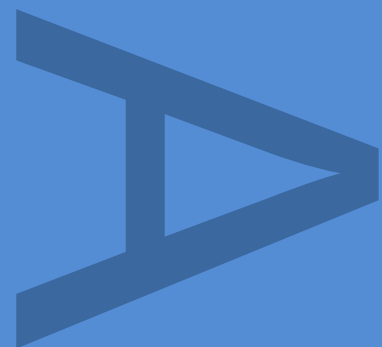
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PRE-CONSTRUCT ARCHAEOLOGY



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LAND ADJACENT TO EAST DRIVE, ORPINGTON,
KENT BR5 2BY

AN ARCHAEOLOGICAL EVALUATION

Quality Control

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Land adjacent to East Drive, Orpington, Kent BR5 2BY

An Archaeological Evaluation

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CONTENTS

1	Abstract	3
2	Introduction	4
3	Planning Background	6
4	Geological and Topographical Background	10
5	Archaeological Background	11
6	Methodology	13
7	Archaeological Description Trenches 1-7	14
8	Archaeological Phased Sequence	15
9	Interpretation and Conclusions	19
10	Acknowledgements	21
11	Bibliography.....	22

PLATES

Plate 1: Trench 2, Geological variation or natural terracing hollow [7], looking N	15
Plate 2: Trench 1, Post Medieval Pit [5], looking NE	16
Plate 3: Trench 1, Section 1, presence of subsoil [2], looking NE	17
Plate 4: Trench 4, Section 4, Made ground on natural geology (no subsoil) looking N.....	18

ILLUSTRATIONS

Figure 1: Site Location	23
Figure 2: Trench Location	24
Figure 3: Trench 1	25
Figure 4: Archaeological Sections 1 & 3	26

APPENDICES

APPENDIX 1: CONTEXT INDEX.....	27
APPENDIX 2: OASIS FORM.....	28

1 ABSTRACT

- 1.1 An archaeological evaluation was undertaken by Pre-Construct Archaeology Limited between the 12th and 16th January 2015 at land adjacent to East Drive, Orpington in the London Borough of Bromley.
- 1.2 A total of seven archaeological evaluation trenches were excavated, laid out around the footprint for the proposed buildings on the site. The trenches were so arranged to maximise coverage within the area whilst avoiding the three borehole standpipes that could be seen above ground. The aim of the trenching strategy was to evaluate the archaeological potential of the site, to determine the presence (or absence) of any surviving archaeology and to understand how the proposed works would or would not affect those remains.
- 1.3 The evaluation concluded that late 20th century terracing and landscaping of the site, particularly in relation to the building of the water pumping station immediately to the south, had severely truncated the archaeological horizon down to the natural geology in nearly all cases. However, a small rubbish pit was uncovered in Trench 1 and a geological anomaly, most likely a natural hollow or variation in the natural geology, was found in the south south-east end of Trench 2.

2 INTRODUCTION

- 2.1 An archaeological evaluation was undertaken by Pre-Construct Archaeology Limited between the 12th and 16th January 2015 at Land adjacent to East Drive, Orpington, Kent (Figure 1). The project was designed and managed by Chris Mayo of Pre-Construct Archaeology Ltd and was commissioned by J.P. Whelan Homes Ltd. The archaeological work was supervised by Wayne Perkins of Pre-Construct Archaeology Limited.
- 2.2 The evaluation was conducted prior to the re-development of an area of excess land within the curtilage of the Thames Water Pumping Station
- 2.3 The site is centred at National Grid Reference TQ 4658 6728 and lies within an Archaeological Interest Area as defined by the London Borough of Bromley. The site comprises a rectangular parcel of land which is bounded to the north by residential housing, to the west by East Drive, to the south by the Thames Water pumping station and to the east by an access lane (Figure 2). The site currently comprises of a fenced-off, turfed area and measures c. 2,515 sq m.
- 2.4 The Archaeology Advisor to the London Borough of Bromley, Mark Stevenson of the Greater London Archaeological Advisory Service (GLAAS) at English Heritage, monitored the project on behalf of the LPA.
- 2.5 Pre-Construct Archaeology Ltd was commissioned by J.P. Whelan Homes Ltd to undertake works necessary to deal with an archaeological planning condition attached to planning permission for development on land adjacent to East Drive, Orpington, Kent BR5 2BY.
- 2.6 The site is currently occupied by grassland surrounding the North Orpington Pumping Station, part of which is to be developed for residential units; permission to develop has been granted by a Planning Inspector under planning appeal reference Planning Appeal Reference APP/G5180/A/12/2189777. The permitted development is the erection of 8 dwellings and associated parking, arranged in 2 blocks.
- 2.7 On behalf of the client, PCA sought the advice of the Archaeology Advisor to the London Borough of Bromley, Mark Stevenson of the Greater London Archaeological Advisory Service, English Heritage. Mr Stevenson provided a consultation letter dated 19th January 2012, reference LAG/5/160-7, stating that an evaluation at the site is necessary in the first instance in order to establish the presence or absence of archaeological remains at the site which may be impacted by the proposed scheme. From this information PCA formulated the Written Scheme of Investigation detailing the methodology by which the evaluation would be undertaken. The WSI was submitted to and approved by Mr Stevenson.
- 2.8 The site is located within an Area of Archaeological Significance as defined within the LB Bromley's Unitary Development Plan. The site does not lie within the vicinity of a Scheduled Ancient Monument, Historic Battlefield or Historic Wreck site.
- 2.9 The primary objective of the evaluation was to establish the presence or absence of any

archaeological remains. PCA's works that were monitored by Mark Stevenson of English Heritage.

2.10 All works were undertaken in accordance with the following documents:

- The Written Scheme of Investigation
- Greater London Archaeology Advisory Service: Standards for Archaeological Work (GLAAS 2014)
- MoRPHE (English Heritage, 2006).

3 PLANNING BACKGROUND

3.1 National Guidance: National Planning Policy Framework

- 3.1.1 The National Planning Policy Framework (NPPF) was adopted on March 27 2012, and now supersedes the Planning Policy Statements (PPSs). The NPPF constitutes guidance for local planning authorities and decision-takers both in drawing up plans and as a material consideration in determining applications. Chapter 12 of the NPPF concerns the conservation and enhancement of the historic environment.
- 3.1.2 In considering any proposal for development, including allocations in emerging development plans, the local planning authority will be mindful of the policy framework set by government guidance, existing development plan policy and of other material considerations.

3.2 Regional Guidance: The London Plan

- 3.2.1 Additional relevant planning strategy framework is provided by The London Plan, published January 2011. It includes the following policy of relevance to archaeology within central London:

Historic environments and landscapes

POLICY 7.8 HERITAGE ASSETS AND ARCHAEOLOGY

Strategic

- A London's heritage assets and historical environment, including listed buildings, registered historic parks and gardens and other natural and historic landscapes, conservation areas, World Heritage Sites, registered battlefields, scheduled monuments, archaeological remains and memorials should be identified, so that the desirability of sustaining and enhancing their significance and utilising their positive role in place shaping can be taken into account.
- B Development should incorporate measures that identify, record, interpret, protect and, where appropriate, present the site's archaeology.

Planning decision

- C Development should identify, value, conserve, restore, re-use and incorporate heritage assets, where appropriate.
- D Development affecting heritage assets and their setting should conserve their significance, by being sympathetic to their form, scale, materials and architectural detail.
- E New development should make provision for the protection of archaeological resources, landscapes and significant memorials. The physical assets should, where possible, be made available to the public on-site. Where the archaeological assets or memorial cannot be preserved or managed on-site, provision must be made for the investigation, understanding, recording, dissemination and archiving of that assets.

LDF preparation

- F Boroughs should, in LDF policies, seek to maintain and enhance the contribution of

built, landscaped and buried heritage to London's environmental quality, cultural identity and economy as part of managing London's ability to accommodate change and regeneration.

- G Boroughs, in consultation with English Heritage, Natural England and other relevant statutory organizations, should include appropriate policies in their LDFs for identifying, protecting, enhancing and improving access to the historic environment and heritage assets and their setting where appropriate, and to archaeological assets, memorials and historic and natural landscape character within their area.

3.3 London Borough of Bromley, Local Plan: Strategic Policies

- 3.3.1 The local planning authority responsible for the study site is the London Borough of Bromley whose policy stipulates as follows:

POLICY BE16

Planning permission will not be granted for development that would adversely affect scheduled ancient monuments or other nationally important archaeological sites, involve significant alterations to them or harm their settings.

When considering planning applications for development involving excavation or other ground works the Council will require that:

- (i) within Areas of Archaeological Significance, as defined on the Proposals Map and listed in Appendix IV, a written statement of the likely is submitted in the form of an archaeological assessment (which can be desk based); where necessary information cannot be obtained by other means, an archaeological field evaluation should be carried out prior to determination;
- (ii) at sites of potential archaeological importance (as defined below), where permanent preservation in situ is not justified, provision shall be made for an appropriate level of investigation and recording to be undertaken by a recognised archaeological organisation before any development commences.

Where investigations indicate that in situ preservation is inappropriate, excavation and recovery should be carried out by a reputable archaeological body, before development commences. Any such investigations shall be in accordance with a detailed scheme to be approved in advance by the Council and the results shall be subsequently published.

Where in situ preservation is appropriate, suitable designs, land uses and management strategies will be required and the Council's archaeology strategy promoted.

- 6.41 Ancient monuments and archaeological remains constitute the principal surviving evidence of the Borough's past. However they are vulnerable to modern development and changes in land use and are easily lost or damaged. The Council considers that preservation of archaeological sites and ancient monuments is a legitimate objective against which the demands of development must be balanced and fully assessed. The destruction of such remains should be avoided and should never take place

without prior archaeological excavation and record.

- 6.42 In addition to Areas of Archaeological Significance, there are locations outside these defined boundaries where archaeological remains have been found and where there may be potential for further finds. Where development is proposed within an Area of Archaeological Significance (as shown on the Proposals Map), or near a site of archaeological potential, the Council will require a preliminary archaeological site evaluation before proposals are considered. The council will seek the appropriate professional advice and will require applicants proposing development to do the same. Where the Council considers it appropriate, detailed investigation shall be carried out to an agreed written specification of work by a professionally qualified archaeological organisation or archaeological consultant.
- 6.43 The Council will encourage early co-operation between landowners, developers and archaeologists in accordance with the Developers Liaison Group Code of Practice, and by attaching appropriate conditions to planning consents, and/or negotiate appropriate planning obligations (section 106 agreements).
- 6.44 It is important to increase public awareness of the historical and archaeological heritage of the Borough and to encourage its effective management as an educational and recreational resource. The Council will promote the conservation, protection and enhancement of ancient monuments and archaeological sites and their interpretation and presentation to the public.
- 6.45 The following sites in the Borough have been scheduled as Ancient Monuments:
- (i) Fordcroft, Poverest Road, Orpington – Romano-British Site/Anglo Saxon Cemetery
 - (ii) Caesar's Camp, Holwood Park, Keston - Iron Age hill fort
 - (iii) Camp on Keston Common, Keston – earthworks
 - (iv) The Temple, west of Keston Court, Westerham Road, Keston – Romano British mausoleum
 - (v) Romano-British villa, Crofton Road, Orpington
 - (vi) St. Botolph's Church, Ruxley - former mediaeval church on site of earlier church
 - (vii) Romano-British site, Wickham Court Farm, West Wickham – site of substantial Romano British settlement
 - (viii) Ice Well at High Elms.
- Sites (i), (iii), (iv), (v), (vii) and (viii) are owned by the Council.
- 6.46 The Council has published its Archaeological Strategy and will seek to use the planning process to implement its objectives. The Strategy provides a framework for dealing with archaeological issues and draws upon Planning Policy Guidance Note 16: Archaeology and Planning published by the Department of the Environment in 1990. Supplementary planning guidance will be prepared on archaeological issues and the preparation of statements.

3.4 Site Specific Planning Background

3.4.1 Planning consent has been approved for redevelopment on the site under application number 11/03762. The consent comprises the re-development of excess land within the curtilage of Thames Water Pumping Station to provide a new residential development of 8 units.

3.4.2 A planning condition (number 17) referring to archaeology has been attached to the planning consent. The condition is given below, along with its informatives:

17) 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 scheme of investigation which has been submitted by the applicant and approved in writing by the local planning authority.

3.4.3 The Archaeology Advisor to the London Borough of Bromley, Mark Stevenson of the Greater London Archaeological Advisory Service (GLAAS) at English Heritage, when consulted about the planning application, stated that:

It is recommended that the archaeological interest can be progressed by the application of a programme of trial trench evaluation for which a suitable specification will need to be prepared and submitted by the developer appointed archaeological practice and for it to be approved by your office following receipt of my recommendation before its implementation.

The results of the fieldwork to be submitted as a report that will enable judgement to be made as to whether there is a continued archaeological interest and if so how it may be mitigated.

3.4.4 The fieldwork herein reported followed the methodology contained within an approved Written Scheme of Investigation (Mayo 2014).

3.4.5 The site is located within an Area of Archaeological Significance as defined within the LB Bromley's Unitary Development Plan. The site does not lie within the vicinity of a Scheduled Ancient Monument, Historic Battlefield or Historic Wreck site.

4 GEOLOGICAL AND TOPOGRAPHICAL BACKGROUND

- 4.1 The site of the land adjacent to East Drive, Orpington (NGR 546583, 167283) is situated at the south end of East Drive and is bounded by residential units and an access lane to the east, by East Drive to the west and by residential housing to the north.
- 4.2 The site is situated c.200m to the west of the River Cray. Ground level of the north western area of the site is c.54.90m OD and falls to c.51.80m OD at the south eastern edge of the site.
- 4.3 The British Geological Survey website records the solid geology of the area to be varied. Beneath the study site it is shown as chalk, the Seaford Chalk Formation and Newhaven Chalk Formation. The chalk is shown to be overlain beneath the site by superficial drift deposits of the Crayford Silt Member - clay and silt. Due west of the site the geology changes and is shown as Thanet Sand with no superficial deposits; due east the Seaford Chalk is shown to be overlain by alluvium formed of clay, silt, sand and gravel. Immediately to the northeast of the site the Seaford Chalk is overlain by the Taplow Gravel Formation formed of sand and gravel.
- 4.4 In 2011 RSK carried out a Geo Environmental Assessment for the possibility of contaminants on the site along with a general survey of the make-up of the ground and its geological substrata. Their boreholes retrieved a great deal of information about the sequence and deposition of the archaeological and geological layers. The report concurs with the observations made through excavation and detailed in the trench descriptions that follow. In particular the boreholes picked up 'made ground' of mixed, re-deposited natural and building materials as being between 0.20m 0.80m thick below the turf layer. Furthermore, borehole evidence generally upheld the view that the western portion of the site (and a good deal of the eastern area) were underlain by Crayford Silt. This in turn overlay the Thanet Sand formed over the deeper Seaford and Newhaven Chalk Formation complex. The report thus tied the relatively small environs of the development area into the larger, regional geological framework as outlined by the BGS (James 2011).
- 4.5 The evaluation revealed natural gravel-with-flint nodules across the site at a height of between 53.93m OD and 51.63m OD. This was overlain a layer of made ground 0.2m – 0.93m thick and capped by a turf landscaping layer. The specifics of each layer are discussed in its relevant trench section below.

5 ARCHAEOLOGICAL BACKGROUND

5.1 Introduction

- 5.1.1 The archaeological and historical background to the site is dominated by the defined scheduled monument (number 1001973) at Bellefield Road, approximately 300m to the northeast. PCA has undertaken numerous projects at Bellefield Road, shortly due for publication (Taylor in prep.), and has produced grey literature reports pertaining to each intervention. The following archaeological and historical background relevant to the current site at East drive is reproduced from an assessment by Pre-Construct Archaeology Limited (Taylor 2008), which in turn drew upon a site specific method statement and evaluation report compiled in 2005 (Butler 2005; Wragg 2005) which itself drew heavily from a number of documents pertinent to an understanding of the archaeology of the Fordcroft area (Densem & Potter 2002; Philp & Keller 1995; Meekums 2001; Wragg 2003).
- 5.1.2 In 2000 carried a Watching Brief was conducted in close proximity to the site and discovered a number of archaeological features ranging from the prehistoric and Roman ditches, as well as evidence for Saxon and Medieval activity (Maloney 2000). No further archaeological or historical research has been undertaken for the assessment document although further research will be undertaken as part of the future publication of the site.

5.2 Prehistoric

- 5.2.1 Mesolithic activity is well documented within the Cray Valley. In the immediate vicinity of the site Mesolithic flint artefacts were found at 64 May Avenue to the north, and a scatter of Mesolithic tools and flint waste were recorded at Poverest Road. In 2003 an evaluation of the east of the former H Smith Yard recovered a mixed assemblage of struck and burnt flints including one struck flint blade, one multi-platformed flint core and one struck flint flake of probable Mesolithic date. One sherd of pottery of possible Iron Age date was found residually during the evaluation (Wragg 2003; 2004).
- 5.2.2 A small Neolithic/Bronze Age pit was identified in an excavation completed in the environs of the Water Pumping Station in 2000 during a Watching Brief by MoLA (Maloney 2000).

5.3 Roman

- 5.3.1 There is much evidence for Roman activity throughout the Cray Valley including the area surrounding the study site. 200m to the north of the site a small Roman cremation cemetery was recorded at 34 May Avenue; a corn drying oven and pit were recorded near Lower Road; a ditch was excavated at Kent Road; areas of metalling and quarry pits were recorded at Wellington Road; 376 silver *denarii* were found in a hoard at Forest Way; and Roman pottery and building material was recovered from a garden in Chelsfield Road.
- 5.3.2 The remains of a Romano- British bathhouse stands to the immediate north of Bellefield Road. To the west of this, excavations have revealed the presence of a kiln or furnace, outbuildings, metallated surfaces, a courtyard and an animal urine soakaway or flue. Excavations to the east of the bathhouse revealed a ditch, several pits, postholes and an area

of flint rubble dating to this period. Romano-British pottery was recovered in 1946 from a sewer trench being dug along Bellefield Road and also from excavations undertaken to the immediate east and south of the former H Smith Yard.

- 5.3.3 A Roman ditch was identified during a Watching Brief carried out by MOLA close to the site in 2000 (Maloney 2000).

5.4 Saxon and Medieval

- 5.4.1 Excavations to the northeast and east of the bathhouse revealed a Saxon cemetery containing 71 burials dating from the mid 5th to 6th century. 10 burials were recorded in close proximity to the bathhouse during later excavations, and a further burial was found to the west of the bathhouse. An isolated *grubenhau*s was recorded in excavations at 10-20 Kent Road some 300m to the east of the site.

- 5.4.2 The River Cray is first attested in AD 798, the name meaning clean or pure. The settlement at Sudcrai is mentioned in the Domesday Book, meaning south of the Cray. The parish church of St Mary Cray, standing on the other side of the river, on the High Street 750m north east of the site [Bellefield Road], dates to the thirteenth century, by which time the settlement is documented as Creye Sancte Marie. The settlement is thought to have comprised a small town, concentrated along the High Street. A medieval burnt clay hearth was discovered during excavations to the north.

- 5.4.3 The area within which the site is located is thought to have comprised of open farmland during this period as Saxon pottery was found in the upper fills of an earlier Roman ditch or field boundary (Maloney 2000).

5.5 Post Medieval

- 5.5.1 The maps of the 16th century showing St Mary Cray suggest that the land south of the river containing the site was open land. The Ordnance Survey map of 1864 shows the site [Bellefield Road] was occupied by a field. The Ordnance Survey maps of 1894-6, 1909, 1937 and 1950 show allotment gardens on the site, with surrounding housing developments.

6 METHODOLOGY

- 6.1 The evaluation was conducted according to an approved Written Scheme of Investigation prepared by Pre-Construct Archaeology Ltd. The fieldwork was designed to assess the presence or absence of archaeological remains.
- 6.2 A total of seven trenches were opened by mechanical excavator avoiding the footprint for the proposed buildings and the extant borehole stand pipes that were visible across the site. No excavation exceeded the stated maximum depth of 2m as stipulated by Thames Water.
- 6.3 A JCB mechanical excavator fitted with a flat-bladed ditching bucket was used under archaeological supervision to remove non-archaeological soils down to the highest archaeological horizon or natural level. Trench 1 was 20m long, Trench 2, provisionally to be 20m long, was extended slightly to ascertain the full width of a geological anomaly and finally measured 23.5m in length. Trench 3 was 10m in length and Trenches 4-7 were each 5m long. Two sondages were excavated through the natural to test its depth and consistency in Trench 1 and 2 but to a depth of no greater than 2m.
- 6.4 Following the opening of the trenches the vertical sections were cleaned and all features identified were investigated by hand. Investigation was intended to identify the extent and nature of the deposits and to recover dating evidence. The deposits, fills, and features were assigned individual context numbers.
- 6.5 All recording systems adopted during the investigations were fully compatible with those most widely used elsewhere in London; that is those developed out of the Department of Urban Archaeology Site Manual and presented in PCAs Fieldwork Operations Manual 1 (Taylor 2007). Individual descriptions of all archaeological and geological strata and features excavated and exposed were entered onto pro-forma recording sheets. All plans and sections of archaeological deposits were recorded on polyester based drawing film, the plans being at scale of 1:20 and the sections at 1:10. The OD heights of all principle strata were calculated and indicated on the appropriate plans and sections.
- 6.6 A photographic record of the investigations was made using digital formats.
- 6.7 A Temporary Bench Mark was installed on the site via GPS surveying equipment; this equipment was also used to record the trench location to the OS grid. The TBM was located upon standpipe BHS(S) in the centre of the site with a value of 53.20m OD.
- 6.8 Upon the completion of the archaeological work the trenches were backfilled under archaeological supervision.
- 6.9 The complete site archive including site records, photographs and finds will be deposited at the London Archaeological Archive Research Centre, (LAARC) under the site code EST15.

7 ARCHAEOLOGICAL DESCRIPTION TRENCHES 1-7

7.1 Trench Results

- 7.1.1 The area under evaluation had been turfed [1] which initially gave it the appearance of a green field site consisting of a slight plateau or level area on the western side gently sloping down towards the southeast echoing the natural fall of the valley side towards the River Cray at the east. . However this layer masked the fact that the site had been truncated through the process of terracing for the construction of the water treatment works and masked a number of layers of made-ground used to landscape the site. Trenches 2, 3, 4 & 5 were opened on the higher ground or terraced plateau where the made ground was deepest. Trenches 1, 6 & 7 were opened on the lower ground at the base of a slope where the land fell away to the south-east.
- 7.1.2 The earliest horizon encountered within the trenches was the natural gravels-with-flints [3] that formed the basal limit of excavation. This was composed of loosely compacted flint nodules of varying size within mid yellow and brown gravel and was located at a height of between 53.93m OD at the higher end of the site at the northwest and 51.46m OD at the lowest, southern limit at the bottom of the slope.
- 7.1.3 A fill of hill-wash in a natural hollow (or variation in the natural) was located in the south-eastern extremity of Trench 2. In order to better understand the deposit and to ascertain its dimensions the trench was extended to the south east by 3.5.
- 7.1.4 One Post Medieval-Modern rubbish pit [5] was located in Trench 1.
- 7.1.5 The first layer of made ground that was encountered in Trenches 2, 3, 4 & 5 consisted of re-deposited flints and gravel natural mixed with construction debris [6] which was up to 0.80m thick in the western part of the site.
- 7.1.6 Layer [6] sealed further modern deposits of re-deposited soils which were identified in trenches as layers [8], [9] in Trench 2 and as layer [16] in Trench 5 and was up to 0.37m thick.
- 7.1.7 A number of modern pits and trenches were recorded which were sealed by the aforementioned made-ground layers. Trench 2 had a modern storm drain trench in its base [15] as well as a modern pit [18]. Their respective fills both contained modern construction debris as well as fragments of plastic and polythene. This was similar to the two machine-cut trenches revealed in the base of Trench 3; both trenches [11] & [13] were modern containing 20th century debris.

8 ARCHAEOLOGICAL PHASED SEQUENCE

8.1 Phase 1: Natural Deposits

8.1.1 The natural deposit of flint nodules in a matrix of mid yellow-brownish gravel [3] that underlay the site was exposed along the length of each of the trenches. Levels ranged from a height of 53.93m OD at the highest point at the west of the site in Trench 4 to 51.15m OD in the south east in Trench 1 at the bottom of the gently falling slope (see Plates 3 & 4). The deposit encountered accords well with the description of the Thanet Sand Formation described by the British Geological Survey on their website and referred to in the Geo-Environmental Risk Report produced by RSK (James 2011).

8.2 Natural Hollow or Geological Variation

8.2.1 In the south east end of Trench 2 a mid grey-brownish layer of silty-clay [7] was discovered in a natural hollow or depression that was either a naturally-occurring 'terracing hollow' filled by hill-wash or simply a variation in the natural (see Plate 1). It had a vaguely linear aspect in plan and was oriented roughly northeast-southwest at the south eastern end of the trench at a height of 52.84m OD and was found to be 0.39m thick. The base of the feature was at 52.45m OD. The trench was lengthened to reveal its extent - an additional 3.5m was excavated to the south-east - and a slot hand dug into the deposit from which a number of flints were recovered. As exposed, the feature was 1.6m north to south and 6.2m east to west. The flint fragments turned out not to be of anthropogenic origin.

Plate 1: Trench 2, Geological variation or natural terracing hollow [7], looking N (Scale 1m)



8.3 Phase 2: Post Medieval – Modern

- 8.3.1 In Trench 1 a shallow, sub circular pit [5] 0.68m in diameter and 0.17m deep was cut into the natural. It contained one, truncated fill [4], the top of which was at a height of 51.67m OD (see Plate 2). The fill [5] comprised of a dark grey-brownish silty-clay. Partial excavation of this fill yielded the metal find of an 19th century 'Apostle' spoon, a fragment of a glass bottle and a sherd of pottery dating to around the late 18th to early 19th century.

Plate 2: Trench 1, Post Medieval Pit [5], looking NE (Scale 0.5m)



8.4 Phase 3: Subsoil

- 8.4.1 In Trenches 1, 6 & 7 on the lower slope, a possible (though thin) subsoil [2] was observed which may suggest that the terracing and construction work required for the building of the water pumping station did not reach as far as the eastern portion of the site. However, this layer still contained both flint nodules and gravel so perhaps it is safer to regard this layer as belonging to the landscaping phase prior to the turf being laid rather than true subsoil which had evolved over time.
- 8.4.2 It was recorded at heights between 51.79m OD and 51.45m OD, both in Trench 6. The layer was up to 0.26m thick.

Plate 3: Trench 1, Section 1, presence of subsoil [2], looking NE (Scale 0.5m)



8.5 Phase 4: 20th Century

- 8.5.1 In both Trenches 2 & 3 were found 20th century, interventions which had been subsequently sealed by the re-deposited and made ground layers [6], [8], [9] & [16]. These modern features consisted of a service trench for a plastic storm drain [15], two machine-dug trenches [11] & [13] and a modern rubbish pit [18]. All displayed inclusions of either modern building materials or plastics giving them a 20th century date.
- 8.5.2 In Trenches 2, 3, 5 & 9 layers of re-deposited soil, composed of clayey-silt, was discovered in varying thicknesses and recorded as layers [8], [9] & [16]. They contained building debris and plastic fragments within them. In Trench 2 it was observed as having a thickness of 0.40m whilst in Trench 5 it feathered out into a wedge shape of only a few millimetres.
- 8.5.3 Across the western portion of the site - from Trench 3 westwards - a thick layer of crushed flint nodules mixed with modern building materials [6] was found which was the result of the land shaping, terracing and landscaping which is believed to have occurred in association with construction of the water pumping station. In Trenches 3 & 4 this layer sits directly upon the natural gravels and in these cases it was difficult to create a 'clean' surface in the base of the trench during excavation as it appeared that modern CBM and plastic had been pressed down with some force (probably due to the movement of plant and/or vehicles) into the natural deposit on the interface. The RSK Geotechnical report records that it was found consistently across the western portion of the site with a thickness varying between as little as 0.2m to as

much as 1m. It varied hugely in its make-up and inclusions of modern construction debris but is best described under the BH5 log which described it as, 'brown clayey-silt with sand, flint gravel and brick fragments' (James 2011:15).

- 8.5.4 The illusion of a 'green field' site had been created by the laying of turf [1] across the whole area which masked the layers of made ground [6] underneath. It was recorded at a height of between 54.50m at the north by Trench 4 to 51.74m OD at the lowest point in the south east by Trench 1. Thickness varied but generally it was between 0.20 and 0.24m thick across the site.

Plate 4: Trench 4, Section 4, Made ground on natural geology (no subsoil) looking N (Scale 1m)



9 INTERPRETATION AND CONCLUSIONS

9.1 Original Research Objectives

9.1.1 The following research objectives were put forth in the Written Scheme of Investigation and these can now be addressed

To determine the natural topography and geology of the site, and the height at which it survives.

9.1.2 The natural topography of the site appears to have been truncated during the construction of the water pumping station in the 20th century. The initial indication of this is that although the study site is located upon the side of a gradually sloping valley wall, it is remarkably flat at the west, while all the land to southeast falls away visibly. It would appear this 'terrace' or 'plateau' was created for the construction of the Water Treatment Works. The topographic and archaeological data therefore attests to 20th century terracing of the site for the construction of the pumping station.

To establish the presence or absence of prehistoric and Roman activity.

9.1.3 There was no evidence of such activity found in the evaluation.

To establish the presence or absence of medieval activity.

9.1.4 There was no evidence of medieval activity found in the evaluation.

To establish the presence or absence of post-medieval activity at the site.

9.1.5 One small pit [5] in Trench 2 was found at the south eastern extremity of the site which was sealed by the subsoil [2]. It was found to be of 19th or 20th century date.

To establish the nature, date and survival of activity relating to any archaeological periods at the site.

9.1.6 The only archaeological period represented on the site was the late post-medieval to the modern period. The rest of the site had been horizontally truncated by early 20th century terracing of the study area.

To establish the extent of all past post-depositional impacts on the archaeological resource.

9.1.7 It is apparent from the work of the evaluation that the post-depositional impacts have had a severe effect on the preservation of the archaeology. It is apparent from topographic data that terracing of the hillside upon which the site is located took place during its development in the

early 20th century. Close scrutiny of the spoil heaps revealed not a single pot sherd or fragment of CBM. This is most unusual because even marginal land at a distance from a settlement will usually contain a 'background' of re-deposited or heavily rolled pottery or CBM. Furthermore, no man-made flint flakes were found in the spoil even when their presence had been attested to in proximity of the site (Maloney 2000).

9.2 Conclusions and Recommendations

- 9.2.1 The evaluation has demonstrated a locally truncated natural horizon at the western end of the site which has been impacted by modern terracing to create a level building platform. The natural slope of the site to the southeast may indicate the survival of a thin subsoil [2] even though this is questionable as to whether it is simply a made ground layer created for the laying of the turf [1].
- 9.2.2 Given the absence of archaeological remains PCA does not recommend any further work for this development.

9.3 Publication and Archive

- 9.3.1 The results of the site investigation will be published by PCA as a summary in the annual 'Round-Up' of London Archaeologist.
- 9.3.2 Upon approval this report and with confirmation that the condition is discharged the complete archive will be deposited with the London Archaeological Archive and Research Centre under the unique site code EST15.

10 ACKNOWLEDGEMENTS

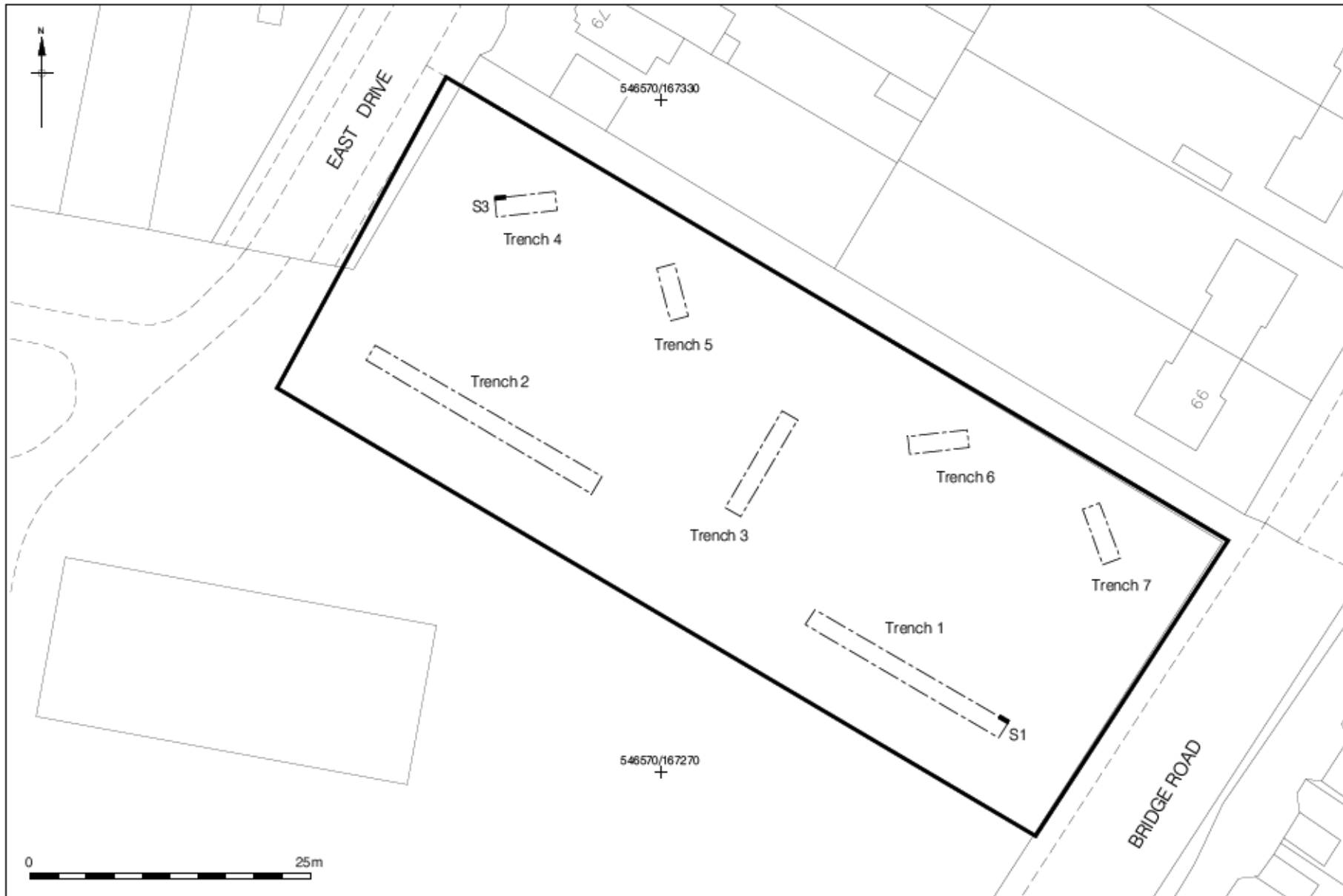
- 10.1 Pre-Construct Archaeology Limited would like to thank Alan Wickham of J. P Whelan Ltd for commissioning the work, and Paul Jeffery for his assistance. We would also like to thank Mark Stevenson of English Heritage for monitoring the project.
- 10.2 The author would like to thank Jim Heathcote for his help in the field, Richard Archer for the survey, Chris Cooper for organising the logistics, Kevin Hayward and Chris Jarrett for dating the finds, Josephine Brown for the illustrations and Chris Mayo for his project management and editing.

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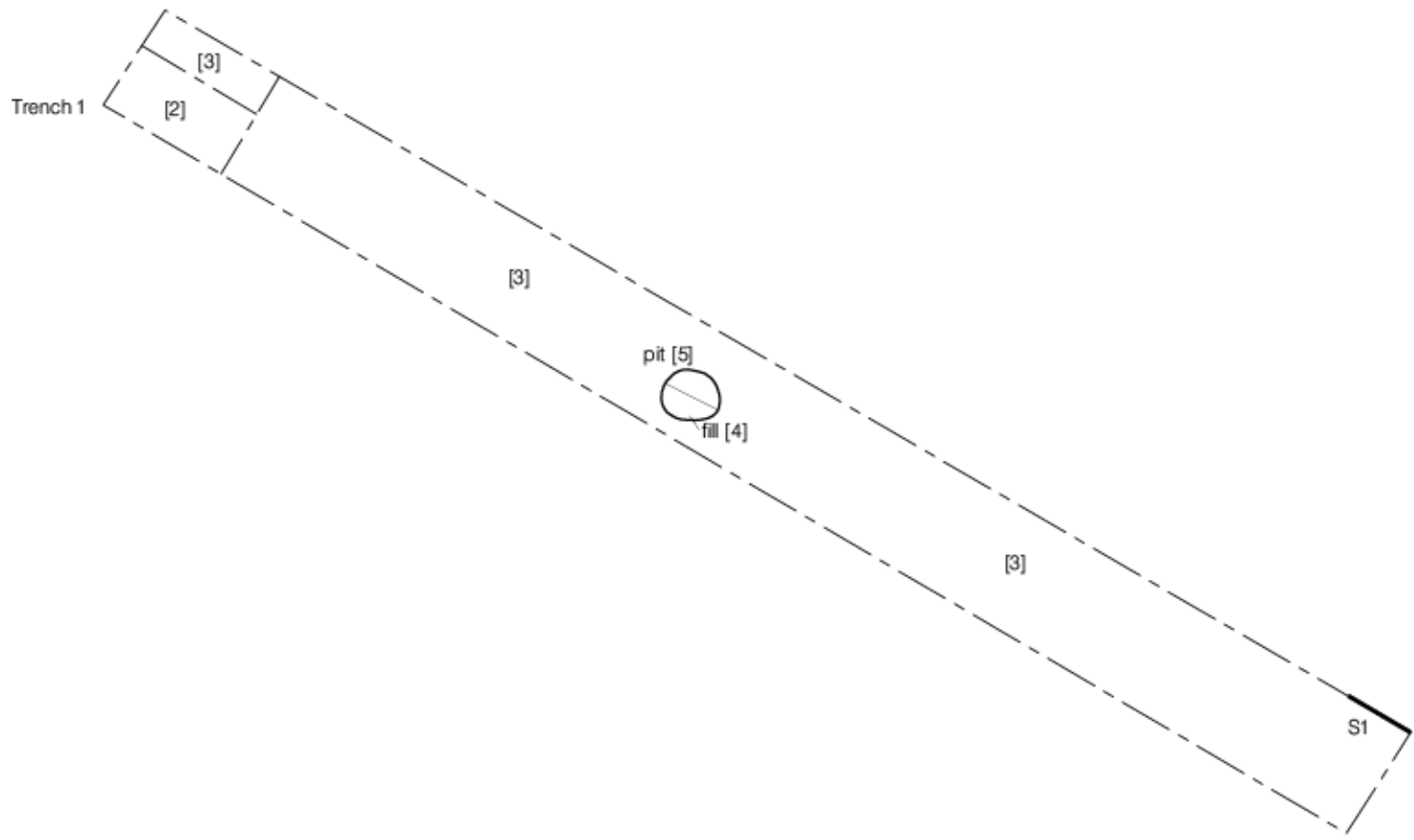


Figure 1
 Site Location
 1:20,000 at A4



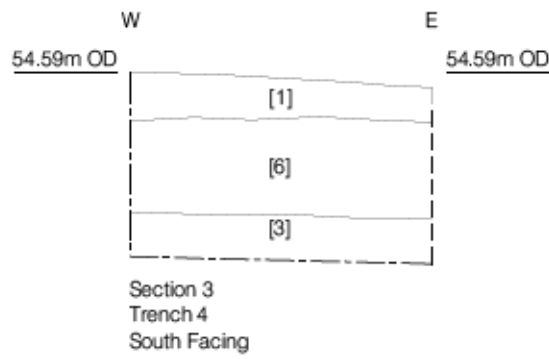
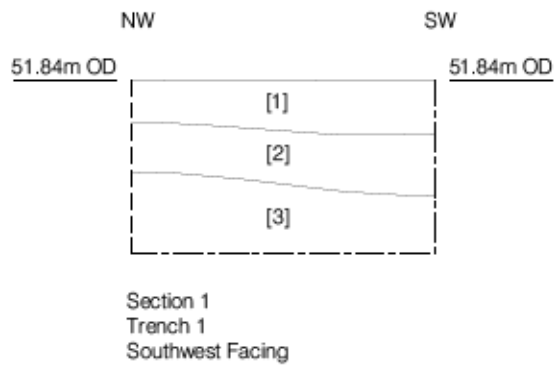
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Figure 2
Trench Location
1:500 at A4



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Figure 3
Trench 1 Plan
1:50 at A4



0 1m

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Figure 4
Sections 1 & 3
1:25 at A4

APPENDIX 1: CONTEXT INDEX

Site Code	Context No.	Trench	Plan	Section / Elevation	Type	Description	Date	Phase
EST15	1	1	TR1	1,2,3,4,5,6,7	Layer	Turf & Topsoil	Modern	4
EST15	2	1	TR1	1,2,6,11,12	Layer	Subsoil	?	3
EST15	3	1	TR1	1,2,3,4,5,6,7	Layer	Natural flint & gravel	Natural	1
EST15	4	1	TR1	*	Fill	Silty clay	Post-Med	2
EST15	5	1	TR1	*	Cut	Pit	Post-Med	2
EST15	6	2	TR2	2,3,4,5,6,7,8,9,10	Layer	Made Ground	Modern	4
EST15	7	2	TR2	5	Layer	Hill-wash	Natural	1
EST15	8	2	TR2	5	Layer	Re-Deposited Soil	Modern	4
EST15	9	2	TR2	6	Layer	Re-Deposited Soil	Modern	4
EST15	10	3	TR3	*	Fill	Modern back-fill	Modern	4
EST15	11	3	TR3	*	Cut	Trench	Modern	4
EST15	12	3	TR3	*	Fill	Modern back-fill	Modern	4
EST15	13	3	TR3	*	Cut	Trench	Modern	4
EST15	14	2	TR2	*	Fill	Silty sand	Modern	4
EST15	15	2	TR2	*	Cut	Pipe trench	Modern	4
EST15	16	5	TR5	9,10	Layer	Re-Deposited soil	Modern	4
EST15	17	2	TR2	*	Fill	Clayey-silt	Modern	4
EST15	18	2	TR2	*	Cut	Pit	Modern	4

PHASES

1. Natural
2. Post Medieval (1540 – 1901)
3. Subsoil
4. Modern (1901 - Present)

APPENDIX 2: OASIS FORM

OASIS ID: preconst1-202285

Project details

Project name	Land adjacent to East Drive, Orpington, Kent BR5 2BY
Short description of the project	Seven archaeological trenches were excavated around the footprint of eight proposed buildings within the land plot adjacent to East Drive avoiding the borehole pipes present and visible above ground. The evaluation showed that early 20th century terracing of the site had severely truncated the archaeological horizon, down to the natural geology in most places. One small rubbish pit, probably of post-medieval date was located in the southeast of the site and one geological anomaly of a natural hollow or geological variation was recorded. Elsewhere, the natural Thanet Beds were exposed once the layers of modern re-deposited soil and made ground had been removed.
Project dates	Start: 12-01-2015 End: 16-01-2015
Previous/future work	Yes / Not known
Any associated project reference codes	APP/G5180/A/12/2189777 - Planning Application No.
Any associated project reference codes	EST15 - Sitecode
Type of project	Field evaluation
Site status	Local Authority Designated Archaeological Area
Current Land use	Vacant Land 2 - Vacant land not previously developed
Monument type	PIT Post Medieval
Significant Finds	NONE None
Methods & techniques	"Sample Trenches"
Development type	Urban residential (e.g. flats, houses, etc.)
Prompt	Planning condition
Position in the planning process	After full determination (eg. As a condition)

Project location

Country	England
Site location	GREATER LONDON BROMLEY ORPINGTON Land adjacent to East Drive, Orpington, Kent BR5 2BY
Postcode	BR5 2BY
Study area	2515.00 Square metres
Site coordinates	TQ 4658 6728 51.3850910824 0.106731800192 51 23 06 N 000 06 24 E Point
Lat/Long Datum	Unknown
Height OD / Depth	Min: 51.15m Max: 53.93m

Project creators

Name of Organisation	Pre-Construct Archaeology Limited
Project brief originator	Local Authority Archaeologist and/or Planning Authority/advisory body
Project design originator	Chris Mayo

Project director/manager	Chris Mayo
Project supervisor	Wayne Perkins
Type of sponsor/funding body	Developer
Name of sponsor/funding body	J.P Whelan Homes Ltd

Project archives

Physical Archive recipient	LAARC
Physical Archive ID	EST15
Physical Contents	"Ceramics","Metal"
Digital Archive recipient	LAARC
Digital Archive ID	EST15
Digital Contents	"Stratigraphic"
Digital Media available	"Images raster / digital photography","Images vector","Spreadsheets","Text"
Paper Archive recipient	LAARC
Paper Archive ID	EST15
Paper Contents	"Stratigraphic"
Paper Media available	"Context sheet","Miscellaneous Material","Notebook - Excavation',' Research',' General Notes","Plan","Section"

Project bibliography 1

Publication type	Grey literature (unpublished document/manuscript)
Title	Land adjacent to East Drive, Orpington, Kent BR5 2BY: An Archaeological Evaluation
Author(s)/Editor(s)	Perkins, W.
Other bibliographic details	PCA R11974
Date	2015
Issuer or publisher	Pre Construct Archeaology Limited
Place of issue or publication	London
Description	A4 grey literature report with blue covers

Entered by	Chris Mayo (cmayo@pre-construct.com)
Entered on	2 February 2015

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