FORMER ROLEX WORKS
HEATH END ROAD
DARTFORD
KENT

ARCHAEOLOGICAL
EVALUATION

MAY 2012

REPORT: R11214

PRE-CONSTRUCT ARCHAEOLOGY

DOCUMENT VERIFICATION

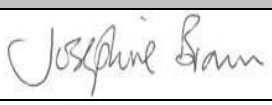
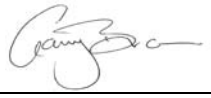
Site Name

Former Rolex Site,
Heath End Road,
Bexley,
Kent,

Type of project

Archaeological Evaluation

Quality Control (Revision 1)

Pre-Construct Archaeology Limited Project Code			K2772
	Name & Title	Signature	Date
Text Prepared by:	Dougie Killock		10.05.12
Graphics Prepared by:	Jenny Simonson		10.05.12
Graphics Checked by:	Josephine Brown		10.05.12
Project Manager Sign-off:	Gary Brown		10.05.12

Revision No.	Date	Checked	Approved

Pre-Construct Archaeology Ltd
Unit 54
Brockley Cross Business Centre
96 Endwell Road
London
SE4 2PD

An Archaeological Evaluation at the former Rolex works, Heath End Road, Dartford, Kent, DA5 2AA

Site Code: KRLX 12

Central National Grid Reference: TQ 5108 7310

Written by: Douglas Killock
Project Manager: Gary Brown
Commissioning Client: Bellway Homes Limited

Pre-Construct Archaeology Limited
Unit 54
Brockley Cross Business Centre
96 Endwell Road
Brockley
London
SE4 2PD

Tel: **020 7732 3925**
Fax: **020 7639 9588**

Email: **gbrown@pre-construct.com**
Website: **www.pre-construct.com**

May 2012

CONTENTS

APPENDICES

ILLUSTRATIONS

1 ABSTRACT

1.1 This report details the results of an archaeological evaluation undertaken at the former Rolex works, Heath End Road, Dartford, Kent DA5 5AA. The evaluation was carried out by Pre-Construct Archaeology Ltd between the 16th and 21st of April 2012. Recording of smaller test pits, excavated to examine the sedimentary sequence and geoarchaeological potential was undertaken by QUEST, University of Reading.

1.2 The evaluation followed the preparation of a Desk Based Assessment of the study site (Fairman and Brown 2011).

1.3 Five trenches were excavated during the evaluation to establish the archaeological potential of the site for the later archaeological periods, that is, from the Neolithic onwards. Six smaller trenches were excavated from the surface of the natural deposits to establish the geoarchaeological and palaeoarchaeological potential for the site.

1.4 The evaluation revealed that large areas of the site had probably been impacted by the landscaping associated with the former Rolex works and the subsequent demolition of the structures it comprised. Some areas of undisturbed topsoil with a brickearth type subsoil (Wantsum Loam) were apparent, particularly on the south side of the site, but no archaeological features were evident. The one remaining area where topsoil had survived on the northern part of the site had undoubtedly been disturbed in the recent past. No subsoils were evident in this area and the topsoil contained material such as plastic shopping bags and in places the topsoil also sealed shallow concrete foundations.

1.5 No archaeological feature or deposits dating to the Neolithic or later periods were evident in any of the evaluation trenches with the exception of post-medieval subsoil and ploughsoil horizons.

1.6 No evidence was found for the survival of palaeoarchaeological remains across the area investigated. In some of the trenches the higher levels of gravel most likely, but not certain, to have contained flint implements had been impacted by modern construction but the later gravels survived in three of the six locations investigated.

2 INTRODUCTION

2.1 An archaeological evaluation was undertaken by Pre-Construct Archaeology Ltd at the former Rolex works, Heath End Road, Dartford, Kent in order to assess the archaeological impact of a proposed housing development on the site. The evaluation was conducted between the 16th and 21st of April 2012 and was commissioned by Bellway Homes Limited.

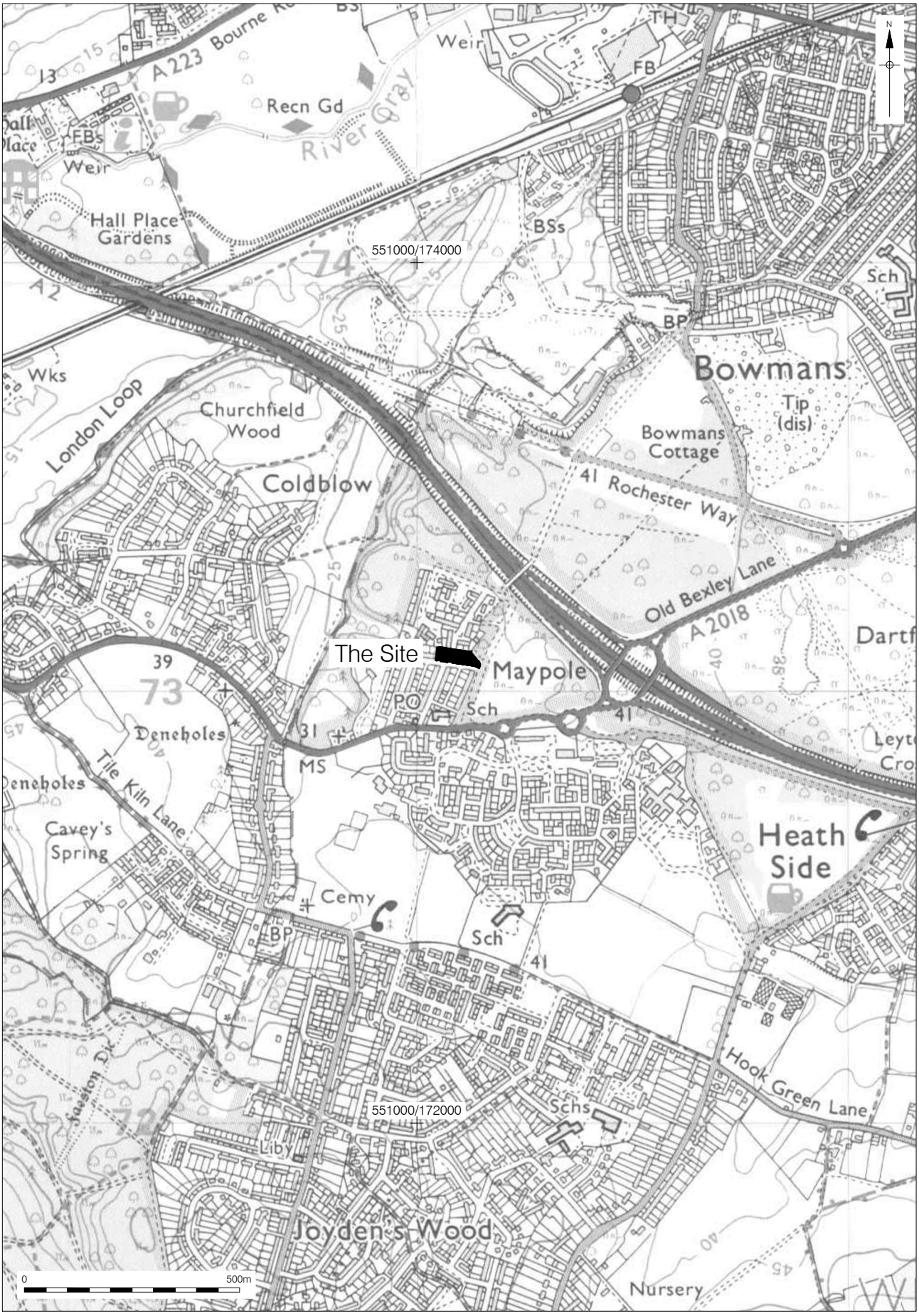
2.2 The site comprises a roughly rectangular plot of land with a total area of c.3233m^2. Until recently the site was occupied by a factory site, the Rolex works. The site is bounded by Heath End Road to the south, residential properties fronting onto Heath End Road to the west, residential properties fronting onto Heathwood Walk to the north and a grassed area and Denton Road to the east.

2.3 The central National Grid Reference of the site is TQ 5108 7310.

2.4 The site was given the code KRLX 12.

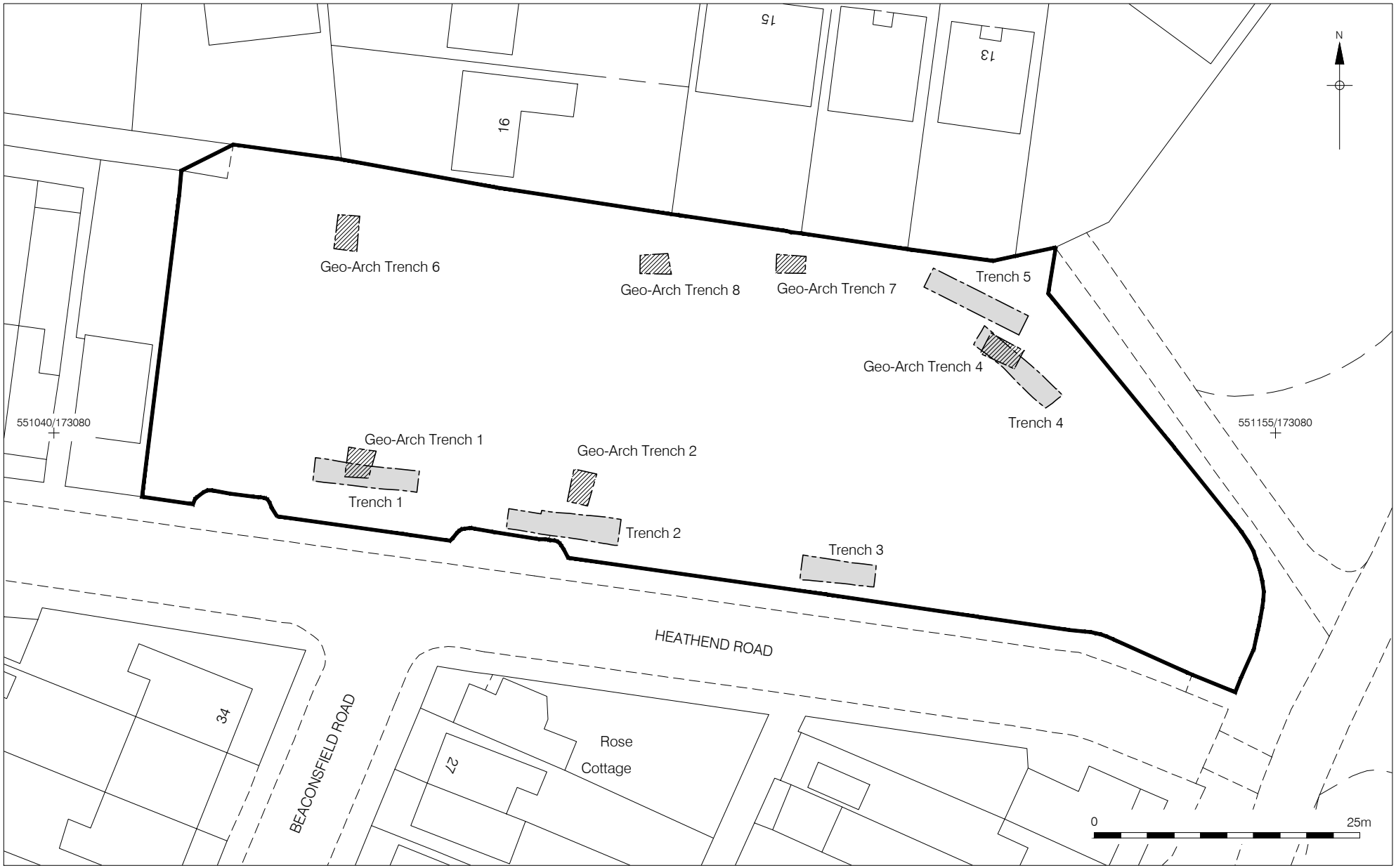
2.5 The project was monitored by Wendy Rodgers of Kent County Council, project managed for PCA Ltd by Gary Brown and supervised by the author.

2.6 The complete site archive including site records, photographs and finds will be deposited at a suitable repository in Kent. At present such a repository is not extant and the archive will be stored at Pre-Construct Archaeology's premises until such time as it can be deposited.



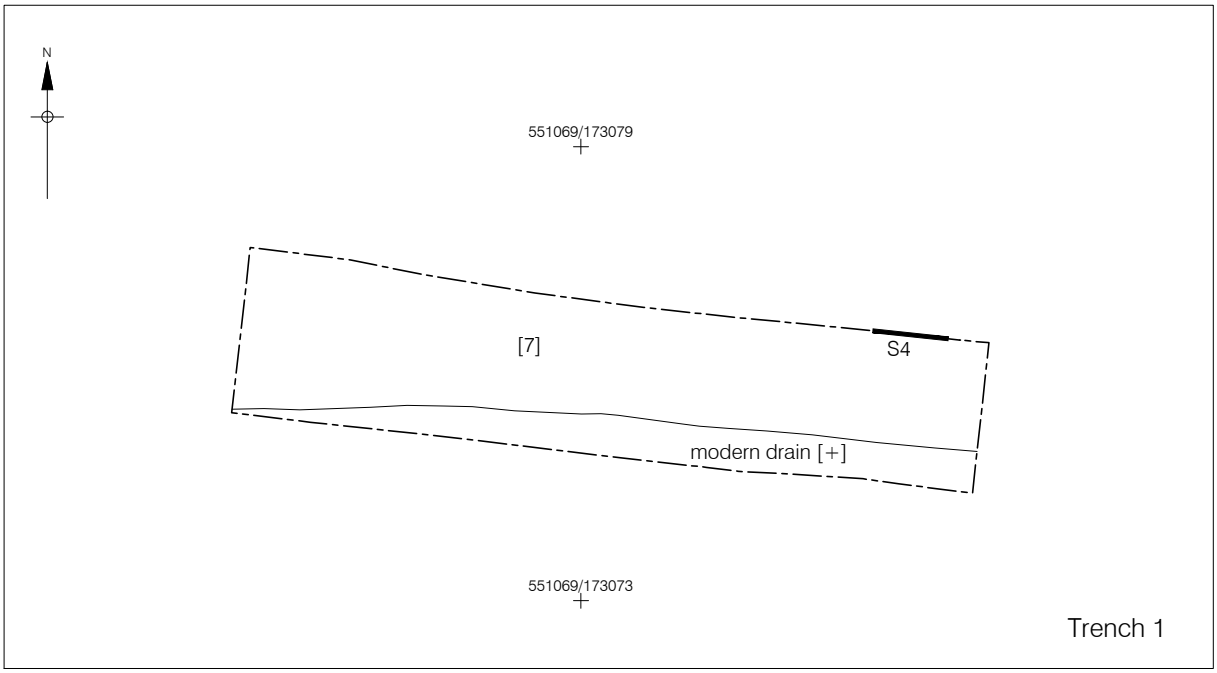
08/05/12 JS

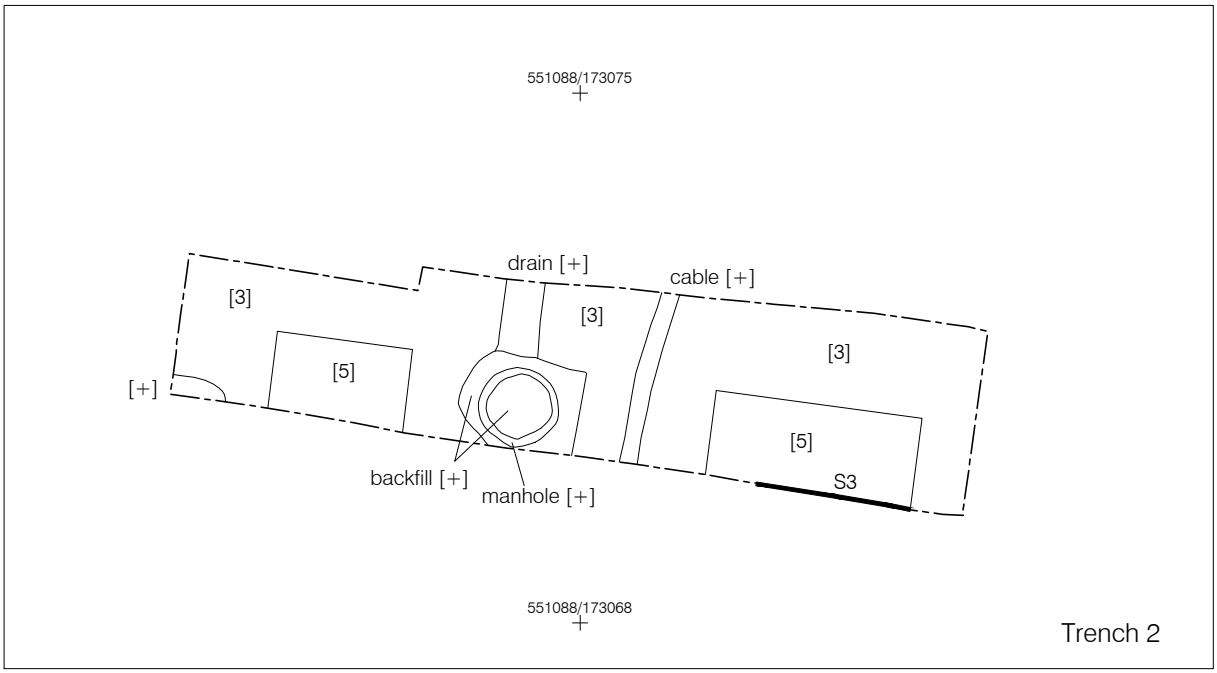
Figure 1
Site Location
1:12,500 at A4

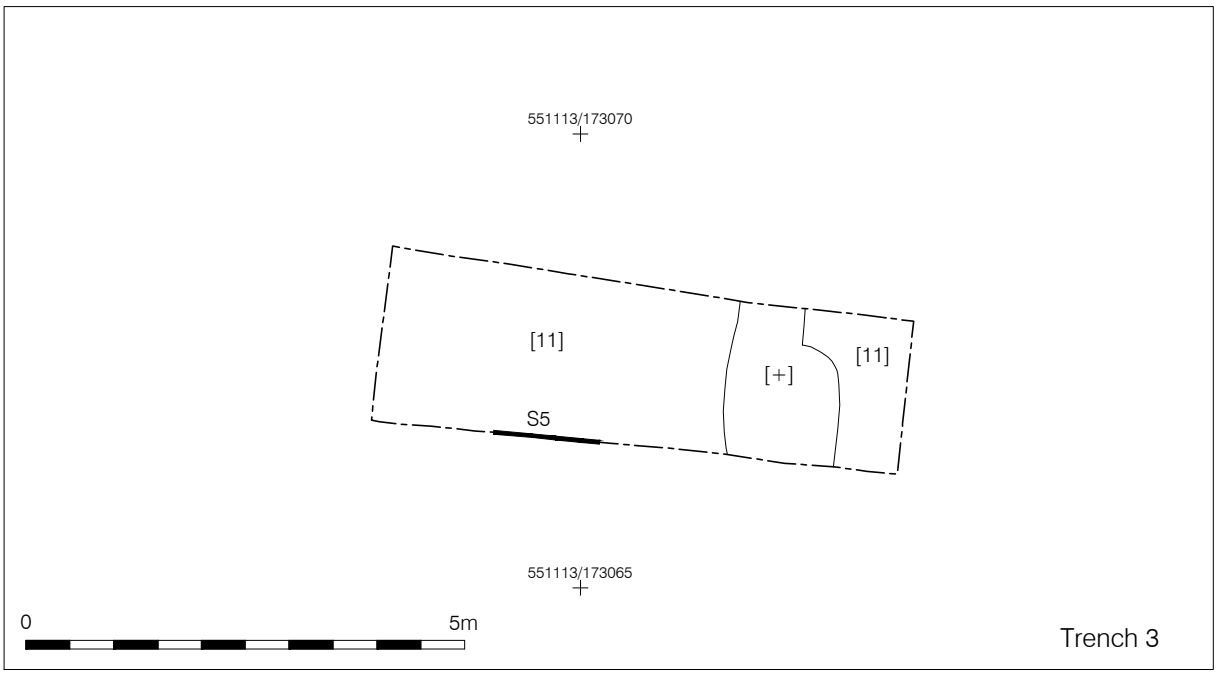


08/05/12 JS

Figure 2
Trench Location
1:500 at A4

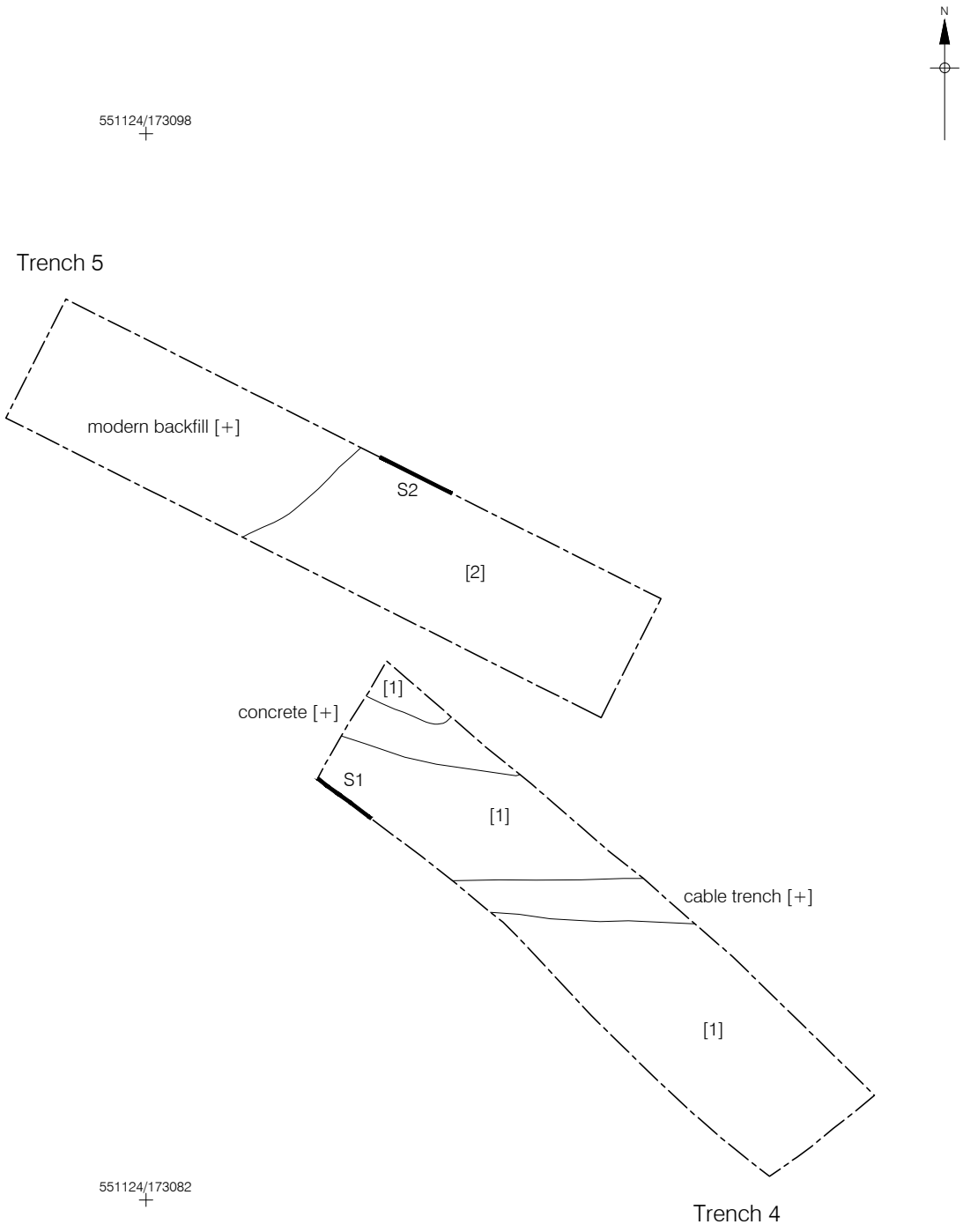






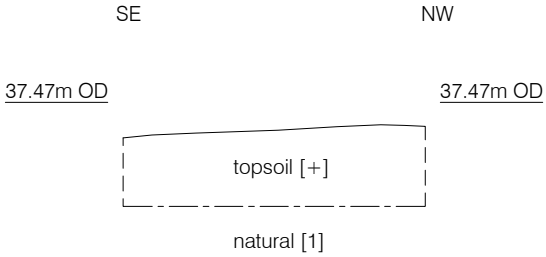
08/05/12 JS

Figure 3
Trenches 1 - 3
1:100 at A4

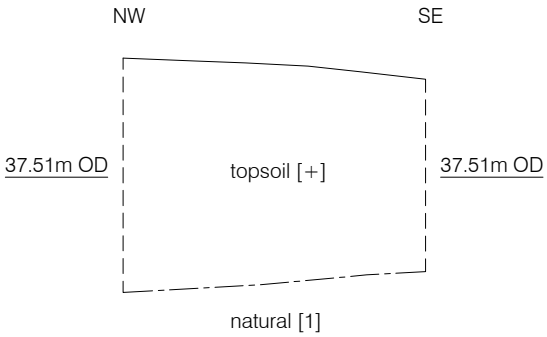


08/05/12 JS

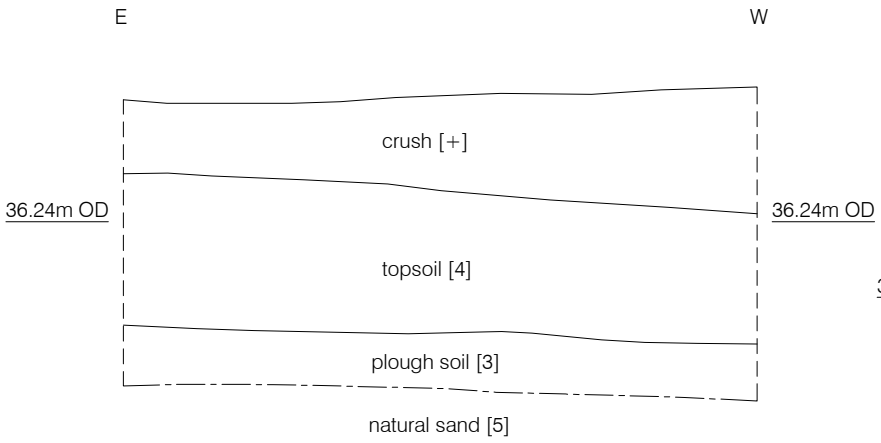
Figure 4
Trenches 4 & 5
1:100 at A4



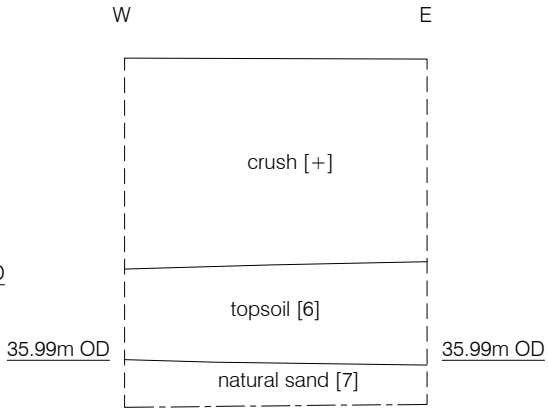
Section 1
Trench 4
Northeast Facing



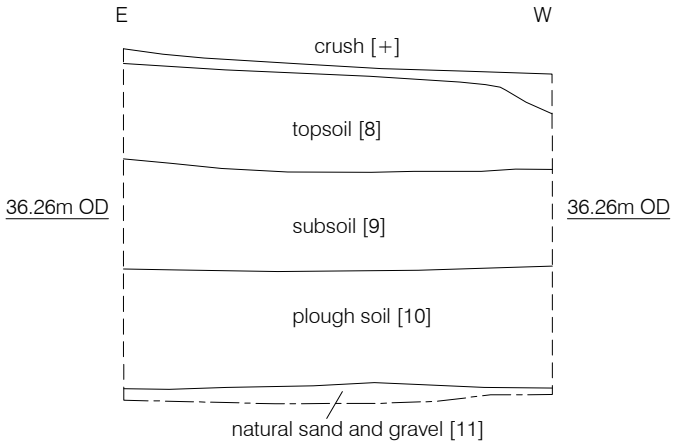
Section 2
Trench 5
Southwest Facing



Section 3
Trench 2
North Facing



Section 4
Trench 1
South Facing



Section 5
Trench 3
North Facing

08/05/12 JS

Figure 5
Sections 1 - 5
1:25 at A4

3 PLANNING BACKGROUND

3.1 The Departments of Communities and Local Government (DCLG) issued a new series of planning guidelines, the National Planning Policy Framework, in March 2012. This document superseded the previous guidance contained in Planning Policy Statement 5. The policies regarding archaeology are contained in Section 12 Conserving and enhancing the historic environment. These state:

126. Local planning authorities should set out in their Local Plan a positive strategy for the conservation and enjoyment of the historic environment[1], including heritage assets most at risk through neglect, decay or other threats. In doing so, they should recognise that heritage assets are an irreplaceable resource and conserve them in a manner appropriate to their significance. In developing this strategy, local planning authorities should take into account:

- the desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation;
- the wider social, cultural, economic and environmental benefits that conservation of the historic environment can bring;
- the desirability of new development making a positive contribution to local character and distinctiveness; and
- opportunities to draw on the contribution made by the historic environment to the character of a place.

127. When considering the designation of conservation areas, local planning authorities should ensure that an area justifies such status because of its special architectural or historic interest, and that the concept of conservation is not devalued through the designation of areas that lack special interest.

128. In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance. As a minimum the relevant historic environment record should have been consulted and the heritage assets assessed using appropriate expertise where necessary. Where a site on which development is proposed includes or has the potential to include heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation.

129. Local planning authorities should identify and assess the particular significance of any heritage asset that may be affected by a proposal (including by development affecting the setting of a heritage asset) taking account of the available evidence and any necessary expertise. They should take this assessment into account when considering the impact of a proposal on a heritage asset, to avoid or minimise conflict between the heritage asset's conservation and any aspect of the proposal.

130. Where there is evidence of deliberate neglect of or damage to a heritage asset the deteriorated state of the heritage asset should not be taken into account in any decision.

131. In determining planning applications, local planning authorities should take account of:

[1] The principles and policies set out in this section apply to the heritage-related consent regimes for which local planning authorities are responsible under the Planning (Listed Buildings and Conservation Areas) Act 1990, as well as to plan-making and decision-taking.

- the desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation;
- the positive contribution that conservation of heritage assets can make to sustainable communities including their economic vitality; and
- the desirability of new development making a positive contribution to local character and distinctiveness.

132. When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation. The more important the asset, the greater the weight should be. Significance can be harmed or lost through alteration or destruction of

the heritage asset or development within its setting. As heritage assets are irreplaceable, any harm or loss should require clear and convincing justification. Substantial harm to or loss of a grade II listed building, park or garden should be exceptional. Substantial harm to or loss of designated heritage assets of the highest significance, notably scheduled monuments, protected wreck sites, battlefields, grade I and II* listed buildings, grade I and II* registered parks and gardens, and World Heritage Sites, should be wholly exceptional.

133. Where a proposed development will lead to substantial harm to or total loss of significance of a designated heritage asset, local planning authorities should refuse consent, unless it can be demonstrated that the substantial harm or loss is necessary to achieve substantial public benefits that outweigh that harm or loss, or all of the following apply:

- the nature of the heritage asset prevents all reasonable uses of the site; and
- no viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation; and
- conservation by grant-funding or some form of charitable or public ownership is demonstrably not possible; and
- the harm or loss is outweighed by the benefit of bringing the site back into use.

134. Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal, including securing its optimum viable use.

135. The effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application. In weighing applications that affect directly or indirectly non designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset.

136. Local planning authorities should not permit loss of the whole or part of a heritage asset without taking all reasonable steps to ensure the new development will proceed after the loss has occurred.

137. Local planning authorities should look for opportunities for new development within Conservation Areas and World Heritage Sites and within the setting of heritage assets to enhance or better reveal their significance. Proposals that preserve those elements of the setting that make a positive contribution to or better reveal the significance of the asset should be treated favourably.

138. Not all elements of a World Heritage Site or Conservation Area will necessarily contribute to its significance. Loss of a building (or other element) which makes a positive contribution to the significance of the Conservation Area or World Heritage Site should be treated either as substantial harm under paragraph 133 or less than substantial harm under paragraph 134, as appropriate, taking into account the relative significance of the element affected and its contribution to the significance of the Conservation Area or World Heritage Site as a whole.

139. Non-designated heritage assets of archaeological interest that are demonstrably of equivalent significance to scheduled monuments, should be considered subject to the policies for designated heritage assets.

140. Local planning authorities should assess whether the benefits of a proposal for enabling development, which would otherwise conflict with planning policies but which would secure the future conservation of a heritage asset, outweigh the disbenefits of departing from those policies.

141. Local planning authorities should make information about the significance of the historic environment gathered as part of plan-making or development management publicly accessible. They should also require developers to record and advance understanding of the significance of any heritage assets to be lost (wholly or in part) in a manner proportionate to their importance and the impact, and to make this evidence (and any archive generated) publicly accessible[2]. However, the ability to record evidence of our past should not be a factor in deciding whether such loss should be permitted.

3.2 In May 2009 the Secretary of State published the final approved Regional Spatial Strategy (The South East Plan). The RSS replaces the Regional Planning Guidance for the South East (RPG 9). The South-East Plan contains the following policy relating to archaeology and the historic environment:

POLICY BE6: MANAGEMENT OF THE HISTORIC ENVIRONMENT

When developing and implementing plans and strategies, local authorities and other bodies will adopt policies and support proposals which protect, conserve and, where appropriate, enhance the historic environment and the contribution it makes to local and regional distinctiveness and sense of place. The region's internationally and nationally designated historic assets should receive the highest level of protection. Proposals that make sensitive use of historic assets through regeneration, particularly where these bring redundant or under-used buildings and areas into appropriate use should be encouraged.

3.3 In relation to the Kent and Medway Structure Plan (adopted July 2006) the Secretary of State has decided that none of its policies relating to archaeology or cultural heritage should be extended, so these have ceased to have development plan status.

3.4 This study aims to satisfy the objectives of Dartford Borough Council, which fully recognises the importance of the buried heritage for which they are the custodians. The Borough's deposited 'Dartford Adopted Plan' (April 1995) was updated in 2004 forming the Amended Second Deposit Draft Local Plan and contains policy statements in respect of protecting the buried archaeological resource.

[2] Copies of evidence should be deposited with the relevant Historic Environment Record, and any archives with a local museum or other public depository

3.5 The proposed development is subject to the Council's Archaeology policy:

BE11 Protection of Non Scheduled Sites of Archaeological Value

Planning permission will only be granted for development which would have a detrimental effect upon the remains of non scheduled sites of local, regional or national archaeological value if the importance of the development outweighs the local value of the remains. If planning permission is granted, conditions will be imposed to ensure that the remains are properly recorded, evaluated and, where practicable, preserved.

Para. 10.6.1 Protection of Non Scheduled Sites of Archaeological Value
In addition to the formally scheduled sites, there are others of more local, regional or national importance. The archaeological significance of such sites will be taken into account in assessing the development proposals which might affect them. Developers should consult the Local Planning Authority prior to the submission of a planning application, in order to establish possible archaeological implications of any proposals. In certain cases, developers may be expected to provide information on the nature and quality of any archaeological remains on the site of the proposed development. Development on important archaeological sites should be avoided, but where this is not possible, a full archaeological investigation will be required prior to any development, in consultation with the County Archaeological Officer.

3.6 The site is not located within a conservation area or within an area of special character as defined by Dartford Borough Council. There are no Scheduled Ancient Monuments within the development area.

4 GEOLOGY AND TOPOGRAPHY

4.1 Geology

4.1.1 The British Geological Survey 1:50,000 series Sheet No 271 indicates that the site is situated on Boyn Hill Gravels. These comprise post diversionary Thames terrace deposits of sandy gravels and part clay. The fieldwork carried out during the evaluation demonstrated that areas of Wantsunt Loam cap the gravels in this area (see Appendix 1).

4.2 Topography

4.2.1 The site had almost certainly been terraced during the construction work associated with the building of the Rolex works which, until recently, stood on the site. However, it is clear that there was once a slight slope from north to south which is particularly evident at the east end of the site. The ground also slopes gently from east to west. The modern ground level on the north side of the site lies close to 38.00m OD whilst the pavement to the south of the site on Heath End Road lies at approximately 37.50m OD.

4.2.2 No water course or bodies of water are present within the site. The river Cray runs approximately 2.4km to the west of the subject site. This turns east to the north of the site to join the river Darent.

5 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

5.1 The archaeological and historical background is presented in full in the Desk-Based Assessment (Fairman and Brown 2011) and summarised below.

5.2 Paleolithic

5.2.1 Evidence of prehistoric activity and exploitation of the wider area mainly comprises flint scatters and implements. One of the richest Palaeolithic sites in the country lies to the east of the study site in Swanscombe. The Barnfield pit has yielded over 80,000 Achuelean and Clactonian flint implements, remains of over 26 animal species in addition to human remains, most notably the 'Swanscombe Man' (Porteus, 1979, p16). It is also recorded that "Lower Palaeolithic sites are abundant on the high terraces of the Lower Thames in the Dartford region." (Wenban Smith in Williams 2007, p47).

5.2.2 Three Palaeolithic sites have been identified within 1km to the north of the subject site. An Acheulean flint working site and over 40 handaxes were recovered c.1912 in Wansunt Gravel Pit. A comparable pit within the vicinity yielded 43 handaxes, 1 core and 53 pieces of debitage and is subsequently recorded as being a key Palaeolithic site. Further evidence of a working site and settlement were recovered from a now disused gravel pit at Bowman's Lodge prior to 1950. Among the finds were bifacial implements, flakes, cores, retouched flakes, a handaxe and scrapers.

5.2.3 Archaeological investigations to the south of the study site have recovered lower Palaeolithic lithics, including handaxes and waste flakes. In the same area four Acheulean handaxes were recovered in 1962 during the construction of a new house off Tile Kiln Lane.

5.3 Mesolithic

5.3.1 Mesolithic evidence derives from pit clusters identified to the south-east on the site of the former Bexley Hospital. It is suggested that these features relate to a period of tree and shrub clearance, and a series of later post holes indicate an ongoing occupation of the site. A collection of contemporary, but unstratified blades, flints and scrapers were recovered from the north-west of the subject site at Bowman's Lodge.

5.4 Neolithic and Bronze Age

5.4.1 Evidence pertaining to the Neolithic period is negligible. The only discoveries noted within a 1km radius of the subject site relate to the recovery of rims of nine pots during the early 20th century at Wansunt gravel pit, and unsubstantiated references to Neolithic earthworks on Dartford Heath.

5.4.2 The Bronze Age is slightly better represented on the HER, and activity of this period is documented from Dartford Heath (Porteus, 1979, p17). A hoard of 53 items, including copper fragments, a gouge, spearhead, and socketed celts (axes) were discovered in a sandpit at Bexley Heath, to the north of the study site. The exact provenance is debateable and the hoard is now in the British Museum. Bronze Age cremations were recorded, also to the north, in 1906-7. During gravel quarrying two groups of late Bronze Age pennanular rings and seventeen gold bracelets were recovered. Later works retrieved a further eight gold armlets and nine similar bracelets, dated to c. 700 BC. At Princes Road, Dartford, Middle and Late Bronze age activity was identified, including structures, and votive offerings in the lower more marginal areas. Important evidence for cereal grain processing was also recognised at this site (Hutchings 2003, p73-4).

5.5 Iron Age

5.5.1 Later Iron Age activity is attested from the Coldblow area to the north-west. In 1957 a V-shaped ditch, 4 ft in depth was recorded as being truncated by a later, smaller ditch at an acute angle Among the finds were baked clay, shell tempered ware pottery and an iron knife.

5.5.2 Iron Age Belgic pottery has also been recovered to the north-west of the study site.

5.6 Roman

5.6.1 There is a significant amount of evidence for activity during the Roman period within the wider area, but only limited entries are noted within a 1km radius of the subject site. Villas existed at Lullingstone, Farningham and Darenth, and a military marching camp is believed to have been sited at Springhead (*Vagniacae*) with an associated surrounding settlement (Porteus, 1979, pp17-19). An additional villa was discovered in Tenter's Field, East Hill, Dartford and was dated to the 2nd and 3rd centuries.

5.6.2 The closest Roman road to the subject site was Watling Street. This would have passed via Springhead to Swanscombe Wood before turning north-north-west to Dartford (Margary 1955, p45). The agger of this road was formerly visible on the common east of Dartford as being 8 yards wide by 2-3 feet in depth. Further evidence was recorded from the foot of East Hill, Dartford, in 1897 where the paved surface existed 2.5 feet below ground level and comprised

stones set in gravel (Margary, 1955, p45). The road probably ran to the north of the present High Street (Porteus, 1979, p17) and it has been suggested that it passes below the present tower of the Holy Trinity Church. The road is likely to have ran some distance to the north of the study site.

5.6.3 The majority of the HER entries relate to Roman features, such as Baths, or settlements alluded to from documentary sources only. Archaeological indications of a Roman cemetery near Darent Road however, infer that a sizeable Roman population occupied the general area. A possible cremation was discovered during the early 20th century in the Maypole Estate. A small red-ware vessel and urn containing burnt bones was documented. However, the precise provenance is in doubt as to whether the finds derived from the Maypole Estate or the Mayplace Estate. A ditch of Roman date was recorded at the Princes Road site, c.3km east of the subject site.

5.7 Anglo Saxon

5.7.1 The first half of the 5th century AD saw the beginnings of Saxon settlement in the area, with many of the previous Roman villas showing indications of re-occupation and settlement within the near vicinity at this time. Lullingstone, Wilmington and Darenth villas all show evidence of Saxon occupation (Porteus, 1979, p25). Other occupational evidence derives from excavations carried out at the Wellcome Chemical Works in 1955. Pottery retrieved from this site was dated to the 7th century. Settlement of the area can also be inferred by references to churches listed within the *Textus Roffensis* of 1115. Churches listed as being present during the late Saxon period included Dartford, Sutton, Darenth and Horton (Porteus, 1979, p26). It may be assumed that each church was attached to a settlement site, with additional isolated farmsteads within the wider vicinity.

5.7.2 According to the Anglo-Saxon Chronicle following the battle at Crayford in AD 457, the Britons 'fled with great fear to London' (Porteus, 1979, p25). Defensive linear earthworks are documented within Joyden's Wood to the south, and could relate to these events. Defensive earthworks are reported from the Briar Road in the Coldblow area. These are thought to have been constructed between the 5th and 6th centuries, which would coincide with documented tribal warfare in the Bexley area. The dyke is also mentioned in the Anglo-Saxon Chronicles of AD 814.

5.7.3 Kent was subsequently invaded by the West Saxons in the 7th century and again by the Mercians in the 8th century, with Kent being incorporated into Mercia soon after 760 AD (Porteus, 1979, p26). Notable kings of this period include Ethelbert, known for the introduction of his legal code, and King Wihtred who granted a charter in 699 AD freeing churches and

monasteries from taxation (Porteus, 1979, p26). The custom of gavelkind, or the equal division of property among sons, was retained from the Saxon period until 1925 in Dartford.

5.7.4 Burial sites flank the Darent Valley with around 100 Saxon graves discovered at South Darenth in the 19th century and a 10th century site with 180 associated graves encountered at Eynsford (Porteus, 1979, p26). Both sites however are located some distance away from the subject site. A Saxon tumulus was recorded less than 1km to the south of the site within Joyden's Wood. This area has since been developed and nothing is thought to remain.

5.8 Medieval

5.8.1 At the time of the Domesday survey Dartford, or *Tarentfort*, was one of four Saxon royal manors in Kent, in Achtestan or Axtane Hundred, and part of the half lathe of Sutton (Porteus, 1979, p26). At this time the town is listed with a population of 155, two quays or hithes and two mills. Dartford appears to have been a flourishing farming community, and Gandulph, Bishop of Rochester, supervised the construction of the Holy Trinity Church c.1080 (Hasted, 1797, pp286-328; Porteus, 1979, p27). The church was enlarged and refurbished throughout the 13th and 15th centuries, indicative of the increased prosperity of the area.

5.8.2 In the early middle ages, several subsidiary manors developed. The closest of these to the subject site appears to have been the Baldwins Manor, to the immediate south. This was under the possession of Sir John Baude, which led to the name Baudiwens, and adjoined the Manor of Temples, under the ownership of the Knight's Templar (Hasted, 1797, pp286-328).

5.8.3 Agriculture was a key part of the local economy until relatively modern times. The corn market was established from at least the 14th century (Porteus, 1979, p36), and a market of sorts had been existence since Norman times as one is mentioned among the royalties of the manor. An undated jingle, ascribed to this period by Porteus (Porteus, 1979, p36), describes the local produce as follows, 'Sutton for Mutton, Kirby for beef, South Darne (Darenth) for ginger bread, Dartford for a thief', which may suggest alternative, less legal, forms of employment also flourished in the area.

5.8.4 Religion also boosted the local economy due to passing trade with pilgrims en route to Rochester and Canterbury Cathedrals. Following the murders of Thomas a Beckett in 1170 and William of Perth in 1202, pilgrims travelling to both shrines would follow the road to London (Porteus, 1979, p35). The increased demands for accommodation led to additional numbers of inns along the route and within town centres like Dartford. Furthermore, the town became a deanery of the diocese of Rochester, which provided a venue for the Bishop of Rochester's consistory court (Dartfordarchive.org). The court met around six times per year and clergymen, laymen and women were brought forward to answer various charges including adultery and the

fathering of illegitimate children. Documented charges include those against Elizabeth de Kirkby in 1335 for fornication with a priest and a punishment of being whipped around the church three times and twice around the market places of Dartford and Rochester was sentenced, but never carried out, to Walter Ramsey in 1445 for fathering an illegitimate child (Dartfordarchive.org).

5.8.5 Despite a well documented history for the area throughout the medieval period, archaeological evidence within 1km of the subject site is minimal. The remnants of a 15th century Tudor Gatehouse are alluded to at Horsman's Place and dumped deposits of medieval pottery were recovered from Wansunt Pit during excavations in 2000. It is likely that settlement was focussed around the town centres, and the vicinity of the subject site remained as open fields with isolated farmsteads at this time.

5.9 Post-Medieval

5.9.1 Dartford did not significantly grow during the early post-medieval period. Widespread instability, unemployment and inflation led to a series of Poor Laws being enacted between 1531 and 1601 (Dartfordarchive.org). Furthermore, the reformation led to the abolition of pilgrimage and dissolution of Dartford Priory. The area therefore lost a significant amount of revenue previously gained as being a stopping point for pilgrims.

5.9.2 Transport improvements were key to the development and urbanisation of the area. The Thames for example formed an almost complete barrier until the 20th century, with no route northward available until 1963 (Porteus, 1979, p89). Ferries were however documented from the 16th and 18th centuries. The construction of proper roads led to the introduction of stage-coach services from 1640 and subsequently an increase in local and regional trade networks (Porteus, 1979, 89; www.dartfordarchive.org.uk). In order to maintain these new networks, the first Turnpike Act of Kent was enforced in 1709. By 1760 the Dartford to Northfleet road was turnpiked and toll gates were erected at the top of West Hill (Porteus, 1979, p89).

5.9.3 Evidence pertaining to this earlier post medieval period within 1km of the study site is limited. A military camp is recorded from Dartford Heath to the east dating to the late 18th century. This was formed due to the French Spanish invasion threat of 1779-80. Troops needed to be stationed in close proximity to the Thames so they could be deployed around the country at short notice, and on 20th July 1780 5,000 men camped on the heath prior to a marching to Gravesend to practice military manoeuvres (www.dartfordarchive.org.uk). The camp mainly consisted of the 52nd, 56th and 65th Regiments of the Line, the North Hants, the Northampton, the Montgomery, the East York and the Hertfordshire regiments of militia, and a 'park' of Artillery guarded by a portion of the Rutland and Caernarvonshire militia. The troops lived for two months in long rows of tents, the line of which was apparently still visible in 1844. Excavations

by the Kent Archaeological Society in 1955 discovered late 18th and early 19th century pottery and glass.

5.9.4 The proximity of Dartford to the Thames and Darent Rivers attracted a number of innovators and industrialists to the area. Documented industries included papermaking, iron slitting, corn, flour and gunpowder mills as well as a local watch and clock making trade (Porteus, 1979, p101; www.dartfordarchive.org.uk). The HER therefore contains numerous references to Dartford's industrial history within 1km of the subject site. Quarries to extract sand and gravel are documented to the north and east at Wansunt Gravel Pit and Dartford Heath respectively. A number of dene holes, possibly for lime extraction, were recorded c.600m to the south-west of the site in the gardens of Baldwyns Park. The former contained no dating evidence but was believed to have been of 15th to 16th century origin, and was exposed to a depth of 45ft. The latter are alluded to in an account by William Lambarde in 1570 which describes a series of 'caves' dug for lime.

5.9.5 Evidence of tile manufacture and kilns dating to the late 17th and 18th centuries were recovered from the south of the site, along Tile Kiln Lane. A horseshoe shaped oven, 3ft by 2ft 6in is documented and considered to have been utilised for firing small pots of local clay.

5.9.6 Other noteworthy post-medieval constructions included Bexley Hospital, c.500m to the south-east of the subject site (Figure 3, Ref. 30, 1029780). This was one of 6 mental hospitals built by the LCC between 1896-8, and provided accommodation for 2,000 patients once completed. A chapel was also constructed to the north of the hospital in 1899. Excavations at the same area yielded one post-medieval post hole in 2001.

5.9.7 The earliest cartographic source consulted was the Ordnance Survey Map of 1799. This illustrates the subject site as being occupied by open fields to the south west of Dartford Heath and to the north of the Baldwins Estate, as documented previously. A small construction to the north is likely to relate to Maypole House and its estate as depicted in better detail on later maps.

5.9.8 The first edition Ordnance Survey Map of 1867 depicts few changes. Maypole House is clearly visible to the north within an area of cultivated fields. The study site however remains undeveloped in a large open field, bound by Dartford Heath to the east.

5.9.9 By the second edition Ordnance Survey Map of 1895 development in the area of Broomhills appears to the west. A few subsidiary properties appear within the Maypole House estate to the north, but the area otherwise remains unchanged and the subject site undeveloped.

5.9.10 The site remains undeveloped by 1907 but the wider area has undergone considerable changes. The land surrounding Maypole House to the north has been subdivided with a number of additional properties constructed. The former open field, which the site occupied, has similarly been subdivided and extensively developed with terraced, residential housing and roads. The extant Baldwyns, Beaconsfield and Heath End Roads and Denton Terrace appear to be undergoing construction. The subject site is now bound to the south by Heath End Road, housing to the west, fields to the north and an access road or track leading to Maypole House to the east.

5.9.11 By 1933 construction of housing along Beaconsfield and Heath End Roads remain incomplete. A track leading to Maypole House is now clearly visible along the site's eastern boundary, and a few small, undesignated constructions appear to the immediate north. The subject site is sub-divided at this time, but appears to remain undeveloped.

5.9.12 The full length of Baldwyn's, and Beaconsfield roads are lined with terraced housing by 1938. Additional properties also appear to the north of Heath End Road, and the properties north of Maypole House are now in an area designated as the Dell. The study site remains undeveloped.

5.9.13 The former Rolex works appears from Ordnance Survey maps of 1966. This occupies the majority of the site as a T-shaped construction. No significant developments appear within the wider area.

5.9.14 The subject site and its immediate vicinity appear unchanged in 1975 by comparison to 1966. The Dartford Bypass however has since been constructed to the north-east.

5.9.15 No changes appear to the study site or the surroundings on the Ordnance Survey map of 1983 and until the recent demolition of the factory, it remained unchanged.

6 ARCHAEOLOGICAL METHODOLOGY

6.1 As far as was practicable the trenches were laid out in accordance with the Written Scheme of Investigation (Brown 2012). The trenches were arranged in order to fully investigate and assess the presence or absence of significant archaeological remains. Five evaluation trenches were excavated; these were numbered termed 1 to 5.

6.2 The trench locations and orientations are detailed in Figure 2. All trenches were to have measured 10m by 2m but due to logistic constraints on site one trench (Trench 3) was limited to 6m in length. Trench 4 was to have been located in the southeast corner of the site adjacent to the frontage but this location was directly behind the site gates and a trench sited in this location would have prevented all vehicular movement on or off site. Trench 4 was therefore relocated to an area close to the northern frontage adjacent to Trench 5.

6.3 The trenches were opened with a 360º mechanical excavator, fitted with a flat-bladed ditching bucket, under archaeological supervision. Excavation by machine was undertaken in spits until significant archaeological horizons or natural geology was reached. The only exception to this was Trench 2 where a subsoil horizon that had not been apparent in the previously excavated trenches (Trenches 1, 4, 5) was left in the base of the trench and selected areas excavated by hand in order to recover artefacts that might demonstrate when this subsoil horizon had been in use as an agricultural or horticultural horizon.

6.4 The sides and bases of the evaluation trenches were hand cleaned prior to photographing and recording. Representative sections were recorded for each section even though they contained very little information that informed on the development of the site due to the previous impacts of building and demolition. Each section consisted of a 1m wide strip that was cleaned and drawn.

6.5 The Written Scheme of Investigation contained a methodology and specification regarding the palaeoarchaeological potential of the site. Each of the five evaluation trenches was to have had a geoarchaeological test pit located within it and a further three locations were to have been investigated along the northern frontage. However, for logistical and safety reasons a trench could not be effected in Trench 3 which was sited very close to the hoarding on Heath End Road. Similarly the repositioning of Trench 4 onto the northern frontage produced two adjacent evaluation trenches which only offered one location for a geoarchaeological investigation. In short 6 of the 8 proposed trenches were excavated and provided ample coverage of the site with the exception of the southeast corner which had already been impacted by construction.

6.6 Once the archaeological potential for periods ranging from the later Prehistoric onward had been established in a trench location, and all appropriate recording undertaken, an area was selected and machine excavated in spits by under archaeological supervision so as to identify and record the early stratigraphic sequence, examine and record the deposits and identify any palaeoarchaeological artefacts or ecofacts. Where appropriate, 100 litre samples were sieved in an attempt to recover artefacts from the sands and gravels.

6.7 All recording systems adopted during the investigations were fully compatible with those developed out of the Department of Urban Archaeology Site Manual, now published by Museum of London Archaeology (MOLAS 1994). Individual descriptions of all archaeological and geological strata and features excavated and exposed were entered onto *pro-forma* recording sheets. All archaeological trenches were located using the Global Positioning System (GPS); and tied into the Ordnance Survey grid. The deposits and features found within the trenches were recorded on polyester based drawing film, with the plans drawn at a scale of 1:20 and sections recorded at a scale of 1:10. The OD heights of all principle strata were calculated and indicated on the appropriate plans and sections.

6.8 A full photographic record was also compiled of the five evaluation trenches, which included black and white print, colour transparencies on 35mm film and digital shots and working shots.

6.9 Levels were taken from a temporary bench mark established by the site contractor which had a value of 38.00m OD. This was checked by PCA Limited using GPS equipment and found to be accurate to 1mm.

7 EVALUATION RESULTS

7.1 Trench 1

7.1.1 Trench 1 measured 10m east-west by 2m north-south and was located in the south-east of the site approximately 4.5m north of the site boundary. The majority of the deposits overlying the archaeological sequence consisted of crushed concrete that resulted from the recent demolition of the Rolex works. Modern topsoil was evident at a maximum height of 36.31m OD in Section 4 though this height may itself be unrepresentative as it is lower than the height of the pavement found to the south on Heath End Road. The objects present in the topsoil, such as fragments of plastic water pipes, suggested that this deposit had been disturbed in the recent past.

Figure 6: Trench 1
Facing west. Scale 1m

7.1.2 No archaeological features or deposits were evident in Trench 1. The only soft deposits found below the recently laid crushed concrete consisted of a topsoil layer [6] and a natural sandy brickearth type deposit [7]. Some recent disturbance appeared to have impacted the surface of this brickearth deposit which was reduced by machine until clean natural deposits were evident. The surface of the brickearth deposit [7] was recorded at 35.90m OD in the west of the trench and 35.84m OD in the east. In Section 4 this deposit was visible at a maximum of 35.99m OD.

7.2 Trench 2

7.2.1 Trench 2 measured a maximum of 10.5m east-west by 2.5m north-south and was located adjacent to the southern frontage in the central area of the site. The trench was a maximum of 0.73m deep, though the depth was again partially a function of the crushed modern demolition debris spread above the ploughsoil. The maximum height recorded on the surface of the topsoil [4] was 36.40m OD which was 0.56m higher than the level of the natural sandy brickearth [5} which formed the base of the trench.

7.2.2 The latest deposit seen in Trench 2 consisted of a topsoil horizon [4] which was recorded in Section 3. As seen in the section this deposit sloped from east to west but the highest level recorded on the ploughsoil, 36.40m OD, was once again below the level of the pavement and it is highly likely that the surface of the ploughsoil had been impacted upon. However, it appeared that this deposit, which was a maximum of 0.50m thick, was largely *in situ* with the exception of areas impacted by modern drainage and foundations, these intrusions were particularly evident in the central part of the trench (see Figure 3).

7.2.3 The topsoil horizon [4] sealed a subsoil or ploughsoil horizon [3] which was evident across the entire trench with the exception of those areas that had been impacted by modern intrusions. The subsoil consisted of a mid yellowish brown slightly clayey silty sand that was probably derived from a natural brickearth type deposit such as that noted in Trench 1. Although this deposit was not of any great intrinsic archaeological importance it was decided to hand excavate selected area of the subsoil horizon in order to recover artefacts that might indicate when the agricultural potential of this area was first exploited. The sondages excavated in the subsoil produced a range of pottery dated from the late medieval to early post-medieval transition to the 18th century. A flint flake of uncertain date was also recovered from this layer (see Appendix 4). No archaeological features were evident cut into the surface of layer [3] which was recorded at 35.71m OD in the east and 35.84m OD in the west after machining, the highest level recorded on this deposit in Section 3 was 35.89m OD.

Figure 7: Trench 2
Facing east. Scale 1m

7.2.4 The subsoil horizon [4] sealed a sandy brickearth type deposit [5] which was revealed in the bases of the two sondages excavated through layer [4]. The surface of the natural brickearth was recorded at 35.74m OD in the east and 35.66m OD in the west.

7.3 Trench 3

7.3.1 Trench 3 measured 6.4m east–west by 2m north-south and 1.15m deep. The trench was to have measured 10m by 2m but the presence of site gates in its proposed location precluded the excavation of the full length. Apart from a very small amount of crushed demolition debris on the surface the top of the trench was formed of a topsoil deposit [8] which was recorded below 36.78m OD. This layer was 0.30m thick.

Figure 8: Trench 3
Facing east. Scale 1m

7.3.2 The topsoil layer [8] sealed a subsoil horizon [9] which was only recorded in Section 5. The highest level recorded on layer [9] was 36.46m OD, it was 0.37m thick. This subsoil horizon consisted of a mid yellowish brown clayey silty sand which had probably derived from a brickearth horizon similar to those seen in Trenches 1 and 2. Very few inclusions were evident in this deposit which contained a few flecks of charcoal and occasional fragments of abraded ceramic building materials but little else that might have indicated periods of past land use in the area.

7.3.3 Below the subsoil layer [9] was a similar homogenous subsoil or ploughsoil type deposit [10]. This deposit was 0.38m thick; the highest level recorded on its surface was 36.21m OD. Layer [10] consisted of a soft mid yellowish brown clayey silty sand that undoubtedly represented a reworked brickearth deposit. The layer contained relatively frequent fragments of chalk, occasional fragments of degraded ceramic building material or daub and occasional charcoal flecks. No datable artefacts were recovered from this deposit.

7.3.4 All of the deposits described above had been truncated by a modern manhole which was removed during the machining of the trench, the backfilled construction cut is evident in Figure 8 at the east end of the trench cutting through the natural sand and gravel layer [11] which formed the base of the trench. The surface of the natural gravels was recorded between 35.72m and 35.64m OD. The overall depth of the deposits found above the gravels in this trench was c.1m-1.10m, considerably more than was evident anywhere else on the site.

7.4 Trench 4

7.4.1 Trench 4 was to have been located along the southern frontage but the presence of the site gates in the proposed location precluded the excavation of a trench in that area. Trench 4 was therefore repositioned to an area close to the northern frontage where an area of apparently undisturbed topsoil remained *in situ and* offered the possibility of archaeological survival on the surface of the gravels. The trench measured 10m northwest-southeast by 2m wide.

Figure 9: Trench 4
Facing northwest. Scale 2m

7.4.2 Although some topsoil remained in the area in which trenches 4 and 5 were located it was clear that the area had been impacted by recent works as the depth of topsoil was very limited. It was also evident from the machine clearance of the area that the remnant of the topsoil had been

disturbed in the relatively recent past as it contained items such as plastic shopping bags. The topsoil also sealed shallow concrete foundations in the areas of Trenches 4 and 5 and was clearly modern, for this reason it was not recorded as an archaeological deposit.

7.4.3 No subsoil deposits similar to those seen on the southern side of the trench were evident in the area of Trenches 4 and 5. This might suggest that the upper areas of the slope had been terraced.

7.4.4 Natural sands and gravels were evident in Trench 4 at a height of 37.00m to 37.33m OD. The surface of the gravel sloped slightly from the southeast to the northwest.

7.4.5 No features were evident cut into the surface of the gravel with the exception of a narrow trench that contained an electricity cable. A small concrete foundation was also evident in the western end of the trench.

7.5 Trench 5

Figure 10: Trench 5
Facing northwest. Scale 2m

7.5.1 Trench 5 measured 10m northwest-southeast and was 2m wide. As was the case in the adjacent Trench 4 no subsoil or ploughsoil horizons were visible. The only major variation in the sequence from topsoil sealing natural sands and gravels was seen at the western end of the

trench where a large and deep modern intrusion had cut through the gravel. This feature was over 5m wide and more than 1.20m deep; it was not bottomed as it had clearly truncated the gravels to a level where no archaeological features were likely to be present. It was not clear what kind of feature this large pit had originally been, it might have once formed part of a subterranean structure that had since had the walls demolished and then been backfilled but no masonry was evident. The backfill contained, among other things, a mass of bottles one of which was sealed with a cap that bore the legend Heinz 57 Varieties.

7.5.2 The natural sand and gravels [2] found in the eastern 5m of the trench were recorded between 37.28m and 37.09m OD, the highest level was recorded in the eastern end of Trench 5.

7.6 Interpretation and Phasing

7.6.1 Very little in the way of formal phasing is required for the fieldwork undertaken at the former Rolex works as the results of the evaluation were invariably negative. However, the natural topography of the site was evident from the levels recorded on the natural deposits evident in the evaluation trenches. Natural gravels, recorded as layers [1], [2] and [11], were evident in Trenches 3, 4 and 5. The remnants of natural brickearth type deposits, Wansunt Loam, were also apparent; these were recorded in Trenches 1 and 2 as layers [7] and [5] respectively. The natural deposits are grouped together as Phase 1.

7.6.2 The highest levels recorded on the gravel in the trenches investigated came from Trenches 4 and 5 where the surface of the natural gravels was recorded at c. 37.30m OD. No brickearth was evident capping the gravels in this area but the presence of shallow modern concrete footing suggested that this location had once been built upon, even if the footings would not have supported a structure much larger than a greenhouse. It is therefore highly likely that this area had been terraced, at least locally, to produce a flat base for a structure. Any subsoil horizon that may once have existed above the gravel may have been removed during this process and the surface of the gravel could also have been impacted. The surface of the gravel was, however, higher at this point than anywhere else on the site.

7.6.3 Natural gravels were exposed on the south side of the site in Trench 3 at a maximum height of 35.72m OD. This shows that even if the gravels found to the north had been truncated the surface of the gravel fell away by 1.60m over a distance of c. 25m. Further to the west the surface of the natural brickearth recorded as layers [5] and [7] was found between 35.66m OD in Trench 2 and 35.90m OD in Trench 1. This indicates that although there were slight undulations the surface of the natural deposits found on the south side of the site was essentially flat. At present the ground level on the north side of the site sloped from east to west but it is unknown whether this is the result of modern terracing.

7.6.4 Phase 2 consists of reworked sub-soils that had probably been turned over by ploughing. These deposits, layers [3], [9] and [10], were evident in Trenches 2 and 3. All three of these deposits consisted of yellowish brown mixes of sandy silt, some with a clay element, that almost certainly are reworked natural brickearth deposits or Wansunt Loam. A notable depth of these deposits, c. 0.70m, was evident in Trench 3 compared to only 0.20m in Trench 2. The reason for the disparity in these thicknesses is unknown but it may be the result of modern landscaping.

7.6.5 The remaining deposits, Phase 3, were topsoil horizons recorded as layers [4], [6] and [8] in Trenches 1, 2 and 3. As discussed above the topsoil horizon found in the vicinity of Trenches 4 and 5 was not recorded archaeologically as it sealed concrete footings and was clearly not *in situ*.

8 RESEARCH QUESTIONS AND CONCLUSIONS

8.1 Several of the research objectives contained in the Written Scheme of Investigation relate to the palaeoarchaeological element of the fieldwork which are reported on in Appendix 1 (Brown 2012). The specific objectives were:

- To understand the character, form, function and date of any significant archaeological activities present on the site including but not limited to the later prehistoric remains identified during the evaluation.
- To clarify the presence of later prehistoric occupation, in particular of Bronze Age and later Iron Age date on the site and determine how this occupation compares with other elements in the local landscape.
- To ascertain whether specific agricultural, industrial or ritual activities can be determined from the observed evidence.

8.2 No archaeological features dating to any period other than the modern one were found during the course of the fieldwork.

8.3 No evidence was found for the presence of later prehistoric material and clearly no conclusions can be drawn regarding how the occupation compared to other elements of the local landscape.

8.4 No specific agricultural, industrial or ritual activities could be determined from the observed evidence as, apart from agricultural soils, no deposits or features of any antiquity were encountered.

8.5 The one area of ploughsoil that was hand excavated to recover artefacts contained only artefacts dated at earliest to the transition from the medieval to post-medieval periods, with the exception of a flint flake of uncertain date.

9 ACKNOWLEDGEMENTS

9.1 Pre-Construct Archaeology would like to thank Bellway Homes Limited and James Sutherland in particular, for commissioning the work and Wendy Rodgers, Senior Archaeologist at Kent County Council, for monitoring the site on behalf of Dartford Borough Council.

9.2 The author would like to thank:

- Gary Brown for his project management and editing
- Jenny Simonson for the CAD illustrations
- Aiden Turner for the site surveying
- Barry Bishop for examining the lithics
- Chris Jarrett for spot dating the pottery
- Site photography was undertaken by the excavation team
- Chris Cooper for technical and logistical support
- The excavation team of Emily Bates and Aiden Turner for their hard work on site and enduring some less than pleasant April weather
- All of the staff of Frankis Solutions Limited for provision of plant and undertaking the trench reductions
- Julian Coll for giving up many a lunch or tea break to help open trenches

9.3 The author and Pre-Construct Archaeology Limited would like to thank Peter Allen, QUEST for carrying out the paleoarchaeological evaluation.

10 BIBLIOGRAPHY

Brown, G 2012 — *Written Scheme of Investigation For An Archaeological Evaluation at the Former Rolex Factory, Heath End Road, Dartford, Kent*

Fairman, A and Brown, G 2012 — *An Archaeological Desktop Assessment of the former Rolex Site, Dartford, Kent, DA5 2AA*

Hasted, E, 1797 — *Dartford', In: The History and Topographical Survey of the County of Kent: Vol. 2, pp 286-328*

Hutchings P. 2003 — *Ritual and Riverside Settlement: a Multi-Period Site at Princes Road,* Dartford Archaeologia Cantiana CXXIII 41-80

Porteus, G, 1979 — The Book of Dartford, Baracuda Books Limited: Buckingham

Wenban-Smith F 2003 — The Palaeolithic archaeology of Kent' in Williams 2003 25-66

Williams JH (Ed) 2003 — *The Archaeology of Kent to AD 800*

Internet Resources:

www.dartfordarchive.org.uk – accessed 7th December 2010

http://maypolehistory.wetpaint.com – accessed 7th December 2010

APPENDIX 1: Palaeoarchaeological Assessment

A REPORT ON THE GEOARCHAEOLOGICAL INVESTIGATIONS AT THE FORMER ROLEX FACTORY, HEATH END ROAD, BEXLEY

P. Allen
Quaternary Scientific (QUEST), School of Human and Environmental Sciences, University of Reading, Whiteknights, PO Box 227, Reading, RG6 6AB, UK

INTRODUCTION

This report summarises the findings arising out of the geoarchaeological investigations undertaken by Quaternary Scientific (University of Reading) in connection with the proposed development at the former Rolex Factory, Heath End Road, Bexley (Figure 1; National Grid Reference centred on TQ 511 731). During recent archaeological investigations on the site multiple trial-pits were put down across the site for geoarchaeological purposes. The main aims of the investigation were to: (1) observe and record the sediments excavated; (2) interpret the sub-surface stratigraphy across the site and (3) highlight sediments of potential palaeoenvironmental and Palaeolithic significance.

THE SITE

The site lies at the eastern extremity of the London Borough of Bexley and at the western end of Dartford Heath. The site lies at approximately 37m OD on gently undulating ground, which reaches 41m OD on the highest parts of the Heath. The ground loses height westwards towards a minor tributary of the River Cray which is only about 300m distant.

Dartford Heath is mapped as Boyn Hill Gravel by the British Geological Survey (BGS) (Figure 2), although the area is anomalously high for the majority of the Boyn Hill Terrace. In the literature, the term Dartford Heath Gravel is used for this higher gravel (e.g. Gibbard, 1995; White et al., 1995; Woods et al., 2004), although Bridgland regards it as an extension of the Orsett Heath Gravel which forms the Boyn Hill Terrace (Bridgland, 1995) (Figure 3). The matter is discussed in Bridgland (1994) and Bridgland et al. (1995). Approximately 1.5 km to the east, near Leyton Cross, Dartford Silt (also known as the Wansunt Loam) is mapped overlying the Boyn Hill Terrace gravel.

The Quaternary Boyn Hill Terrace gravel overlies Tertiary Thanet Sand. The River Cray cuts down into the Cretaceous Chalk.

Palaeolithic artefacts have been recovered from various points on Dartford Heath, but notably from Bowmans Lodge and from Wansunt Pit, both within 1km of the site (Figure G1). Artefacts and vertebrate bones from the Wansunt Pit were mostly from the Wansunt Loam which overlies and occupies a channel within the Dartford Heath/Boyn Hill Terrace gravel between ca. 33.0 and 37.0m OD (White et al., 1995).

The Swanscombe site is 8.75km to the east and is on the Boyn Hill Terrace. With a ground surface height of 34m OD, the Upper Middle Gravel and Upper Loam are regarded as the equivalents of the Dartford Heath Gravel and the Wansunt Loam (Bridgland, 1995). However, The Upper Middle Gravel is mostly sands, with associated bedding structures, rather than a gravel. The majority of the artefacts, vertebrates and molluscs were found in the Lower Gravel, Lower Loam and Lower Middle Gravel, between ca. 23.0 and 28.0m OD, too low for direct correlation with the Dartford Heath material.

METHODS

Building construction was already underway at the time of the site visit so groundworks (foundations et al.) and stored materials limited access to the planned trial pit locations and machine availability to dig the trial pits was limited.

In many cases there was more than 1.0m of loose spoil (building rubble) at the surface making the pit sides potentially unsafe and in one case (TP2) there was a collapse within the natural material. Fortunately the upper part of the face had been recorded when the pit was only 1.0m deep. The collapse occurred when the pit was deepened to ca. 1.5m. Given these conditions, pits were limited to ca. 2.5m maximum depth as there was limited working space at the sides of most of the pits, so a side collapse would undermine the limited working area available. No pit was entered beyond a depth of 1.0m. Consequently observations of the deeper pits were made from the ground surface and strata thicknesses estimated from a surveyor's staff lowered into the pit at its maximum depth.

Six trial pits were sunk to various depths between 1.5 and 2.6m; their locations are shown in Figure G4. The surface exposed by each scrape of the machine blade was examined visually for changes in the sedimentology of the deposits and for fossil material and the contents of the bucket for artefacts, bone material and molluscs. When gravel-dominated beds (sandy gravel) were encountered they were assessed for sieving. 100 litre samples were sieved from five of the six pits.

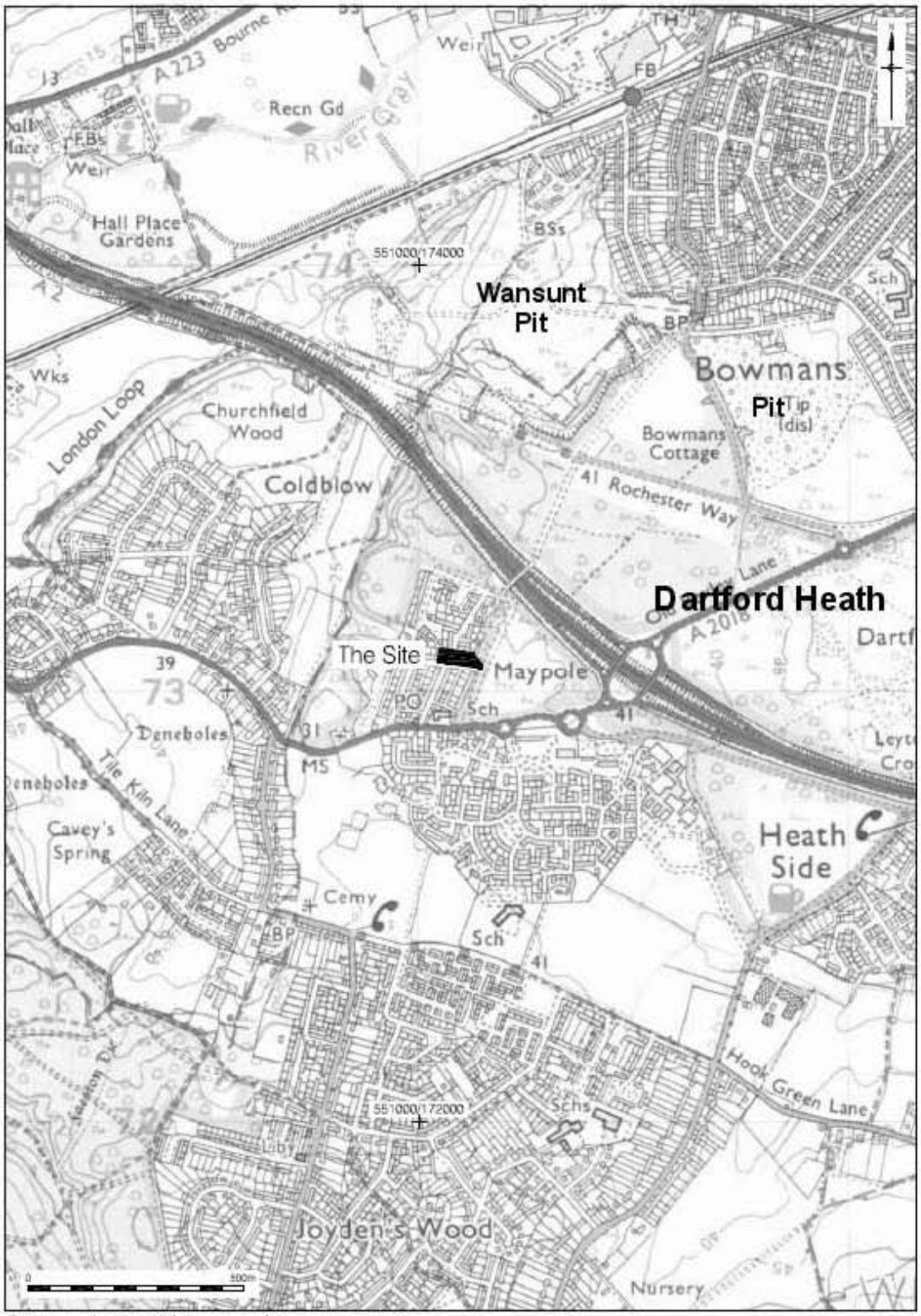


Figure G1: Former Rolex Factory, Heath End Road, Bexley

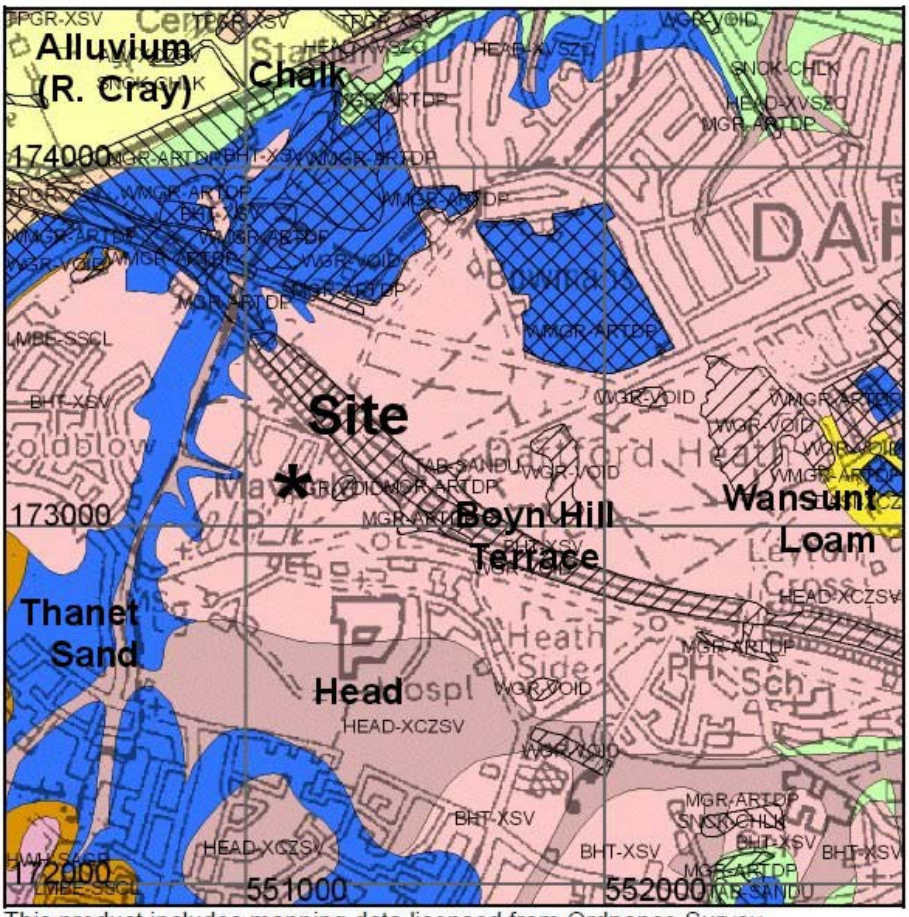


Figure G2: Local Geology (British Geological Survey Report BH 11856-1)

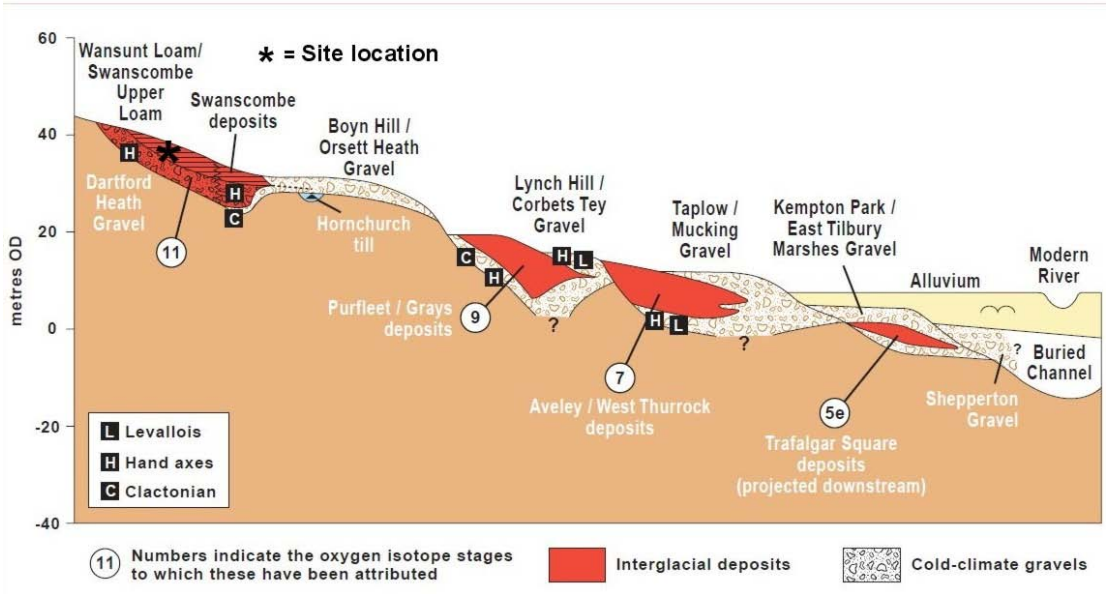


Figure G3: Site position within the Thames terrace sequence (Bridgland)

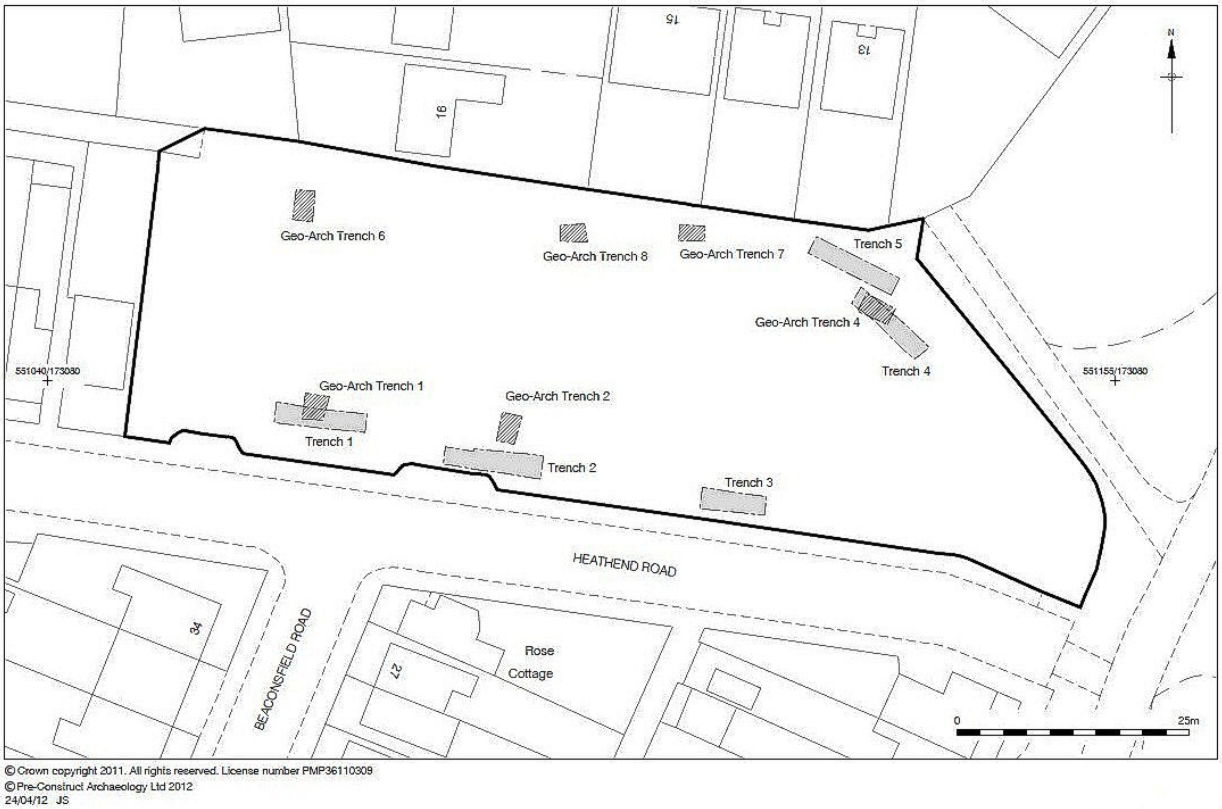


Figure G4: Geoarchaeological trial-pit locations

RESULTS OF THE GEOARCHAEOLOGICAL INVESTIGATIONS

Annotated photographs and tabulated descriptions are provided for trial-pits TP1 (Table 1; Figure G5; TP2 (Tables 2; Figure G6 & G7); TP4 (Table 3; Figure G8); TP6 (Table 4; Figure G9); TP7 (Table 5; Figures G10 & G11) and TP8 (Table 6; Figure G12).

The general situation was that a clayey, silty sand overlay gravelly sand, sandy gravel or sand. The clayey silty sand is interpreted as the Wansunt Loam and the sandy and gravelly beds as the Dartford Heath Gravel (Tables 1 – 6).

	Wansunt Loam *Unit*	**Dartford Heath Gravel** *Unit*
TP1	5	1 - 4
TP2	5	1 - 4
TP4	(not recognised)	1 - 7
TP6	3	1 - 2
TP7	(spoil)	1 - 6
TP8	(spoil)	1 - 6

The Wansunt Loam on site is 0.2 – 0.6m thick, lying between 33.9 and 36.0m OD, which compares well with the height range in the Wansunt Pit of 33.0 – 37.0m OD. No bedding structures were noted, though in TP2 it divided into a lower more silty part and an upper more clayey, humic part. Occasional flints, usually sub-angular, occurred, up to 2cm long.

The silt and clay occurs in quantities such that the Loam could not have been derived from the beds below. Being on the highest part of a local plateau-like terrace, it could not have been derived laterally from local slopes. It most likely arrived by wind and was subsequently affected by soil forming processes, giving the humic input, and other ground surface processes.

No worked flints or biogenic material was observed.

The BGS mapping does not show Wansunt Loam in the vicinity of the site nor at the Wansunt Pit. The mapping underplays the distribution of the Loam.

The Dartford Heath Gravel variously comprises sands and gravels in varying proportions as a continuum, so it can be difficult to decide the break-point between gravelly sand and sandy gravel. Apart from a small lens of clast-supported gravel (i.e. the clasts were in contact and could support one another) (TP2, Unit 3), the clasts were either matrix–supported (i.e. they were only partly in contact with one another and so partly depended on the sand for support) or floating (i.e. not in contact with one another at all). The various sediment types, such as the sandy gravel, occur at different heights OD and in different thicknesses in each trial pit, although there was a tendency for there to be a sandy gravel at about 36m OD (TP1, TP4) and another at a lower, more variable depths between 33.90 and 35.45m OD (TP2, TP6, TP7, TP8). The beds were horizontally disposed. This horizontal nature of the sedimentological assemblage is indicative of an aggradational succession, typical of a braided river system, but the dominance of sand indicates towards the less powerful end of the flow regime for such rivers. The more gravelly beds represent the cores of mid-river bars which would have changed their positions and sizes over time, hence the varying heights and thicknesses.

The sieving for artefacts produced no hand-axes or cores; very little of the gravel was large enough to present such items anyway. A number of potential small flakes were retained for further identification, but none proved to be worked.

No fossil material capable of giving palaeoenvironmental information was observed.

Table 1: Trial Pit 1, East Face (west facing)

Depth (m OD)	Depth (m BGS)	Thickness (m)	Lithology	Unit
36.08	0.0		Temporary surface	
36.08 – 35.88	0.0 – 0.2	0.2	Clayey silty sand (sand, fine to medium) 7.5YR5/6 (strong brown) **Wansunt Loam**	5
35.88 – 35.83	0.2 – 0.25	0.05	Clayey gravel (clasts mostly c.1 cm, max. 5 cm) 7.5YR5/6 (strong brown) **Dartford Heath Gravel (DHG)**	4
35.83 – 35.68	0.25 – 0.4	0.15	Gravelly sand 7.5YR5/8 (strong brown) **DHG**	3
36.68 – 35.53	0.4 – 0.55	0.15	Sandy gravel 5YR5/8 (yellowish red) 100 litre sample sieved **DHG**	2
35.53 – 33.98	0.55 – 2.1	1.55	Gravelly sand (sand, medium to coarse) Mostly 10YR6/8 (brownish yellow), bands of 5YR5/8(yellowish red) Horizontal bedding **DHG**	1

Sedimentary succession horizontally bedded.

Figure G5: Trial Pit 1, East Face (west facing)

Table 2: Trial Pit 2, West Face (east facing)

Depth (m OD)	Depth (m BGS)	Thickness (m)	Lithology	Unit
35.91	0.0		Temporary surface	2
35.91 – 35.76	0.0 – 0.15	(0.15)	Spoil	
35.76 – 35.56	0.15 - 0.35	0.20	Clayey, silty fine sand, humic 7.5YR4/4 (brown/dark brown) **Wansunt Loam (WL)**	5
35.56 – 35.16	0.35 – 0.75	0.40	Silty fine sand Dominantly 7.5YR5/8 9 (strong brown) with mottles 10YR5/4 (yellowish brown). Humic horizon 10YR4/3 (brown/dark brown) **WL**	4
35.16 – 35.06	0.75 - 0.85	0.10	Clast supported gravel 10YR3/3 (dark brown) **Dartford Heath Gravel (DHG)**	3
35.06 – 34.96	0.85 – 0.95	0.10	Sandy gravel 10YR5/4 (yellowish brown) 100 litre sample sieved **DHG**	2
34.96 - 34.41	0.95 – 1.5	0.55	Sand (Fig. 6) Horizontally bedded, with lens of gravel possibly infilling a temporary channel Mostly 10YR6/8 (brownish yellow), bands of 5YR5/8(yellowish red) **DHG**	1

Sedimentary succession horizontally bedded.

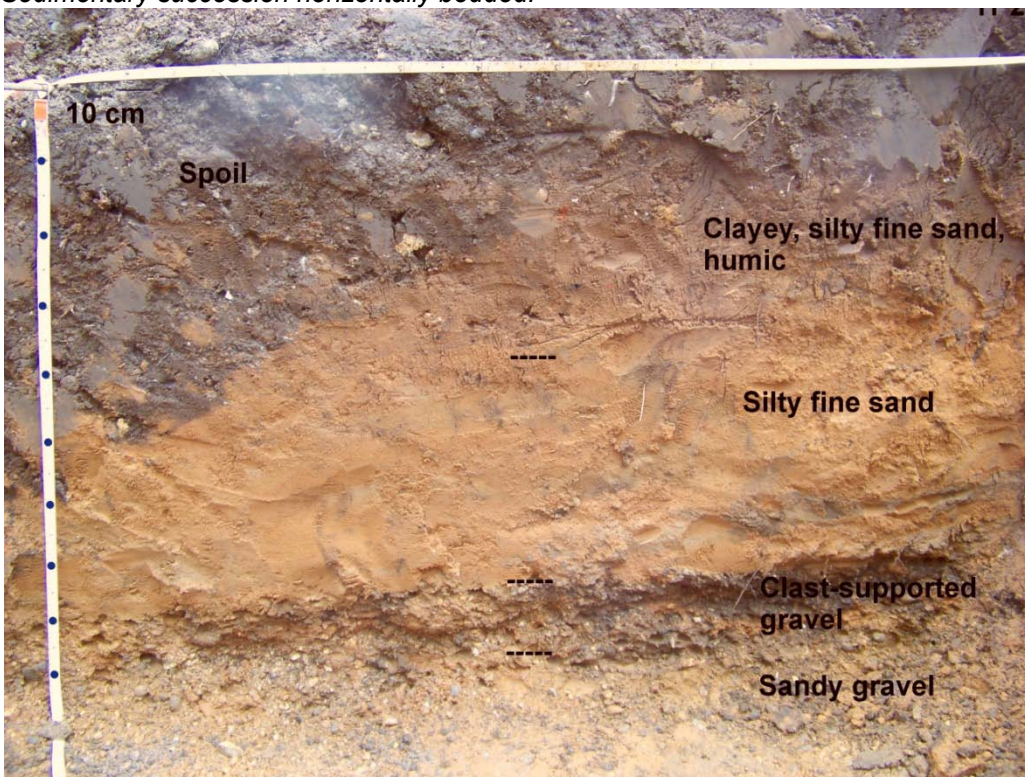


Figure G6: Trial Pit 2, West Face (east facing)

Figure G7: Trial Pit 2, Collapsed West Face (east facing)

Table 3: Trial Pit 4 South-east face (north-west facing)

Depth (m OD)	Depth (m BGS)	Thickness (m)	Lithology	Unit
37.24	0.0		Temporary surface	
37.24 – 37.04	0.0 -0.2	0.2	Spoil	
37.04 – 36.94	0.2 – 0.3	0.1	Sandy gravel (medium sand) Gravel clasts up to 3 cm **Dartford Heath Gravel (DHG)**	7
36.94 – 36.79	0.3 – 0.45	0.15	Sandy gravel (medium sand) Gravel clasts up to 6 cm 100 litre sample sieved **DHG**	6
36.79 – 36.69	0.45 – 0.55	0.1	Sandy gravel (medium sand) **DHG**	5
36.69 – 36.64	0.55 – 0.60	0.05	Sand, bar top **DHG**	4
36.64 – 36.44	0.60 – 0.80	0.2	Sandy gravel **DHG**	3
36.44 – 35.74	0.80 – 1.50	0.7	Gravelly sand **DHG**	2
35.74 – 34.94	1.50 – 2.3	0.8	Sandy gravel **DHG**	1

Sedimentary succession horizontally bedded.

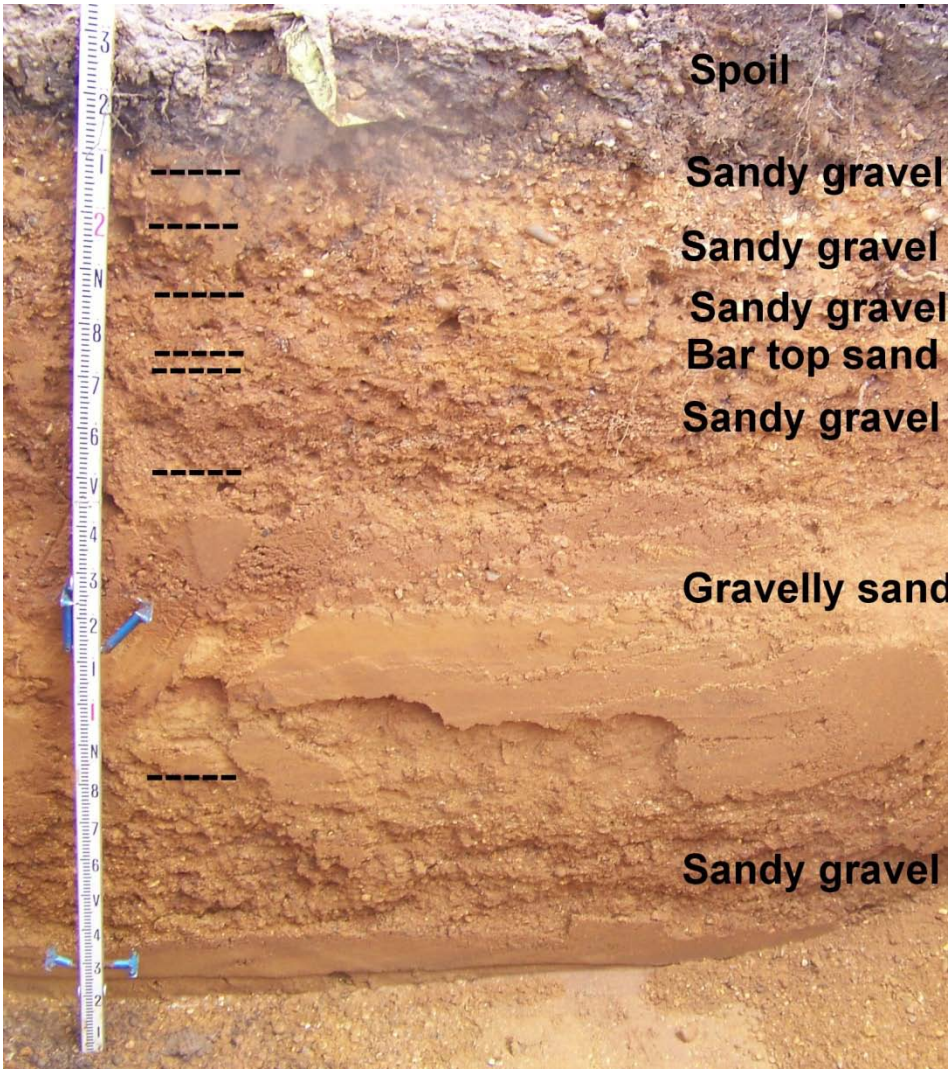


Figure G8: Trial Pit 4, South-East Face (north-west facing)

Table 4: Trial Pit 6 East Face (west facing)

Depth (m OD)	Depth (m BGS)	Thickness (m)	Lithology	Unit
35.40	0.0			
35.40 – 34.40	0.0 – 1.0	1.0	Spoil	
34.40 – 33.90	1.0 – 1.5	0.5	Clayey silty sand 10YR5/8 (yellowish brown) **Wansunt Loam**	3
33.90 – 33.30	1.5 – 2.1	0.6	Sandy gravel 7.5YR5/8 (strong brown) 100 litre sample sieved **Dartford Heath Gravel (DHG)**	2
33.30 – 33.10	2.1 -2.3	0.2	Sand **DHG**	1

Sedimentary succession horizontally bedded.

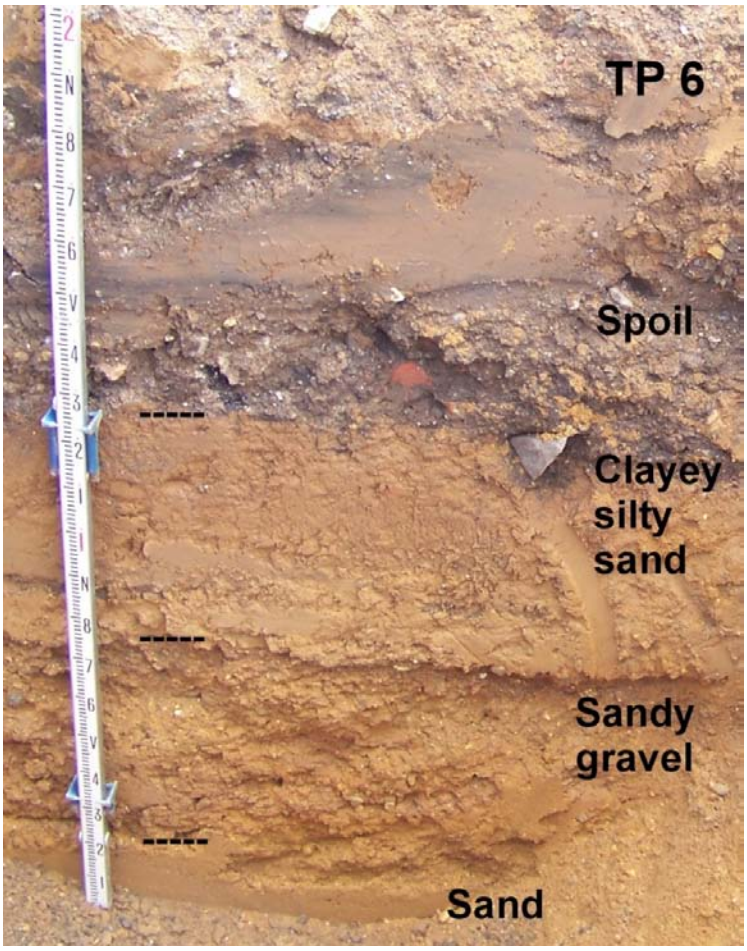


Figure G9: Trial Pit 6

Table 5: Trial Pit 7 North Face (south facing)

Depth (m OD)	Depth (m BGS)	Thickness (m)	Lithology	Unit
36.66	0.0		Temporary surface	
36.66 – 35.76	0.0 – 0.9	0.9	Spoil	
35.76 – 35.625	0.9 – 0.975	0.075	Sand **Dartford Heath Gravel (DHG)**	6
35.625 – 35.55	0.975 – 1.05	0.075	Sandy gravel **DHG**	5
35.55 – 35.45	01.05- 1.15	0.1	Sand **DHG**	4
35.45 – 34.75	1.15 – 1.85	0.7	Sandy gravel 100 litre sample sieved **DHG**	3
34.75 – 34.35	1.85 – 2.25	0.4	Gravelly sand Horizontally bedded **DHG**	2
34.35 – 34.00	2.25 – 2.6	0.35	Sand, medium – coarse Horizontally bedded **DHG**	1

Sedimentary succession horizontally bedded.

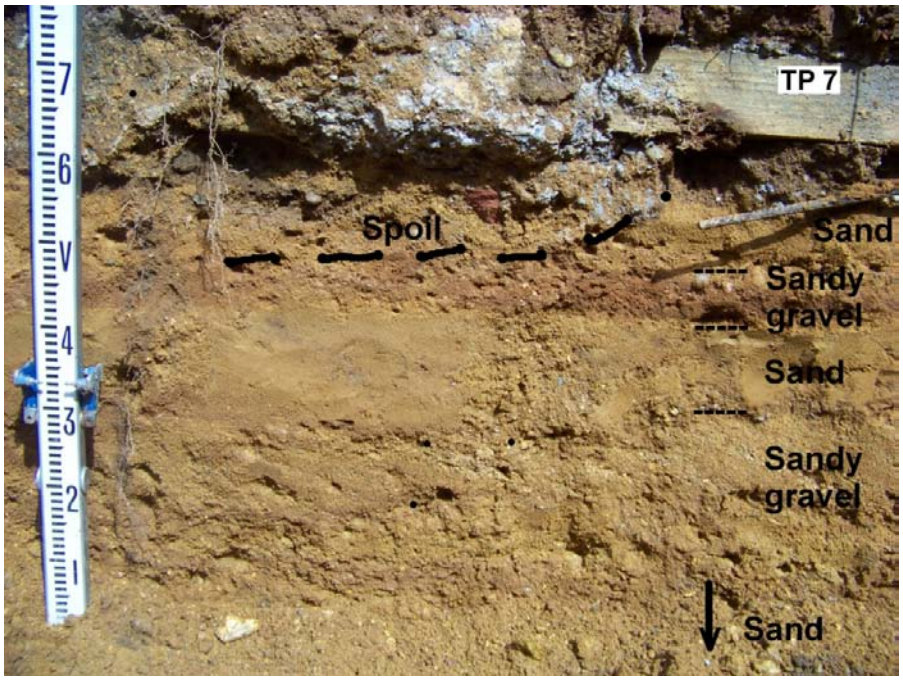


Figure G10: Trial Pit 7, Upper Part, North Face (south facing)

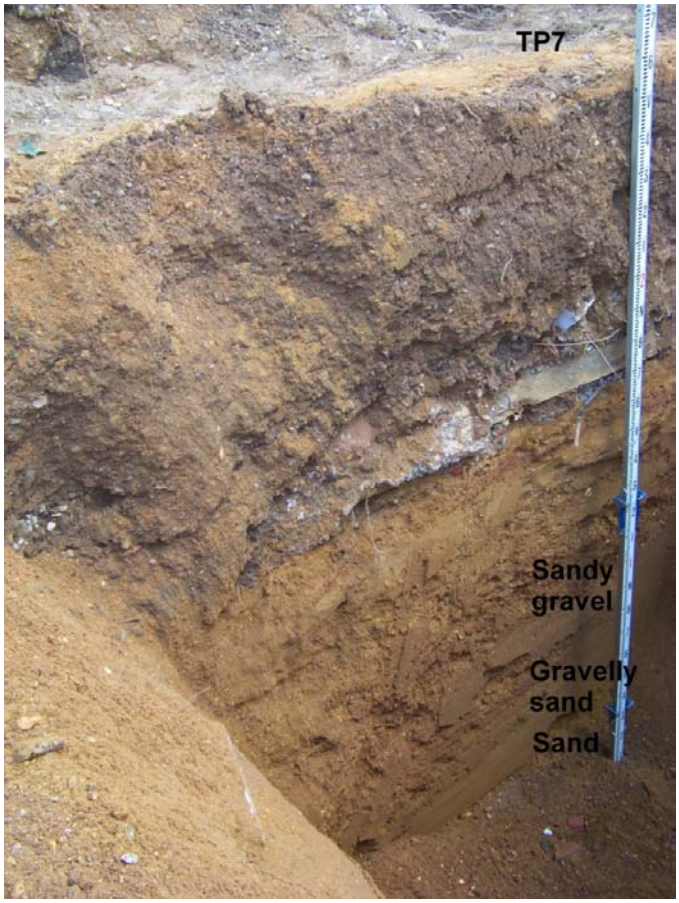


Figure G11: Trial Pit 7, Full Section, Oblique, North Face (south facing)

Table 6: Trial Pit 8 North Face (south facing)

Depth (m OD)	Depth (m BGS)	Thickness (m)	Lithology	Unit
36.08	0.0		Temporary surface	
36.08 – 34.88	0.0 – 1.2	1.2	Spoil	
34.88 – 34.58	1.2 – 1.5	0.3	Sandy gravel **Dartford Heath Gravel (DHG)**	3
34.58 – 34.08	1.5 – 2.0	0.5	Gravelly sand **DHG**	2
34.08 – 33.58	2.0 – 2.5	0.5	Sandy gravel **DHG**	1

Sedimentary succession horizontally bedded.

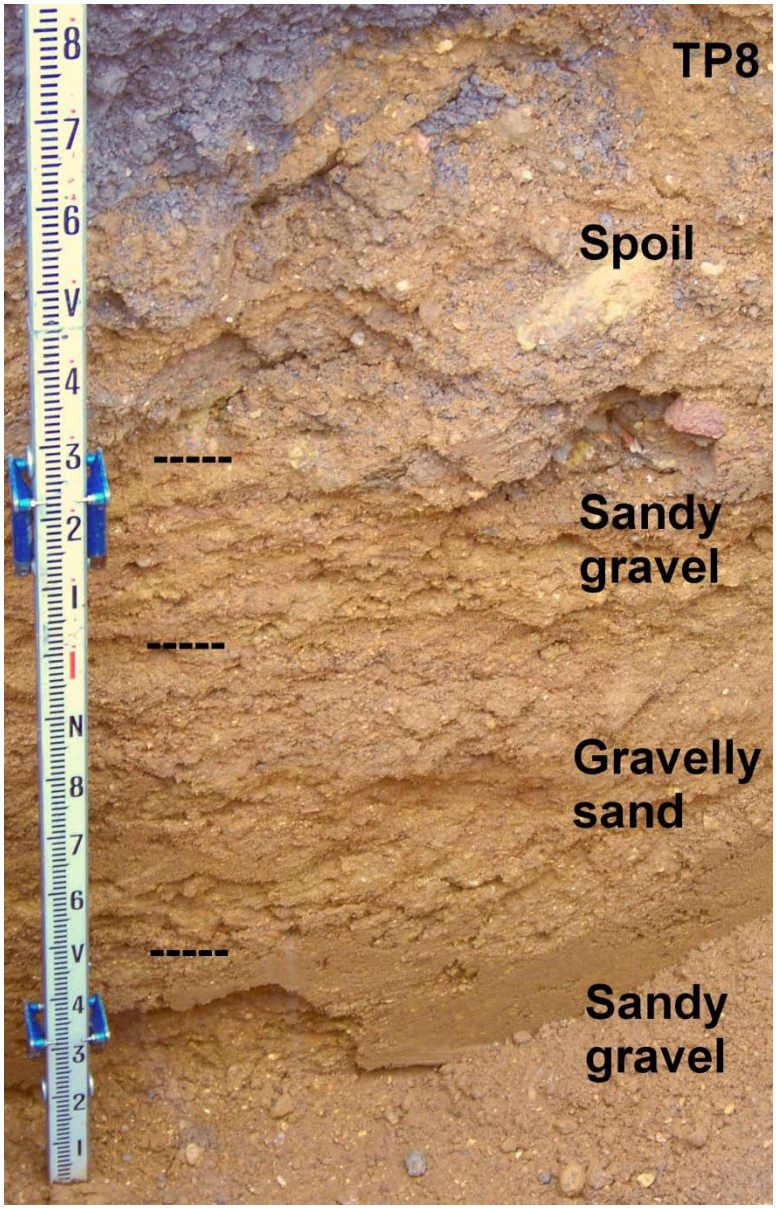


Figure G12: Trial Pit 8 North Face (south facing)

RECOMMENDATIONS

Although the artefacts are known locally from the Boyn Hill Terrace (Wansunt Loam, Dartford Heath and Orsett Heath Gravels), no significant Palaeolithic archaeological or palaeoenvironmental materials were found.

The archaeological material from the Wansunt Loam at Wansunt Pit came mostly from a channel where the Loam was thicker. No such feature was detected at the site. The archaeology from the Swanscombe was mostly from a lower part of the succession at that site than is represented at Dartford Heath.

The possibility of Palaeolithic material being present cannot be ruled out, but the site is unlikely to be productive.

REFERENCES

Bridgland, D.R. (1994) *Quaternary of the Thames*, Geological Conservation Review Series No. 7, Chapman and Hall, London.

Bridgland, D.R. (1995) The Quaternary sequence of the eastern Thames Basin: problems of correlation. In (Bridgland, D.R., Allen, P. & Haggart, B.A. eds) *The Quaternary of the Lower Reaches of the Thames: Field Guide*. Quaternary Research Association, Durham.

Bridgland, D.R., Allen, P. & Haggart, B.A. (1995) *The Quaternary of the Lower Reaches of the Thames: Field Guide*. Quaternary Research Association, Durham.

Gibbard, P.L. (1995) Palaeogeographical evolution of the Lower Thames. In (Bridgland, D.R., Allen, P. & Haggart, B.A. eds) *The Quaternary of the Lower Reaches of the Thames: Field Guide*. Quaternary Research Association, Durham.

White, M., Bridgland, D.R., Ashton, N.M., McNabb, J. & Berger, M.A. (1995) Wansunt Pit, Dartford Heath (TQ 513737). In (Bridgland, D.R., Allen, P. & Haggart, B.A. eds) *The Quaternary of the Lower Reaches of the Thames: Field Guide*. Quaternary Research Association, Durham.

Wood, M.A., Allen, D.J., Forster, A., Pharoah, T.C. & King, C. (2004) *Geology of London. Special Memoir for 1:50 000 Geological Sheets 256 (North London), 257 (Romford), 270 (South London) and 271 (Dartford) (England and Wales)*. British Geological Survey.

APPENDIX 2 Pottery Assessment

Chris Jarrett

Introduction

A small sized assemblage of pottery was recovered from the site (1 box). The pottery is extremely fragmentary with few diagnostic sherds represented. Some sherds show slight evidence for abrasion indicating secondary, possibly tertiary deposition after breakage. All the pottery is either transitional medieval/post-medieval in date with 18th and 19th century sherds also present. Only a single context produced pottery and this is as a small sized group (under 30 sherds).

All the pottery (25 sherds, 15 ENV/250g, of which three sherds/2 ENVs/26g are unstratified) was examined macroscopically and microscopically using a binocular microscope (x20), and recorded in an ACCESS database, by fabric, form, decoration, sherd count, estimated number of vessels (ENV's) and weight using standard Canterbury Archaeological Trust fabric codes and dating. The pottery is discussed by its types and distribution.

The Pottery Types

Red earthenwares

London area early post-medieval redware (fabric LM19), 1480-1600, form: bowl, 3 sherds, 3 MNVs, 36g. Context [3].
Post-medieval red earthenwares (fabric PM1), 1550-1800, form: unidentified, 2 sherds, 2 MNVs, 20g. Context [3].
Fine red earthenware (fabric PM1.4), 1575/1600-1675/1700, form: jar, 7 sherds, 5 MNVs, 78g. Context [3].
Wealden buff fine sandy ware (fabric PM2), 1525-1650, form: unidentified, 9 sherds, 2 MNVs, 88g. Context [3].

Stonewares

Modern English stoneware (fabric LPM10A), form: bottle, 1800-1940, 2 sherds, 1 MNV, 18g. Unstratified.
Nottinghamshire/Derby stoneware, (fabric PM38A), 1670-1900, form: unidentified, 1 sherd, 1 MNVs, 8g. Unstratified.

Imported pottery

Chinese porcelain, blue and white (fabric PM40A), 1580/1650-1900, one sherd/1 MNV/2g, form: bowl. Context [3].

Distribution

All of the stratified pottery was recovered from Trench 2, context [3], interpreted as a sub-soil or plough soil and this would explain the fragmentary nature of the ceramics and why some of the material is slightly abraded. This group of pottery from context [3] contains red earthenware types either dating to the late 15th/early 16th century or the late 16th/ 17th century and indicates the deposit was subjected to agricultural activity over a period of two or three centuries; the latest pottery type in context [3] consists of a small sherd of Chinese porcelain of a late 17th or 18th century date.

Significance Of The Collection

The pottery assemblage has no significance at a local level owing to its fragmentary nature. The pottery types represented are typical for North Kent during the late 15th to 19th centuries.

Potential

The pottery has only the potential to date the context it was found in. The pottery does not require illustrating.

Recommendations for Further Research

There are no recommendations for further research and should a publication be required on the archaeological excavation of the site, then information should be taken from this report.

APPENDIX 3: Context Index

Context	Trench	Plan	Section	Type	Description	Date	Phase
1	Tr 4	Tr 4	-	Layer	Natural sands and gravels	Natural	1
2	Tr 5	Tr 5	-	Layer	Natural sands and gravels	Natural	1
3	Tr 2	-	S3	Layer	Ploughsoil/subsoil	Post-med	2
4	Tr 2	-	S3	Layer	Topsoil	Modern	3
5	Tr 2	Tr 2	S3	Layer	Natural brickearth	Natural	1
6	Tr 1	-	S4	Layer	Topsoil	Modern	3
7	Tr 1	Tr 1	S4	Layer	Natural brickearth	Natural	1
8	Tr 3	-	S5	Layer	Topsoil	Modern	3
9	Tr 3	-	S5	Layer	Ploughsoil/subsoil	Post-med	2
10	Tr 3	Tr	S5	Layer	Ploughsoil/subsoil	Post-med	2
11	Tr 3	Tr	S5	Layer	Natural sands and gravels	Natural	1

APPENDIX 4: Lithics Assessment

Barry Bishop

No flint artefacts were identified in the sieved material recovered from the geo-archaeological test pits.

However, there is one definite flake - from context [3]. It is a small, 28mm x 21mm x 3mm flake made from semi-translucent grey flint and in a good sharp condition. It has a nicely prepared, edge trimmed, striking platform, a diffuse bulb of percussion, three unidirectional dorsal scars and a feathered distal termination.

This artefact is not easy to date, it was not recovered from the gravels but the ploughsoil/subsoil horizon [3] excavated in Evaluation Trench 2. The flake has not been rolled which indicates that it was produced nearby. If the flake derived from the gravels, and was therefore Palaeolithic in date, its slightly curved profile could indicate it comes from biface thinning (ie handaxe manufacture) but there is nothing intrinsic about it to suggest it is not early Holocene in date; the flake may have been produced in the Mesolithic or Neolithic. The original provenance of the flake is unknown, the ploughsoil layer produced an array of artefacts with a very wide date range. The flake can perhaps best be described as part of a background scatter indicative of the wider low-key use of the landscape by transient communities.

APPENDIX 5: OASIS DATA COLLECTION FORM

OASIS ID: preconst1-124279

Project details

Project name	Rolex Works,
Short description of the project	Evaluation which failed to produce any significant archaeological in situ remains. The earliest pottery recovered dated to the late medieval/early post-med transition. This material was recovered from a ploughsoil horizon. The latter contained a single flint flake of uncertain date, it could date from the Palaeolithic to the Neolithic
Project dates	Start: 16-04-2012 End: 21-04-2012
Previous/future work	No / Not known
Any associated project reference codes	KRLX 12 - Sitecode
Type of project	Recording project
Site status	None
Current Land use	Vacant Land 1 - Vacant land previously developed
Monument type	PLOUGHSOIL Post Medieval
Significant Finds	POT Post Medieval
Significant Finds	FLAKE Uncertain
Investigation type	'Test-Pit Survey'
Prompt	Direction from Local Planning Authority - PPS

Project location

Country	England
Site location	KENT DARTFORD DARTFORD Rolex works, Heath End Road
Postcode	DA5 2AA
Study area	3233.00 Square metres
Site coordinates	TQ 5108 7310 51.4362072829 0.173839137355 51 26 10 N 000 10 25 E Point
Height OD / Depth	Min: 35.64m Max: 37.33m

Project creators

Name of Organisation	Pre-Construct Archaeology Limited

Project brief originator	Pre-Construct Archaeology Ltd
Project design originator	Gary Brown
Project director/manager	Gary Brown
Project supervisor	Douglas Killock
Type of sponsor/funding body	Developer
Name of sponsor/funding body	Bellway Homes

Project archives

Physical Archive recipient	Local museum
Physical Contents	'Ceramics','Worked stone/lithics'
Digital Archive recipient	Local museum
Digital Media available	'Images raster / digital photography','Survey','Text'
Paper Archive recipient	Local Museum
Paper Media available	'Context sheet','Drawing','Photograph','Plan','Section','Survey','Unpublished Text'

Project bibliography 1

Publication type	Grey literature (unpublished document/manuscript)
Title	An Archaeological Evaluation at the former Rolex works, Heath End Road, Dartford, Kent, DA5 2AA
Author(s)/Editor(s)	Killock, D
Date	2012
Issuer or publisher	PCA
Place of issue or publication	Brockley
Description	A4 Blue cover

Entered by	Douglas Killock (dkillock@pre-construct.com)
Entered on	5 May 2012

P C A

PCA SOUTHERN

UNIT 54

BROCKLEY CROSS BUSINESS CENTRE

96 ENDWELL ROAD

BROCKLEY

LONDON SE4 2PD

TEL: 020 7732 3925 / 020 7639 9091

FAX: 020 7639 9588

EMAIL: info@pre-construct.com

PCA NORTHERN

UNIT 19A

TURSDALE BUSINESS PARK

DURHAM DH6 5PG

TEL: 0191 377 1111

FAX: 0191 377 0101

EMAIL: info.north@pre-construct.com

PCA CENTRAL

7 GRANTA TERRACE

STAPLEFORD

CAMBRIDGESHIRE CB22 5DL

TEL: 01223 845 522

FAX: 01223 845 522

EMAIL: info.central@pre-construct.com

PCA WESTERN

6 KING ALFRED PLACE

WINCHESTER

HAMPSHIRE SO23 7DF

TEL: 07714 134099

EMAIL: info.west@pre-construct.com