

# Archaeological Evaluation of Land to the rear of 2-33 St Marys Road, Stone, Kent



NGR: 557119 174952

Site Code: STM/EV/15

(Planning Application: DA/14/01180/FUL)

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# **Archaeological Evaluation of Land to the rear of 2-33 St Marys Road, Stone, Kent**

NGR: 557119 174952

Site Code: STM-EV-15

## **1. Summary**

*Swale & Thames Survey Company (SWAT) carried out an archaeological evaluation of land to the rear of 2-33 St Marys Road, Stone in Kent. A Planning Application (DA/14/01180/FUL) to develop this site for the erection of 53 dwellings together with the construction of a new access road, parking spaces and associated landscaping was submitted to Dartford Borough Council, whereby the Council requested that an Archaeological Evaluation be undertaken as part of an archaeological and geo-archaeological investigation in order to determine the possible impact of the development on any archaeological remains. The work was carried out in accordance with the requirements set out within an Archaeological Specification (KCC 2015 and KCC Specification Manual Part B and KCC Appendix 3) and in discussion with the Senior Archaeological Heritage Officer, Kent County Council. The results of the excavation of eight evaluation trenches revealed that no archaeological features were present within the trenches. The natural geology of pale buff sandy silty loam was reached at an average depth of between 0.30m and 0.40m below the modern ground surface. The Archaeological Evaluation has therefore been successful in fulfilling the primary aims and objectives of the Archaeological Specification.*

## **2. Introduction**

Swale & Thames Survey Company (SWAT) was commissioned by Skillcrown Homes Ltd to carry out an archaeological evaluation at the above site. The work was carried out in accordance with the requirements set out within an Archaeological Specification (KCC 2015) and in discussion with the Senior Archaeological Heritage Officer, Kent County Council. The evaluation was carried out on the 23<sup>rd</sup> to 25<sup>th</sup> September 2015. The archaeological evaluation comprised part of an overarching investigation which included:

1. Site Survey (EH Level 1) (Appendix 1)
2. Archaeological evaluation (present document)
3. Geo-archaeological test pits (Appendix 2)

### 3. Site Description and Topography

The Site is located within the parish of Stone, Dartford and centered on NGR 557119/174952. The Site lies to the south of St Marys Road and north of the North Kent Railway Line. The site is currently scrub, trees and rough grass.

There are proposals to develop the site for 53 dwellings and associated works. Further details are set out in the planning application DA/14/01180.

The Site is near the village of Stone, to the east of Dartford at a distance of about 0.6 km from the modern waterfront of the estuarine River Thames. The Site is on ground rising from NE to SW representing the slope up from the edge of the alluvial floodplain, at a level of c.1.0m OD, to higher levels. The ground surface at the Site is between 4.0m OD near its NE corner and 9.9m OD near its SW corner, but mainly between 6.0m and 8.0m OD. The British Geological Survey (BGS) (1:50,000 Sheet 271 Dartford 1998) shows the Site to be underlain by Taplow Gravel, forming a narrow outcrop extending eastward from the broader spread of gravel to the north of Dartford.

### 4. Planning Background

Dartford Borough Council gave planning permission (DA/14/01180/FUL) for development of land situated to the rear of 2-33 St Marys Road, Stone, near Dartford in Kent.

On the advice of the Wendy Rogers, Senior Archaeological Officer (KCC) a programme of archaeological works was attached to the consent:

*11) Before commencement of any building operations on site, details of a programme of archaeological work in accordance with a written specification and timetable, shall be submitted to and approved by the Local Planning Authority. The details shall be implemented as approved.*

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

The results from this evaluation will be used to inform KCC Heritage and Dartford Borough Council of any further archaeological mitigation measures that may be necessary in connection with the development proposals.

The initial requirements by KCC Heritage was for an Level 1 (non-analytical) record be made of the site in accordance with the guidelines set out in the document *'Understanding the Archaeology of Landscapes: a guide to good recording practise* (English Heritage 2007).

In addition KCC Heritage had requested:

- Archaeological trial trenches
- Geo-archaeological test pits
- Detailed mitigation based on the results of the first 3 phases

## **5. Archaeological and Historical Background**

The application site lies within an area with known archaeology. Visits to the Kent History and Library, Maidstone were productive in viewing early maps including the Tithe maps and aerial photographs from the 1940's. A map regression exercise on historic OS maps was carried out on the Proposed Development Area (PDA) and has shown that the site includes a dairy farm with historic beginnings that can be mapped in some detail from the mid 19<sup>th</sup> century and railway lines associated with the winning of aggregate south of the PDA (Appendix 1).

The Map Regression Exercise indicates that there may be the buried remains of a 'Dairy Farm' and 'Brewery' still located in the east area of the site. In addition some buildings not identified by mapping may have existed in the curtilage of the 'Old Rectory' which may be located in the central north area of the PDA. Of the railway remains no standing buildings associated with the mineral railway have been identified in the map regression exercise apart from concrete buffers and the railway bridge both of which are outside the footprint of the PDA. However, no traces of building remains were found during the Site Investigation.

Flint implements were found in 1935 about 280m south-west of the PDA (TQ 57 SE 40) whilst a double ring ditch is known 200m north-east of the PDA (TQ 57 NE 1013). A Roman pot found in Palmers Pit at Stone Court about 1025m south-west of the PDA (TQ 57 SE 59). The Post Medieval period within the assessment area could be represented by 'Cotton Farm and the 'Old Rectory'. The Old Rectory was destroyed by fire on 5<sup>th</sup> May 1986 (TQ 57 SE 1027) and is located about 50m north-east of the PDA. In addition Whitings Paint Factory and drying sheds both former listed buildings were located 250 west of the PDA (TQ 75 SE 1030, 1019).

## **6. Aims and Objectives**

According the KCC Archaeological Specification, the aims and objectives for the archaeological work were that:

"The programme of archaeological work should be carried out in a phased approach and will commence with a Level 1 Site survey, focusing on recording (preservation by record) the remaining early 20<sup>th</sup> century railway industrial remains. The investigation will then continue with an evaluation through trial trenching, with geo-archaeological test pits at one end of each trench. The aim of the trenching is to clarify the presence/absence of any prehistoric, Roman or post medieval remains especially survive on the site. This initial phase should determine whether any significant archaeological remains would be affected by the development and if so what mitigation measures are appropriate. Such measures may include further detailed archaeological excavation, historic buildings recording and/or an archaeological watching brief during construction work.' (KCC 2015).

The National Planning Policy Framework (NPPF) and Heritage Assets clarifies a developers responsibilities in paragraphs 12.8 and 14.1.

Paragraph 12.8 states:

*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.*

Paragraph 14.1 states:

*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. However, the ability to record evidence of our past should not be a factor in deciding whether such loss should be permitted.*

The aims set out in the KCC Specification (2015) for the site required a phased approach to the mitigation of the development site commencing with an evaluation, with the results influencing the possibility of further work on the site such as further mitigation in the form of a watching brief or excavation depending upon the amount and significance of any possible archaeological remains.

## **7. Methodology**

The KCC Archaeological Specification called for an evaluation by trial trenching comprising eight trenches within the footprint of the proposed development. A 12.5 ton 360° tracked mechanical excavator with a flat-bladed ditching bucket was used to remove the demolition overburden to expose the natural geology and/or the archaeological horizon. All archaeological work was carried out in accordance with the specification. A single context recording system was used to record the deposits, and context recording numbers were assigned to all deposits for recording purposes. These are used in the report and shown in **bold**. All archaeological work was carried out in accordance with KCC and IFA standards and guidance.

## 8. Monitoring

Curatorial monitoring was not available during the course of the evaluation.

## 9. Results

The evaluation has identified no archaeological features or retrieved any archaeological finds within the eight trenches (Figure 1).

### Trench 1

The plan is recorded in Figures 1 & 2 (see also Plate 1). The trench lay on an E to W alignment and measured approximately 20m by 1.20m.

Undisturbed natural geology **(102)** was identified across the trench as sandy clay silt, at a depth of approximately 0.60m (5.24mOD) below the present ground surface at 5.84m OD at the W end of the trench.

The natural geology was sealed by a layer of demolition material and made ground **(101)** 0.60m thick.

### Trench 2

The plan is recorded in Figures 1 & 2 (see also Plate 2). The trench lay on an N to S alignment and measured approximately 22m by 1.20m.

Undisturbed natural geology **(202)** was identified across the trench as sandy clay silt, at a depth of approximately 1.11m (5.33mOD) below the present ground surface at 6.44m OD at the S end of the trench.

The natural geology was sealed by a layer of demolition material and made ground **(201)** 1.11m thick.

### Trench 3

The plan is recorded in Figures 1 & 2 (see also Plate 3). The trench lay on an E to W alignment and measured approximately 20m by 1.20m.

Undisturbed natural geology **(302)** was identified across the trench as sandy clay silt, at a depth of approximately 0.37m (6.37mOD) below the present ground surface at 6.74m OD at the W end of the trench.

The natural geology was sealed by a layer of demolition material and made ground **(101)** 0.37m thick.

### Trench 4

The plan is recorded in Figures 1 & 2 (see also Plate 4). The trench lay on an N to S alignment and measured approximately 15m by 1.20m.



Undisturbed natural geology **(402)** was identified across the trench as sandy clay silt, at a depth of approximately 0.58m (6.47mOD) below the present ground surface at 7.05m OD at the S end of the trench.

The natural geology was sealed by a layer of demolition material and made ground **(101)** 0.58m thick.

#### **Trench 5**

The plan is recorded in Figures 1 & 2 (see also Plate 5). The trench lay on an N to S alignment and measured approximately 20m by 1.20m.

Undisturbed natural geology **(502)** was identified across the trench as sandy clay silt, at a depth of approximately 0.83m (6.65mOD) below the present ground surface at 7.48m OD at the S end of the trench.

The natural geology was sealed by a layer of demolition material and made ground **(501)** 0.83m thick.

#### **Trench 6**

The plan is recorded in Figures 1 & 2 (see also Plate 6). The trench lay on an E to W alignment and measured approximately 20m by 1.20m.

Undisturbed natural geology **(602)** was identified across the trench as sandy clay silt, at a depth of approximately 0.47m (6.16mOD) below the present ground surface at 6.63m OD at the W end of the trench. A modern pit 65cm x 30cm infilled with brick fragments and coal pieces was revealed.

The natural geology was sealed by a layer of demolition material and made ground **(601)** 0.47m thick.

#### **Trench 7**

The plan is recorded in Figures 1 & 2 (see also Plate 7). The trench lay on an NW to SE alignment and measured approximately 18m by 1.20m.

Undisturbed natural geology **(702)** was identified across the trench as sandy clay silt, at a depth of approximately 0.18m (6.77mOD) below the present ground surface at 6.95m OD at the NW end of the trench.

The natural geology was sealed by a layer of demolition material and made ground **(701)** 0.18m thick.

#### **Trench 8**

The plan is recorded in Figures 1 & 2. The trench lay on an E to W alignment and measured approximately 20m by 1.20m.

Excavation of the trench was halted at 2.10m below ground level as the area has been raised recently by dumps of crushed brick and gravel which made the trench to unstable to continue work.

In addition all Test Pits were watched and no archaeological features observed or artefacts recovered. No archaeology features or archaeological artefacts were recovered from any of the eight trenches or Test Pits.

## **10. Discussion**

Despite the presence of archaeological sites in the vicinity of the PDA it was expected that the evaluation may produce evidence of archaeological activity. But there was none.

## **11. Finds**

No finds were found.

## **12. Conclusion**

The evaluation trenches at the proposed development site revealed no archaeological features or artefacts.

The archaeological evaluation has been successful in fulfilling the primary aims and objectives of the Specification. A common stratigraphic sequence was recognised across the site comprised of demolition and made ground **(100)** sealing the subsoil **(101)** which overlay the natural geology of Sandy Clay Silt **(102)**. Therefore, this evaluation has been successful in fulfilling the aims and objectives as set out in the planning condition and the Archaeological Specification.

## **13. Acknowledgements**

SWAT Archaeology would like to thank the client, Skillcrown Homes Ltd for commissioning the project. Thanks are also extended to Wendy Rogers, Senior Heritage Officer, Kent County Council. Illustrations were produced by Jonny Madden for Digitise This. The fieldwork was undertaken and the project was managed and report written by Dr Paul Wilkinson MCifA.

Paul Wilkinson BA (Hons), PhD, FRSA, MCifA

03/11/15

## 14. References

Institute for Field Archaeologists (IfA), Rev (Dec 2014). *Standard and Guidance for archaeological field evaluation*

Historic Landscape Recording of Land to the rear of 2.33 St Marys Road, Stone, Dartford, Kent (2015)

KCC (2015) *Specification for Archaeological Investigation of Land (Part A)*

KCC Specification Manual Part B

KCC HER data 2015

QUEST Geo-archaeological Fieldwork Report

## PLATES



Plate 1 – Trench 1 under excavation (looking west) 1m scale



Plate 2 – Trench 2 (looking north) 1m scale



Plate 3 – Trench 3 looking south east, 1m scale.



Plate 4 – Trench 4 looking south, 1m scale.



Plate 5 – Trench 5 looking north, 1m scale





Plate 6 – Trench 6 looking east, 1m scale.



Plate 7 – Trench 7 looking south east, 1m scale.



Plate 8 – Trench 7 and Test Pit 2, 1m scale.



Plate 9 – Test Pit 1 (Trench 1), 1m scale.



Plate 10 – Test Pit 4, 1m scale.



Plate 11 – Test Pit 5, 1m scale.

## **Kent County Council HER Summary Form**

**Site Name:** Land at 2-33 St Marys Road, Stone, Dartford, Kent

**SWAT Site Code:** STM/EV/15

**Site Address:** As above

### **Summary:**

Swale and Thames Survey Company (SWAT) carried out Archaeological Evaluation on the development site above. The site has planning permission for a housing whereby Kent County Council Heritage and Conservation (KCCHC) requested that Archaeological Evaluation be undertaken to determine the possible impact of the development on any archaeological remains.

The Archaeological Monitoring consisted of an Archaeological Evaluation which revealed no archaeology.

**District/Unitary:** Dartford Borough Council

### **Period(s):**

**NGR (centre of site to eight figures)** 557119 174952

**Type of Archaeological work:** Archaeological Evaluation

**Date of recording:** September 2015

**Unit undertaking recording:** Swale and Thames Survey Company (SWAT. Archaeology)

**Geology:** Underlying geology is Chalk overlain by Sand and Gravel

**Title and author of accompanying report:** Wilkinson P. (2015) Archaeological Evaluation at Land off 2-33 St Marys Road, Stone, Dartford, Kent

### **Summary of fieldwork results (begin with earliest period first, add NGRs where appropriate)**

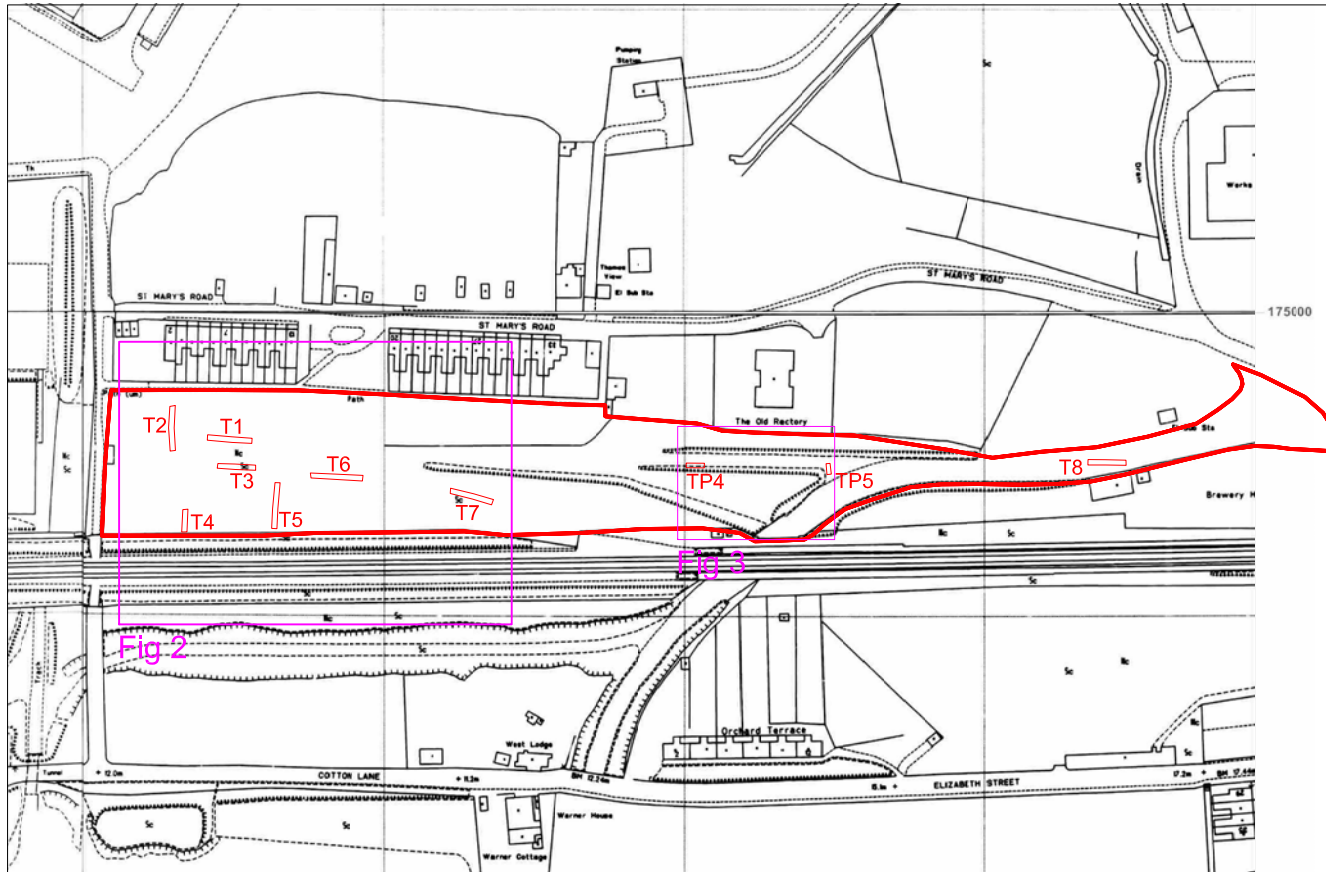
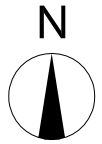
No archaeology found

**Location of archive/finds:** SWAT. Archaeology. Graveney Rd, Faversham, Kent. ME13 8UP

**Contact at Unit:** Paul Wilkinson

**Date:** 03/11/2015

556936.0mE  
175152.0mN



557437.0mE  
174787.0mN

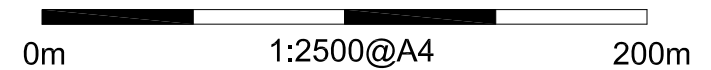


Figure 1: Location of archaeological trenches

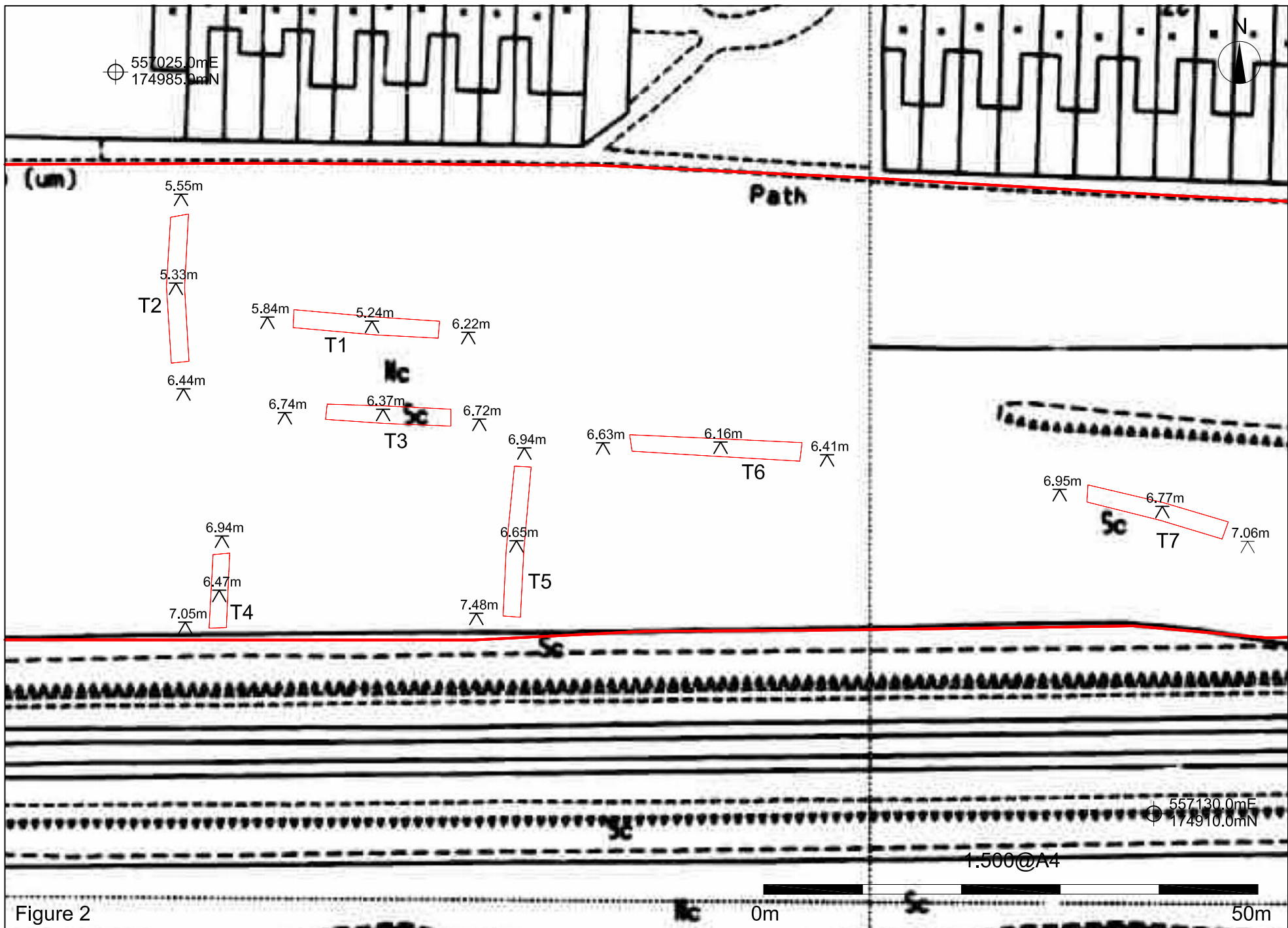


Figure 2

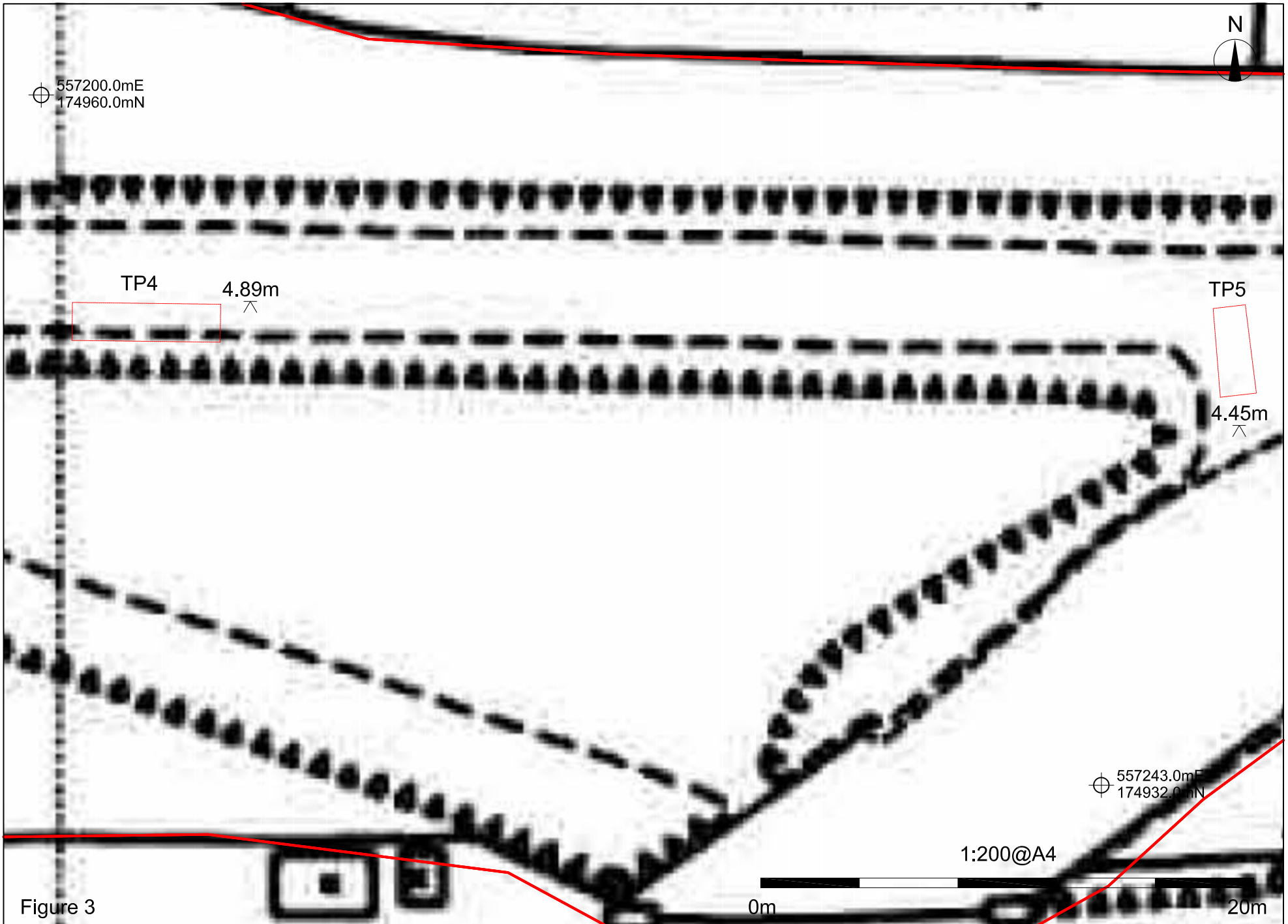


Figure 3



# Historic Landscape Recording of Land to the rear of 2-33 St Marys Road, Stone, Dartford, Kent



Date of Report: 03/08/15

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Plate 17 Google Earth

Plate 18 Google Earth

Plate 19 Google Earth

Plate 20 Google Earth

Plate 21 Andrews Dury map

Plate 22 Andrews Dury map

Plate 23 OS SD map

# Historic Landscape Recording of Land to the rear of 2-33 St Marys Road, Stone, Dartford in Kent

## **Summary**

SWAT Archaeology has been commissioned by Skillcrown Homes Ltd to carry out a programme of phased archaeological investigations of which historic landscape recording at land to the rear of 2-33 St Marys Road, Stone in Kent is Phase 1 (Figure 8).

The Site is currently occupied by a number of crushed rock (roadstone) linear banked railway tracks and discarded concrete railway sleepers associated with the sites former use as a railway marshalling yard and depot and is overgrown with scrub, trees and grass (Plates12-18).

The Site is of some significance due to its age, possible interesting features and historic development. It was therefore required by KCC Heritage that a Level 1 survey for a Historic Landscape Assessment be undertaken. This would serve to mitigate the negative effects of the redevelopment/demolition of any surviving buildings or structures by 'preservation by record' and inform KCC Heritage of the sites potential for surviving industrial archaeology.

## **Acknowledgements**

This project was commissioned by Skillcrown Homes Ltd and SWAT Archaeology is grateful to Michael Jackson in this regard. SWAT Archaeology would also like to thank Wendy Rogers (Senior Archaeological Officer, Kent County Council), and the staffs of the Kent History and Library Centre and National Monuments Record Centre for their assistance.

On site survey, photography and documentary research was carried out by Paul Wilkinson MifA., PhD., FRSA. The illustrations were produced by Jonny Madden of 'Digitise This'.

## 1 INTRODUCTION

### 1.1 Project background

1.1.1 SWAT Archaeology was commissioned by Skillcrown Homes Ltd to carry out a programme of historic landscape recording at the former railway marshalling yards and depot at land to the rear of 2-33 St Marys Road, Stone, Kent, and centred on National Grid Reference NGR 557119/174952 (hereafter 'the Site').

1.1.2 The Site (Fig.8) is currently occupied by areas of hard-standing, linear banks of roadstone, piles of concrete railway sleepers, trees, scrub and rough grassland.

1.1.3 Planning consent for the proposals was granted by Dartford Borough Council subject to certain conditions. Condition 11 states that:

*11) Before commencement of any building operations on site, details of a programme of archaeological work in accordance with a written specification and timetable, shall be submitted to and approved by the Local Planning Authority. The details shall be implemented as approved.*

1.1.4 It was therefore required by KCC Heritage that an Level 1 (non-analytical) record be made of the site in accordance with the guidelines set out in the document 'Understanding the Archaeology of Landscapes: a guide to good recording practise (English Heritage 2007).

1.1.5 In addition KCC Heritage has requested:

- Archaeological trial trenches
- Geo-archaeological test pits
- Detailed mitigation based on the results of the first 3 phases

## **2 THE SITE**

### **2.1 Site location, Geology and Description**

2.1.1 The Site is located within the parish of Stone, Dartford and centered on NGR 557119/174952. The Site lies to the south of St Marys Road and north of the North Kent Railway Line. The site is currently scrub, trees and rough grass. There are proposals to develop the site for 53 dwellings and associated works. Further details are set out in the planning application DA/14/01180.

The Site is near the village of Stone, to the east of Dartford at a distance of about 0.6 km from the modern waterfront of the estuarine River Thames. The Site is on ground rising from NE to SW representing the slope up from the edge of the alluvial floodplain, at a level of c.1.0m OD, to higher levels. The ground surface at the Site is between 4.0m OD near its NE corner and 9.9m OD near its SW corner, but mainly between 6.0m and 8.0m OD. The British Geological Survey (BGS) (1:50,000 Sheet 271 Dartford 1998) shows the Site to be underlain by Taplow Gravel, forming a narrow outcrop extending eastward from the broader spread of gravel to the north of Dartford. The bedrock is the Chalk.

2.1.2 In recent years, the Taplow Gravel of the BGS in this part of the Lower Thames valley has been variously re-interpreted. Bridgland (1994) regards the gravel underlying St Mary's Road, and its westward continuation as part of the Mucking Formation which he equates with the Taplow Gravel and places stratigraphically in the period that includes the latter part of MIS 8, the whole of MIS 7 and the early part of MIS 6. In this interpretation, the surface of the post-MIS 7 Mucking Gravel forms a terrace, which Bridgland (1994, Figs 1.3 and 4.2) shows at a level of c.10-12m OD in the Dartford area. Gibbard (1994 Fig. 1) assigns the same body of gravel to the East Tilbury Marshes Gravel which he equates with the Kempton Park Gravel of the Middle Thames and places stratigraphically in the period following the Last Interglacial (Ipswichian, MIS 5e). Gibbard (1994 Fig. 6) illustrates a section based on borehole records extending from the high ground of Dartford northward along the route of the Dartford Crossing southern approach road (M25) and identifies his East Tilbury Marshes Gravel in this section at levels between c. 6.0m OD and c.-7.0m OD.

## **3 METHODS**

### **3.1 Introduction**

3.1.1 The aim of the programme of historic landscape recording was to make a permanent record of any railway/industrial activity on the Site prior to any redevelopment and demolition works. This would serve to mitigate the negative effects of the redevelopment/demolition of any buildings or structures by 'preservation by record'. This is Phase 1 of the archaeological investigation programme.

3.1.2 This recording programme was achieved through a combination of photographic, written record and documentary research. Particular attention was paid to any evidence for functional details or machinery associated with the use of the site as an railway depot, although following demolition in the 1980's, much of the former sidings and railway infrastructure had been removed from the Site.

3.1.3 The recording programme included detailed description and analysis, high-quality digital and film photographic record (Figure 9).

### **3.2 Documentary Research**

3.2.1 A search of relevant primary and secondary sources was carried out in the following repositories/locations:

- Kent History and Library Centre, Maidstone
- Kent Historic Environment Record (HER Appendix 3)

3.2.2 In addition to the above-mentioned repositories, a search for information was also carried out via SWAT Archaeology's own library and via the internet.

### **3.3 Site visits**

3.3.1 The Site was visited on 9<sup>th</sup> July 2015 by Dr Paul Wilkinson, a senior archaeologist from SWAT Archaeology.

3.3.2 The Site has been recorded to *Level 1*, as described in the document *Understanding the Archaeology of Landscapes: a guide to good recording practise* (English Heritage 2007). In addition the recording was carried out in

accordance with the Manual of Specification for the Site (Part A) issued by Kent County Council (KCC 2015) and guidance given by the Institute for Archaeologists' Standard and Guidance for the archaeological investigation and recording of standing buildings and structures (IfA 1996, revised 2001 and 2008).

3.3.3 During the site visits, some 31 colour digital photographs were taken using an digital SLR camera equipped with Zeiss optics.

3.3.4 Due to varying lighting conditions encountered during the site visit (due to time of day), some of the views were digitally photographed a number of times, with varying timed exposure ratings (bracketed shots). A metric photographic scale has been included in all detailed shots.

3.3.5 All photographic views were recorded on photographic registers which give the direction of the view and a brief description of the subject.

3.3.6 A selection of the digital photographic record has been used to illustrate this report (**Plates 1 - 17**). Topographic plans showing the location of photographic locations used to illustrate the report are included in Figure 9.

## **4 HISTORICAL BACKGROUND**

### **4.1 Site OS Development: 1867 – 1992**

### **4.2 Map Regression 1769-1992**

Visits to the Kent History and Library, Maidstone were productive in viewing early maps including the Tithe maps and aerial photographs from the 1940's. All results of interpretation of this data are presented in order of chronology. A map regression exercise on historic OS maps was carried out on the Proposed Development Area (PDA) and has shown that the site includes a dairy farm with historic beginnings that can be mapped in some detail from the mid 19<sup>th</sup> century and railway lines associated with the winning of aggregate south of the PDA (Figures 1-8).



**4.3** Maps consulted for this earlier period include, the Andrews and Dury map of 1769 and the OS Surveyors Drawings (1799). The scale on all these maps is such that the fine detail required for a Historic Landscape Survey is not there. However, both sets of these large scale maps were the first to use triangulation which enabled actual field boundaries to be drawn. The Ordnance Survey surveyors claimed to illustrate 'every inclosure, however small.....every road, public and private....the rivers, with their bends, fords and bridges'.

4.4 From the 1840s the Ordnance Survey started work on the Great Britain 'County Series', modelled on the earlier Ireland survey. A start was made on mapping the whole country, county by county, at six inches to the mile (1:10,560). From 1854, to meet requirements for greater detail, including land-parcel numbers in rural areas and accompanying information, cultivated and inhabited areas were mapped at 1:2500 (25.344 inches to the mile), at first parish by parish, with blank space beyond the parish boundary, and later continuously. Early copies of the 1:2500s were available hand-coloured. Up to 1879, the 1:2500s were accompanied by Books of Reference or "area books" that gave acreages and land-use information for land-parcel numbers. After 1879, land-use information was dropped from these area books; after the mid-1880s, the books themselves were dropped and acreages were printed instead on the maps. After 1854, the six-inch maps and their revisions were based on the "twenty-five inch" maps and theirs. The six-inch sheets covered an area of six by four miles on the ground; the "twenty-five inch" sheets an area of one by one and a half. One square inch on the "twenty-five inch" maps was roughly equal to an acre on the ground. In later editions the six-inch sheets were published in "quarters" (NW,NE,SW,SE), each covering an area of three by two miles on the ground. The first edition of the two scales was completed by the 1890s. A second edition (or "first revision") was begun in 1891 and completed just before the First World War. From 1907 till the early 1940s, a third edition (or "second revision") was begun but never completed: only areas with significant changes on the ground were revised, many two or three times.

**4.5** The Andrews and Dury & Herbert map of 1769 is of interest as it shows in some detail 'Stone Parsonage' (now called 'The Old Rectory') located just to the north of the PDA. The road indicated south of the 'Stone Parsonage' is

presumably 'St Marys Road' leading as it does to the 13<sup>th</sup> century church dedicated to St Mary the Virgin at Stone. The church was known as the 'Lantern of Kent' from its beacon light which could be seen by sailors on the nearby River Thames. Of additional interest is the fact that 'Watling Street' the Roman road from Dover and Richborough to London and beyond is shown as a pecked line and seems not to be in use (Figures 21-22).

**4.6** The Ordnance Survey Surveyors Drawings of 1799 (OSD 129) at a scale of 6" to the mile does not annotate 'Stone Parsonage' but it can be seen as a dwelling house and coloured red (Figure 23). What is annotated is 'Cotton Farm' which presumably was located in Cotton Lane just south of the PDA and can be viewed in a painting held by Dartford Library and dated c.1920 by an unknown artist.

**4.7** The OS map of 1867 shows the PDA to be open ground and to the east a 'Dairy Farm' which may be the same establishment as 'Cotton Farm' as shown on the OSSD map of 1799. Some of these building are located in the proposed entrance to the PDA. To the north of the PDA the 'Rectory' is shown but separated from the PDA by St Marys Road itself shown on the 1769 map. It may be that ancillary buildings of the 'Rectory' may be situated in the immediate area of the PDA (Figure 1).

**4.8** By 1897 the 'Dairy Farm' has been sat summed into a 'Brewery' and again there a buildings which are located in the entrance to the PDA. To the west the PDA has no buildings or development activity (Figure 2).

**4.9** The OS map of 1909 shows some land division in the western area of the PDA whilst to the east the 'Brewery' is still in being (Figure 3).

**4.10** By 1933 the OS maps show three railway lines entering the PDA through the east entrance with some of the 'Brewery' buildings demolished. Two of the lines veer to the south and cross under the main line carried by a bridge (Plate 6). To the west one line continues on a raised bank to the western edge of the PDA and halts at a large concrete buffer (Plate 7). A passing track veers to the south and on a raised bank joins the main line just to the west of the railway

bridge. To the south of the main line railway lines have been constructed to facilitate loading of aggregate onto railway wagons (Figure 4).

**4.11** The OS map of 1962 shows more detail of the railway embankments in the PDA and the construction of a large factory just to the north of the PDA at its eastern end (Figure 5).

**4.12** By 1972 the OS map shows the railway line veering south under the railway bridge has been taken up and the large factory is now identified as 'Cement Works' (Figure 6).

**4.13** The 1984 OS map shows all the railway lines on the PDA dismantled and taken up with only the embankments remaining. In addition the 'Cement Factory' is longer shown on the OS map (Figure 7).

**4.14** By 1992 the OS map shows three embankments on the PDA (Figure 8).

**4.15 The Map Regression Exercise** indicates that there may be the buried remains of a 'Dairy Farm' and 'Brewery' still located in the east area of the site. In addition some buildings not identified by mapping may have existed in the curtilage of the 'Old Rectory' which may be located in the central north area of the PDA. Of the railway remains no standing buildings associated with the mineral railway have been identified in the map regression exercise apart from concrete buffers and the railway bridge both of which are outside the footprint of the PDA (Plates 6, 15). However, no trace of any building remains were found during the Site Investigation.

## 5 ARCHAEOLOGICAL AND HISTORICAL DEVELOPMENT

Prehistoric	Palaeolithic	c. 500,000 BC – c.10,000 BC
	Mesolithic	c.10,000 BC – c. 4,300 BC

	Neolithic	c. 4,300 BC – c. 2,300 BC
	Bronze Age	c. 2,300 BC – c. 600 BC
	Iron Age	c. 600 BC – c. AD 43
	Romano-British	AD 43 – c. AD 410
	Anglo-Saxon	AD 410 – AD 1066
	Medieval	AD 1066 – AD 1485
	Post-medieval	AD 1485 – AD 1900
	Modern	AD 1901 – present day

***Table 1 Classification of Archaeological Periods***

## **5.1 Introduction**

The Archaeological record within the area around St Marys Road, Stone, Dartford is diverse and comprises possible activity dating from one of the earliest human period in Britain (the Neolithic) through to the post-medieval period. The geographic and topographic location of the site is within a landscape that has been the focus of trade, travel and communication since the Palaeolithic. However, the area has had limited past archaeological investigations so for most periods the archaeological potential is unknown.

This section of the assessment will focus on the archaeological and historical development of this area, placing it within a local context. Each period classification will provide a brief introduction to the wider landscape (1km radius centered on the PDA). Time scales for archaeological periods represented in the report are listed on the previous page in **Table 1**.

## **5.2 Scheduled Monuments; Listed Buildings; Historic Parks & Gardens and Conservation Areas**

No scheduled monuments; no Listed Buildings; No Historic Parks & Gardens and Conservation Areas are recorded within the confines of the proposed development area (PDA).

### **5.3 Prehistoric (Palaeolithic, Mesolithic, Neolithic and Bronze Age)**

The Palaeolithic represents the earliest phases of human activity in the British Isles, up to the end of the last Ice Age.

The Mesolithic period reflects a society of hunter-gatherers active after the last Ice Age.

The Neolithic period represents the first farmers and the Bronze Age, a period of large migrations from the continent and more complex social developments on a domestic, industrial and ceremonial level are represented in the assessment area.

Flint implements were found in 1935 about 280m south-west of the PDA (TQ 57 SE 40) whilst a double ring ditch is known 200m north-east of the PDA (TQ 57 NE 1013).

### **5.4 Iron Age**

The Iron Age is, by definition a period of established rural farming communities with extensive field systems and large 'urban' centres. An Iron Age pot was found in 1935 300m south-west of the PDA (TQ 57 SE 377).

### **5.5 Romano-British**

The Romano-British period is the term given to the Romanised culture of Britain under the rule of the Roman Empire, following the Claudian invasion in AD 43, Britain then formed part of the Roman Empire for nearly 400 years.

The predominant feature of the Roman infrastructure within Kent is arguably the extensive network of Roman roads connecting administrative centres: the towns to military posts and rural settlements (villas, farmsteads and temples) increasing the flow of trade, goods, communications and troops. The assessment area includes one record from this period. A Roman pot found in Palmers Pit at Stone Court about 1025m south-west of the PDA (TQ 57 SE 59).

### **5.6 Anglo-Saxon**

The Anglo-Saxon period is not represented in the assessment area.

## 5.7 Medieval

The medieval period is represented within the assessment area with the 13<sup>th</sup> century church of St Mary the Virgin located to the east of the PDA.

## 5.8 Post-Medieval

The Post Medieval period within the assessment area could be represented by 'Cotton Farm and the 'Old Rectory'. The Old Rectory was destroyed by fire on 5<sup>th</sup> May 1986 (TQ 57 SE 1027) and is located about 50m north-east of the PDA. In addition Whitings Paint Factory and drying sheds both former listed buildings were located 250 west of the PDA (TQ 75 SE 1030, 1019).

## 5.9 Modern

Modern development within the PDA has been limited to railway sidings built in the 1930's and demolished by 1984.

## 5.10 Undated

There is no Kent HER undated records that fall within the assessment area.

# 6 ARCHAEOLOGICAL POTENTIAL

## 6.1 Palaeolithic, Mesolithic, Neolithic and Bronze Age

The potential for finding remains that date prior to the Iron Age within the confines of the proposed development is therefore considered **undefined**.

## 6.2 Iron Age

The potential for finding remains dating to the Iron Age within the confines of the PDA is considered **undefined**.

## 6.3 Romano-British

The lack of presence of Romano-British archaeology in the research area suggests that the potential is therefore to be considered as **undefined**.

## 6.4 Anglo-Saxon

Anglo-Saxon archaeology within the assessment area has not been represented. The potential for finding remains dating to the Anglo-Saxon period on the development site is considered as **undefined**.

## **6.5 Medieval**

The potential for finding remains dating to the medieval period is considered as **undefined**.

## **6.6 Post-Medieval**

The potential for finding remains dating to the post-medieval period is considered as **medium** as cartographic evidence suggests farm and factory activity close to the site.

## **11. DISCUSSION**

A historic landscape walkover and photographic recording exercise took place on 11<sup>th</sup> May 2015. There were no buildings within the area of the PDA. No industrial activity or infrastructure and no coherent remains from the railway.

11.1 Outside the area of the PDA a rather fine mild steel latticed bridge dating from about 1930 could be seen (Plate 6) and at the far west end of the site and again outside the PDA a concrete buffer (Plate 15) which can be identified from historic mapping (Figures 1-8).

11.2 Truncated remains of raised roadstone banks, the remains of railway sidings can be seen (Plates 10-14) and in some places piles of concrete sleepers were found (Plates 14, 16). It was noted that massive scarping of the landscape had taken place by the build of the railway sidings which will have an impact on future phases of archaeological investigation of the site.

11.3 There were no standing buildings to record and no landscape features of importance to record. A comprehensive photographic survey of the Site was achieved and can be viewed (Plates 1-17).

**11.4 Proposed Geological Investigation (QUEST):** Given the topographic situation of St Mary's Road on ground sloping up from the alluvium, and given the mapped presence beneath the site of gravel, it seems likely that the ground here forms part of the bluff marking the edge of the Holocene floodplain and separating it from a gravel terrace remnant at a higher level. The position of the site on this bluff means that near surface sediments are

likely to have been disturbed by downslope movement, particularly during periods of cold climate conditions. Such deposits may be quite thick (2-3m) and might rest directly on bedrock chalk. Alternatively the bluff may be cut into terrace gravels, in which case undisturbed fluvial deposits might be present at depth beneath the disturbed sediment.

If undisturbed fluvial sediments are present beneath the site, it is not possible on the basis of the available evidence to determine what their stratigraphic position may be. If they comprise East Tilbury Marshes Gravel *sensu* Gibbard (1994), it is extremely unlikely that they will contain any Palaeolithic remains, either in primary context or as individual artefacts contemporary with the deposition of the sediment. If the sediment comprises Mucking Gravel *sensu* Bridgland (1994) there are sites in the Lower Thames valley where Palaeolithic remains have been recorded in this formation (e.g. Crayford, West Thurrock).

A sensible investigative strategy would be to open a small number of exploratory trenches to the depth of disturbance planned in association with the proposed development of the site, with the possibility of opening deeper sondages if any undisturbed fluvial sediments are encountered.

## **12. ARCHIVE**

### **12.1 Preparation and Deposition**

12.1.1 The Site archive, to include all project records, will be prepared in accordance with Guidelines for the preparation of excavation archives for long-term storage (UKIC 1990).

On completion of the project SWAT Archaeology will arrange for the archive to be deposited with the appropriate repository (to be advised). Any alternative arrangements will be agreed with the County Archaeologist and the Local Planning Authority.

12.1.2 The historic building record archive will include:

- hard copy of the report
- pdf copy of the report on CD
- full photographic record with photographic registers
- field notes and sketches



12.1.3 Following approval of the report, SWAT Archaeology will provide the Kent Historic Environment Record (HER) with copies of all reports in both hard copy and digital format.

12.1.4 Upon completion of the on-site programme of historic building recording SWAT Archaeology will supply the Kent HER with a completed HER form.

### **13. Copyright**

13.1.1 The full copyright of the written/illustrative archive relating to the Site will be retained by SWAT Archaeology under the Copyright, Designs and Patents Act 1988 with all rights reserved. The designated repository, however, will be granted an exclusive licence for the use of the archive for educational purposes, including academic research, providing that such use shall be non-profit making, and conforms to the Copyright and Related Rights regulations 2003.

### **14. REFERENCES**

#### **14.3 Cartographic Sources consulted**

1867 Ordnance Survey, 1:2,500

1897 Ordnance Survey, 1:2,500

1909 Ordnance Survey, 1:2,500

1933 Ordnance Survey, 1:2,500

1962 Ordnance Survey, 1:2,500

1972 Ordnance Survey, 1:2,500

1984 Ordnance Survey, 1:1,500

1992 Ordnance Survey, 1:1,500

## **14.2 Secondary sources**

English Heritage, 2006: *Understanding Historic Buildings, A guide to good recording practice*, English Heritage

English Heritage, 2007: *Understanding the Archaeology of Landscapes, A guide to good recording practice*, English Heritage

Kent County Council, 2015, *Specification for archaeological investigation of land. Manual of Specifications Part A*

Kent County Council, 2014, *Manual of Specifications Part B*

## Plates



Plate 1 (looking west).



Plate 2. (looking east)



Plate 3. Site defined by green reptile barrier (looking west)



Plate 4. Site defined by green reptile barrier (looking south-west)



Plate 5. Site defined by green reptile barrier, note concrete retaining wall (looking east)



Plate 6. Railway bridge (outside the PDA and looking south-west)



Plate 7. Looking upslope on made-up ground (looking west)



Plate 8. Looking down one of the sidings (facing west)



Plate 9. Further on- note roadstone of relict railway track (looking west)



Plate 10. Again looking along one of the relict railway tracks (facing west)



Plate 11. Facing east- note roadstone of relict railway track



Plate 12. Facing west





Plate 13. Looking east back into the Site



Plate 14. Concrete railway sleepers still in situ



Plate 15. Concrete buffers outside the PDA (looking west)



Plate 16. Pile of discarded concrete railway sleepers



Plate 17. Far west end of site

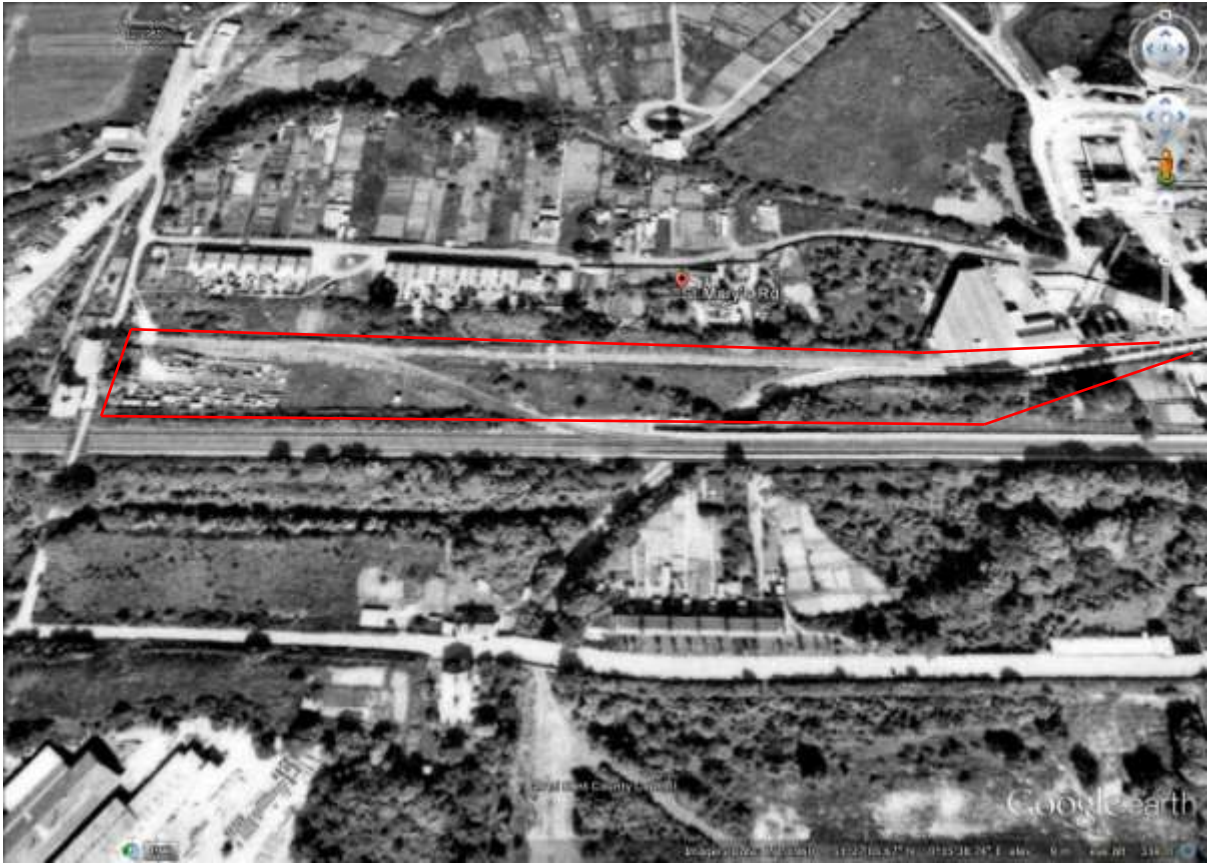


Plate 18. Google Earth 1960 red line denotes extent of PDA



Plate 19. Google Earth 1990



Plate 20. Google Earth 2007



Plate 21. The Andrews Dury map of 1769. Approximate area of site highlighted in red

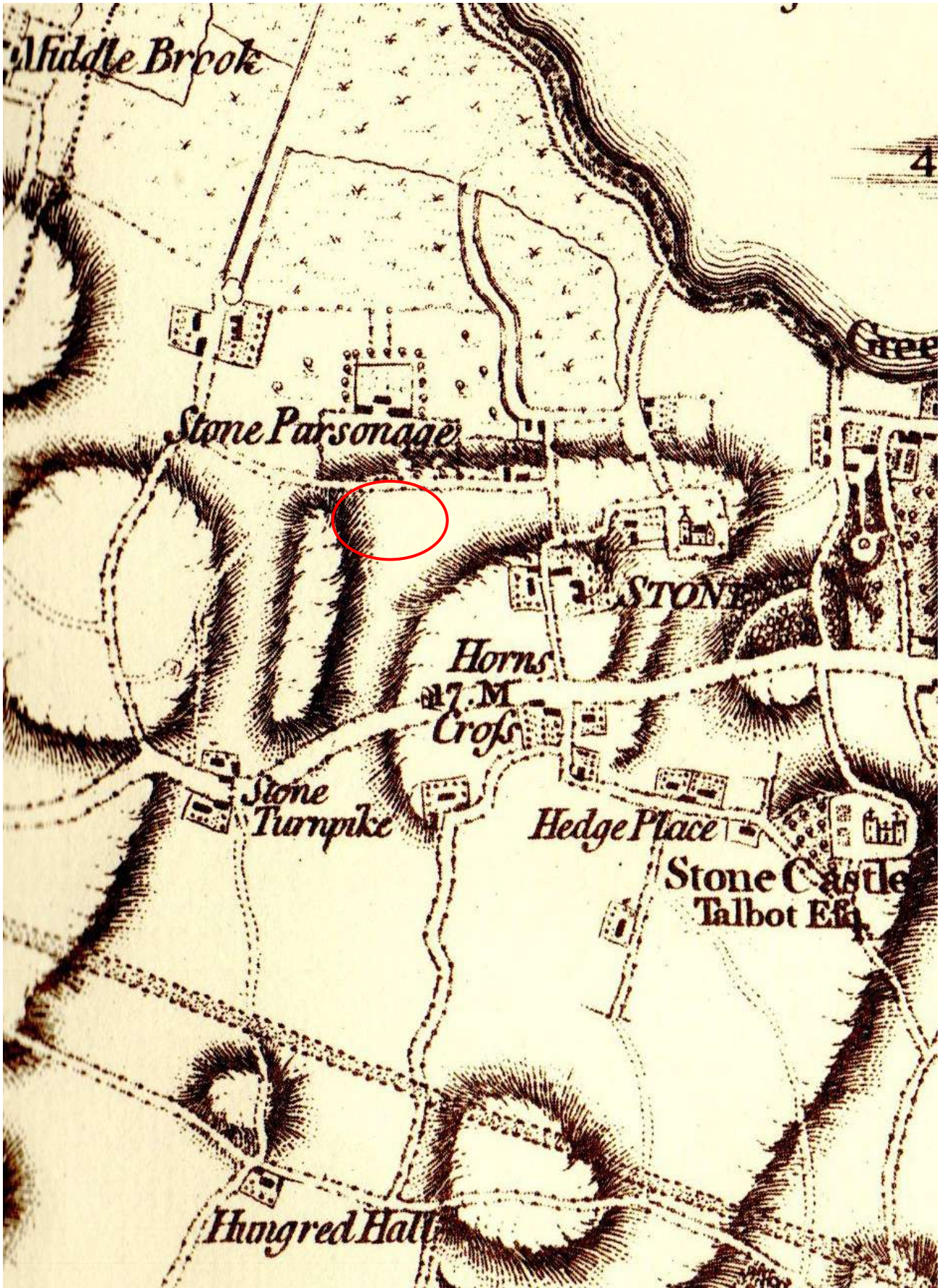
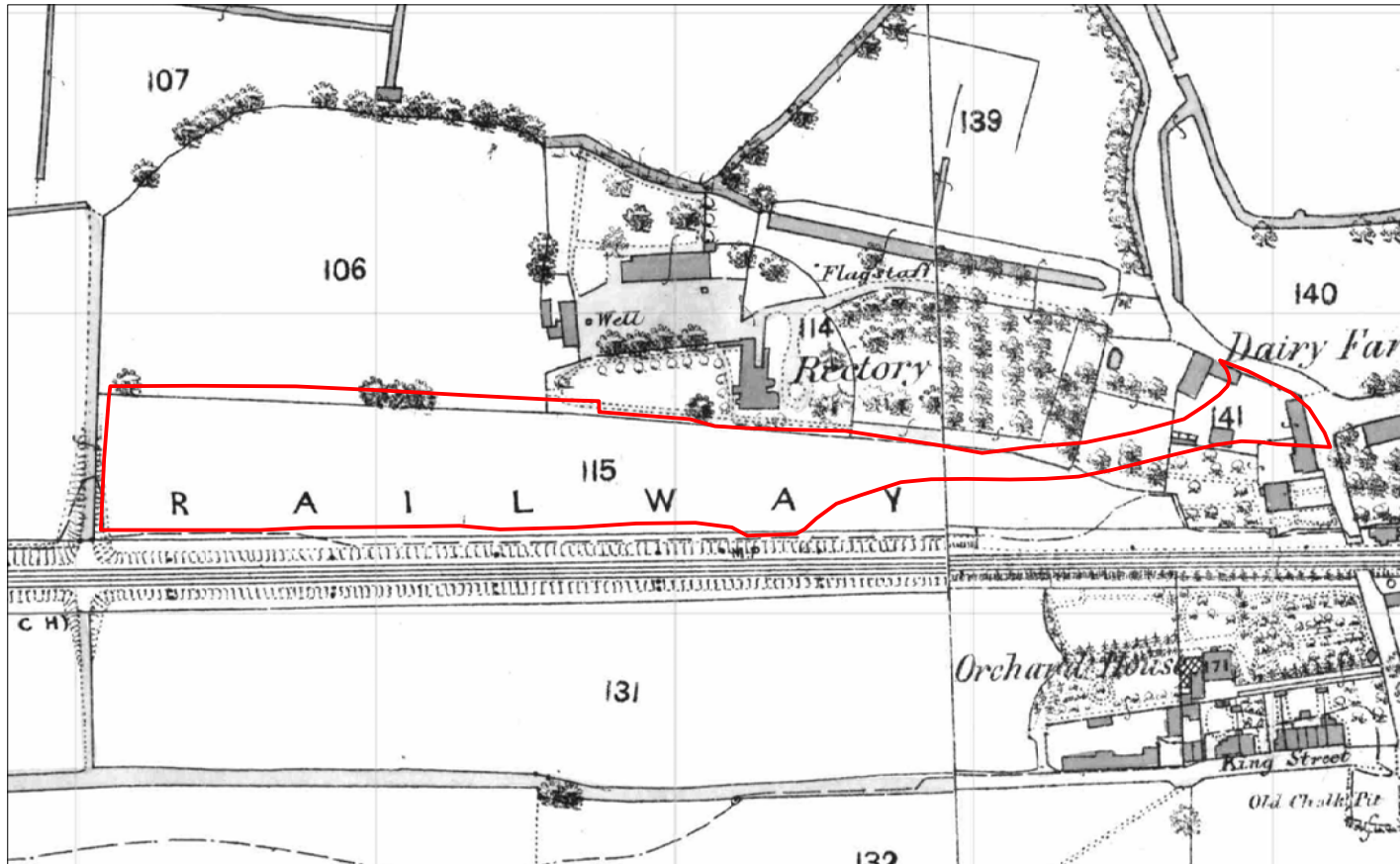
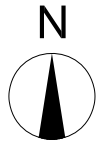


Plate 22. Detail of the Andrews Dury map of 1769. Approx area of site highlighted in red



Plate 23. The Ordnance Survey Surveyors drawing of 1799, PDA area highlighted in red

556936.0mE  
175152.0mN



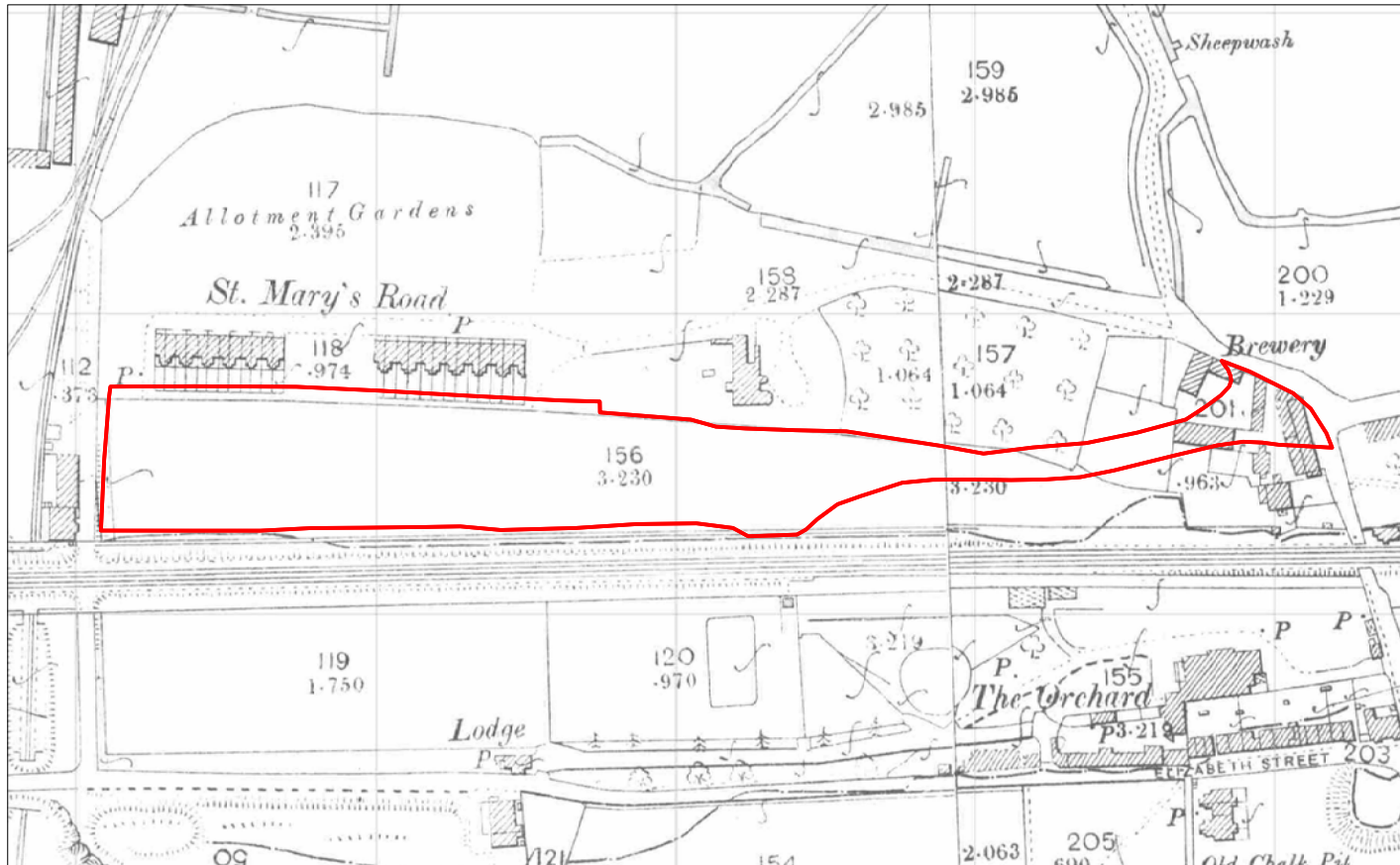
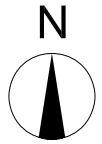
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174787.0mN

0m 1:2500@A4 200m

Figure 1: Historic mapping 1867



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175152.0mN



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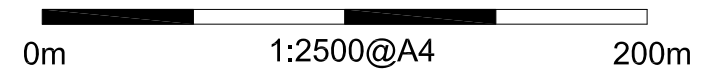
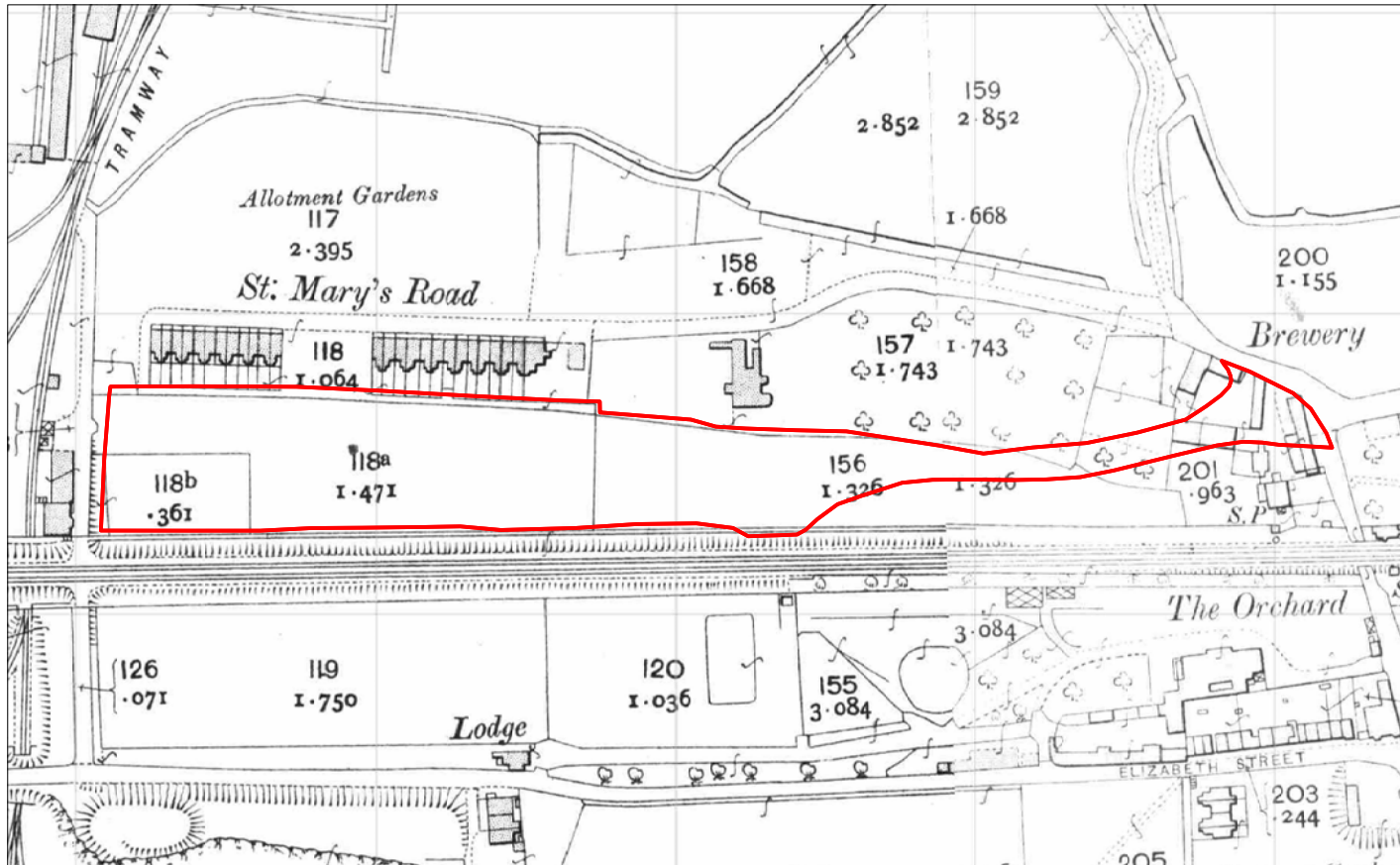
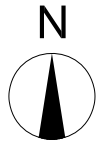


Figure 2: Historic mapping 1897

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557437.0mE  
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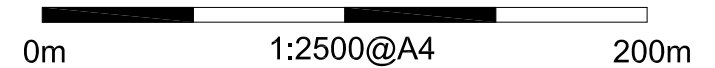
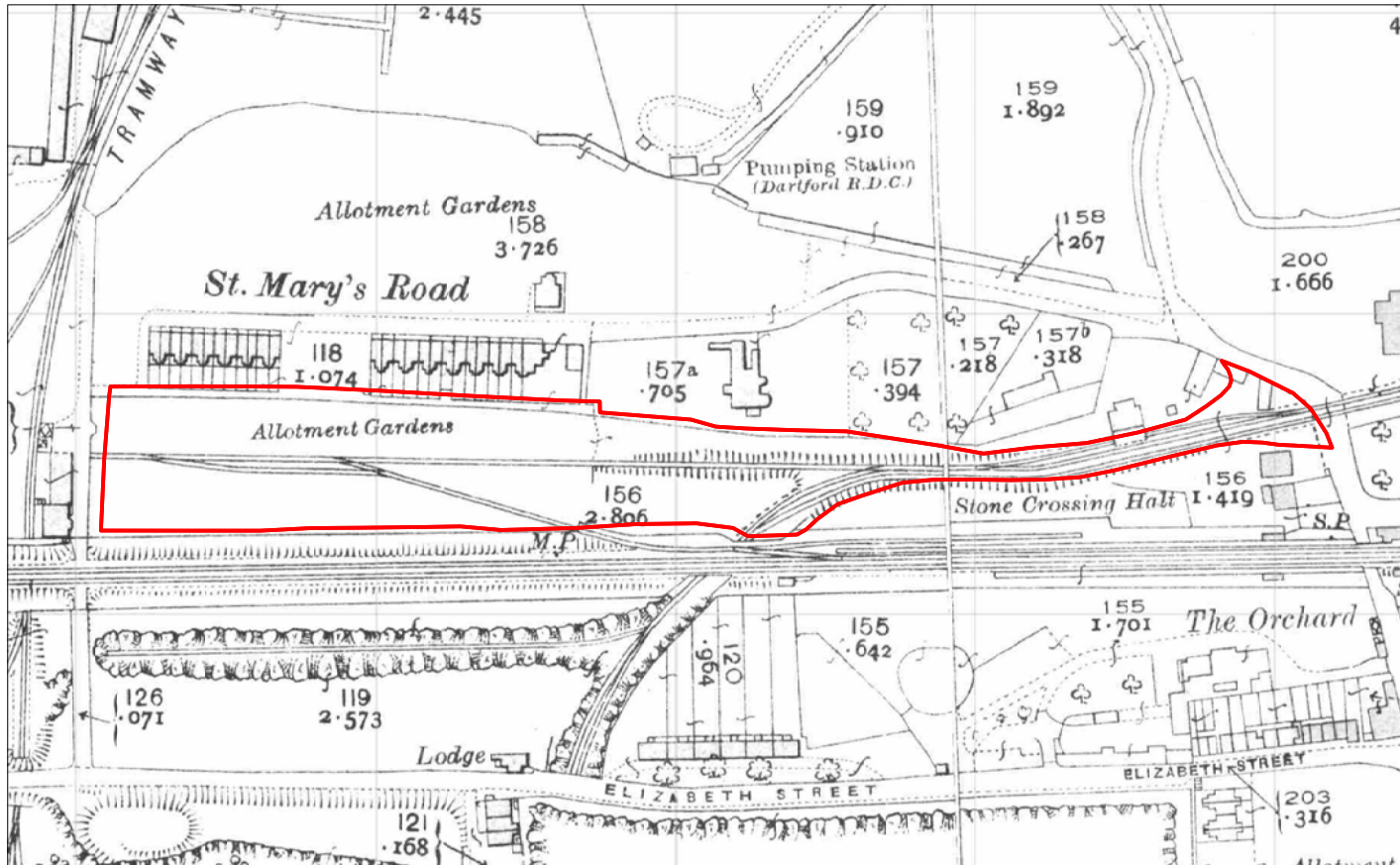
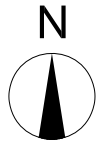


Figure 3: Historic mapping 1909

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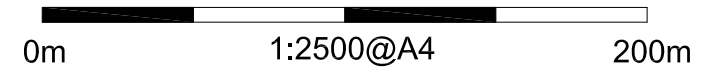
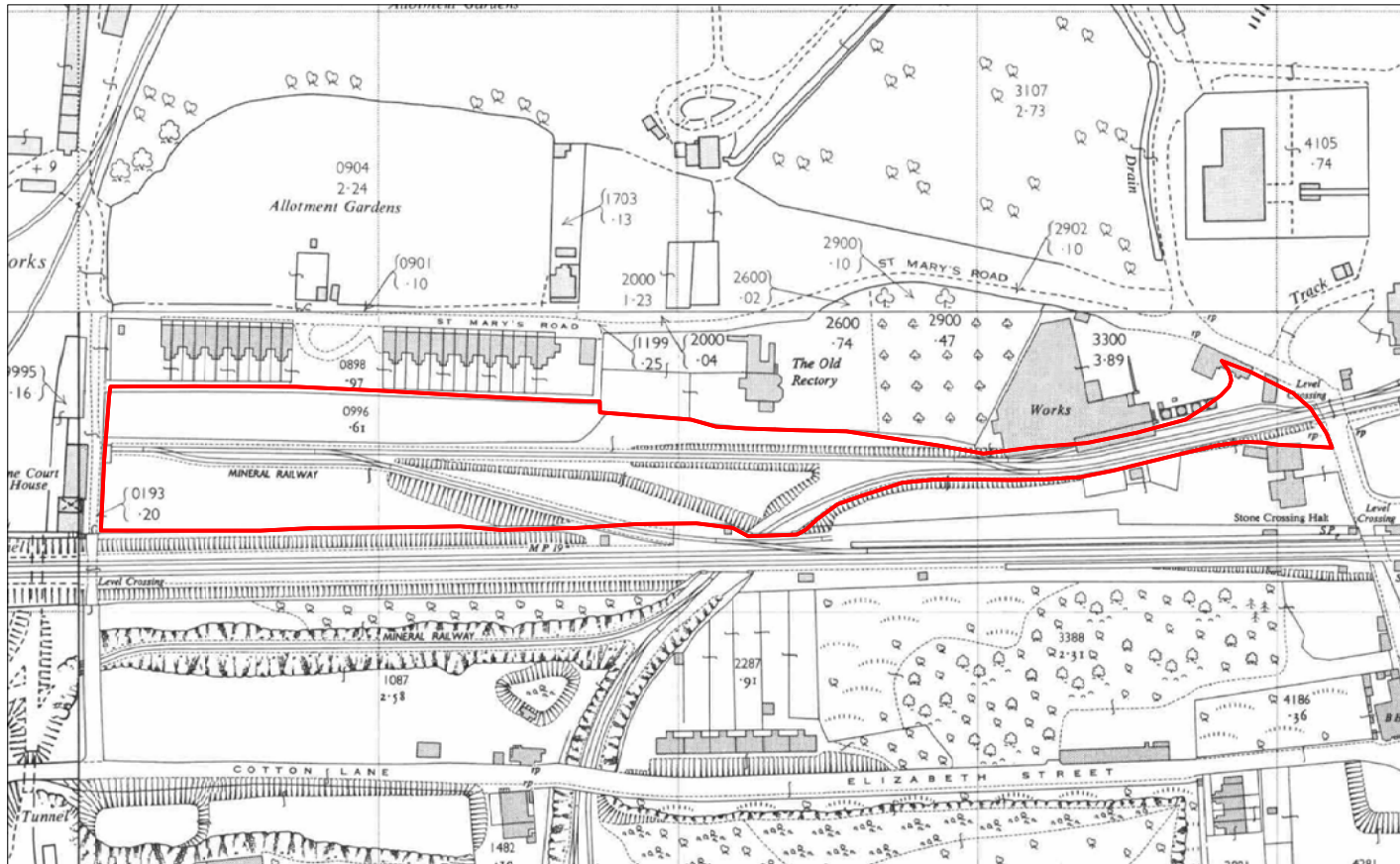
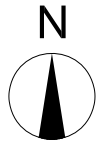


Figure 4: Historic mapping 1933

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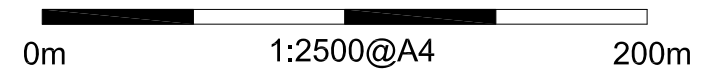
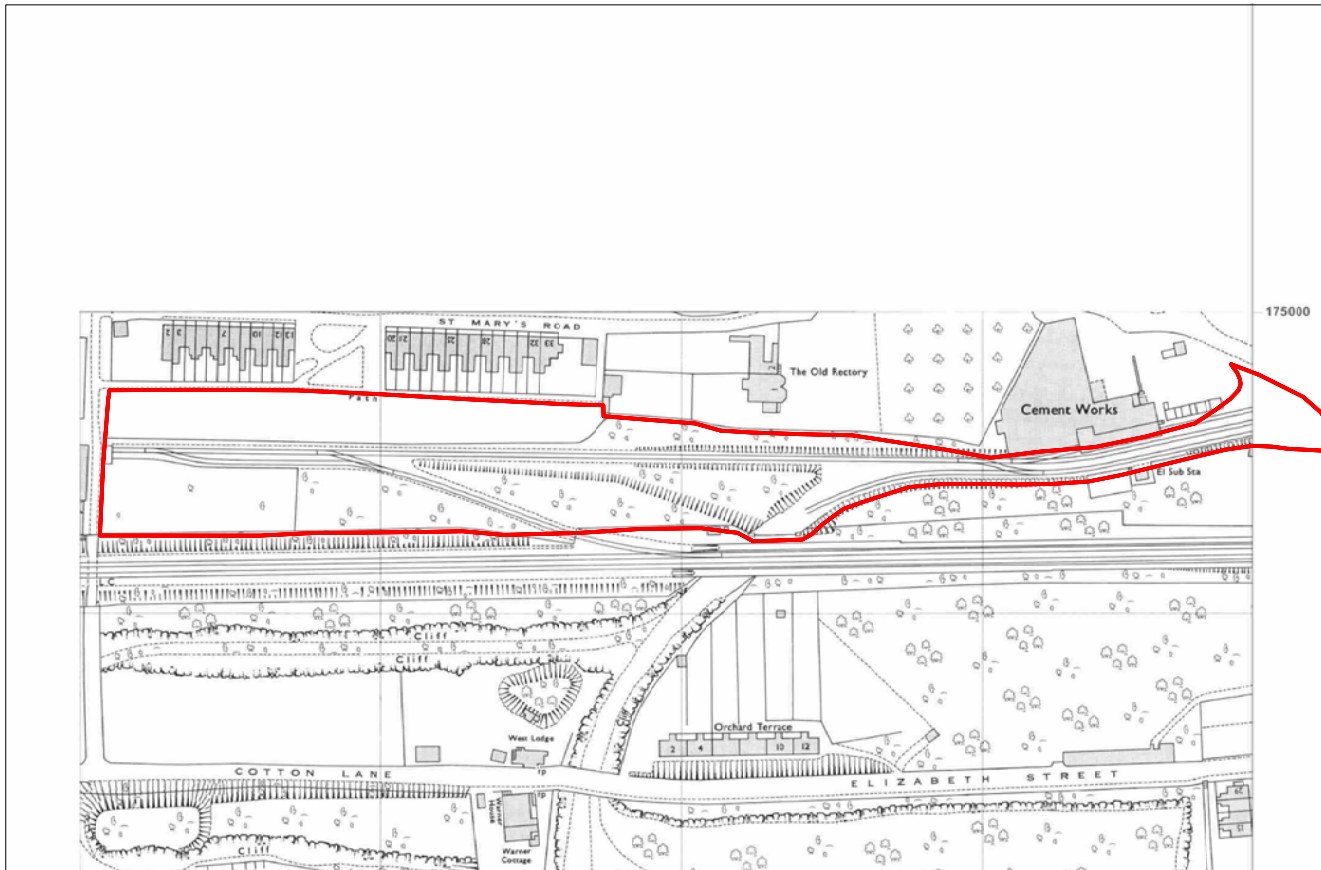
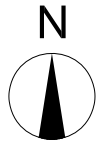


Figure 5: Historic mapping 1962

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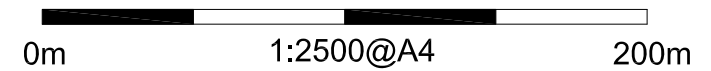
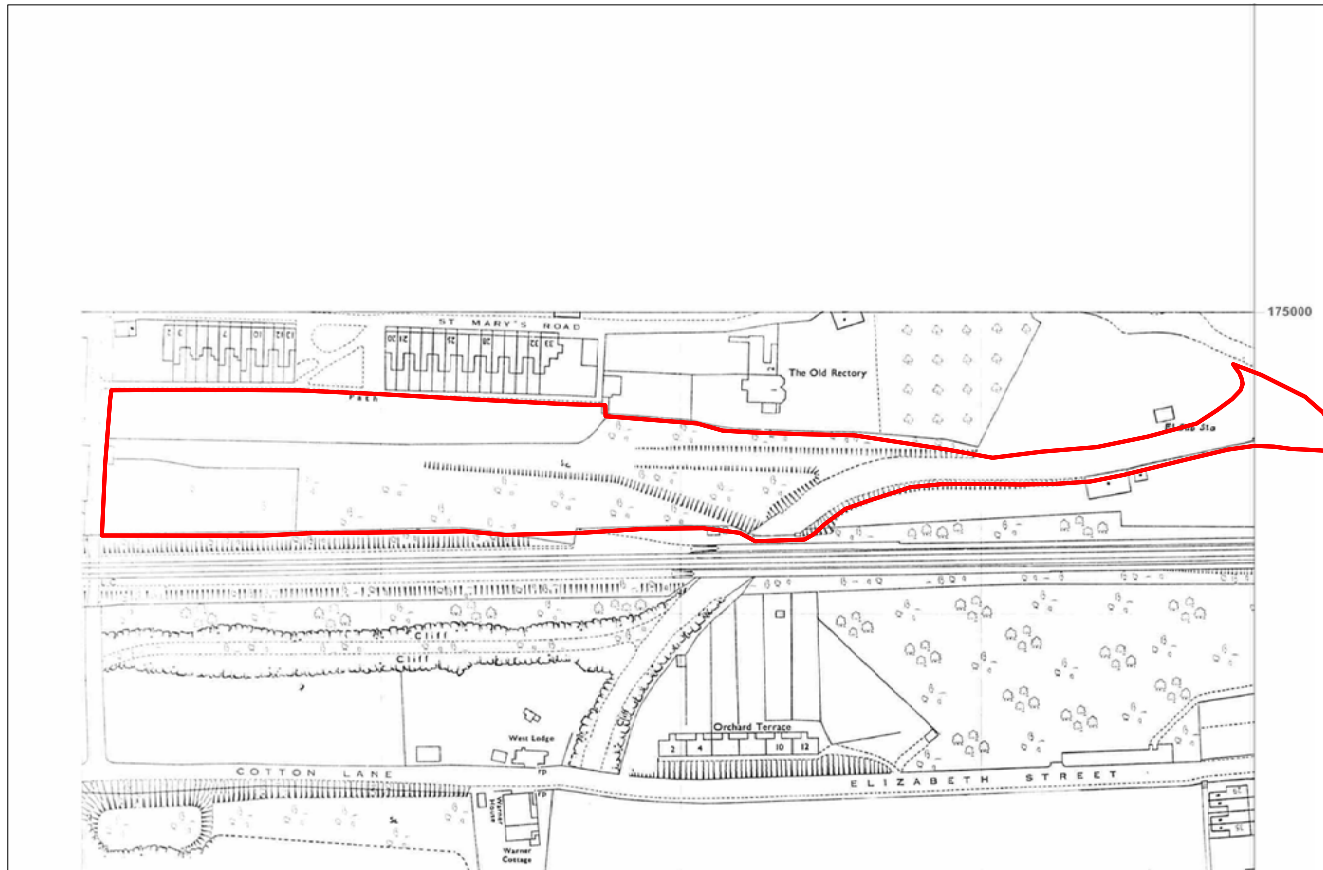
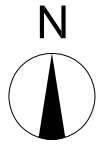


Figure 6: Historic mapping 1972

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175152.0mN



175000

557437.0mE  
174787.0mN

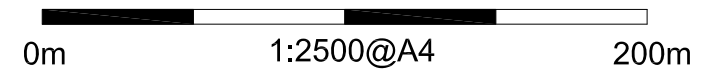
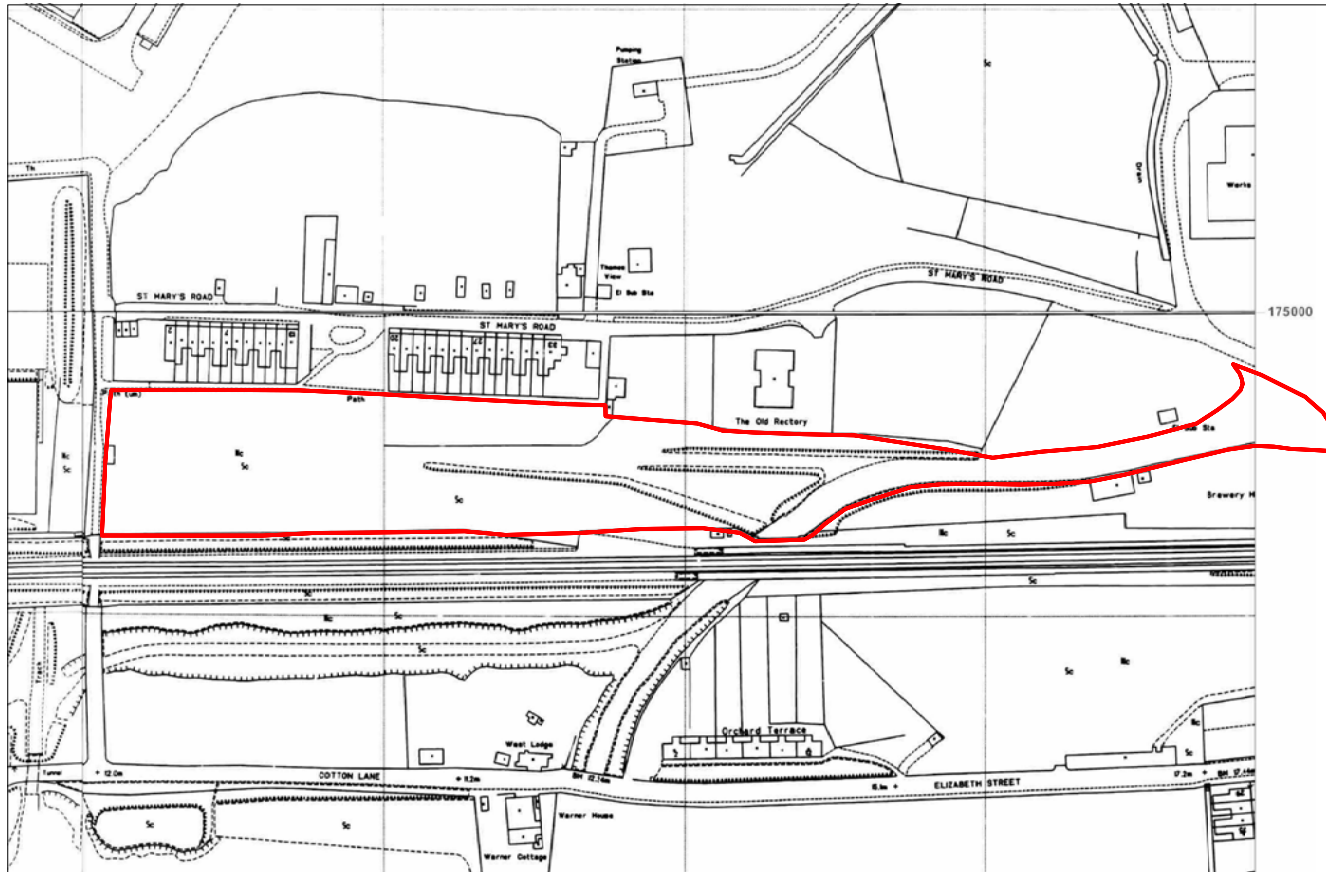
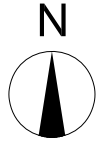


Figure 7: Historic mapping 1884

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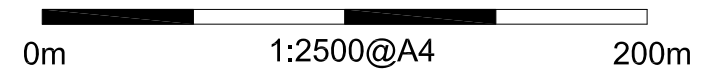
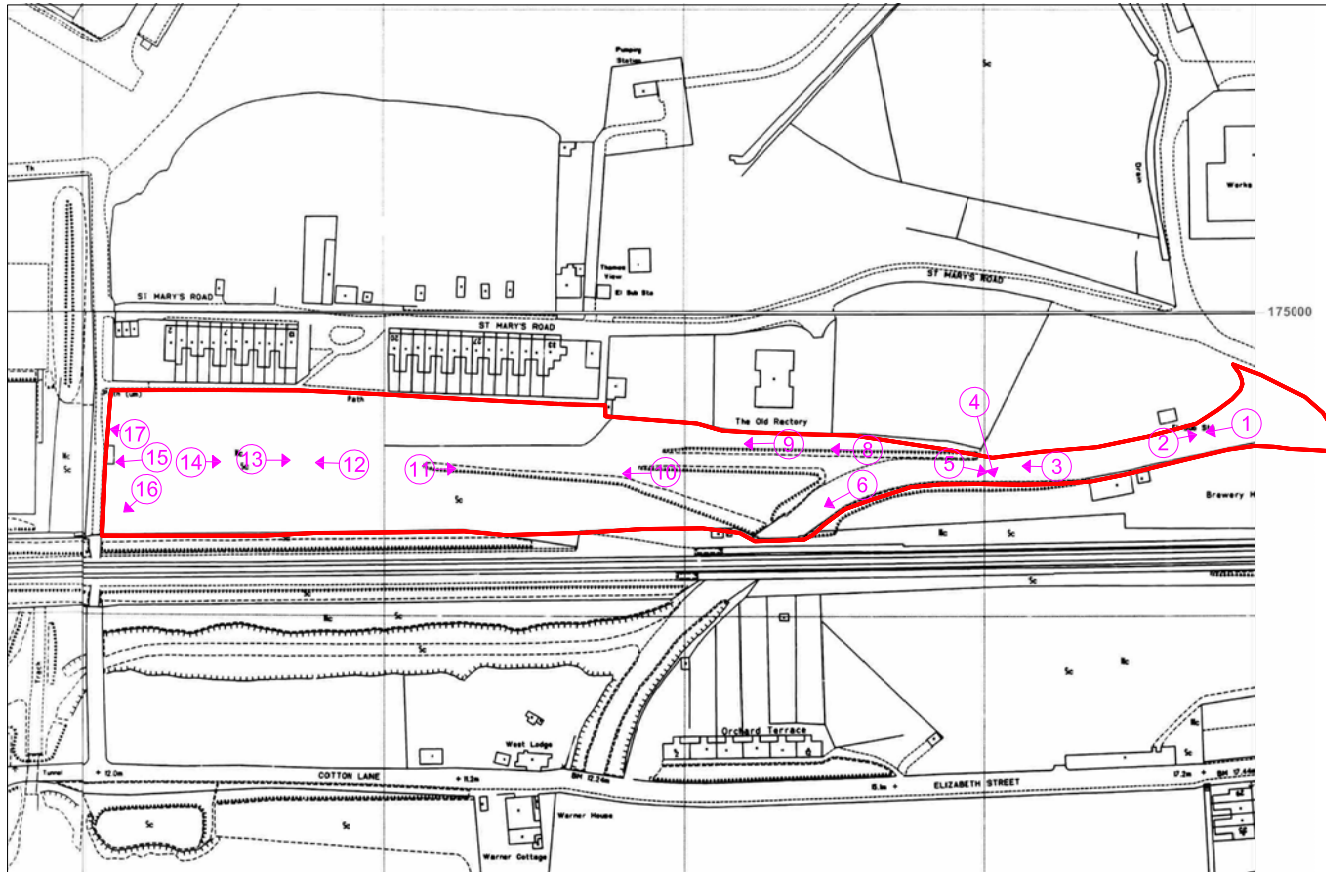
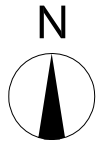


Figure 8: Historic mapping 1992

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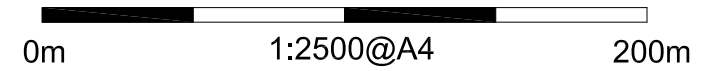
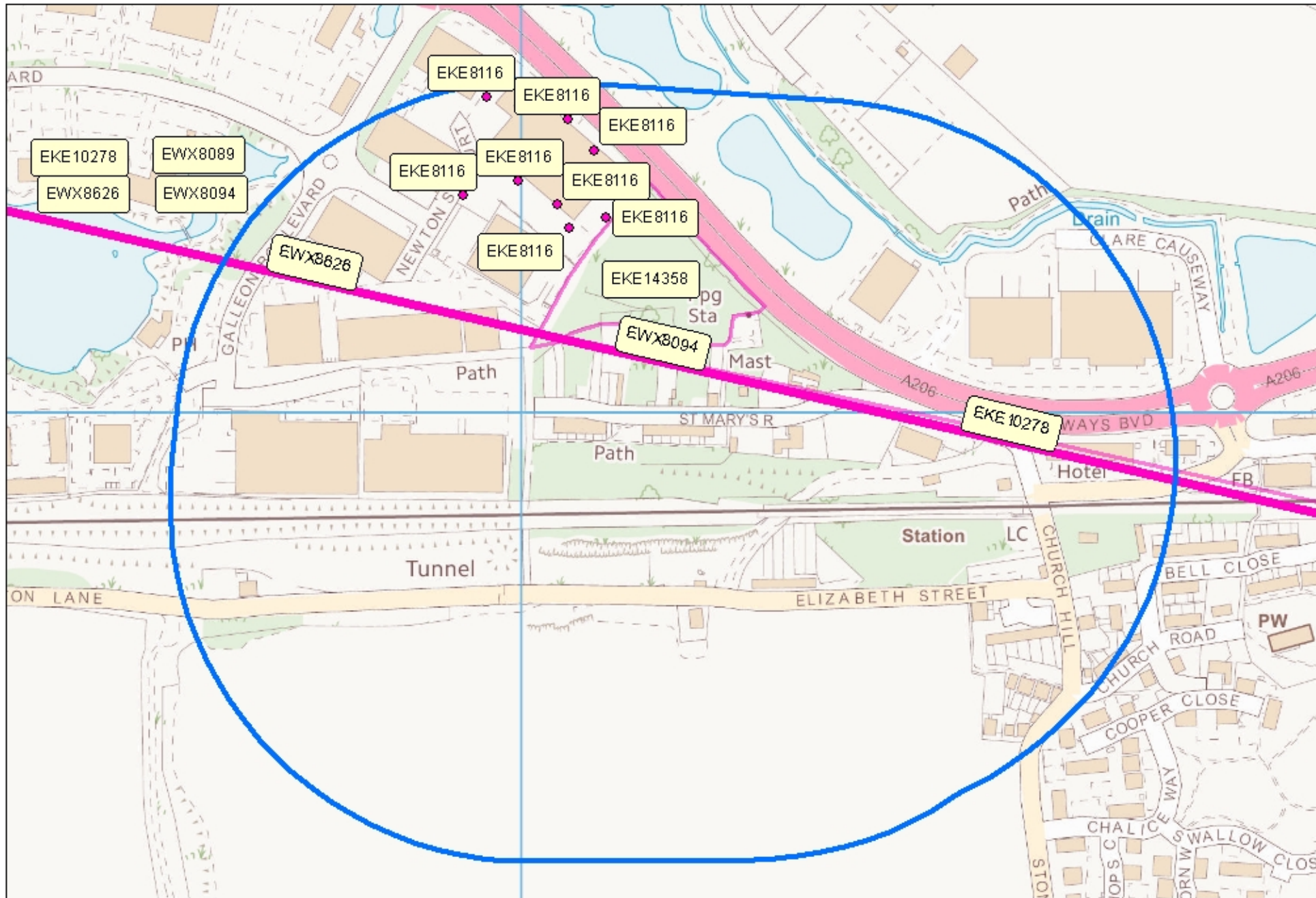


Figure 9: Photo Plan



# Kent Historic Environment Record - Events

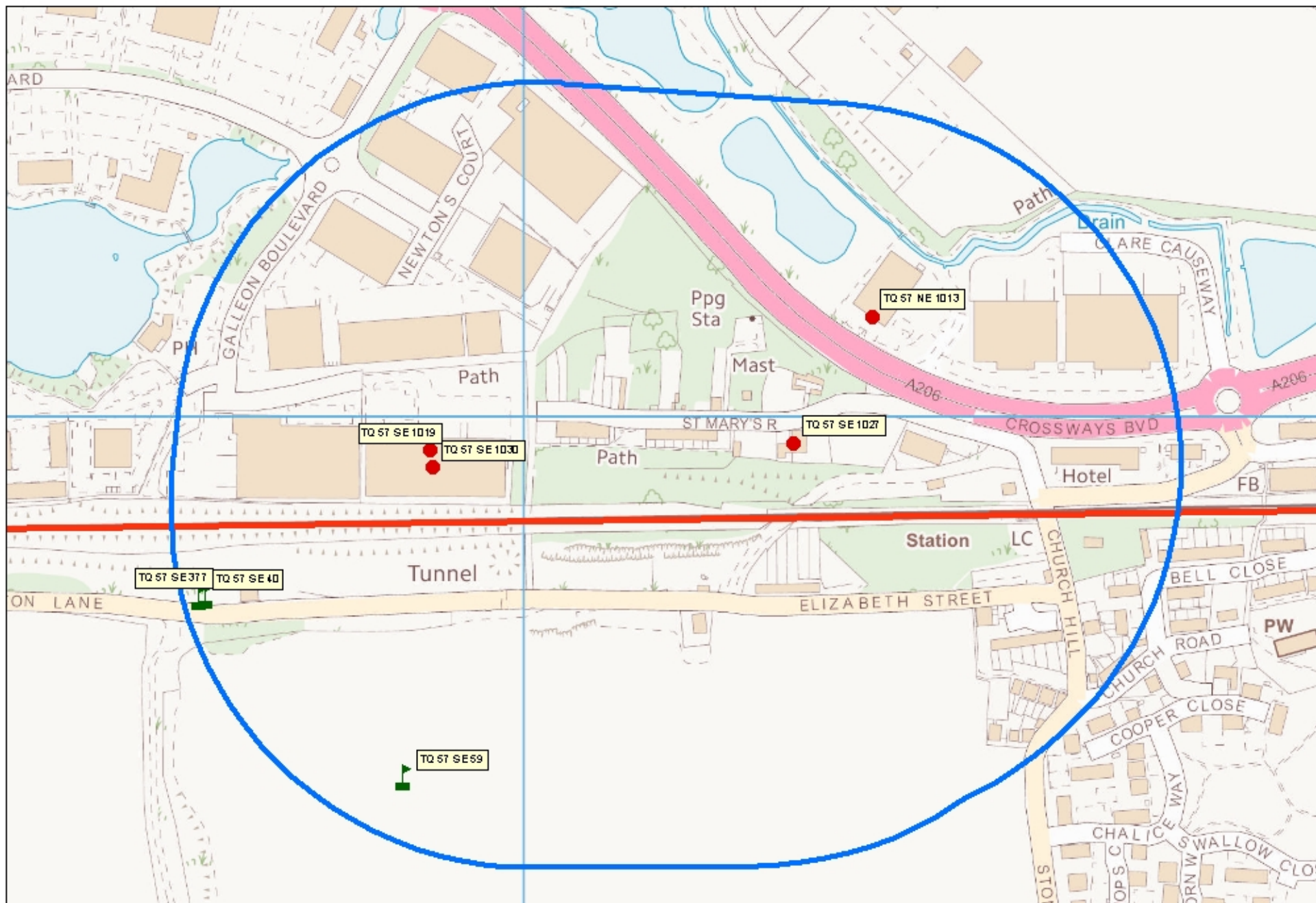


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# Kent Historic Environment Record - Monuments



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# 2-33 ST MARY'S ROAD, STONE, DARTFORD, KENT

## Geoarchaeological Fieldwork Report

**NGR:** TQ 57119 74952

**Date:** 16<sup>th</sup> October 2015

**Written by:** Dr C.P. Green

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**Email:** [d.s.young@reading.ac.uk](mailto:d.s.young@reading.ac.uk)  
<http://www.reading.ac.uk/quest>



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### 1. INTRODUCTION

The site (National Grid Reference: TQ 57119 74952) is near the village of Stone, about 3.0 km to the east of Dartford town centre and at a distance of about 0.6 km from the modern waterfront of the estuarine River Thames. The site is on ground rising from NE to SW representing the slope up from the edge of the Holocene alluvial floodplain, at a level of *ca.* 1.0m OD, to higher levels. The ground surface at the site is between 4.0m OD near its NE corner and 9.9m OD near its SW corner, but mainly between 6.0m and 8.0m OD. The British Geological Survey (BGS) (1:50,000 Sheet 271 Dartford 1998) shows the site to be underlain by Taplow Gravel, forming a narrow outcrop extending eastward from the broader spread of gravel to the north of Dartford. The bedrock is the Chalk.

In recent years, the Taplow Gravel of the BGS in this part of the Lower Thames valley has been variously re-interpreted. Bridgland (1994) regards the gravel underlying St Mary's Road, and its westward continuation as part of the Mucking Formation which he equates with the Taplow Gravel and places stratigraphically in the period that includes the latter part of Marine Isotope Stage (MIS) 8, the whole of MIS 7 and the early part of MIS 6. In this interpretation, the surface of the post-MIS 7 Mucking Gravel forms a terrace, which Bridgland (1994, Figs 1.3 and 4.2) shows at a level of *ca.* 10-12m OD in the Dartford area. Gibbard (1994 Fig. 1) assigns the same body of gravel to the East Tilbury Marshes Gravel which he equates with the Kempton Park Gravel of the Middle Thames and places stratigraphically in the period following the Last Interglacial (Ipswichian, MIS 5e). Gibbard (1994 Fig. 6) illustrates a section based on borehole records extending from the high ground of Dartford northward along the route of the Dartford Crossing southern approach road (M25) and identifies his East Tilbury Marshes Gravel in this section at levels between *ca.* 6.0m OD and *ca.* 7.0m OD.

## 2. FIELD INVESTIGATION

The natural land surface throughout the site is severely affected by historic land-use and current redevelopment. Where it was possible within the site to inspect sub-surface conditions, the soils and sediments immediately beneath the present ground surface appeared to be the truncated remnants of the natural soil/sediment sequence. It was nowhere possible therefore to identify confidently the natural ground surface or the complete original soil/sediment sequence that underlay it. In most places the pre-redevelopment land surface was either buried beneath newly introduced made ground (at the eastern end of the site), or had already been re-shaped as part of the redevelopment groundworks (at the western end of the site), or was buried beneath spoil arising from ongoing clearance of industrial and other debris. Five test pits were put down at intervals along an E-W transect to depths varying from 2.5m to 4.3m (Tables 1 to 5).

**Table 1: Lithostratigraphic description of Test Pit 1 in Trench 1 at St Mary's Road, Stone, Dartford, Kent.**

Depth (m OD)	Unit	Description
5.24-4.94	4	Surface layer heavily contaminated with anthropogenic debris including ballast, concrete, metalwork and domestic rubbish; truncating:
4.94-3.94	3	Pale buff; sandy silty loam with small (mainly <20mm) well-rounded, sub-round and sub-angular chalk clasts and scattered clasts of flint (up to 70mm maximum dimension), mainly unrolled broken fragments of nodules with a few sub-angular clasts; very compact; well-marked even, sub-horizontal transition to:
3.94-3.44	2	Reddish brown; silty/clayey sand with flint clasts (up to 0.2m), mainly unrolled broken fragments of nodules and small numbers of sub-angular clasts (mainly <0.1m maximum dimension) and a few well-rolled flint pebbles; sharp, even sub-horizontal contact with:
3.44-0.94	1	Yellowish red; medium to coarse sand

**Table 2: Lithostratigraphic description of Test Pit 2 in Trench 6 at St Mary's Road, Stone, Dartford, Kent.**

Depth (m OD)	Unit	Description
		Reduced ground surface truncating:
6.41-6.01	3	Pale buff; sandy silty loam with small (mainly <20mm) well-rounded, sub-round and sub-angular chalk clasts and scattered clasts of flint (up to 70mm maximum dimension), mainly unrolled broken fragments of nodules with a few sub-angular clasts; very compact; well-marked even, sub-horizontal transition to:
6.01-5.71	2	Reddish brown; silty/clayey sand with flint clasts (up to 0.2m), mainly

Depth (m OD)	Unit	Description
		unrolled broken fragments of nodules and small numbers of sub-angular clasts (mainly <0.1m maximum dimension), well-rolled flint pebbles; sharp, even sub-horizontal contact with:
5.71-3.91	1	Yellowish red; medium to coarse sand

Table 3: Lithostratigraphic description of Test Pit 3 in Trench 7 at St Mary's Road, Stone, Dartford, Kent.

Depth (m OD)	Unit	Description
		Reduced ground surface truncating:
6.77-6.47		Pale buff; sandy silty loam with small (mainly <20mm) well-rounded, sub-round and sub-angular chalk clasts and scattered clasts of flint (up to 70mm maximum dimension), mainly unrolled broken fragments of nodules with a few sub-angular clasts; very compact; well-marked even, concave-upward transition to:
6.47-5.97		Reddish brown; silty/clayey sand with flint clasts (up to 0.2m), mainly unrolled broken fragments of nodules and small numbers of sub-angular clasts (mainly <0.1m maximum dimension), well-rolled flint pebbles and very scattered particles of chalk; sharp, even sub-horizontal contact with:
5.97-4.37		Yellowish red; medium to coarse sand with very scattered particles of chalk

Table 4: Lithostratigraphic description of Test Pit 4 at St Mary's Road, Stone, Dartford, Kent.

Depth (m OD)	Unit	Description
4.45-3.65		Made Ground truncating:
3.65-3.35		Pale buff; sandy silty loam with small (mainly <20mm) well-rounded, sub-round and sub-angular chalk clasts and scattered clasts of flint (up to 70mm maximum dimension), mainly unrolled broken fragments of nodules with a few sub-angular clasts; very compact; well-marked even, sub-horizontal transition to:
3.35-2.25		Reddish brown; silty/clayey sand with flint clasts (up to 0.2m), mainly unrolled broken fragments of nodules and small numbers of sub-angular clasts (mainly <0.1m maximum dimension), well-rolled flint pebbles and very scattered particles of chalk; sharp, even sub-horizontal contact with:
2.25-1.05		Yellowish red; medium to coarse sand with very scattered particles of chalk

Table 5: Lithostratigraphic description of Test Pit 5 at St Mary's Road, Stone, Dartford, Kent.

Depth (m OD)	Unit	Description
4.89-4.19		Made Ground truncating:
4.19-3.09		Reddish brown; silty/clayey sand with flint clasts (up to 0.2m), mainly unrolled broken fragments of nodules and small numbers of sub-angular clasts (mainly <0.1m maximum dimension), well-rolled flint pebbles and very scattered particles of chalk; sharp contact with:
3.09-1.99		Yellowish red; medium to coarse sand with very scattered particles of chalk and near base of section a thin ( <i>ca.</i> 0.2m) lens of well-rounded and sub-round chalk clasts in matrix of chalk-rich sand

### 3. DISCUSSION AND INTERPRETATION OF THE LITHOSTRATIGRAPHIC DESCRIPTIONS

In all five test pits a similar sediment sequence was recorded, as follows:

#### Unit 1

At the base of the sequence a body of yellowish red, medium to coarse, slightly silty/clayey, stoneless sand was present. In some sections, a few small particles of chalk were present and in test pit TP5 a thin isolated lens of fine to medium gravel of well-rolled chalk clasts. The surface of the sand was generally even and sub-horizontal and a maximum thickness of 2.5m was seen without bottoming the unit.

#### Unit 2

Overlying Unit 1 was a reddish brown silty/clayey sand with numerous clasts of unrolled, broken nodular flint (up to 0.2m maximum dimension), and smaller quantities of sub-angular flint (generally <0.1m maximum dimension) and well-rolled flint pebbles. In some sections small, scattered clasts of chalk were also present. In some places the contact with the underlying unit (Unit 1) was quite sharply defined by a colour contrast; elsewhere the contact appeared gradual. Where the upper and lower boundaries of this unit were preserved, the thickness of the unit ranged from 1.1m to 0.5m. The upper surface of Unit 2 was generally even and sub-horizontal, but in test pit TP3 the overlying unit (Unit 3) cut down into it to rest on a concave-upward surface (incompletely exposed)

#### Unit 3

In many places this unit formed the uppermost part of the natural sediment sequence, being overlain by made ground or an accumulation of industrial, domestic and organic debris. It

comprised a compact, pale buff coloured, chalky, sandy loam with many small (<20mm) clasts of sub-angular, sub-round and well-rounded chalk, and smaller quantities of flint, including infrequent pieces of broken unrolled nodules (up to 70mm) and small sub-angular clasts. This unit was horizontally bedded, with infrequent thin (<0.2m) isolated lenses of almost pure chalk gravel. And evidence of CaCO<sub>3</sub> reprecipitation on structural surfaces. In the test pits the natural surface of this unit was not observed due to ground lowering during various historic land use operations and the present redevelopment of the site. However, sections visible in the SW corner of the site extended up to or more likely closer to the natural ground surface and exposed a fourth sedimentary unit (Unit 4) overlying Unit 3 of the sequences recorded in the test pits.

#### Unit 4

This unit was probably nowhere completely preserved within the site due to truncation either historically or during current development of the site. This conclusion is supported by the fact that evidence of soil horizonisation was absent or very weakly developed in the unit. Unit 4 consisted of a reddish brown stony, clayey sand, structureless but having a sharp and very uneven contact with the underlying unit (Unit 3). In places, in section, Unit 4 appeared to occupy pipe-like depressions (up to 0.7m in depth) in Unit 3. However, where similar depressions were exposed in plan they appeared as long (several metres) sinuous features, orientated roughly E-W, i.e. normal to the broad N-S slope of the ground.

Although it was not possible to examine Unit 1 *in situ* due to the depth below the ground surface at which it occurred, it seems likely that it was a water-laid fluvial deposit occupying a depression of some sort close to the edge of the valley floor of the River Thames. The overlying deposits forming Units 2 and 3 were evidently of colluvial origin deriving chalk and flint from an exposed bluff of chalk rising southward from the valley floor of the Thames, and separating the valley floor from a river terrace at a slightly higher level. Unit 4 probably comprises a mixture of the insoluble residue of Unit 3 plus an admixture of colluvial material derived from upslope.

The levels of the stratigraphic boundaries recorded in the test pits are consistent with a slope up towards the south and with the colluvial origin of Units 2 and 3, with contacts at higher levels in test pits TP2 and TP3 which lay further to the south than test pits TP1, TP4 and TP5, e.g. base of Unit 2 at ca. 6.0m OD in TP2 and TP3, but at ca. 3.5m OD in TP1, TP4 and TP5.



There were no archaeological or visible fossil remains in any of the sediments observed and recorded and there was no other evidence that might be helpful in determining the precise age and affinities of the deposits. It seems likely however that the sand represented in Unit 1 forms part of the sediment underlying a low terrace of the River Thames, but any terrace as such has clearly been obliterated by colluvial processes responsible for the introduction of Units 2 and 3. Judging by the elevation of Unit 1, the most likely correlation is with the East Tilbury Marshes/Kempton Park Gravel of Gibbard (1994).

## **4. RECOMMENDATION**

In the absence of archaeological or significant palaeoenvironmental remains there is no reason to recommend any further geoarchaeological work on this site.

## **5. REFERENCES**

Bridgland, D.R. (1994) *Quaternary of the Thames*. Chapman & Hall, London.

Gibbard, P.L. (1994) *Pleistocene History of the Lower Thames Valley*. Cambridge University Press, Cambridge.