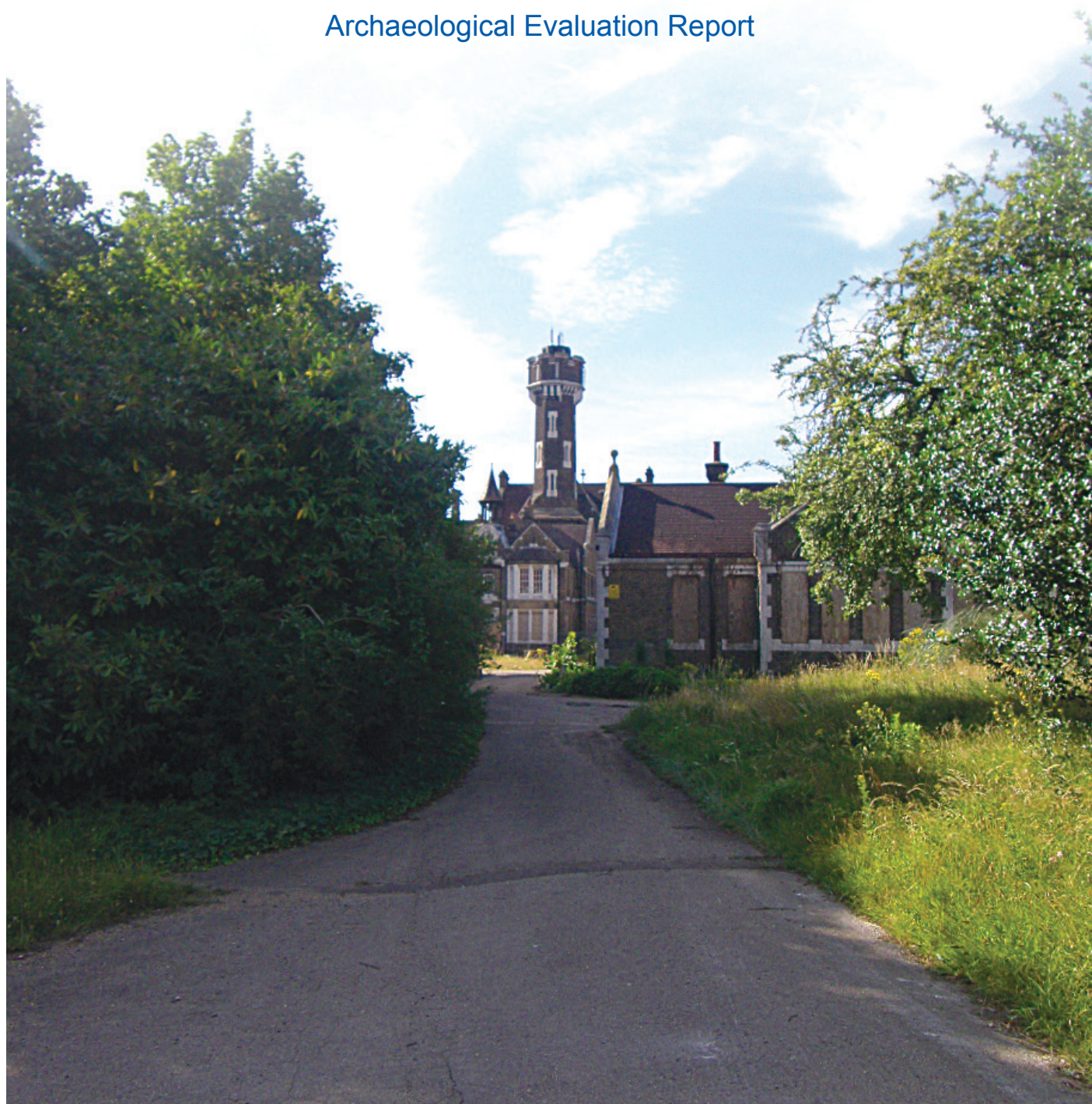




Stonehouse Hospital, Dartford, Kent

Archaeological Evaluation Report





**STONEHOUSE HOSPITAL,
DARTFORD, KENT**

Archaeological Evaluation Report

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Summary

Wessex Archaeology was commissioned by CgMs Consulting to undertake an archaeological trial trench evaluation and Pleistocene test pit survey on land at the former Stonehouse Hospital, Dartford, Kent.

Plans have been submitted for the redevelopment of the former Stonehouse Hospital (hereafter 'the Site') for residential use comprising 260 dwellings. Archaeological works to date have established that the proposed development will impact upon the Boyn Hill/Orsett Heath Terrace Gravels Formation which underlies the Site. These terrace gravels have a potential for yielding Palaeolithic remains.

This report details a programme of archaeological evaluation comprising 10 trenches within the hospital grounds measuring as follows: **TR 1** – 16m x 2m, **TR's 2, 4 & 5** – 30m x 2m, **TR 3** – 50m x 2m, **TR 6** – 10m x 2m, **TR 8** – 2m x 2m, **TR 9** – 6m x 2m, **TR 10** – 21m x 2m & **TR 11** – 17m x 2m. **TR 7** could not be accessed. To mitigate the threat from the proposed development on the Boyn Hill/Orsett Terrace gravels a programme of 10 Pleistocene test pits, excavated to a depth of 3.5m bgl and implemented at the end of each trial trench, was undertaken.

The Site is located off Cotton Lane, Dartford and lies some 2km to the east of Dartford town centre. The Site covers an area of 5.1 hectares and currently comprises an open field in the northern area with the main hospital buildings the central area and open former gardens in the southern. The Site currently lies at approximately 38m aOD and is underlain by the Boyn Hill/Orsett Heath Terrace gravel formation. The main hospital building area comprises large areas of hard standing comprising modern tarmac with several small grassed areas understood to be part of general hospital landscaping. Several mature trees are evident across these grassed areas around the Site.

It is apparent that the construction of the hospital has had a profound impact on any Holocene archaeological features that may have been present prior to the construction of the hospital. The trial trenching has shown that severe truncation of the original ground level has been undertaken, no doubt in an attempt to level the ground prior to the erection of buildings. Almost no subsoil horizon was recorded across the Site with the exception of **TR 9** and **TP 14**. However, no archaeological features were identified in these small remaining subsoil deposits.

Further to the north of the Site the open field area also exhibited signs of severe truncation with a thin layer of topsoil overlying modern made ground, observed in some cases to be 1m in thickness. Again this material was seen to directly overlie the gravel formation across the field. It is apparent that this area had been used as a construction compound in the recent past as the made ground comprised concrete rubble, brick, hardcore, metal, sand, brick and lengths of cable and pipe.

Trenches **10** and **11** produced evidence of the previous formal gardens in this area. The walls (**1011** & **1114**) are both understood to correspond to historic mapping of the area dating to 1909 and later. These walls are believed to have formed separate gardens for male and female patients who were housed apart during their residency at the hospital. Remnants of a cinder path could also be seen in **TR 11** which again corresponds to the historic mapping. This suggests that beneath the surface in this

area more remains of the formal garden may survive relatively intact although truncated. The design of the proposed construction shows little if no impact is projected for this area and the remains should remain intact during the current build.

A total of 10 geoarchaeological test pits were opened within the footprint of evaluation trenches across the Site, in order to allow an assessment of the archaeological and palaeoenvironmental potential of the underlying Pleistocene gravels.

Excavation proceeded downwards in spits of c.0.10m initially, increasing up to c.0.25m where this became impractical at deeper levels. Spoil was separated into distinct piles by context or context subdivision in order to enable sieved finds to be attributed to the correct strata. Where contexts were over 0.5m thick, separate piles were formed for each 0.5m of that context. A minimum of 100 litres of each context were sieved in order to retrieve any artefacts or ecofacts present. Where contexts extended over 0.5m in thickness, 100 litres were sieved from each 0.5m depth.

The deposits recorded were broadly very similar across the Site. No layers which may have represented preserved land surfaces were present. The finer-grained strata which were present were horizontally bedded sands which contained indications of fluvial deposition. The silt deposits recorded were within involutions in the upper, cyroturbated portion of the sequence or ice wedges, and are formed of wind-blown loessic material from subsequent glacial phases. They do not represent stases or interglacial deposits.

Although several redeposited flint tools were retrieved from the fluvial deposits, despite careful observation both during sieving and of the spoil no ecofacts such as shell or vertebrate remains were found to be present.

The Pleistocene terrace deposits recorded during this project can be considered to be of low potential for archaeological and palaeoenvironmental material, although with some potential for containing low densities of redeposited river-rolled Lower Palaeolithic artefacts.

Acknowledgements

This project was commissioned by CgMs Consulting and Wessex Archaeology is grateful to Will Bedford in this regard. Wessex Archaeology would also like to thank Wendy Rogers Archaeological Officer for Kent County Council for her advice throughout the project.

The report was researched and compiled by Rob De'Athe. The project was managed for Wessex Archaeology by Brendon Wilkins. The evaluation was undertaken under the direction of Rob De'Athe with assistance from Jo Condliffe and Steve Rawling. The Pleistocene test pits were excavated under the supervision of Phil Harding (Pleistocene and Palaeolithic specialist), Dave Norcott (Geoarchaeologist) and Dr. Matt Leivers (Palaeolithic flint specialist). Thanks are also extended to the team from P.J. Livesey for their assistance on Site.

**STONEHOUSE HOSPITAL,
DARTFORD, KENT****Archaeological evaluation report****1 INTRODUCTION****1.1 Project Background**

- 1.1.1 Plans have been submitted for the redevelopment of the former Stonehouse Hospital, Dartford, Kent (hereafter 'the Site') for residential use comprising 260 dwellings (**Figure 1**). Archaeological works to date have established that the proposed development will impact upon the Boyn Hill/Orsett Heath Terrace Gravels Formation which underlies the Site. These terrace gravels have a potential for yielding Palaeolithic remains. The development may also impact upon potential remains of formal gardens associated with the former hospital.
- 1.1.2 This report details a programme of archaeological evaluation comprising 10 trenches within the hospital grounds measuring as follows: **TR 1** – 16m x 2m, **TR's 2, 4 & 5** – 30m x 2m, **TR 3** – 50m x 2m, **TR 6** – 10m x 2m, **TR 8** – 2m x 2m, **TR 9** – 6m x 2m, **TR 10** – 21m x 2m & **TR 11** – 17m x 2m. **TR 7** could not be accessed.
- 1.1.3 To mitigate the threat from the proposed development on the Boyn Hill/Orsett Terrace gravels a programme of 10 Pleistocene test pits, excavated to a depth of 3.5m bgl and implemented at the end of each trial trench, was undertaken.

1.2 Site location, topography and geology

- 1.2.1 The Site is located off Cotton Lane, Dartford and lies some 2km to the east of Dartford town centre. The Site covers an area of some 5.1 hectares and currently comprises an open field in the northern area with the hospital buildings within the central area and open former gardens in the southern area. The Site currently lies at approximately 38m aOD and is underlain by the Boyn Hill/Orsett Heath Terrace gravel formation. The main hospital building area comprises large areas of hard standing comprising modern tarmac with several small grassed areas understood to be part of general hospital landscaping. Several mature trees are evident across these grassed areas around the Site.

Current land use

- 1.2.2 The former hospital was closed to patients in November 2007 and is currently undergoing a programme of redevelopment and the demolition of later additions to the main hospital structure. The main buildings were constructed between 1862 and 1866 and comprise a broadly east – west aligned main building with several contemporary structures to the north. A chapel, constructed of faced flint blocks, occupies the northern central region of the Site.

2 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

2.1 Recent investigations in the area

2.1.1 Recent investigations in the area of the Site have comprised a watching brief undertaken by Oxford Archaeology between the 2nd and 6th August 2010 (Oxford Archaeology, 2010). This watching brief monitored a series of 14 geotechnical test pits and 18 boreholes across the Site. The watching brief identified areas of substantial modern made ground and truncation of the original Holocene soil profile associated with the construction of the hospital buildings. No archaeological features or artefacts were identified during the course of the fieldwork. However, the watching brief did identify substantial deposits of Pleistocene gravels associated with the Boyn Hill formation underlying most of the Site.

2.1.2 Further to this work a second watching brief was undertaken monitoring an additional 91 test pits across a greater percentage of the Site (Oxford Archaeology, 2011). The test pits revealed a similar sequence to those previously undertaken although more evidence of modern truncation was identified. Two pieces of worked flint were recovered from probable disturbed contexts.

Lower and Middle Palaeolithic (500,000 – 30,000 BC)

2.1.3 The stretch of the Boyn Hill/Orsett Heath Formation preserved between Dartford Heath and Northfleet is rich in Lower Palaeolithic archaeological remains, with quarrying activity at numerous locations having produced flint artefacts, faunal remains and biological evidence relating to climate and environment (Wymer 1968; Wessex Archaeology 1993). The most productive site so far investigated is Barnfield Pit, Swanscombe (Ovey, *ed.* 1964; Conway *et al.* 1996). The site is recognised as internationally significant, as well as designated as an SSSI on Quaternary geological grounds. The deposits at the site contained lithic and faunal remains incorporated in stratified fluvial sand and gravel units, accompanied by biological palaeo-environmental evidence. Undisturbed archaeological horizons preserving intact evidence of Lower Palaeolithic activity were present in one of the lower deposits – the Lower Loam. One horizon within the middle phase of the Barnfield Pit sequence – the Upper Middle Gravel – also produced an early human fossil skull (the Swanscombe Skull), as well as copious artefacts, making it one of only two sites in England with Lower or Middle Palaeolithic hominid skeletal evidence. Several other nearby sites within the mapped strip of the Boyn Hill/Orsett Heath formation have produced significant quantities of Lower Palaeolithic finds, including Ricksons/ Barracks Pit, Craylands Lane, the Globe Pit, Greenhithe and Dierden's Yard.

2.1.4 The investigations at the Swan Valley Community School established that the Pleistocene deposits present were equivalent to Phases II and III of the Barnfield Pit sequence, and that they contained abundant lithic artefacts, as well as some faunal remains. The deposits at the 2004 Southfleet Road/New Barn Farm site were not directly equivalent to any of the Barnfield Pit horizons, although of a broadly similar age. They proved to contain Lower Palaeolithic remains of exceptional significance and archaeological richness, including an undisturbed horizon with a skeleton of the extinct straight-tusked elephant *Palaeoloxodon antiquus* surrounded by lithic artefacts.

2.1.5 Further to the east of Southfleet Road, the colluvial and solifluction deposits filling the Ebbsfleet Valley have produced significant quantities of Middle Palaeolithic material. This includes the nationally significant Baker's Hole and Ebbsfleet Channel Levalloisian sites, which contained undisturbed archaeological horizons in association with faunal remains and environmental evidence (Wenban-Smith 1995). The deposits containing this evidence occurred at a substantially lower altitude (c. 5–12m aOD) than those in the Site.

2.1.6 In summary, the Site is in an area of high potential Pleistocene sediments proven to contain nationally significant evidence from both the Lower and Middle Palaeolithic. It was recognised at the outset that the Site had the potential to contain important Lower Palaeolithic remains, and possibly also Middle Palaeolithic remains.

Upper Palaeolithic (30,000 – 10,000 BC)

2.1.7 To the east of the Site, in the Ebbsfleet valley, nationally important Upper Palaeolithic long blade assemblage have been recorded at the base of the Holocene alluvium in adjacent Holocene colluvial sediments.

Mesolithic (8500 – 4000 BC) & Neolithic (4000 – 2400 BC)

2.1.8 Mesolithic and Neolithic flintwork has also been found in the Ebbsfleet valley, which contains the type site for Neolithic Ebbsfleet Ware pottery; two sites identified in the 1930s are now Scheduled Monuments. Recent fieldwork in advance of the Channel Tunnel Rail link (CTRL), and the Ebbsfleet Development, has revealed more extensive and varied range of Neolithic features and finds within the surrounding landscape.

Middle – Late Bronze Age (1600 – 700 BC)

2.1.9 There is evidence of Middle Bronze Age burial at Springhead, and evidence of formal land division and enclosure, from the late Bronze Age through the Iron Age and into the Roman period.

Iron Age (700 BC – AD 43), Romano-British (AD 43 – 410) & Saxon (AD 410 – 1066)

2.1.10 By the Late Iron Age there was a substantial settlement and ritual site at Springhead, representing the precursor of the Roman religious centre, comprising a ritual sanctuary and a temple complex, around which the Roman town of *Vagniacae* developed on Watling Street. With the Northfleet 'villa', river wharf and a possible mill, and related features to the north, and a walled enclosure recorded at Swan Valley Community School, it is likely that the entire Valley was exploited during the Roman period. The landscape continued to be settled and its resources exploited in the Saxon period, a nationally important mid-Saxon timber mill being recently discovered in the valley at Northfleet and a rich cemetery discovered at Springhead.

Post-medieval and modern (AD 1500 – present)

- 2.1.11 The post-medieval and modern exploitation of the landscape was dominated by extensive chalk quarrying.
- 2.1.12 Under the provisions of the Lunatic Asylums Act 1853, the City of London Corporation was given powers to provide an Asylum for the City of London's insane. In 1859 land was bought at Stone, near Dartford, and plans and estimates were presented before the Special Lunatic Asylum Committee in the same year. Construction of the hospital began on the Site in 1862 with building representing the Gothic Style of architecture. The main building was constructed using the gallery or corridor plan, extending east to west with projections north and south at several points. This allowed for male and female patients to be separated on either side of the central bay which contained a dining hall and chapel above. The west wing accommodated the female patients with the males in the east wing. The wings were identical; containing three 8-bedded dormitories, three 9-bedded dormitories and 14 single rooms, along with rooms for nurses and ancillary functions. Semi-detached laundry and workshop blocks were connected to the central building via covered ways to the north of the main building.
- 2.1.13 In 1998 it was agreed that Stone House should be closed as it no longer provided suitable modern healthcare facilities. In 2007 Stone House finally closed after 139 years of service.

3 AIMS AND METHODS**3.1 Introduction and General Objectives**

3.1.1 The overall aim of the programme of fieldwork was to secure the preservation, either by record or *in situ*, of archaeological deposits and/or features, and existing hospital structures to be restored that are of archaeological, architectural and historic interest. The general aims were as follows:

- To determine, as far as reasonably practicable, the location, extent, date, character, condition, significance and quality of any surviving archaeological remains.
- To establish the ecofactual and environmental potential of archaeological deposits and features encountered.

3.2 Specific aims

3.2.1 The specific aims of the fieldwork programmes were as follows:

- To determine the potential for the Boyn Hill Gravel identified on the Site to contain early prehistoric remains.
- To establish the presence or absence of remains of the designed landscape and formal gardens associated with the hospital, which were previously present on the Site.
- To determine the presence or absence of Holocene remains.
- To establish a suitable mitigation response to any identified remains.

4 METHODOLOGY

4.1 Health and Safety

- 4.1.1 Health and Safety considerations were of paramount importance in conducting the fieldwork. Safe working practices took precedence over archaeological considerations at all times.
- 4.1.2 All work was carried out in accordance with the *Health and Safety at Work etc. Act 1974* and the *Management of Health and Safety Regulations 1992*, and all other relevant Health and Safety legislation, regulations and codes of practice.
- 4.1.3 Wessex Archaeology supplied a copy of their Health and Safety Policy and a Risk Assessment to the Client before the commencement of the fieldwork. The Risk Assessment was read and understood by all staff attending the Site before any groundwork commenced.

4.2 Service location

- 4.2.1 Prior to and during excavation, the trenches were scanned with a Cable Avoidance Tool (CAT) to verify the absence of underground services.

4.3 Fieldwork

- 4.3.1 All works were conducted in compliance with the standards outlined in the Institute for Archaeologist's *Standard and Guidance for Archaeological Excavations* (2008), excepting where they were superseded by statements made below.
- 4.3.2 A total of 10 evaluation trenches were implemented measuring as follows: **TR 1** – 16m x 2m, **TR 2** – 30m x 2m, **TR 3** – 50m x 2m, **TR 4** – 30m x 2m, **TR 5** – 30m x 2m, **TR 6** – 10m x 2m, **TR 8** – 2m x 2m, **TR 9** – 6m x 2m, **TR 10** – 21m x 2m & **TR 11** – 17m x 2m. **TR 7** could not be accessed.
- 4.3.3 To mitigate the threat from the proposed development on the Boyn Hill/Orsett Terrace gravels a programme of 10 Pleistocene test pits, excavated to a depth of 3.5m bgl and implemented at the end of each trial trench, was undertaken.
- 4.3.4 All trenches were excavated with a 360° tracked mechanical excavator, equipped with a toothless bucket, operating under constant archaeological supervision. Machining continued to the first recognisable archaeological horizon or to the underlying geological deposits, whichever was encountered first.
- 4.3.5 The machine excavated arisings were stored adjacent to the trench and spoil heaps were routinely inspected for artefacts and ecofacts of archaeological interest. Deep test pits and trenches were fenced as appropriate.
- 4.3.6 All trenches were marked out on the ground using a Global Positioning System (GPS) prior to the commencement of work and were tied into the Ordnance Survey.

- 4.3.7 All trenches, on agreement with the Archaeological Officer for Kent County Council, were backfilled on completion of the archaeological recording in the order in which they were excavated.
- 4.3.8 Once the level of archaeological deposits was exposed by machine, cleaning of the trench bases was undertaken by hand where necessary. Appropriate sampling of all archaeological features identified in the evaluation trenches was carried out by hand.
- 4.3.9 In the event of the identification of an exceptional number and complexity of archaeological deposits, sample excavation was to be more circumspect and sought to be minimally intrusive. Excavation was, however, to be sufficient to resolve the principal aims of the evaluation.
- 4.3.10 Where complex archaeological stratification was encountered, deposits were to be left *in situ* and measures to assess the depth of this stratification agreed with Kent County Council. Where modern features were seen to truncate the archaeological stratification, these were carefully removed without damage to surrounding deposits to enable the depth of stratification to be assessed.
- 4.3.11 A metal detector search was implemented at all stages of the evaluation by experienced Wessex Archaeology staff.

4.4 Recording

- 4.4.1 All recording was undertaken using Wessex Archaeology's *pro forma* recording system.
- 4.4.2 A complete record of the evaluation trenches comprising both plans and sections, drawn to appropriate scales (1:20 for plans, 1:10 for sections) was undertaken. The plans and sections were annotated with coordinates and aOD heights.
- 4.4.3 Photographs were taken as appropriate, providing a record of the excavated trenches to illustrate their location and context, as well as images of the Site overall. The photographic record comprises digital, black and white and colour slides. A photographic register of all the photographs is contained within the project archive.
- 4.4.4 All interventions were surveyed using a GPS tied into the Ordnance Survey.

4.5 Monitoring

- 4.5.1 Wessex Archaeology informed KCC of the commencement of fieldwork and the progress of the investigations on Site.
- 4.5.2 Reasonable access to the Site was arranged for KCC to make Site visits to inspect and monitor the archaeological investigations as they progressed.
- 4.5.3 Variations to the WSI and trench locations were agreed in advance with representatives of the Client and KCC.

5 ARCHAEOLOGICAL RESULTS

5.1 Introduction

5.1.1 This section presents the results of the Archaeological Evaluation. Detailed descriptions of the contexts recorded are included in **Appendix 2**.

5.2 Natural deposits and soil sequences

5.2.1 The natural deposits varied across the Site. In the northern area an open grassed field comprised a thin layer of homogeneous mid brown loamy topsoil, c.0.20 – 0.30m in thickness overlying deposits of modern made ground which varied between 0.40m and up to 1m in thickness. The made ground was observed to directly overlie the Boyn Hill Gravel formation. It is apparent that this area had been used as a construction compound in the recent past, likely to be associated with the construction of a new hospital facility directly to the north of the Site.

5.2.2 Towards the south within the main hospital grounds the soil sequence comprised made ground constituted by hardstanding up to 0.40m in thickness (tarmac and hardcore) overlying the Boyn Hill Gravel formation. A silty clay subsoil was only identified in Test Pits **9** and **14** underlying the made ground and directly overlying the gravel formation, this deposit was identified to be approximately 0.40m in thickness.

5.2.3 In the far southern lawn area the sequence comprised a thin homogeneous loam topsoil directly overlying the gravels. It is apparent that truncation by the construction of the hospital had removed any potential archaeological remains of Holocene date apart from the small subsoil areas around Test Pits **9** and **14** where no archaeological remains were found to be present.

5.2.4 The Boyn Hill Gravels were characterised by dark yellowish brown fine sand with mixed poorly sorted fine to medium gravel and chalk flecks, with some evidence of bioturbation. This deposit varied little across the Site.

5.3 Summary of the evaluation results

5.3.1 A total of 14 evaluation trenches were scheduled to be excavated with Pleistocene test pits to be implemented at the end of each trench. Site constraints characterised by live electric cables, live drainage and water supply and physical constraints such as accessibility issues meant that one evaluation trench (**TR 7**) was inaccessible; **TR 8** was reduced in scale in agreement with KCC and the client due to live service constraints. **TR's 10** and **11** were shortened slightly to avoid live cables; **TR's 1** and **6** were moved slightly to avoid two mobile phone masts and an extant roadway respectively with **TR 6** shortened due to a live drain. **TR's 12** and **14** could not be excavated due to live cables, although **TR 14** was moved to allow a test pit to be excavated and **TR 9** was shortened to avoid live drains.

5.3.2 In summery, a total of 10 evaluation trenches were excavated with a total of 10 Pleistocene Test Pits (**TP**) implemented.

5.4 Negative trenches

5.4.1 The following trenches were devoid of archaeological features. Full descriptions of the trenches including soil sequences can be found in **Appendix 2**.

5.4.2 Trenches **1, 2, 3, 4, 5, 6, 8** and **9** contained no archaeological features with **TR's 1 – 5** located in the northern field where made ground was observed to directly overlie the gravel formation.

5.5 Palaeolithic (c.500,000 – 10,000 BC)

5.5.1 No evaluation trenches yielded any Palaeolithic artefacts, however the test pits (see below) did recover some artefacts dating to this period.

5.6 Upper Palaeolithic, Mesolithic, Neolithic, Bronze Age, Iron Age, Roman, Saxon & medieval (c. 10,000BC – 1499 AD)

5.6.1 No features were identified that correspond to these archaeological periods. This is no doubt due to the landscaping that has been undertaken in association with the construction of the hospital, removing evidence of any Holocene archaeological remains.

5.7 Post-medieval and modern (AD 1500 onwards)

5.7.1 Trenches **10** and **11** located on the lawn area in the south of the Site contained features associated with the hospital.

5.7.2 Trench **10** was aligned north-east / south-west and measured 21m in length. The trench was shortened to avoid live services (**Figure 2**). The trench contained features consistent with the formal gardens located in the southern area of the hospital. Wall (**1011**) was aligned broadly north – south and comprised yellow stock bricks held in a yellow sandy mortar. The wall was of Flemish bonding with struck pointing. A small buttress (**1013**) was observed at the southern end of the wall as it appeared in the trench. This was of the same material albeit with rounded bull nose bricks forming the corner. The wall had been demolished to below ground surface (see **Plate 2, Figure 3**). To the north a wall 'scar' could be seen on the main hospital building which aligned with this wall (see **Plate 3**). It is probable that the wall originally traversed the entire garden area where it met the main building effectively closing off this garden from the similar one to the east (see below). Also located within this trench was a possible cinder path aligned broadly north – south and a potential flower bed (**1004**) located at the eastern end of the trench. This feature appeared as a shallow semi-circle and measured 2.4m in diameter. The feature described a shallow concave cut with a flat base and contained a mid brown grey sandy silt.

5.7.3 Possible remnants of later paths were observed within the topsoil in the trench such as fragments of tarmac but none of these proved substantial or intact.

5.7.4 Trench **11** located some 50m to the west of **TR 10** was broadly aligned east – west and measured 17m in length and 2m in width, the trench was shortened to avoid live services detected using a Cable Avoidance Tool. Further features associated with the formal gardens were observed within the trench, most significantly was wall (**1114**) (see **Plate 1, Figure 3** and

Plates 5 & 6). The wall was broadly aligned north – south and was identical to wall (1011) in TR 10 as described above. A ‘scar’ of this wall could be seen on the main south facing hospital building to the north of the trench (see Plate 4). Additionally, a cinder path (1122) was recorded either side of the wall in the trench also aligned north-south (see Plates 7 & 8). This appears to correspond to historical mapping (see Figure. 2). The cinder matrix of the path was contained within a shallow concave cut which achieved a depth of some 1m bgl. Contained within the path cut but below it was a concrete slab (1117) and general wall demolition rubble (1119). The function of the concrete slab remains elusive but it may have functioned as a culvert cover for unseen drainage pipes to facilitate the watering of the formal gardens. To the east two further remnants of cinder paths/bedding areas were identified, (1111 & 1103) aligned north – south and broadly east - west respectively. Only the very base of these features remained suggesting they may not be contemporary with the main cinder path (1122) which was of far more substantial construction, also some fragments of tarmac remained within these paths. A relationship between the two paths was demonstrated with linear path (1111) truncated by later path (1103).

6 PLEISTOCENE TEST PITS

6.1 Introduction

- 6.1.1 A total of 10 geoarchaeological test pits were opened within the footprint of evaluation trenches across the Site (Figure 1), in order to allow an assessment of the archaeological and palaeoenvironmental potential of the underlying Pleistocene gravels.
- 6.1.2 As discussed by Harding (Wessex 2006), the gravels in this area form part of vast spreads of river terrace gravel that have been mapped as Boyn Hill/Orsett Heath Gravel (BGS 1998), and which lie along the south side of the River Thames Estuary. These deposits can be traced through Dartford to the internationally renowned site at Swanscombe; however, it is hotly debated whether they form part of the same deposit (Bridgland 1994), dated to 400,000-340,000 BP, and are contemporary with those at Swanscombe, or whether they are part of the earlier Black Park Gravel of 450,000-423,000 BP (Gibbard 1985; 1994). Clast lithology (Canterbury Archaeological Trust 2002) has in fact suggested that the gravel is derived from the Darent drainage, although components, including the implements, may have been reworked from the Thames gravel.
- 6.1.3 The Site is roughly level and lies between 37.5 and 38m above Ordnance Datum (OD).

6.2 Methodology

- 6.2.1 The test pits were excavated by 360° mechanical excavator using a 2m wide toothless ditching bucket, and were four to six metres in length. Excavation proceeded downwards in spits of c.0.10m initially, increasing up to c.0.25m where this became impractical at deeper levels. Spoil was separated into distinct piles by context or context subdivision in order to enable sieved finds to be attributed to the correct strata. Where contexts were over 0.5m thick, separate piles were formed for each 0.5m of that context.

6.2.2 A minimum of 100 litres of each context were sieved in order to retrieve any artefacts or ecofacts present. Where contexts extended over 0.5m in thickness, 100 litres were sieved from each 0.5m depth.

6.2.3 Geoarchaeological recording took place as excavation commenced, and incorporated annotated scaled sketch sections combined with geoarchaeological description following Hodgson (1997). By necessity due to safety constraints all recording was done from the top of the pit, using a tape to obtain accurate depth measures and material from the machine bucket to refine descriptions. There is a high degree of confidence in the interpretations provided.

6.3 Results

6.3.1 The deposits recorded were broadly very similar across the Site (see **Plates 9 & 10**). The main units were extensive and laterally continuous, and are described below. Descriptions of the test pits are presented in **Appendix 3**.

Cryoturbated upper sequence

6.3.2 The upper part of the sequence (below modern overburden and extending down to 1.7-2m below ground level) was composed of cryoturbated gravel and sands, characterised by the presence of poorly to well-defined involutions. These involutions were generally filled with dark yellowish brown to strong brown sands, but in some cases contained paler yellowish brown well-sorted medium to coarse silts (c.f. loess). Traces of bedding were still apparent in some of the deposits, which are of fluvial origin but have been extensively deformed by freeze / thaw processes during the Pleistocene, as evidenced by the involutions and other indicators such as vertically aligned pebbles. A good proportion of the gravel was frost-fractured, resulting in angular / sub-angular as well as rounded clasts.

Fluvial sands and gravels

6.3.3 Beneath the reach of the freeze-thaw effects of successive cold phases (from 1.7-2m below ground level down to 3.6m+), intact fluvial deposits were recorded. These were composed of relatively fine matrix-supported gravels and sands. The deposits were horizontally bedded, and in some cases traces of cross-bedding were apparent.

6.3.4 There was some slight variation between the test pits in terms of the presence of sand lenses at various depths, but the strata were quite consistent across the site.

Ice wedges

6.3.5 In **TP12** a large ice-wedge cast was present. This extended longitudinally along the length of the test pit, running just off a north-south alignment, and effectively splitting the pit into two parts, with the normal gravel sequence in the northern section (albeit heavily distorted by the expanding ice wedge), and the southern section through the ice wedge fills, which became apparent at 1.2m below ground level.

6.3.6 The sides of the feature were steep (c.80°), and it was filled with sand and well-sorted silt (c.f. loess). It was more than 3.6m in depth, and although the

southern extent of the feature was not exposed its width is estimated at not less than 4m.

6.4 Potential

6.4.1 No layers which may have represented preserved land surfaces were present. The finer-grained strata which were present were horizontally bedded sands which contained indications of fluvial deposition. The silt deposits recorded were within involutions in the upper, cyroturbated portion of the sequence or ice wedges, and are formed of wind-blown loessic material from subsequent glacial phases. They do not represent stases or interglacial deposits.

6.4.2 Although several redeposited flint tools were retrieved from the fluvial deposits (see **Section 7** below), despite careful observation both during sieving and of the spoil no ecofacts such as shell or vertebrate remains were found to be present.

7 ARTEFACTS

7.1 Introduction

7.1.1 As described above a total of 10 geoarchaeological Test Pits were opened within the footprint of evaluation trenches across the Site (**Figure 1**).

7.2 Methodology

7.2.1 The test pits were excavated by 360° mechanical excavator using a 2m wide toothless ditching bucket, and were four to six metres in length. Excavation proceeded downwards in spits of c.0.10m initially, increasing up to c.0.25m where this became impractical at deeper levels. Spoil was separated into distinct piles by context or context subdivision in order to enable sieved finds to be attributed to the correct strata. Where contexts were over 0.5m thick, separate piles were formed for each 0.5m of that context.

7.2.2 A minimum of 100 litres of each context were sieved in order to retrieve any artefacts or ecofacts present. Where contexts extended over 0.5m in thickness, 100 litres were sieved from each 0.5m depth.

7.3 Results

7.3.1 Only five pieces of struck flint were recovered, as in **Table 1**.

Table1. Recovered flint

Test Pit	Depth bgl	Description
1	2.4m	Rolled tertiary flake; broken; flake scars on dorsal from two directions, at 45°. Butt damaged, probably punctiform
2	3.12m	Probably thermal tertiary flake. Abrupt direct retouch at one end and onto one margin forms end and side scraper.
6	2.8m	Glossed tertiary flake; hinge termination; unidirectional flake scars on dorsal; punctiform butt.
13	1.1-1.38m	Tertiary chip, quite fresh; not definitely an artefact Secondary flake; heavy cream patina all over; plain butt

- 7.3.2 Where visible, the flint is in each case mottled grey, undoubtedly derived from gravel pebbles. No conclusions can be drawn from such a small number of pieces: none are diagnostically Lower or Middle Palaeolithic, although the depths from which most were recovered suggest that this is probably the case. The numbers present are no more than would be expected in any similar sample of fluviially-deposited Pleistocene gravel, and do not indicate any *in situ* hominin presence.
- 7.3.3 Two pieces of Holocene flint were recovered during the topsoil stripping in **Trench 9**. One is a trimming flake from an opposed platform blade core, the other an end scraper on a secondary preparation flake. Both are hard-hammer struck from pieces derived from the gravels. A Mesolithic or Neolithic date would be appropriate for the former; the latter is not chronologically distinctive.

8 ENVIRONMENTAL EVIDENCE

8.1 Introduction

- 8.1.1 No deposits were identified which warranted environmental sampling during the evaluation.

9 CONCLUSIONS

- 9.1.1 It is apparent that the construction of the hospital has had a profound impact on any Holocene archaeological features that may have been present prior to the hospitals construction. The trial trenching has shown that severe truncation of the original ground level has been undertaken no doubt in an attempt to level the ground prior to the erection of buildings. In many areas a thin c.0.10m layer of topsoil was present directly overlying the Boyn Hill Gravel formation. Almost no subsoil horizon was recorded across the Site with the exception of **TR 9** and **TP 14**. However, no archaeological features were identified in these small remaining subsoil deposits.
- 9.1.2 Further to the north of the Site the open field area also exhibited signs of severe truncation with a thin layer of topsoil overlying modern made ground which was observed in some cases to be 1m in thickness. Again this material was seen to directly overlie the gravel formation across the field. It is apparent that this area had been used as a construction compound in the recent past as the made ground comprised concrete rubble, brick, hardcore, metal, sand, brick and lengths of cable and pipe. It appears that once construction had been completed within this area, the Site was levelled and the thin topsoil layer implemented to return the field to its previous state. **TR 1** exhibited a deeper depth of made ground at its northern end where rubble and general construction detritus was identified to a depth of approximately 1.3m bgl.
- 9.1.3 Trenches **10** and **11** produced evidence of the previous formal gardens in this area. The walls (**1011 & 1114**) are both understood to correspond to historic mapping of the area dating to 1909 and later (**Figure 3**). These walls are believed to have formed separate gardens for male and female patients who were housed apart during their residency at the hospital. Remnants of a cinder path could also be seen in **TR 11** which again corresponds to the historic mapping. This suggests that beneath the surface in this area more

remains of the formal garden may survive relatively intact although truncated. The design of the proposed construction shows little if no impact is projected for this area and the remains should remain intact during the current build.

9.1.4 The walls identified in **TR's 10** and **11** had been designed to symmetrically divide the formal gardens with a significant physical barrier. Victorian hospital wards were strictly divided along gender lines, and the presence of these walls indicates that this division could also have been extended into the hospital gardens. Their subsequent removal could relate to changes in medical attitudes to the segregation of patients, and a more open style of treatment. The walls were seen to align themselves with visible scars on the main hospital building frontage.

9.1.5 The proposed development is not scheduled to significantly impact upon these formal gardens. Any extant surviving features here including bedding areas, wall remains, drainage and paths will be preserved beneath the topsoil.

9.2 Pleistocene test pits potential

9.2.1 The Pleistocene terrace deposits recorded during this project can be considered to be of low potential for archaeological and palaeoenvironmental material, although with some potential for containing low densities of redeposited river-rolled Lower Palaeolithic artefacts.

10 ARCHIVE

10.1 Preparation and Deposition

10.1.1 The complete project archive will be prepared in accordance with Wessex Archaeology's *Guidelines for Archive Preparation* and in accordance with *Guidelines for the Preparation of Excavation Archives for Long-Term Storage* (Walker 1990) and following nationally recommended guidelines (SMA 1995). On completion of the project, the archive will be deposited with the County Museum Service or similar repository to be agreed with the Archaeological Officer for Kent County Council.

10.2 The Archive

10.2.1 Following the fieldwork the archive and all artefacts were subsequently transported to Wessex Archaeology's Rochester office where they were processed and assessed for this report. The accompanying documentary records from the archaeological works have been compiled into a stable fully cross-referenced and indexed archive in accordance with Appendix 6 of Management of Archaeological Projects (English Heritage 1991).

10.2.2 The contents of the project archive, comprises an A4 ring-bound file containing the following (as further detailed in **Appendix 1**):

- 10 Trench Record Sheets
- 15 Photographic Records
- Day Book (8 sheets)

- A copy of the scoping document
- A copy of the RA

10.2.3 The project archive including plans, photographs and written records are currently held at Wessex Archaeology's Rochester office under the site code **78700**. The project archive will be deposited with an appropriate local museum in the Suffolk area.

10.3 Copyright

10.3.1 The full copyright of the written/illustrative archive relating to the Site will be retained by Wessex Archaeology Ltd under the Copyright, Designs and Patents Act 1988 with all rights reserved. The recipient museum, however, will be granted an exclusive license 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.

10.4 Security Copy

10.4.1 In line with current best practice, on completion of the project a security copy of the paper records will be prepared, in the form of microfilm. The master jackets and one diazo copy of the microfilm will be submitted to the National Monuments Record Centre (NMR) (English Heritage) in Swindon; a second diazo copy will be deposited with the paper records at the appropriate local museum, and a third diazo copy will be retained by Wessex Archaeology.

11 REFERENCES

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APPENDIX 1: ARCHIVE INDEX

File No.	NAR Cat.	Details	Format	No. Sheets
1	-	Index to Archive	A4	1
1	-	Project Specification	A4	16
2	B	Day Book (photocopy)	A4	8
2	B	Trial trench records	A4	10
2	B	Context Record Sheets	A4	28
2	B	Site Graphics	A4	4
2	B	Site Graphics	A3	4
2	D	Photographic Register	A4	15
2	-	B+W Negatives	35mm	-
2	-	Colour slides	35mm	-
FINDS	None			

APPENDIX 2: TABLE OF TRENCH DESCRIPTIONS

All depths are below ground level. The order in which the deposits are listed represents their stratigraphic position, except where noted.

Trench 1	Dimensions :	16.00m x 2.00m x 1.2m 37.90m aOD	
	Coordinates:	(N) 556081.7032, 174319.0405 (S) 556079.7706, 174302.7637	
Context	Category	Description	Depth
101	Topsoil	Mid brownish grey sandy silt with frequent medium sub-rounded flint.	0.00-0.18m
102	Made Ground	Light brownish grey loose sandy silt with 95% hardcore and building waste with lenses or re-deposited natural	0.18-1.2m (+)
103	Natural	Boyn Hill Gravels: Dark yellowish orange sandy silt with frequent medium sub-rounded and sub-angular gravels.	0.66m (+)

Trench 2	Dimensions :	30.00m x 2.00m x 0.45m 38.05m aOD	
	Coordinates:	(S) 556111.4439, 174325.5168 (N) 556128.4208, 174350.2510	
Context	Category	Description	Depth
201	Topsoil	Mid brownish grey sandy silt with frequent medium sub-rounded flint.	0.00-0.17m
202	Subsoil	Mid orangey brown sandy silt with frequent sub-rounded and sub-angular flints.	0.17-0.45m
203	Natural	Boyn Hill Gravels: Dark yellowish orange sandy silt with frequent medium sub-rounded and sub-angular gravels.	0.45m (+)

Trench 3	Dimensions :	50.00m x 2.00m x 0.60m 38.08m aOD	
	Coordinates:	(S) 556133.7984, 174308.1639 (N) 556147.2131, 174329.2600	
Context	Category	Description	Depth
301	Topsoil	Mid brownish grey sandy silt with frequent medium sub-rounded flint.	0.00-0.18m
302	Subsoil	Mid orangey brown sandy silt with frequent sub-rounded and sub-angular flints.	0.18-0.32m
303	Natural	Boyn Hill Gravels: Dark yellowish orange sandy silt with frequent medium sub-rounded and sub-angular gravels.	0.32m (+)
304	Made Ground	Mid orangey brown gravelly silty sand with building waste including bricks, lumps of concrete, wires, and plastic.	0.18-0.60m

Trench 4	Dimensions :	30.00m x 2.00m x 0.71m 37.74m aOD	
	Coordinates:	(N) 556178.6221, 174346.3815 (S) 556192.0978, 174319.5785	
Context	Category	Description	Depth
401	Topsoil	Mid brownish grey sandy silt with frequent medium sub-rounded flint.	0.00-0.19m
402	Made Ground	Mid grey brown sandy silt with frequent medium sub-rounded stones and building waste including concrete lumps, plastic and wires.	0.19-0.64m
403	Natural	Boyn Hill Gravels: Dark yellowish orange sandy silt with frequent medium sub-rounded and sub-angular gravels.	0.52m (+)

Trench 5	Dimensions :	30.00m x 2.00m x 0.95m 37.78m aOD	
	Coordinates:	(W) 556158.8416, 174314.1616 (E) 556183.3724, 174296.8920	
Context	Category	Description	Depth
501	Topsoil	Mid brownish grey sandy silt with frequent medium sub-rounded flint.	0.00-0.18m
502	Made Ground	Mid grey brown sandy silt with frequent medium sub-rounded and sub-angular stones and building waste including concrete lumps, plastic, wires and pipes.	0.18-0.62m
503	Natural	Boyn Hill Gravels: Dark yellowish orange sandy silt with frequent medium sub-rounded and sub-angular gravels.	0.62m (+)

Trench 6	Dimensions :	10.00m x 2.00m x 0.20m 37.36m aOD	
	Coordinates:	(W) 556202.2116, 174266.7026 (E) 556214.0697, 174262.5336	
Context	Category	Description	Depth
601	Topsoil	Mid brownish grey sandy silt with frequent medium sub-rounded flint.	0.00-0.15m
602	Natural	Boyn Hill Gravels: Dark yellowish orange sandy silt with frequent medium sub-rounded and sub-angular gravels.	0.15m (+)

Trench 8	Dimensions :	2.00m x 2.00m x 0.50m 37.70m aOD	
	Coordinates:	centred on: 556099.9451, 174217.1034	
Context	Category	Description	Depth
801	Topsoil	Mid brownish grey sandy silt with frequent medium sub-rounded flint.	0.00-0.25m
802	Natural	Boyn Hill Gravels: Dark yellowish orange sandy silt with frequent medium sub-rounded and sub-angular gravels.	0.25m (+)

Trench 9	Dimensions :	6.60m x 2.00m x 1.00m 37.77m aOD	
	Coordinates:	(N) 556023.4082, 174200.3735 (S) 556024.2039, 174193.8074	
Context	Category	Description	Depth
901	Made Ground	Tarmac: Car park surface.	0.00-0.05m
902	Made Ground	Hardcore: Aggregate and brick rubble.	0.05-0.55m
903	Made Ground	Tarmac: Previous surface.	0.55-0.60m
904	Subsoil	Mid brown silty sand with occasional sub-rounded flints.	0.60-1.00m
905	Natural	Boyn Hill Gravels: Dark yellowish orange sandy silt with frequent medium sub-rounded and sub-angular gravels.	1.00 (+)

Trench 10	Dimensions :	21.40m x 2.00m x 0.30m 38.17m aOD	
	Coordinates:	(W) 556104.951, 174096.6671 (E) 556122.1222, 174101.4308	
Context	Category	Description	Depth
1001	Topsoil	Mid brownish grey sandy silt with frequent medium sub-rounded flint.	0.00-0.26m
1002	Cut of possible plant bed	Cut of shallow possible plant bed. North-south orientation, sub-circular plan, flat base, shallow concaved sides. 2.60m x 1.70m.	0.26-0.38m
1003	Fill of possible plant bed [1002]	Mid brownish grey sandy silt with frequent small-medium sub-rounded and sub-angular flint. Similar to topsoil.	0.26-0.38m
1011	Wall	Yellow stock brick wall. Western wall of east rose garden. Flemish bonding. Bonded to buttress (1013). (Not fully excavated)	0.26 (+)
1013	Wall buttress	Bonded to (1011) same material	0.26 (+)

Trench 11	Dimensions :	17.7m x 2.00m x 1.2m 38.38m aOD	
	Coordinates:	(W) 556173.4313, 174107.3945 (E) 556192.3965, 174119.8218	
Context	Category	Description	Depth
1101	Topsoil	Mid brownish grey sandy silt with frequent medium sub-rounded flint.	0.00-0.17m
1102	Fill of path [1103]	Dark brownish grey loose sandy silt with frequent small-medium rounded and sub-rounded flint. Possibly compacted topsoil.	0.17- 0.22m
1103	Cut of path	Cut of linear path. East-west orientation. Flat base, moderately sloped concaved sides. 7m(+) x 1m(+)	1.17- 0.22m
1108	Natural	Boyn Hill Gravels: Dark yellowish orange sandy silt with frequent medium sub-rounded and sub-angular gravels.	0.17m (+)
1109	Cut path	Cut of east-west linear path. Flat base, shallow concaved sides. Same as [1103]	0.17-0.27m
1110	Fill of path [1109]	Mid brown grey silt with frequent gravel stones and lumps of tarmac. Possibly compacted top soil.	0.17-0.27m
1111	Cut of path	Cut of linear north-south path. Flat base, straight shallow sides. 1.22m(+) x 0.78m	0.17-0.27m
1112	Fill of path [1111]	Mid brown grey silt with occasional small sub-rounded gravel stones. Possibly compacted top soil.	0.17-0.27m
1113	Cut	Cut for walls (1114) and (1123) and Path (1117) Linear, north-south orientation, straight moderated steep sides. Stepped at western to of slope. (Not full excavated) May be the same cut as [1122]	0.17-1.2m (+)
1114	Wall	Yellow stock brick wall. Eastern wall of west rose garden. Flemish bonding on east face. Bonded to buttress (1123). (Not fully excavated)	0.17-1.2m (+)
1115	Fill of [1113]	Buried topsoil. Dark black grey clay silt with occasional small sub-rounded gravel stones and occasional charcoal flecks.	0.46m
1116	Fill of [1113]	Buried topsoil. Mid black grey clay silt with moderate small sub-rounded stones and occasional charcoal flecks.	0.64m
1117	Path/culvert	Sunken concrete path/culvert parallel with wall (1114)	0.03m
1118	Fill of [1113]	Layer of tarmac possible dump not compacted enough to be a surface.	0.45m
1119	Fill of [1113]	Collapsed wall rubble. Remains of wall (1114) which had been demolished into cut [1113]	0.31m
1120	Fill of [1113]	Layer of made ground. Mid brownish orange sandy silty gravel with frequent small gravel stones. Re-deposited natural gravel.	0.40m
1121	Fill of [1113]	Secondary fill of cut [1113] Dark black grey clay silt, occasional sub-rounded stones and lumps of tarmac. Thin layer of silting material above concrete path (1117)	0.02m
1122	Cut	North-south linear cut for cinder path (1124) and possibly for wall (1114). Flat base, with moderate concaved sides. 1.55m x 2.00m	0.54m
1123	Wall buttress	Yellow stock brick buttress. Bonded to east face of wall (1114). Bull nose corner bricks. (Not fully excavated)	0.17-1.2m (+)
1124	Fill of [1122]	Mid grey ash cinder path, frequent waste slag and moderate small sub-angular flints.	0.54m
1125	Made Ground	Light brownish yellow sand with frequent medium to large rounded flint. Made ground over cinder path (1124)	0.20m

APPENDIX 3: TABLE OF PLEISTOCENE TEST PIT DESCRIPTIONS

Location:	Test pit 1	Mono:	-	Comments: Test pit 1	
Level (top):	37.85m aOD	Drg:	Geo sketch section		
Depth Mbg	Sediment description			Interpretation	
0-0.20m	Topsoil			OVERBURDEN	
0.20-1.15m SPITS 1-3	Gravel (subangular) supported by sandy loam matrix with sandy loam filled involutions (c.30% by area in plan). Gravely sand has slight clay content and is strong brown in colour; loamy sand is dark yellowish brown.			CRYOTURBATE D ZONE Bedded, distorted by cryoturbation (some vertical pebbles), clear involutions developed	
1.15-1.60m SPITS 4-5	As above but higher proportion of sandy involution fills				
1.60-2.30m SPITS 6-7	Matrix supported gravel, mainly in the 10-30mm range, subrounded to subangular, occasional nodule up to 150mm. Matrix of dark yellowish brown to strong brown loamy sand			FLUVIAL DEPOSITS Horizontally bedded gravels and sands	
2.30-3.50+ SPITS 8-10	Fine rounded to subrounded gravel <20mm in gritty sand as elsewhere, matrix supported, horizontally bedded.				

Location:	Test pit 2	Mono:	-	Comments: Test pit 2
Level (top):	37.93m aOD	Drg:	Geo sketch section	
Depth Mbg	Sediment description			Interpretation
0-0.20m	Topsoil			OVERBURDEN
0.20-1.10m SPITS 1-3	Gravel (subangular) supported by sandy loam matrix with sandy loam filled involutions (c.30% by area in plan). Gravelly sand has slight clay content and is strong brown in colour; loamy sand is dark yellowish brown.			CRYOTURBATE D ZONE Bedded, distorted by cryoturbation (some vertical pebbles), clear developed involutions
1.10-1.60m SPITS 4-5	As above but sandier			
1.60-2.40m SPITS 6-7	Matrix supported gravel, mainly in the 10-30mm range, subrounded to subangular, occasional nodule up to 150mm. Matrix of dark yellowish brown to strong brown loamy sand			FLUVIAL DEPOSITS Horizontally bedded gravels and sands
2.40-2.60 SPIT 8	Coarse silt, 10YR 6/6 brownish yellow, horizontally bedded, massive (no structure), inorganic, no indications of stasis. Speculate that this is of loessic origin, but probably fluviially redeposited – not in adjacent pits so probably a pocket of slackwater.			
2.60-3.50+ SPITS 9-11	Fine rounded to subrounded gravel <20mm in gritty sand as elsewhere, matrix supported, horizontally bedded.			

Location:	Test pit 3	Mono:	-	Comments: Test pit 3
Level (top):	37.97m aOD	Drg:	Geo sketch section	
Depth Mbg	Sediment description			Interpretation
0-0.20	Topsoil			OVERBURDEN
0.20-0.60	Made ground (various rubble & redeposited soil material)			
0.60-1.50	Strong brown to dark yellowish brown gravelly sand (50% by area) with involutions of less gravelly sandy loam. Slight clay content.			CRYOTURBATE D ZONE Bedded, distorted by cryoturbation (some vertical pebbles), clear involutions developed
1.50-2.10	Matrix-supported gravel (subrounded to subangular, poorly sorted at 10-100mm with most in the 20-30mm range) with 20% by area involutions filled with dark yellowish brown sandy loam. Fairly clear involutions in plan, visible also in section but less clearly.			
2.10-2.50	Finer rounded to subrounded gravel <30mm in gritty sand as elsewhere, matrix supported, horizontally bedded.			FLUVIAL DEPOSITS Horizontally bedded gravels and sands
2.50-2.70	As above but with larger gravel clasts and occasional very large up to 200mm			
2.70-3.50+	Fine rounded to subrounded gravel <20mm in gritty sand as elsewhere, matrix supported, horizontally bedded.			

Location:	Test pit 4	Mono:	-	Comments: Test pit 4
Level (top):	37.73m aOD	Drg:	Geo sketch section	
Depth Mbg	Sediment description			Interpretation
0-0.20	Topsoil			OVERBURDEN
0.20-0.80	Made ground (various rubble & redeposited soil material)			
0.80-1.40 SPITS 1-2	Strong brown to dark yellowish brown gravelly sand (50% by area) with fairly clear involutions filled with sandy loam.			CRYOTURBATED ZONE Bedded, distorted by cryoturbation (some vertical pebbles), clear developed involutions
1.40-1.50 SPIT 3	Sandier patch of dark yellowish brown loamy sand			
1.50-1.90 SPIT 4	Strong brown to dark yellowish brown gravelly sand (50% by area) with fairly clear involutions filled with sandy loam.			
1.90-2.30 SPIT 5	Matrix supported gravel, sub-rounded with occasional broken (frost-shattered) nodules up to 300mm, esp. around 2.20m			FLUVIAL DEPOSITS Horizontally bedded gravels and sands
2.30-3.40 SPIT 6-10	Fine rounded to subrounded gravel 5-25mm in gritty sand as elsewhere, matrix supported. Manganese staining noted. Sandier and finer gravel below 2.8m			
3.40-3.50+ SPIT 11	Dark yellowish brown sand, rare fine gravel			

Location:	Test pit 5	Mono:	-	Comments: Test pit 5	
Level (top):	37.86m aOD	Drg:	Geo sketch section		
Depth Mbg	Sediment description			Interpretation	
0-0.20	Topsoil			OVERBURDEN	
0.20-0.85	Made ground (various rubble & redeposited soil material)				
0.85-1.60 SPITS 1-4	Dark yellowish brown sandy loam with patchy gravel (subrounded to subangular, poorly sorted at 10-100mm with most in the 20-30mm range). Fairly clear involutions in plan, visible also in section but less clearly. Some vertical pebbles. Colour becoming stronger brown with depth (redder), involutions between gravels filled with strong brown clayey to loamy sand and in some patches a paler coarse silt (cf loess).			CRYOTURBATED ZONE Bedded, distorted by cryoturbation (some vertical pebbles); clear developed involutions	
1.60-1.90 SPIT 5	As above but with sand-filled involutions decreasing with depth and gravel increasing, also gravel becoming finer and more rounded as less disturbed deposits are reached.				
1.90-2.20 SPIT 6	Strong brown loamy sand with c.10% fine gravel, horizontally bedded. Some deformation from involutions but essentially intact fluvial material.			FLUVIAL DEPOSITS Horizontally bedded gravels and sands	
2.20-2.40 SPIT 7	Gravel increasing to 70%, matrix supported, 10-70mm subrounded to rounded, becoming finer downwards				
2.40-3.10 SPITS 8-9	Fine rounded & subrounded matrix-supported gravel in gritty sand, horizontally bedded				
3.10-3.20	Sand with sparse fine rounded gravel, horizontally bedded. Taken with above spit 9.				
3.25-3.50 SPIT 10	Fine rounded & subrounded matrix-supported gravel in gritty sand, horizontally bedded				

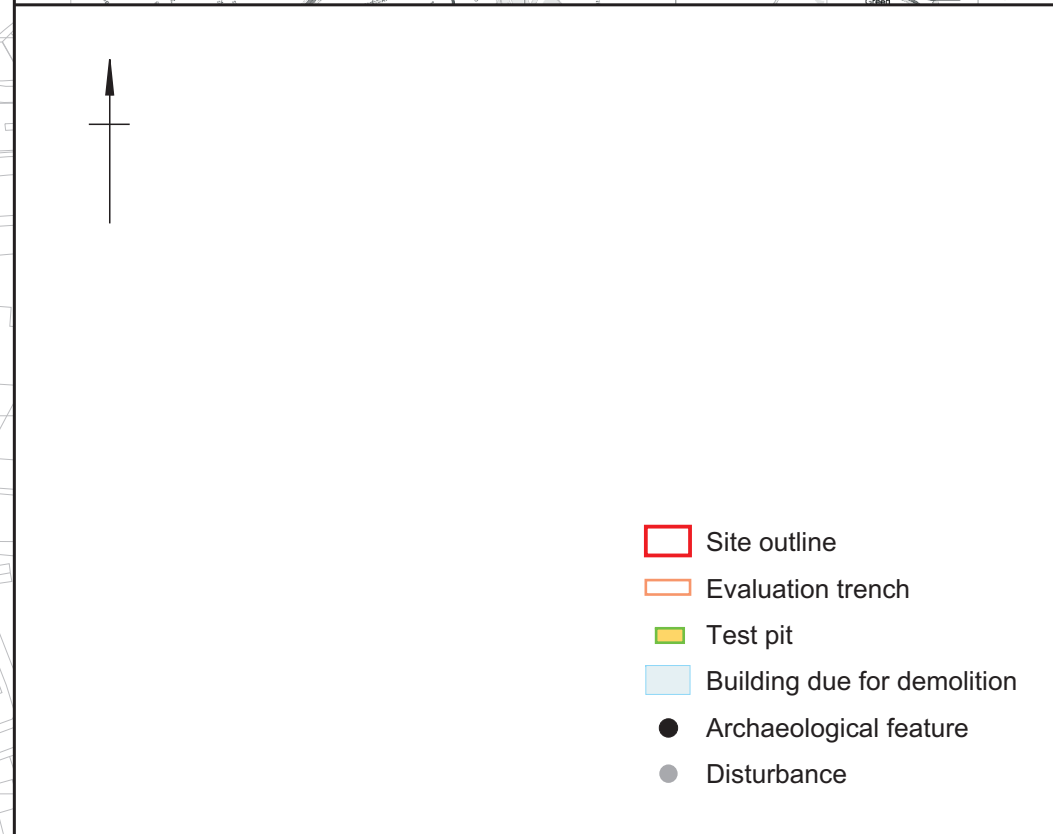
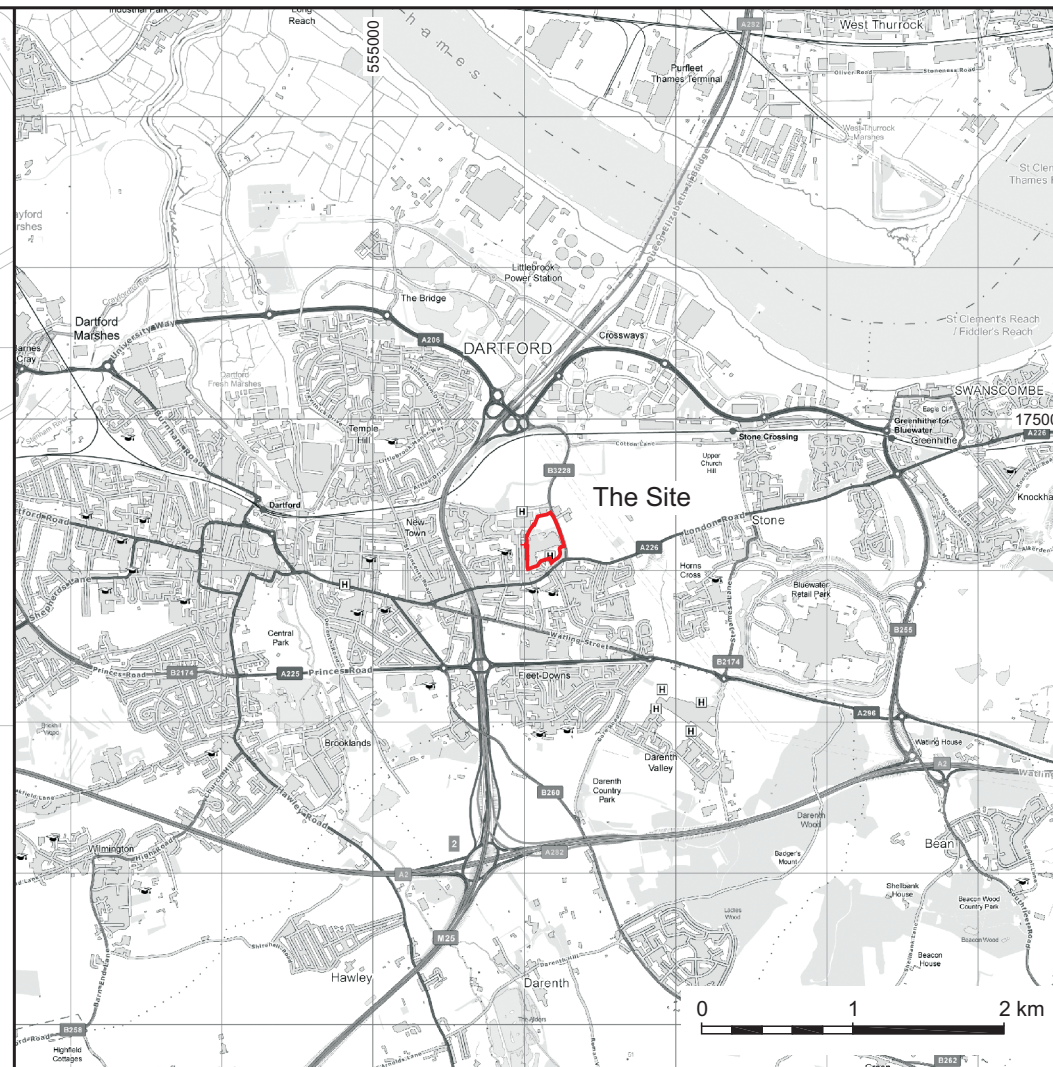
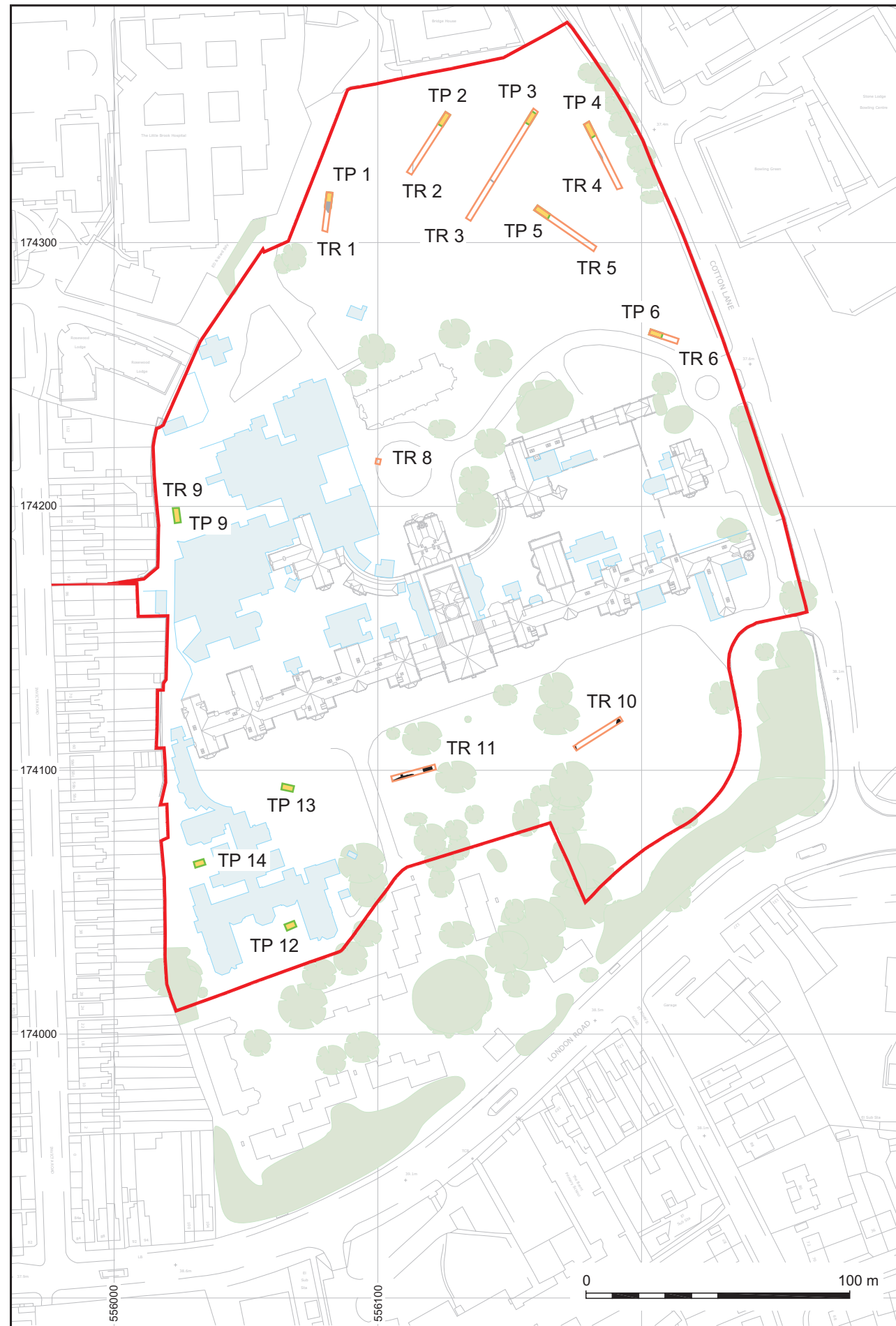
Location:	Test pit 6	Mono:	-	Comments: Test pit 6
Level (top):	m aOD	Drg:	Geo sketch section	
Depth Mbg	Sediment description			Interpretation
0-0.20	Topsoil			OVERBURDEN
0.30-1.10 SPITS 1-2	Dark yellowish brown to strong brown loamy sand fills of involutions			CRYOTURBATED ZONE Bedded, distorted by cryoturbation (some vertical pebbles), clear developed involutions
1.10-2.20m SPITS 3-7	Dark yellowish brown sandy loam 40/60 with patchy gravel (subrounded to subangular, poorly sorted at 10-100mm with most in the 20-30mm range). Moderately clear involutions in plan, visible also in section but less clearly. Some vertical pebbles. Colour becoming stronger brown with depth (redder), involutions between gravels filled with strong brown clayey to loamy sand.			
2.20-3.50m SPITS 7-11	Matrix supported fine gravel (rounded) 2-25mm in dark yellowish brown gritty sand, horizontally bedded, occasional thin sandier or gravelly layer.			FLUVIAL DEPOSITS Horizontally bedded gravels and sands

Location:	Test pit 9	Mono:	-	Comments: Test pit 9
Level (top):	37.77m aOD	Drg:	Geo sketch section	
Depth Mbg	Sediment description			Interpretation
0-0.20	Topsoil			OVERBURDEN
0.20-0.85	Made ground (various rubble & redeposited soil material)			
1.00-1.30 SPIT 1	Dark yellowish brown sand (fill of involutions) with 30% gravely material as below by area.			CRYOTURBATED ZONE Bedded, distorted by cryoturbation (some vertical pebbles); clear developed involutions
1.30-1.90 SPITS 2-3	Matrix-supported gravel (subrounded to subangular, poorly sorted at 10-100mm with most in the 20-30mm range) with 30% by area involutions filled with dark yellowish brown sandy loam. Fairly clear involutions in plan, visible also in section but less clearly. Some vertical pebbles. Colour becoming stronger brown with depth (redder), involutions between gravels filled with strong brown clayey to loamy sand.			
1.90-3.00 SPITS 4-7	Matrix supported gravel 5-40mm, subrounded, with occasional 100m clast. Similar to elsewhere, horizontally bedded. Interestingly has base of ice-wedge (filled with strong brown sand) cutting down into it which was not visible above this level; presumably it was obscured by subsequent cryoturbative episodes.			FLUVIAL DEPOSITS Horizontally bedded gravels and sands
3.00-3.50 SPIT 8	Fine rounded to subrounded gravel in gritty sand, matrix supported, horizontally bedded.			

Location:	Test pit 12	Mono:	-	Comments: Test pit 12. Huge ice wedge cast splitting the pit, so the northern section (south facing) has the normal site sequence (albeit a bit squashed), while southern section was through ice wedge fills.		
Level (top):	38.08m aOD	Drg:	Geo sketch section			
Depth Mbg	Sediment description			Interpretation		
0-0.30	Tarmac & hoggin			OVERBURDEN		
0.30-0.80m	Heavily bioturbated (modern) soil profile formed in slightly gravelly sand					
0.80-1.20m SPIT 1	Dark yellowish brown sand with slight clay content			CRYOTURBATED ZONE Bedded, distorted by cryoturbation (some vertical pebbles), moderately developed involutions		
Below this point the north and south facing sections are recorded separately						
North-facing section			South-facing section			
1.20-1.90m SPITS 2-3	Strong brown to dark yellowish brown gravelly sand (50% by area) with indistinct involutions filled with sandy loam.		1.20-2.60m	Light greyish brown well sorted coarse silt, c.f. loess. Fill of ice wedge cast, extends laterally ½ way across trench. Grades into sand gradually at base		
1.90-3.60 SPITS 4-8	Fairly fine sub-rounded to rounded gravel <25mm with occasional larger clasts up to 100mm. Becoming finer with depth. Horizontally bedded with occasional sandier layer as elsewhere		2.60-3.60+	Strong brown sand forming lower fill of ice wedge cast.		
				ICE WEDGE CAST Aeolian coversands / loess, possibly fluvially redeposited	FLUVIAL DEPOSITS Horizontally bedded gravels and sands	

Location:	Test pit 13	Mono:	-	Comments: Test pit 13	
Level (top):	37.94m aOD	Drg:	Geo sketch section		
Depth Mbg	Sediment description			Interpretation	
0-0.20	Dark grey fine sandy topsoil & rootline			OVERBURDEN	
0.20-0.60	Dark yellowish brown fine sand with mixed poorly sorted fine to medium gravel and chalk flecks, Some bioturbation. Some tertiary pebbles, otherwise subrounded clasts. Compact				
0.60-0.80 SPIT 1	Light yellow sand yielding to dark orange, some roots present. Poorly sorted fine and angular flint gravel including flecks of chalk. Clear contact with gravel below.			CRYOTURBATED ZONE Bedded, distorted by cryoturbation (some vertical pebbles), poorly developed involutions	
0.80-1.10m SPIT2	Compact medium to coarse well sorted rounded matrix supported flint gravel. Some tertiary pebbles. Matrix of orange sand. One piece of quartz.				
1.10-1.38m SPIT3	Sand bed, suggestion of bedding, traces of intrusive medium medium-coarse gravel. Quartz also present but rare				
1.38-1.70m SPIT 4	Fine sandy silt pockets (involution fills) in well sorted fine matrix supported dark yellowish brown to strong brown sandy gravel. Modern roots present, also manganese panning (staining not solid) which slopes N-S across pit (1.5 at N, 1.7 at S). @1.5-1.60 thin bed of strong brown coarse sand, irregular but clear contacts above and below.				
1.70-2.00 SPIT 5	Gravel as above; fine to medium, trending to fine. Horizontally bedded.			FLUVIAL DEPOSITS Horizontally bedded gravels and sands	
2.00-2.40m SPIT 6	Gravel as above. From 2.20-2.40 fine sand lens / bed of yellow to dark orange brown, flecked with manganese. Almost certainly horizontally bedded. Irregular contact with above and below. Some hint of cross bedding.				
2.40-2.90 SPIT 7	Gravel as above. Horizontally bedded.				
2.90-3.60 SPIT 8	Gravel as above. Horizontally bedded.				

Location:	Test pit 14	Mono:	-	Comments: Test pit 14
Level (top):	38.16m aOD	Drg:	Geo sketch section	
Depth Mbg	Sediment description			Interpretation
0-1.0	Tarmac and made ground			OVERBURDEN
1.0-1.60	Strong brown to dark yellowish brown gravelly sand (as below, 50% by area) with involutions of l sandy loam. Slight clay content. Some involutions have well-sorted silt (c.f.loess) fills.			CRYOTURBATE D ZONE Bedded, distorted by cryoturbation (some vertical pebbles), clear involutions developed
1.60-2.10	Matrix-supported gravel (subrounded to subangular, poorly sorted at 10-100mm with most in the 20-30mm range) with 20% by area involutions filled with dark yellowish brown sandy loam. Fairly clear involutions in plan, visible also in section but less clearly.			
2.10-2.50	Matrix supported gravel, sub-rounded generally <30mm with occasional larger clast			FLUVIAL DEPOSITS Horizontally bedded gravels and sands
2.50-2.80	Yellowish brown sand with quite common fine gravel			
2.80-3.50	Fine rounded to subrounded gravel in gritty sand as elsewhere, matrix supported. Manganese staining noted.			



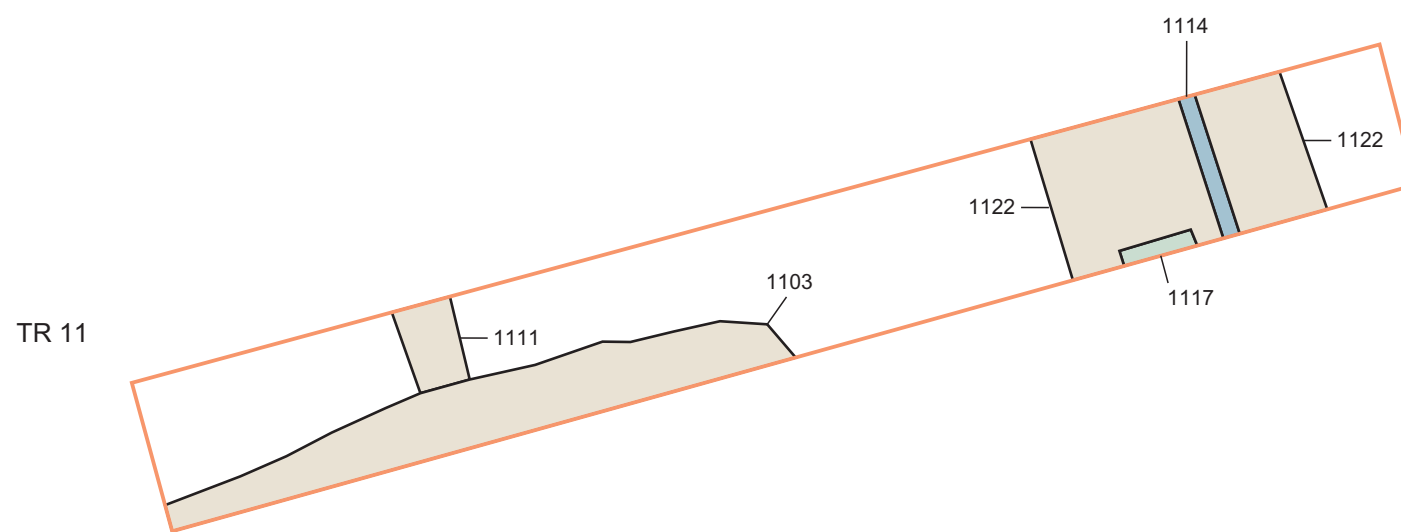
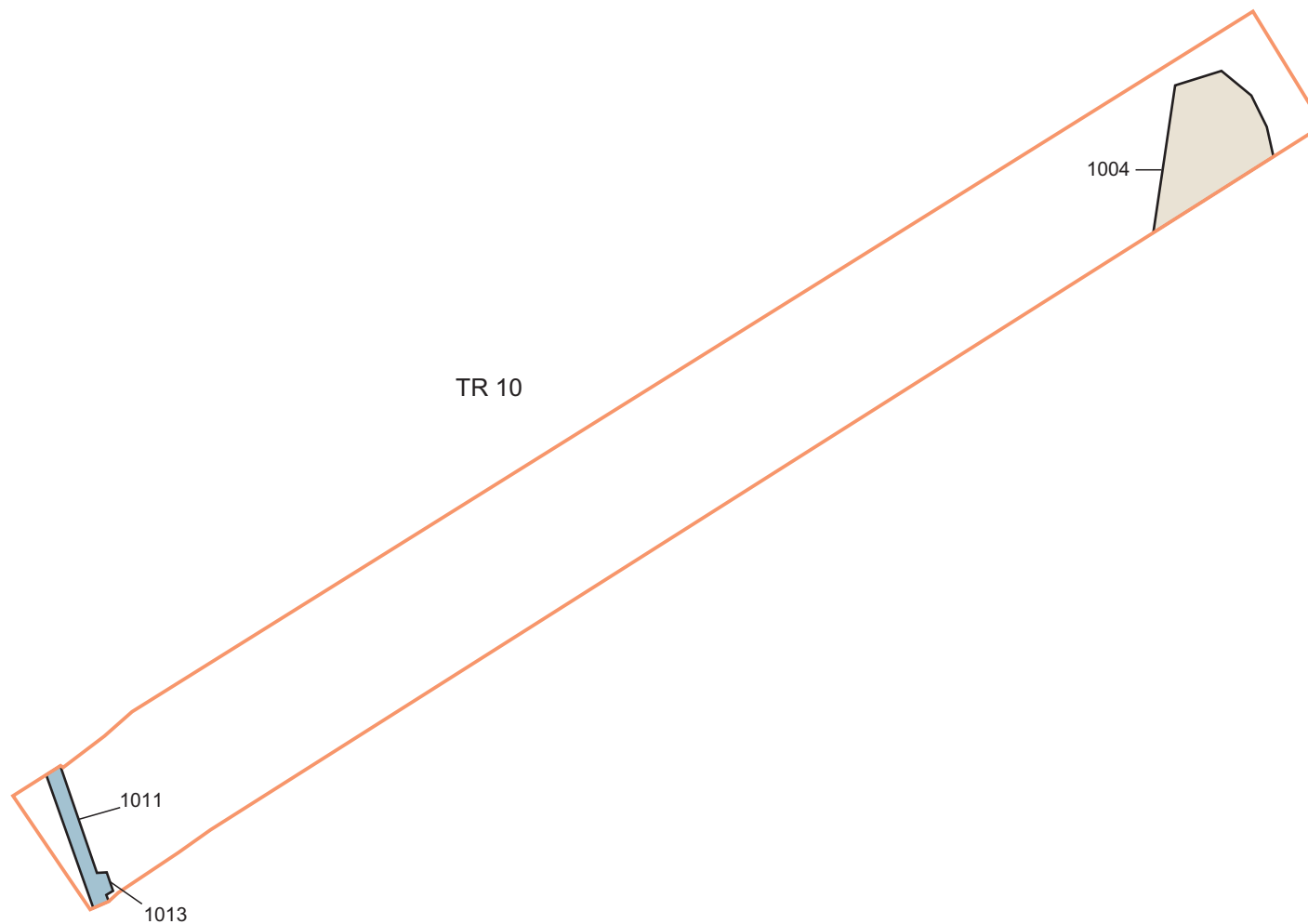
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Site, trench and test pit location plan

Figure 1



- Cut feature
- Wall
- Pathway



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Plan of trenches 10 and 11 showing excavated garden features

Figure 2



Plate 1: East facing elevation of wall 1114

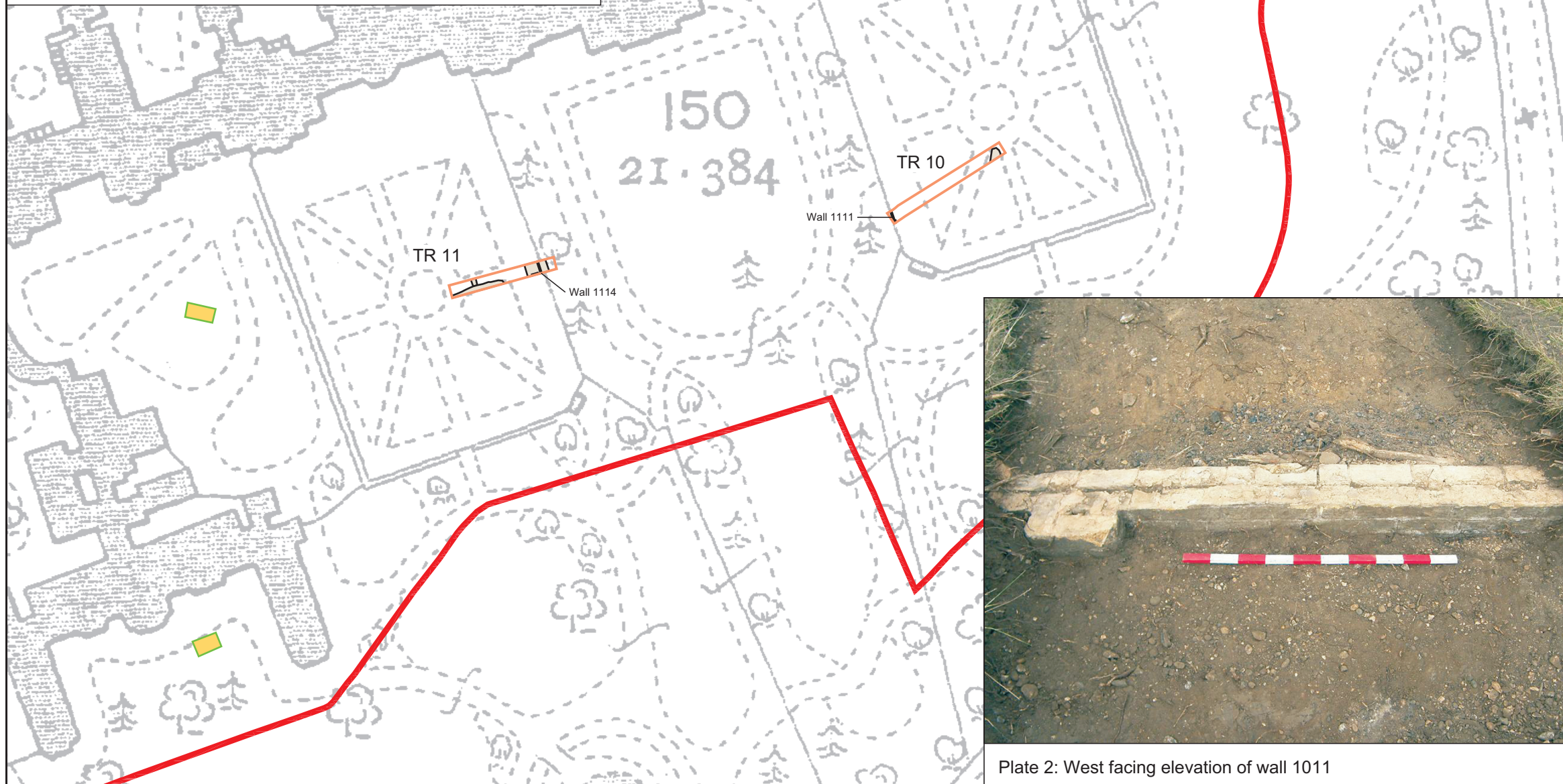


Plate 2: West facing elevation of wall 1011

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Plate 3: South facing view showing wall scar 1011



Plate 4: South facing view showing wall scar 1114


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Plate 5: South facing view of wall 1114



Plate 6: West facing elevation of wall 1114



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Plate 7: East facing elevation of wall 1114



Plate 8: South facing section of cinder path 1122 and wall 1114

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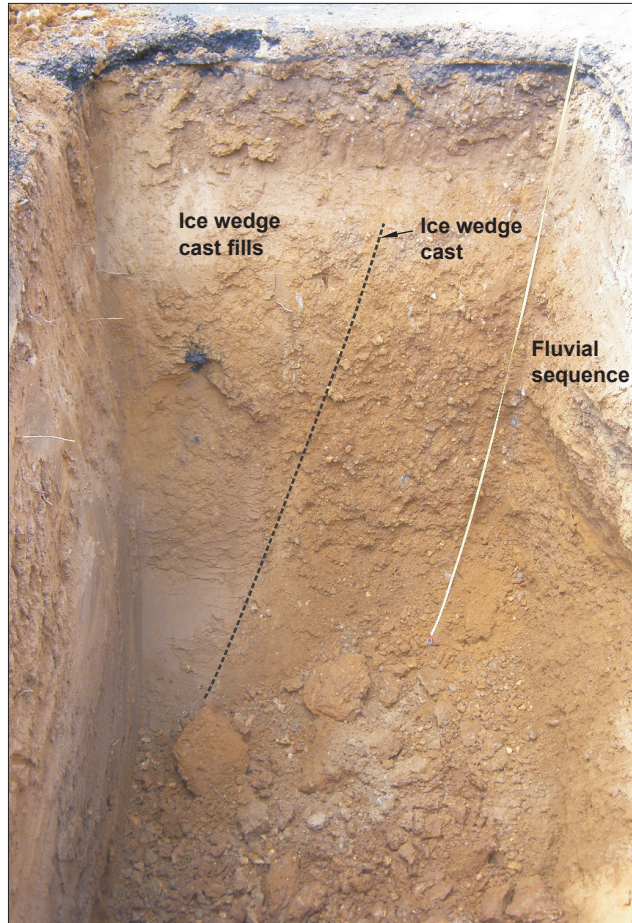



Plate 9: East-facing section of test-pit 12 showing ice wedge cast



Plate 10: North-facing section of test-pit 14

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