Historic Royal Palaces

East Front Irrigation, Hampton Court Palace HCP 169 and HCP 106

An Archaeological Watching Brief Report

Accession Code: 3910095 and 3910063

National Grid Reference: TQ 15955 68457

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Historic Royal Palaces

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Contents

An Archaeological Watching Brief

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Summary (non-technical)

On the 7th and 8th March 2018 Historic Royal Palaces undertook a watching brief in the Great Fountain Garden, Hampton Court Palace, TQ 15955 68457. The project was undertaken to mitigate the excavation work required for the installation of irrigation pipes.

The watching brief exposed buried garden soil horizons overlain at the western and central portions of the trench by a layer of compacted gritty burnt black sand followed by a rich red compacted sand and brick dust layer. These deposits may be evidence for the 16th-century brick clamps documented in the Hampton Court Building Accounts.

These deposits were truncated at the western end of the trench by a later sub-round garden feature. Towards the eastern end of the trench a series of 20th-century rubble deposits and gravelly make-up layers associated with the present-day gravel pathways were recorded.

This report also combines the results of a similar watching brief undertaken in 2013 mitigating the impact of the installation of irrigation pipes on the north side of the grassed demi-lune area in the Great Fountain Garden. Gravel deposits overlying a compacted brick, mortar and charcoal layer located at roughly 0.45m below ground level were encountered.

1 Introduction

Scope of works

1.1 Hampton Court Palace is Scheduled Monument (SM LO 83, HA 1002009). The scheduled area extends to the east of the Palace buildings, delimited by the Great Fountain Garden railings separating the gardens from Home Park. There are three Grade II listed statues or pedestals within the confines of the Great Fountain Garden.

1.2 Hampton Court Park is a Grade I registered Park and Garden (Historic England No. 1001108).

1.3 This archaeological Watching Brief Report has been prepared by the Curatorial Department of Historic Royal Palaces (HRP) to outline the archaeological mitigation works associated with the installation of irrigation pipes in the Great Fountain Garden, Hampton Court Palace. The excavation of a 70-m long trench across the north-east section of the grassed demi-lune area of the Great Fountain Garden was undertaken on the 7th and 8th March 2018 by the Hampton Court Palace Gardens and Estate Team. The excavation was monitored by HRP Assistant Curator, Alexandra Stevenson. This report also outlines the watching brief that was undertaken during the installation of irrigation pipes in 2013, also located on the north side of the demi-lune grassed area in the Great Fountain Garden. This watching brief was undertaken by Assistant Curator Fiona Keith-Lucas.

1.4 The site codes assigned to these projects was HCP 169 (2018) and HCP 106 (2013) respectively. Accession numbers, 3910095 and 3910063 were allocated and encompass the physical, digital, and paper archives associated with these projects.

1.5 The works were both centred on National Grid Reference TQ 15955 68457.

Geology and Topography

1.6 The British Geological Survey mapping (BGS 2014) indicates that the solid geology underlying the site and surrounding area is the London Clay Formation. This is an Eocene marine deposit laid down around 55 million years ago. This is overlain by a superficial geology of sands and gravels of the First River Thames (Kempton Park Gravels).

1.7 The East Front is a flat expanse of land lying to the north of the Thames between the Palace and Home Park. It averages at around 9.4m OD.

2 Aims and Methodology

Aims

2.1 The General aims of these projects were to:

1. Record the presence or absence, date, nature and extent of any archaeological material within the excavation area.
2. Preserve by record any archaeological material uncovered as part of the project.
3. Establish a broad phased plan of any archaeological remains revealed during the works.
4. Prepare a fully illustrated report on the results of the archaeological watching brief that is proportionate to the findings and compliant with all relevant regulations, policy, guidance and good practice.

5. Archive all documents, material and digital records created as a result of the archaeological watching brief, with Historic Royal Palaces.

2.2 The specific research aims of these projects were to:

6. Record and preserve any evidence for the layout of the 17th-century Parterre Garden, including horticultural design and fountain bases.
7. Identify and record any evidence for 18th and 19th-century landscaping works.
8. Record and preserve any remains of historic culverts.
9. Record any evidence for activity in the area pre-dating 1689.

Methodology

2.3 Conservation is the overriding priority in all HRP's aims and objectives; guided by strict in-house Conservation Principles. These include a commitment to the continued use and occupation of the palaces, but with minimum intervention to historic fabric. Any interventions are preceded by informed research and study of the physical and documentary evidence, and meticulous recording of the fabric before, during and after all work.

2.4 The excavation work undertaken in the East Front during both projects HCP 106 and HCP 169, fell within the scope of the Standing Scheduled Monument Clearance agreement between HRP and Historic England. The Hampton Court Building Curator and Historic England were consulted prior to the commencement of this project. A watching brief was undertaken by Assistant Curator, Alexandra Stevenson during works in 2018, and by Fiona Keith-Lucas in 2013.

2.5 The unique site code attributed is written on all records, drawings, artefact bags and sample containers, whilst the accession number is written on all finds labels and boxes and on the top-most sheet of each bundle of context sheets and drawings in the archive. These projects will be archived together.

2.6 The archaeologist in attendance worked in accordance with the Chartered Institute for Archaeologists' Code of Conduct and all relevant Standard and Guidance documents.

2.7 This report will not be the subject of any further work or publication, however the site report will be logged on the Oasis website and Historic Royal Palaces has submitted a summary of the project for the annual round-up section of London Archaeologist in the 2019 edition.

HCP 169

2.8 A 70m-long trench was excavated from west to east on the north side of the demi-lune grassed area on the East Front, extending to the Long Water (Fig.1). The trench was excavated by mechanical means, using a 0.5m-wide toothless bucket to an average depth of 0.5m BGL.

2.9 Any archaeological levels or features were cleaned using appropriate hand tools and recorded in section at 1:20. An overall scale plan locating the trench within the wider context of the East Front was drawn at 1:100. Digital SLR photographs were also taken as part of the record, including general area shots as well as details shots illustrating specific features. A written description was carried out using HRP Pro Forma context record sheets. Contexts were numbered from (**1**) to (**16**).

2.10 Any finds recovered were exposed, lifted, and collected. These were processed and analysed by Oxford Archaeology in 2019. Objects selected for retention will be housed by Historic Royal

Palaces and accessioned into the permanent collection. Discarded objects will be destroyed or used in the handling collection.

HCP 106

2.11 In 2013, a trench measuring approximately 110m in length and roughly 0.5m in width was excavated by means of a mechanical excavator. The trench followed the far northern edge of the demi-lune grassed area in the Great Fountain Garden (Fig. 1).

2.12 Unfortunately, only the digital photographic record of the watching brief was recovered from the working project archive. Artefactual material was recovered from this site, and although the context of these is now lost, some limited deductions about the site can be made through their analysis. The finds were processed and analysed by Oxford Archaeology in 2018. The finds have limited use and will either be discarded, or used as educational tools, or housed in HRP's object handling collection.

3 Historical and Archaeological Background

3.1 Hampton Court Palace is a Scheduled Monument, the palace, gardens and grounds form an archaeological and historical site of national importance. The historical background to Hampton Court is well documented and will not be repeated here.

Brief Historical Background of the East Front

3.2 The origins of the moated platform in which the heart of Hampton Court Palace is positioned, is thought to lie in the late 15th century, during Giles Daubeney's tenure of the manor of Hampton Court (1495-1508). Prior to this period, little is known of the site, though it is likely that the area presently occupied by the Great Fountain Garden was part of the open sheep run lying east of the Knight's Hospitallers' timber manor house from the 14th century[1].

3.3 Cardinal Wolsey extended the parklands surrounding Hampton Court and introduced a new water supply to the new palace via a conduit from Combe which crossed the parkland, passing beneath today's Great Fountain Garden.

3.4 In 1537, the park immediately to the east was divided in two with a wall enclosing a strip of land on the north side called the 'The Course'. The Course wall extended up against the south-east corner of the palace in line with the Long Gallery and a bridge and gate were constructed so that it was possible to enter the park directly from the east front of the palace. 'The Great Wall' was built around the Privy Garden and Pond Yard and the southern end of the east moat was extended to the river's edge.

3.5 By the early 17th century, a 'Moat Garden' had been created below the east front of the palace. An image from the 1660's clearly illustrates a balustrade running in front of the palace, presumably delimiting the Moat Garden as well as preventing deer and other unwanted guests from creeping into the palace grounds from the park. There may have been a garden in this location during the Tudor period, as it lay immediately in front of the Queen's Apartments, however, there are no records of its existence until the 1650's. A bowling green also existed in the Park, constructed in the 1630's, and located east of the Privy Garden, it was probably accessed via a drawbridge from the door in the 'Great Wall'. The bowling green appears to have been dismantled in the late

1 Jacques, D., (2019), p.7.

1660's and built anew close to the riverside, seemingly illustrated on William Talman's map of the palace from 1698.

3.6 During the reign of Charles I (1625-49), the use of water was becoming an increasingly fashionable and popular part of garden design, and it seems that Charles I was keen to adopt the trend. Between 1638 and 1639, a great deal of money was spent on creating a new river or conduit taking water from the River Colne over Hounslow Heath to the Hampton Court parks, - a distance of eleven miles. This artificial waterway would become known as the Longford River. Given that there was already a water supply to Hampton Court Palace, it seems likely that this new artificial waterway was created to feed the gardens. However, if Charles I did indeed have a project for the gardens, he was never able to bring it to fruition.

3.7 Up until the 1660's, the east front of the palace still looked out onto a flat expanse of hunting grounds. By this time, the palace buildings, surrounding gardens and parks were looking old-fashioned and neglected. As a result, between 1660 and 1668 Charles II instigated major changes that would set the layout for the future gardens. The most significant of these alterations included constructing a canal extending three-quarters of a mile into the park lined with an avenue of Dutch lime trees. According to David Jacques, the design of this has been erroneously assigned to André Mollet, but the detailed accounts do not appear to mention his name. He believes that it is possible that the two brothers Hugh and Adrian May, who were responsible for examining the bills and accounts for Hampton Court Palace, Whitehall and St James, instigated the new layout[2].

3.8 The sides of the canal were revetted with timber and the Longford River was used to supply the water, although further work on the 'planking and piling' was undertaken in 1670[3]. However, by 1675/6 the Longford River had badly silted up causing the water level in the canal to diminish and despite efforts to rectify this problem, once again the palace gardens were left in a less than desirable state of repair.

3.9 William III and Mary II undertook substantial work on the palace gardens in the late 17th century. Charles II's canal became a dominant feature of the layout of the new palace and in fact all the principal design drawings included at least its western end to show it in relation to the proposed new buildings[4]. A great *parterre de broderie* was created and designed by Daniel Marot and included 13 fountains that would eventually give the garden its name: The Great Fountain Garden. An even greater sense of grandeur was created by planting radiating avenues of lime trees extending beyond the gardens and into Home Park. The whole garden was then fenced off from Home Park with an elaborate wrought-iron palisade set on a low plinth designed by Jean Tijou, which included elaborate gates at the diagonal avenues.

3.10 During Queen Anne's reign (1702-1714), the Great Parterre and the East Front Gardens were given yet another overhaul. Anne disliked the gardens as they were both too expensive and too complicated to maintain particularly with regards the continued problem of maintaining fully functional fountains. The changes that were initially made, simplified the gardens and bore a resemblance to the original proposals put forward by Hawksmoor in 1689[5].

3.11 In 1710-11, Queen Anne carried out a final phase of redesign increasing the area of ornamental water by constructing a semi-circular canal following the already existing avenues with extending transverse arms northwards and southwards. This would have required the railings bordering the parterre to be moved further east in 1710/11[6] adding six more acres to the Great Fountain Garden. As of yet the foundations of the original location of William and Mary's palisade have yet to be

2 Jacques, D, (2019), p.15-14

3 Thurley, S., (2003). p.225.

4 Thurley, S., (2003), p.229

5 See Thurley p.240: "Nicholas Hawkesmoor, site plan and survey of the Tudor palace showing proposals for replacing the eastern quadrangle."

6 Travers Morgan Planning, 1982. *Royal Parks Historical Survey Report: Hampton Court and Bushy Park*. Department of the Environment, (p.46).

found, though they would seem to have been located somewhere near the western edge of the northern and southern arms of the canal.

Previous Archaeological Investigations

3.12 A number of archaeological investigations have been undertaken on the East Front at Hampton Court Palace; most of these relate to evaluation and mitigation projects associated with the gates and railings delimiting the garden. However, few archaeological investigations, have been undertaken within the bounds of the Great Fountain Garden grassed demi-lune area.

HCP 41: East Front Fountain Garden Cable

3.13 In 2002, the East Front fountain was refurbished as part of the Jubilee project. The work included the provision of an electrical supply to service submersible pumps, and underwater lighting to the fountain. Oxford Archaeology undertook a watching brief during the excavation of a 400mm-wide and 600mm-deep cable trench from the Tennis Court corridor through the herbaceous border and along the gravelled walk to the East Front Fountain. No archaeological deposits or structures were recorded.

HCP 53: East Front Garden Niches

3.14 In March 2007, Oxford Archaeology carried out building recording and mitigation works in advance of some repairs and alterations to the bricks of the East Front Garden Niches in the East Front garden. The area is a secluded part of the gardens, and as a consequence, a tradition developed for couples and individuals to inscribe their names in the bricks of the niches, most graffiti dating from the 19th century onwards.

HCP 60: East Front Drainage

3.15 In 2008, Oxford Archaeology undertook an archaeological watching brief during the excavation of 98.5m-long by 0.5m-wide trench running along part of the East Front of the Baroque palace, immediately in Front of the Swedish Limestone paving. During the excavation work, layers of demolition rubble as well as several wall foundations and brick drains were exposed and recorded. The demolition material was probably associated with the destruction of part of the Tudor palace in the late 17th century, whilst the wall foundations may have been the remains of the Tudor Queen's Apartments and drainage structures.

East Front Garden Geo-physical survey

3.16 In 2011, the southern half of the grassed demi-lune area of the Great Fountain Garden was the subject of geo-physical survey undertaken by Oxford Archaeology, including resistance survey and Ground Penetrating Radar survey (GPR). No complete pattern of response recognisable as any of the earlier formal garden layouts was seen, however, the survey does seem to have revealed the location of one of the quatrefoil fountains illustrated in drawings of the late 17th-century garden layout. Areas of high resistance and increase response from the GPR may represent former garden paths, planting beds and other landscaping features. A "broad amplitude zone" was recorded (Fig. 12), possibly representing a cut feature with relatively well-defined extents. This finding was a something of a mystery as no such feature is known to have existed according to records.

3.17 A myriad of pipes and drains were recorded by GPR, and this was by far the clearest set of data.

HCP 141: The 20th-Century Garden Gate Conservation and Temporary Bridge Installation

3.18 In 2016, HRP undertook an archaeological evaluation prior to conservation and restoration works on the 20th-Century Garden Gate and prior to the installation of a temporary footbridge. A second watching brief was undertaken in 2019 during the removal of brick and stone work from the 20th-Century Garden Gate. The archaeological investigation explored the presence and nature of the gate's threshold, which was inserted in the Great Fountain Garden railings in the 18th century. The gate's threshold was found to be constructed over two levels; the lower step was composed of Portland stone whilst the upper step was composed of Ketton stone. It seems likely that the gate threshold was reconfigured in the 19th century, the Ketton stone perhaps having been installed at this time. The trenches excavated in advance of the installation of a temporary bridge across the canal exposed the steel shoring and sheet piling as well as an earlier phase of timber shoring.

HCP 157: Groom's House Gate

3.19 In 2016, HRP undertook an archaeological evaluation at the foot of the Groom's House Gate at the far northern end of the East Front. The threshold of the gate was heavily disturbed and damaged by the growth of tree roots. The brickwork appeared to be of c.18th /early 19th-century date.

4 Stratigraphic Description

HCP 169

4.1 Natural stratum was not encountered during this excavation. The earliest deposit recorded was located between 0.5m and 0.6m BGL. It was a soft, grey homogenous, and damp, sandy silt buried soil horizon (**6**). No finds were uncovered from this deposit. It was overlain at the western end of the trench by a sequence of heat-affected soils extending 8.5m east-west. A small test pit was excavated through this sequence (Fig.3). At the base, it was difficult to clearly distinguish the interface with the underlying buried soil horizon (**6**), which appeared to be discoloured with a very dark brown to black colour, fading to dark reddish-brown with depth. The overlying deposit was a 0.12-0.18m-thick layer of compact, gritty, homogenous, black burnt sand (**3**), which was in turn overlain by a compact, bright reddish orange brick dust and sand deposit (**5**), up to 0.08m thick. This upper deposit was conserved over a length of 3.5m, and appears to have been truncated, presumably by the reworking of soils in this area.

4.2 The same sequence was recorded 18.5m further east towards the central portion of the trench approximately 1.5m west of the pathway north-west of the Long Water. This series of deposits, represented by the burnt black sand (**15**) and the brick dust (**16**), was recorded over a much smaller area: 2.5m east-west. However, gravels (**9**) overlay the brick dust deposit at the eastern end, so the sequence was either obscured by unexcavated layers or truncated. Given the distance that separates these two analogous sequences of deposits, it would seem that they represent two separate features.

4.3 At the far western end of the trench, a possible pit [**7**] with steep edges was recorded, however, there was not a clearly defined edge, so this feature is somewhat dubious. It was 'filled' with a soft, homogenous silty sand (**8**) and truncated the black (**3**) and red (**5**) sand deposits as well as the garden soil deposit (**6**) described above. No artefactual material was recovered from this feature.

4.4 This archaeological sequence was overlain by a 0.2-0.3m-thick layer of subsoil (**2**), in which a small collection of artefactual material was recovered, including fragments of brick dating to between the 16th and 18th centuries, five fragments of post-medieval red earthenware pottery, and a clay pipe bowl dating to between c.1690 and 1701 (Type A019). This context was in turn overlain by a 0.4m thick layer of topsoil.

4.5 Towards the eastern end of the trench a series of 20th-century rubble deposits and gravelly make-up layers associated with the present-day gravel pathways were recorded (contexts **10**-**14**).

HCP 106

4.6 The complete site archive associated with the watching brief undertaken in 2013 was not identified. Only a set of digital photographs and a small number of finds were recovered. Nevertheless, the limited data was sufficient enough to make a few inferences about the nature of the archaeological remains in this area.

4.7 The photographic record indicates that the trench was excavated to a maximum depth of 0.5m, with a sequence of light brown gravelly/silty deposits overlying a homogenous silty sand layer. This sequence was overlain by 0.12-0.15m of topsoil. Towards either the central or eastern portion of the trench (it was difficult to ascertain the exact location from the photographs alone), a layer of crushed brick and mortar with patches of what appears to be charcoal was observed. This deposit was located at an upper height of around 0.3m BGL.

5 Specialist Reports

The pottery - *John Cotter*

HCP 169

Introduction and methodology

5.1 A total of five sherds of pottery weighing 19g were recovered from a single context. All of this is of post-medieval date (after c 1480). Given the small size of the assemblage a separate catalogue has not been constructed and instead the pottery is simply described and spot-dated below. Post-medieval pottery fabric codes noted below are those of the Museum of London (MOLA 2014) which can be applied to most post-medieval types in south-east England. No further work on the assemblage is recommended.

Date and nature of the assemblage

5.2 The pottery assemblage is in a fragmentary condition and occurs as small body sherds, some fresh and some slightly abraded. Ordinary domestic pottery types are represented.

Context (2) Spot-date: c 1650-1900?

5.3 Description: 5 sherds (19g). All fairly small body sherds in post-medieval red earthenware (PMR, c.1580-1900). From a minimum of 3 unglazed vessels. Three joining sherds come from a thin-walled vessel (possibly a jar?) with a grey external surface. The other 2 sherds are from 2 thicker-walled vessels with a softer and smoother bright orange fabric showing very little curvature, and are very probably from flowerpots. The latter are difficult to date closely although flower pots are fairly common at Hampton Court from the later 17th century onwards, but these examples might be as late as the 18th or 19th century.

HCP 106

Introduction and methodology

5.4 Two sherds of pottery weighing 31g were recovered from a single context. All of this is of post-medieval date. Given the small size of the assemblage a separate catalogue has not been constructed and instead the pottery is simply described and spot-dated below. Post-medieval pottery fabric codes noted below are those of the Museum of London (MoLA 2014) which can be applied to most post-medieval types in south-east England. No further work on the assemblage is recommended.

Context (1) Spot-date: c 1850-1950

5.5 Description: 2 sherds (31g). Post-medieval red earthenware (PMR, c 1580-1900+). Fresh rim sherds from two wheel-thrown but fairly modern-looking flowerpots in a smooth orange fabric. Both have flattened beaded or sub-collared rims. One has an incised groove a short distance below the rim - possibly the top of a band of incised decoration.

Ceramic Building Material - *Cynthia Poole*

HCP169

5.6 Two partial bricks (2095g) were recovered from deposit (**2**). One (Id318) was made in fabric MoL3030 a reddish-brown fired clay containing a high density mixed fine and medium quartz sand, occasional irregular voids and a scatter of small white calcareous grits <2mm. It had a smooth flat upper surface and fairly even edges, but much of the brick was obscured by mortar on its bedding faces. The brick measured 61mm (2⅜") thick by 107mm ($4^{3}/_{16}$") wide. The size falls within that of HCP brick types H, I and K, and the general character of the brick suggests a date of 17th-18th century, which is compatible with the Wren stock bricks type H and I. The mortar was grey ashy lime mortar containing large black lumps of charcoal/coal 1-9mm, white lime balls and fragments of shell. It formed a bedding layer 15-20mm thick on both bedding surfaces. Attached to the mortar was part of an adjacent more purplish coloured brick, which is a typical colour of types H and I bricks.

5.7 The second brick (Id317) was made in fabric MoL3046 a reddish orange fired clay containing a high density of medium and coarse quartz sand. The brick had an even upper surface with an indented border 11mm wide alongside the header and a rough base with possible grass impressions. The edges were rough and creased. It measured 55mm thick ($2^{3}/_{16}$") and over 110mm (4⅜") wide. This falls within the size range of HCP brick types A, B and E and the character of the brick and associated mortar suggests it is most probably type A or B. It has been broadly dated to the 16th-17th century on general characteristics, whilst types A and B are dated to c.1495-1528 at Hampton Court[7]. On the upper surface were patches of bedding mortar consisting of light brown sandy lime mortar containing frequent medium amber quartz sand and common chalk/lime balls 0.5-4mm.

HCP106

5.8 A small quantity of building material amounting to 15 fragments weighing 3080g and comprising brick, roof tile, floor tile, plaster and mortar was recovered from three deposits: (**2**), (**4**), and (**8**). The assemblage appears to be largely of 16th-17th century date.

5.9 Brick accounted for seven fragments (2624g), which included two half bricks, the remainder being smaller broken fragments. All the broken brick, which was found in deposit (**8**), and the half brick from deposit (**4**) was made in fabric Mol3033 and had a rough finish with pitted and irregular surfaces, rough creased edges and rounded arrises and corners. One of the fragments had silvery grey vitrified, sand coated edges. The fragments with a complete thickness measured 52-54mm (2⅛") thick and the half brick measured 58mm thick and 109mm wide. These are all typical of the 16th-century HCP brick types A-D and are most probably brick type C or D, which are associated with Henrician building activity between 1529 and 1566. The half brick (Id257) falls into the size category of type B. The other half brick (Id260) from deposit (**8**), which differs slightly in character from the rest, was made in fabric MoL3030 a pink fine sandy clay with occasional shell inclusions. It is likely to be later in date probably later 16th-early 18th century. It

7 Type A brick is interpreted as Pre-Wolsey and Wolsey Stock Brick (c.1495-1522), recorded in the Phase I Great Kitchens, Apartment 44, as well as early footings beneath the Wolsey Suite (Apartment 35). Also seen in in sub-cellar off Wine Cellar, N.wall; excavated ranger under/ incorporated into Apt. 36 and in Clock Court excavations; Horn Room Stair and west wall of Wine Cellar; moat Revetment wall under Apt.36; Apt. 57 Apt. 15 Apt. 33. Base Court all ranges; culvert at S/E. corner of Chapel; demolished revetment wall under Apt.37 (seen in excavation); early wall under Apt.17 (seen in excavation); gallery seen in excavation under S. Range Fountain Court; demolished footings under Chapel (seen in excavation).

had a more regular finish than the others with a smoother top surface with faint longitudinal wipe marks, more even side surfaces with some fine creasing, rounded arrises and corners and rough, irregular base. It measured 59-61mm (2¼"-2½") thick and 101mm (4") wide. The character and size are consistent with the Wren stock bricks HCP type H, I or J or the contemporary type K place bricks.

5.10 Three fragments (321g) of roof tile consisted of a tiny flake from context 2 and two pieces of peg tile from deposit (**8**). The peg tile was made in red-orange fine sandy fabric MoL2276. It had a lumpy striated upper surface and rough base and edges and measured 12 and 14mm (c ½″) thick. One had faint finger prints from handling on the upper surface. Both pieces had square or diamond peg holes measuring 8 and 11-12mm wide. On one was centred 24-25mm from the top and side edges and on the second a pair survived set 41mm apart and centred 28-34mm from the top edge. The roof tile is probably 15th-17th century.

5.11 A single small fragment from the corner of a floor tile (27g) came from deposit (**8**). It has smooth flat surfaces and cut bevelled edges and measured 23mm thick. It had a dribble of amber brown glaze down the corner. It was made in a light red firing clay with creamy buff laminations and containing rounded-sub-rounded, medium and some coarse quartz sand, unevenly distributed with coarse angular clay inclusions up to 10mm and red iron oxide grits up to 3mm. Based on descriptions of the London fabric series, this is most likely to fabric MoL3080, but it has not been possible to directly compare it with a fabric type sample. This is likely to be a plain glazed Flemish type floor tile of 16th – early 17th century date.

5.12 Deposit (**8**) also produced some fragments of mortar and plaster. Three small rounded pieces of mortar (80g) measured 25-55mm size and were made in a cream lime mortar with a high density of medium and coarse, rounded-sub-rounded quartz sand, clear, milky and amber in colour, with lesser quantities of black, probably iron oxide, sand, forming the added aggregate and occasional chalk/lime granules <5mm. Two of the pieces had a rough flat surface with dark brownish red brick residue adhering on two. The fragments are thicker than standard bedding mortar suggesting the fragments derive from the wall core or some other brick and mortar structure.

5.13 A fragment of plaster moulding made in a hard, dense cream plaster matrix with red laminations containing very fine sand <0.1mm of quartz and black iron oxide. The surface was smooth and shaped to two curving plano-convex surfaces joining at a shallow angle. The fragment measures 21mm thick, 38mm wide and 54mm long. It was probably some form of architectural moulding, such as the rib of roof vaulting.

5.14 The overall character of the CBM assemblage from this site suggests a broad contemporaneity derived from 16th-century structures probably those instigated by Henry VIII rather than Wolsey.

Clay tobacco pipes - *John Cotter*

HCP 169

Introduction and methodology

5.15 A single piece of clay pipe weighing 23g was recovered. This has not been separately catalogued but is fully described here. References below are to Atkinson and Oswald's (1969) London pipes typology with bowl types assigned to an abbreviated code (e.g. AO22). No further work is recommended.

Deposit (2) Spot-date: c 1690-1710

5.16 Description: 1 piece (23g). A complete pipe bowl of London Type AO19 datable c 1690-1710 (or slightly earlier?) with a small stubby spur and with faint milling or grooving around the back quarter of the rim. The bowl itself is fresh but unburnished and has 56mm of stem attached.

6 Discussion

Reliability of the investigation

6.1 The inevitable consequence of such a confined archaeological investigation is that interpretation of the few deposits and features recorded is difficult. However, despite the limited data, including the extent of archaeological deposits recorded and the lack of associated artefactual material, the striking character of the few features recorded during the watching brief made it possible to find parallels with other recent investigations, both at Hampton Court Palace and further afield (discussed below).

6.2 The confined nature of the trench made it difficult to determine the relationship between features and deposits, or to distinguish between truncation and erosion of deposits.

6.3 No firm conclusions could be drawn from the results of the watching brief undertaken in 2013 (HCP 106) due to the fact that only the photographic record alongside a few finds were identified from the site archive. Although the finds were numbered and bagged up by context, there was no way of identifying their exact provenance without the written records. Nevertheless, even with this limited data, it was possible to make some inference about the nature and depth of the archaeology.

Summary of Results

6.4 The underlying natural geology of the Great Fountain Garden was not revealed during either of these archaeological investigations. During the watching brief in 2018, the maximum depth of excavation reached was 0.6m, with the deepest area of excavation at the far western end of the trench. Archaeological remains became apparent at an upper height of 0.35m BGL (8.82m OD), and consisted of a sandy silty buried soil horizon at the base of the excavation, two areas of burning and one possible pit feature at the far western end of the trench. Only the overlying subsoil produced any artefactual material, therefore it was impossible to accurately date phases of activity represented by the deposits and the single negative feature identified. However, the small assemblage of brick, pottery and clay pipe produced a date range of between the 16th and 18th century, which at the very least hints that the underlying archaeology does not post-date the 18th-19th century.

Interpretation

6.5 The striking colours represented by two clear areas of burning within the narrow confines of the excavated trench during the watching brief in 2018, are characteristic of the appearance of brick clamp remains. Given the confined nature of this investigation it would be difficult to confirm, however, evidence drawn from previous archaeological investigations at Hampton Court and further afield, as well as information drawn from the Hampton Court Palace Works Accounts certainly go some way to supporting this interpretation.

6.6 In January 2014, an archaeological watching brief was undertaken during groundworks to replace the existing roadway of Home Park Road within the grounds of Hampton Court Park (HCP 114). Archaeological remains were plentiful, and among the most significant was the discovery of two brick clamps relating to either the Wolsey or Henrician construction phases of the Palace (1515-1547). They measured 12m x 4.5m and 7.68m x 7.32m respectively, though their east-west extent extended beyond the confines of the excavation. The brick clamps identified during HCP 114, consisted of a sequence of burnt deposits. At the base was a zone of heat-affected subsoil, followed by a layer of black burnt sand, thought to be burnt turf or topsoil incorporating remnants of fuel waste, which was in turn overlain by a layer of red burnt sand and brick dust, likely the remaining debris from the firing of the bricks and the subsequent demolition of the brick clamp. One of the brick clamps was overlain by a brick rubble deposit associated with the broken and discarded elements produced after the brick clamp was dismantled and the fired bricks were

gathered. Although there was very little brick rubble recorded during HCP 169, the photographic record of the brick clamp features in Home Park shows a remarkable similarity to the appearance of the deposits exposed during the watching brief in the Great Fountain Garden (Figs. 3 and 7). The major difference, however, was that the features recorded during the Home Park Road Project were exposed over a much wider area, providing the opportunity to examine some in situ structures. One of the clamps retained four bricks in section (two stacked on two), and a line of broken bricks was recorded in section, possibly representing remnants of the primary course of bricks forming the base of the brick clamp. Both clamps recorded in Home Park appeared to have been set within a gentle hollow, possibly to improve the stability of the temporary brick structure enabling the stack of bricks to be sloped towards the centre[8].

6.7 A brick clamp is a temporary structure which was used only once for firing green bricks and then dismantled[9]. No two brick clamps would have been built the same, with differences in technique arising from the skill of the labourers, local and regional differences, the location of the clamp and available resources. Before constructing a brick clamp, the ground needed to be drained, levelled and compacted. Where available from previous firings, the ground was often levelled with discarded bricks. The ground in Home Park and in the Great Fountain Garden is already relatively flat and level, and the natural free-draining sandy and gravelly soils supported partially by brickearth, would surely have made the land ideal both for retrieving and preparing the raw materials, as well as constructing the brick clamps. Channels were created in the ground to form flues, and discarded bricks from previous firings were placed on the ground on edge over two courses between the channels to form platforms upon which the unfired, dried bricks (green bricks) were placed. The channels were then filled with fuel, either wood, charcoal, turf, coal, or domestic rubbish (which would have been plentiful at Hampton Court). Layers of unfired bricks were stacked over the entire surface of the clamp interspersed with layers of fuel. The top and sides of the clamp were encased with the waste products of previous firings to protect the bricks during the firing process. The clamp would then burn for two or three weeks, although larger clamps could burn for up to 12 weeks, and once cooled down the structure was dismantled.

6.8 There were a number of advantages for using the brick clamp, one of the main ones was that the clamp could be assembled on or very close to the building site. Also important was that the capacity of an average brick clamp was 30,000 – 45,000 bricks with larger versions accommodating up to 150,000 bricks[10]. However, the number of bricks suitable for building would have been much less than that contained within the clamp. Whilst it was possible to fire a vast quantity of bricks quickly and cheaply in comparison to other types of brick kiln, there was little control over the distribution and intensity of the heat, which means that many bricks misfired, vitrified and fused, whilst the bricks around the edges would not have been fired to a high enough temperature. As a consequence, there was a large quantity of waste produced. This is why there are great variations in the colour, texture and quality of bricks fired in clamps, something which is very much evident particularly in brick types A, B, C, and D at Hampton Court.

6.9 There are very few examples of mediaeval and postmediaeval brick clamps in the UK, but where evidence for their use has been uncovered, they are characteristically similar. Evidence uncovered ten years ago in Greater Beaulieu Park in Essex during the excavation of evaluation trenches, exposed the basal remains of two scove[11] or brick clamps as well as a clay pit. The clamps consisted of a layer of charcoal material overlain by intensely heated clay and brick debris. These clamps are particularly interesting as they may be associated with the nearby re-construction of

8 Harriss, J., Poole, C., Ford, B., (2017), p. 43.

9 It is worth noting that the term clamp and kiln was interchangeable in early literature (Proctor, J, Sabel, K and Meddens, F M)

10 Brunskill, (1997), p.27.

11 A scove kiln is similar to a brick clamp. The main difference is that the outer walls of the structure were covered with clay, mud or earth to reduce the loss of heat.

New Hall by Henry VIII (later renamed Beaulieu). A Tudor brick clamp was recorded during archaeological investigations in around 2008 at Beeleigh Abbey in Essex, whilst in Old Woking during test-pitting, a brick clamp associated with the construction of the 15th century Manor was partially uncovered[12]. Other examples of later brick clamps have been recorded in Greater London, including 17th-18th century examples at New Cross. All these examples present the same heat-affected soils and fired brick dust debris.

6.10 The potential discovery of a third and possibly fourth brick clamp in the grounds of Hampton Court Palace is significant not only for the fact that brick clamps are a rare find nationally, but also because it provides further evidence for the onsite brick kilns producing the vast quantity of bricks required to construct the Tudor palace predominantly during the Wolsey and Henrician phases[13]. There is extensive documentation in the building accounts for Hampton Court concerning the quantities of brick used in the construction of the buildings, although only the first year of Wolsey's construction campaign survives[14]. One of the earliest building accounts from 1515 recording payment to the Greenwich Brickmaker, Richard Recolver, states: *"… bricks ready delivered in to the works at Hampton Court, as appeareth in the fortnight next preceding, in prest upon the kiln which stands by my lord's manor place there esteemed to contain 300,000 bricks to be carried & delivered in to the works…[15]"*. Although the Works Accounts never state where the brick kilns were located, at least some of the kilns or clamps must have been metres from the palace, and in the 16th century, the present Great Fountain Garden would have still been part of the wider parkland. Another point to make is that the enormous quantity of brick contained in the said-kiln (300,000) would likely have been beyond the capacity of even the largest brick clamps. This however, can be accounted by the fact that the term Kiln or *Kyll* was used interchangeably to describe both the structure where the bricks were fired and where they were stored, i.e. the brickyard. It could also simply refer to brick coming from multiple kilns.

6.11 The Works Accounts show that individual brickmakers were paid for batches ranging from 100,000 to 1.495,000 bricks[16] but it is difficult to estimate how many brick clamps this would represent. According to Harriss, between 1533 and 1537, the thirty entries in the accounts referring to different suppliers firing bricks in the grounds of the palace must represent a minimum of 30 clamp firings[17]. During some intense periods of building works there were several different brickmakers firing bricks simultaneously. Until 2014, no evidence of brick clamps had ever been found, and with further evidence for their presence in the grounds of Hampton Court, one being immediately adjacent to the palace and the other nearly 2km away, indicates the expansive nature of their locality.

6.12 Other possible evidence for the existence of brick clamps in the Great Fountain Garden comes from the geophysical survey undertaken in 2011 on the southern half of the demi-lune grassed area (Fig. 12). A curious broad low amplitude zone with relatively clear limits was revealed by the ground penetrating radar survey (GPR) measuring approximately 27m E-W x 45m N-S. It was not clearly identifiable as a known feature in the gardens, but one interpretation at the time was that it may be some form of negative feature of a relatively late phase since it appeared to cut other responses. The feature was remarkably different in character from other suspected landscaping features. The other alternative was that it corresponded to a near-surface lens of material causing the radar signal to be attenuated and could potentially represent the installation of a temporary

12 Savage, R (2010)

13 There is some evidence indicating that brickmaking in or near the palace grounds continued into the mid-17th century, with reference in Pro Work/5/3 of brickmaker John Stevens fetching 5 thousand bricks from Bushey Park in July 1662.

14 In the period between 1533 and 1537 16 million bricks were fired in the grounds of Hampton Court, supplemented by 10 million bricks transported from further afield.

15 TNA E36/235, p835

16 Heath Archive Vol.16.

17 Harriss, J., Poole, C., Ford, B., (2017), p. 45

structure or surface laid down for an event in the past. It is difficult to interpret the patterns presented in the geophysical survey but given the shallow depths of the archaeology recorded during the 2018 watching brief, one possible explanation is that it indicates the presence of a feature or several features associated with brick-making.

HCP 106

6.13 The watching brief in 2013 (HCP106) did not appear to expose any evidence of brick kilns, however the project did reveal what appears to be a section of a crushed brick and mortar surface at approximately 0.3m BGL. Its appearance was much more mottled and heterogenous than the brick dust deposit recorded during the 2018 watching brief. Deposits of this nature have been found across the Hampton Court Palace grounds at similar levels, including in the works Yard, Tiltyard, and the Wilderness, and are usually associated with earlier garden paths. A small assemblage of brick, roof and floor tile, and fragments of mortar were collected from this site. It produced a relatively close date range of between 16th and 17th century, most brick associated with the Henrician type bricks (Types B, C, and D). The mix of materials collected, alongside the presence of mortar would tend to suggest that it corresponds to scattered demolition rubble associated with the destruction of the Tudor palace in 1689, rather than being indicative of waste material associated with brick firing.

Recommendations

6.14 The presence of archaeological deposits at relatively shallow depths highlights the Great Fountain Garden as an area with high archaeological potential.

6.15 It would be worthwhile to undertake more extensive geo-physical survey of the East Front and Home Park, including the Hampton Court Golf Course to determine the potential existence of other brick clamps/kilns, brick yards, brick drying sheds, and other structures associated with the construction of the Palace. The geo-physical surveys carried out in 2006 and 2011 only covered small targeted areas of the grounds.

6.16 Any intervention in the area of the Great Fountain Garden should be approached with due care and diligence and must be accompanied by archaeological mitigation and recording. Should the area occupied by the potential brick clamps in the Great Fountain Garden be excavated in the future, it is recommended that geo-morphological sampling through the deposits should be undertaken in order to establish the nature and origin of the soils. An attempt to retrieve dateable material from these deposits should also be made where possible.

8 Archive, Artefacts, and Ecofacts

8.1 The paper archive contains all the site records, including site registers, context sheets, site drawings (one plan at 1:100, 2 sections at 1:20). It also contains an A4 bound copy of this report.

8.2 The digital archive contains scans of all site records, database of context records, finds register, and a photographic register. There are 55 digital photographs in Tiff and Jpeg format associated with HCP 169, and 13 photographs associated with HCP 106, any duplicates or poor-quality photographs were deleted. There are short-cut links to research material in the HRP X-Drive used during the production of this report. All original copies of specialist reports associated with HCP 169 and HCP 106 have been retained in the digital archive.

8.3 No artefactual material will be retained from these projects, as they have limited or no archival value in terms of further research. However, certain items may be kept for handling purposes if relevant, most however will be discarded.

8.4 No environmental samples were taken during projects HCP 169 and HCP 106.

8.5 The physical, digital and paper archives will be deposited according to the HRP *Deposition of Archaeological Excavation Archives Guidelines 2015.*

9 Illustrations

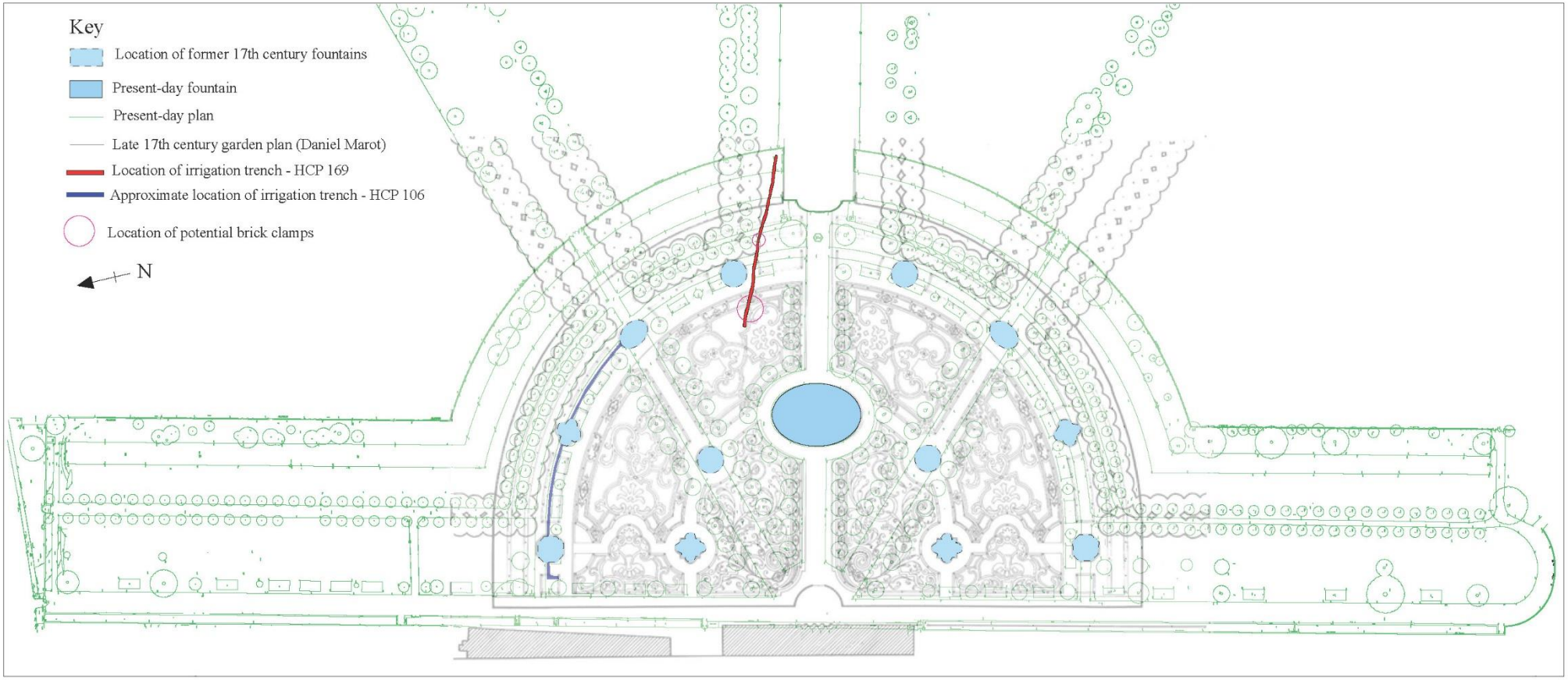

Figure 1: Trench location in the Great Fountain Garden, Hampton Court Palace

Figure 2: Excavated trench in the Great Fountain Garden; barriers collapsed during a windy day

Figure 3: Potential brick clamp at the western end of the trench, Deposits (**3**) and (**5**)

Key

Burnt black sand deposit

Red sand and brick dust

Small stones/gravels

Brick

Service

North-facing Section, Great Fountain Garden

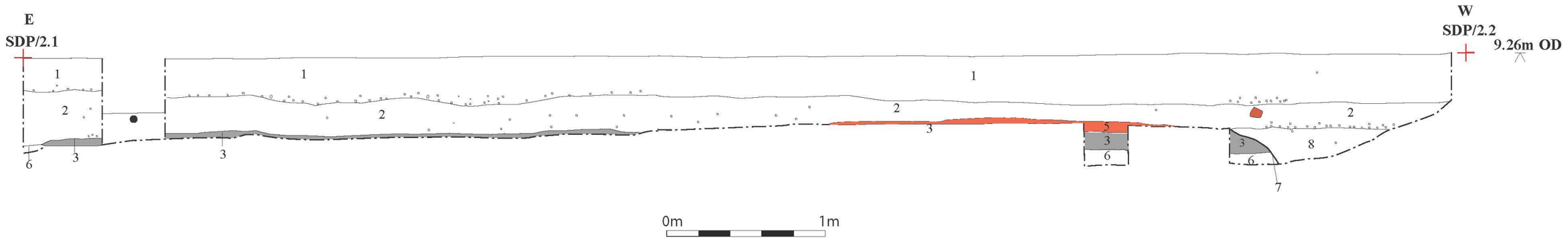

Figure 4: North-facing section illustrating the western-most area of burning

Figure 5: Possible pit feature [**7**] at the far west end of the trench

Figure 6: Potential brick clamp deposits (**15**) and (**16**), and gravel layer (**9**)

Figure 7: Brick Clamp in Home Park near the Kingston Gate shown in section

Figure 8: Deposits recorded in the Great Fountain Garden during HCP 106

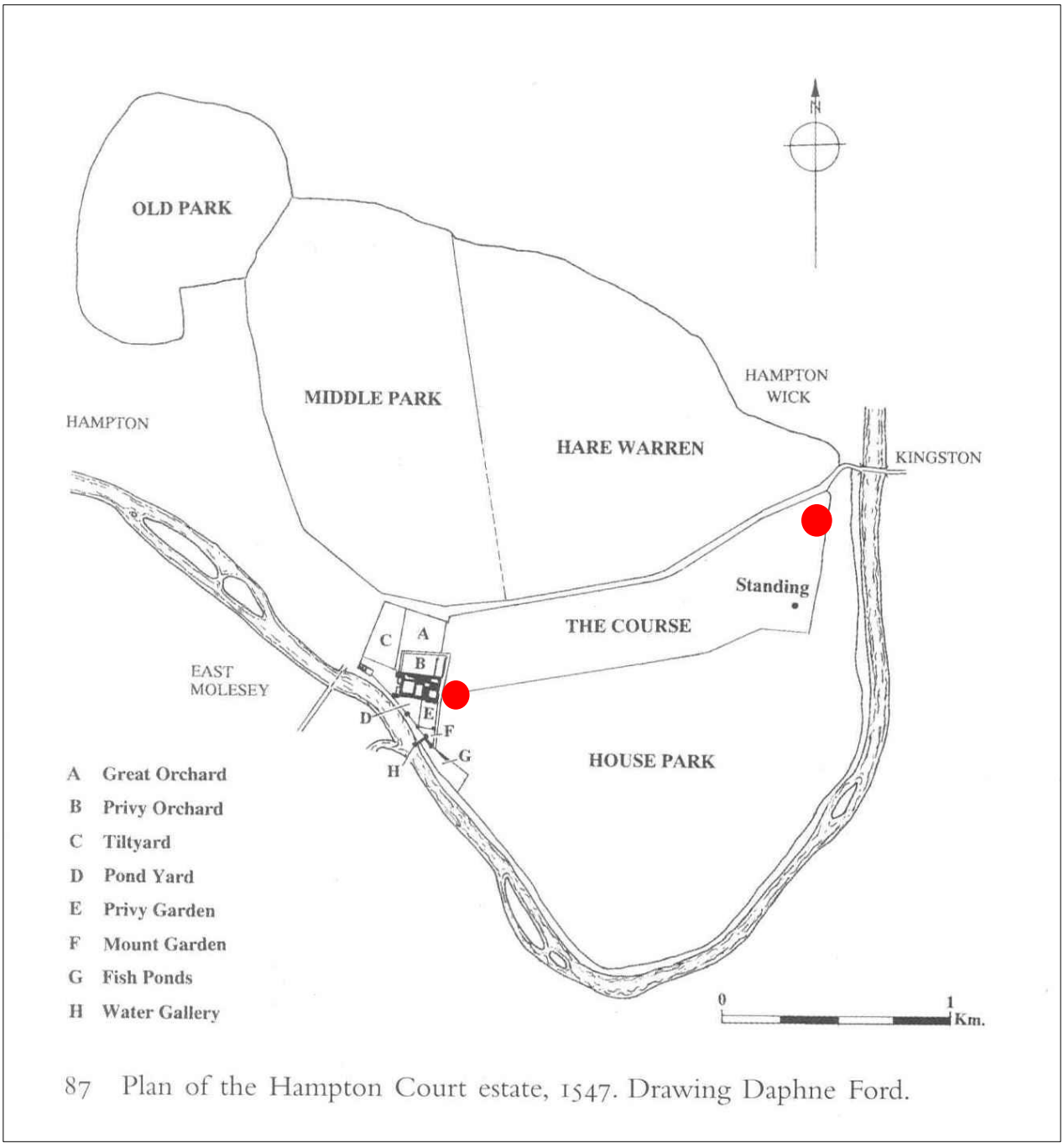

Figure 9: Plan of the Hampton Court estate illustrating the parkland stretching right up to the east front of the palace (Thurley, p.90). Approximate location of known brick clamps shown in red.

Figure 10: Leonard Knyff's bird's eye view of Hampton Court from the east, c.1705.

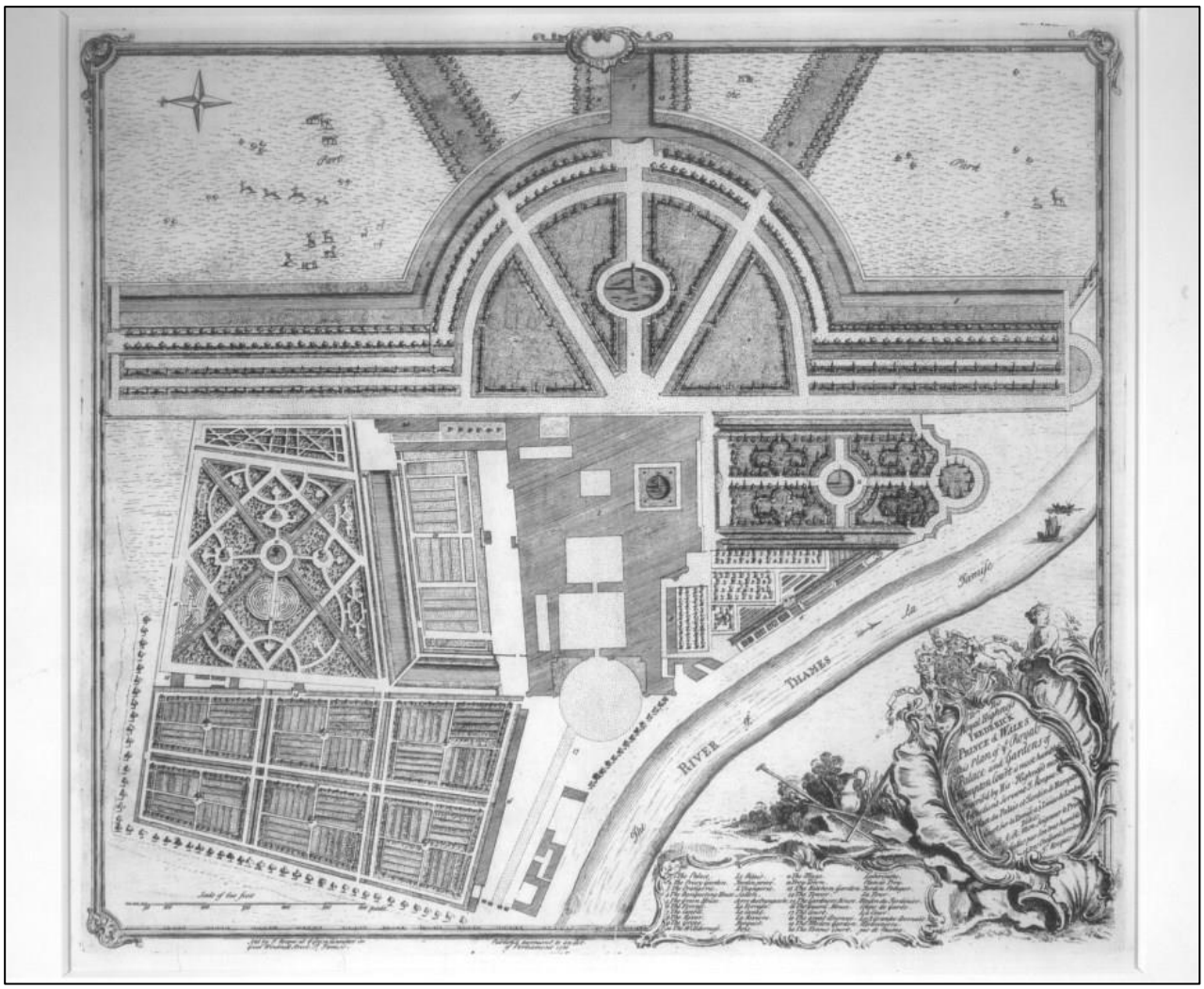

Figure 11: John Rocque's plan of Hampton Court and gardens, 1736, showing a much-simplified garden on the East Front

Figure 12: Plans showing the results from the GPR survey, the area of low amplitude signal is represented by the blue area 7

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The Gerald Heath Archive Hampton Court Palace Pipes Hearth Archive – Volume 15. HRP.

The Gerald Heath Archive Hampton Court Palace Bricks 1529-1538 Hearth Archive – Volume

16. HRP.

The Gerald Heath Archive Hampton Court Palace Bricks and tiles 1567-1660 Hearth Archive –

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11 Appendix I

Context Inventory

			Levels m OD		Dimensions			
Context No.	**Type**	**Description**	**Highest**	**Lowest**	**N-S**	**E-W**	**Thickness/ depth**	**Finds**
1	Deposit	Topsoil	9.26	8.86			up to 0.35	
2	Deposit	Subsoil - soft light brown silty sand, medium dampness, flecks of CBM, occasional brick fragments, frequent gravels at the top and bottom interfaces	9.06	8.76				Clay pipe, pot, CBM
3	Deposit	Black homogenous compacted coarse sand, appears in patches, it overlies (6) and (4)	8.76	8.6		8.5	0.15	
4	Deposit	Soft homogenous damp sand - former garden soil? Only a small area recorded in section	8.6					
5	Deposit	Compacted red brick dust and sand overlying (3)	8.82	8.78		3.5	0.04	
6	Deposit	Soft homogenous grey sandy material, few inclusions, cut by [7] - associated with (3), possibly levelling material	8.64	8.55			0.1+	
7	Cut	Sub-round cut feature with convex sides at the top, steed edge, base not reached; filled by (8), sealed by (2)	8.76	8.56+			0.24+	
8	Fill	Soft homogenous silty sand similar in nature to the subsoil; contained occasional flecks of CBM; overlies (3), fill of [7]	8.76	8.56+			0.24+	
9	Deposit	Loose, coarse sandy gravels located towards the middle/eastern end of the trench, later disturbance; overlies (2)	9.25	8.59			0.4	

10	Deposit	Compact sandy gravels associated with contemporary pathway					0.04-0.09	
11	Deposit	Coarse pink gravels; plastic in texture - make-up layer below (10)					0.02	
12	Deposit	Yellow, coarse sandy gravels - make-up layer for contemporary path					0.04-0.06	
13	Deposit	Heterogenous silty sand with occasional CBM, gravels and small stones - make-up layer associated with contemporary path					0.2	
14	Deposit	Rubble/demolition material - levelling deposit associated with contemporary path						
15	Deposit	Equivalent of (3), located towards the east of the trench, and south of the path; underlies (16)				1.45		
16	Deposit	Equivalent of (5), located towards the east of the trench, and south of the path; overlies (15)				1.2		

Photographic Register

Shot No.	Description	View	Scale
1	General view of trench, deposits (15) and (16)	E/SE	N/A
2	General view of trench	E	N/A
3	General view of trench	E	N/A
4	Section through the gravel path north-east of the Long Water	N	1m
5	Oblique view of the section through th gravel path, contexts (10)-(14)	E/NE	1m
6	Detail view of stratigraphy beneath the path, contexts (10)-(14)		0.3m
7	General view of eastern end of trench	E	N/A
8	General view of eastern end of trench	E	N/A
9	West end of the trench illustrating cut [7], and contexts (3) and (5)	E	1m
10	West end of the trench illustrating cut [7], and contexts (3) and (5)	E	1m
11	Small intervention to look at contexts (3) and (5)	N	1m
12	Context (5)	N	1m
13	Contexts (5) and (3)	N	1m
14	Context (3)	N	1m
15	Context (3)	N	1m
16	Context (5), cut by (broken) irrigation pipe	N	1m
17	Context (4)	N	1m
18	Context (4)	N	1m
19	Context (4)	N	1m
20	Context (4)	N	1m
21	Context (4) and irrigation pipe	N	1m
22	Context (4)	N	1m
23	Context (2)	N	1m
24	Context (2) and irrigation pipe	N	1m
25	Context (2)	N	1m
26	Context (2)	N	1m
27	Contexts (2) and (4)	N	1m
28	Context (15)	N	1m
29	Contexts (16) and (15)	N	1m
30	Gravels (9)	N	1m
31	General view of trench	W	1m
32	Detail profile view of (3)	E	0.3m
33	Great Fountain Garden	SW	N/A
34	Context (8)	N	0.3m

35	Box section through (3) and (5)	N	0.3m
36	Box section through (3) and (5)	E	0.3m
37	Box section through (3) and (5)	S	0.3m
38	Contexts (5) and (3)	E	N/A
39	Contexts (5) and (3)	E	1m
40	Contexts (5) and (3)	E	1m
41	Pit feature [7], fill (8)	S	0.3m
42	Pit feature [7], fill (8)	S	0.3m
43	Box section through (3) and (5)	S	0.3m
44	Box section through (3) and (5)	N	0.3m
45	Section through topsoil and subsoil	S	N/A
46	Section through topsoil and subsoil	S	N/A
47	Context (15)	N	N/A
48	Contexts (15) and (16)	E	N/A
49	General view of excavation; barriers collapsed after a windy day	E	N/A
50	Gravels (9)		N/A
51	Gravels (9)		
52	Far eastern end of trench	E	N/A
53	General view of trench	E	N/A
54	General view of trench	W	N/A
55	General view of trench	W	N/A

12 Appendix II

Oasis Data Form

OASIS DATA COLLECTION FORM: England

List of Projects | Manage Projects | Search Projects | New project | Change your details | HER coverage | Change country | Log out

Printable version

OASIS ID: historic9-378854

Project details

Project name	East Front Irrigation, Hampton Court Palace
Short description of the project	On the 7th and 8th March 2018 Historic Royal Palaces undertook a watching brief in the Great Fountain Garden, Hampton Court Palace. The project was undertaken to mitigate the excavation work required for the installation of irrigation pipes. The watching brief exposed buried garden soil horizons overlain at the western and central portions of the trench by a layer of compacted gritty burnt black sand followed by a rich red compacted sand and brick dust layer. These deposits may be evidence for the 16th-century brick clamps documented in the Hampton Court Building Accounts. These deposits were truncated at the western end of the trench by a later sub-round garden feature. Towards the eastern end of the trench a series of 20th-century rubble deposits and gravelly make-up layers associated with the present-day gravel pathways were recorded. This report also combines the results of a similar watching brief undertaken in 2013 mitigating the impact of the installation of irrigation pipes on the north side of the grassed demi-lune area in the Great Fountain Garden. Gravel deposits overlying a compacted brick, mortar and charcoal layer located at roughly 0.45m below ground level were encountered.
Project dates	Start: 07-03-2018 End: 08-03-2018
Previous/future work	Yes / Not known
Any associated project reference codes	HCP 169 - Sitecode
Any associated project reference codes	HCP 106 - Sitecode
Type of project	Recording project
Current Land use	Other 5 - Garden
Monument type	PARKLAND Medieval
Significant Finds	NONE None
Investigation type	""Watching Brief""
Prompt	Standing Scheduled Monument Clearances

Project location

Country	England

Site location	GREATER LONDON RICHMOND UPON THAMES RICHMOND UPON THAMES The Great Fountain Garden, Hampton Court Palace
Postcode	KT8 9AU
Study area	0 Kilometres
Site coordinates	TQ 15955 68457 51.40277048059 -0.332817314698 51 24 09 N 000 19 58 W Point

Project creators

Name of Organisation	Historic Royal Palaces
Project brief originator	Alexandra Stevenson
Project design originator	Alexandra Stevenson
Project director/manager	Graham Dillamore
Project supervisor	Alexandra Stevenson

Project archives

Physical Archive Exists?	No
Digital Archive recipient	Historic Royal Palaces
Digital Archive ID	3910095 and 3910063
Digital Media available	"Text","Images raster / digital photography","Spreadsheets"
Paper Archive ID	3910095 and 3910063
Paper Media available	"Context sheet","Drawing","Report"

Project bibliography 1

Publication type	Grey literature (unpublished document/manuscript)
Title	East Front Irrigation, Hampton Court Palace, HCP 169 and HCP 106 - An Archaeological Watching Brief Report
Author(s)/Editor (s)	Stevenson, A
Date	2020
Issuer or publisher	Historic Royal Palaces
Place of issue or publication	Hampton Court Palace
Description	A4 digital and bound copy

Entered by	Alexandra Stevenson (alexandra.stevenson@hrp.org.uk)
Entered on	13 January 2020

OASIS:

Please e-mail Historic England for OASIS help and advice