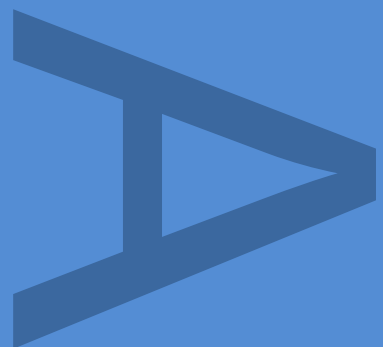


**THE GREAT PAGODA, ROYAL  
BOTANIC GARDENS, KEW,  
LONDON BOROUGH OF RICHMOND  
UPON THAMES**

**ARCHAEOLOGICAL EVALUATION**

**PCA REPORT NO: R11689**

**APRIL 2014**




**PRE-CONSTRUCT ARCHAEOLOGY**

## DOCUMENT VERIFICATION

# THE GREAT PAGODA, ROYAL BOTANIC GARDENS, KEW

## ARCHAEOLOGICAL EVALUATION

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**An Archaeological Evaluation at The Great Pagoda,  
Royal Botanic Gardens, Kew, London Borough of  
Richmond upon Thames, TW9 3AB**

**Site Code: To be confirmed**

**Central National Grid Reference: TQ 18471 76076**

**Written and Researched By Alexis Haslam**

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**April 2014**

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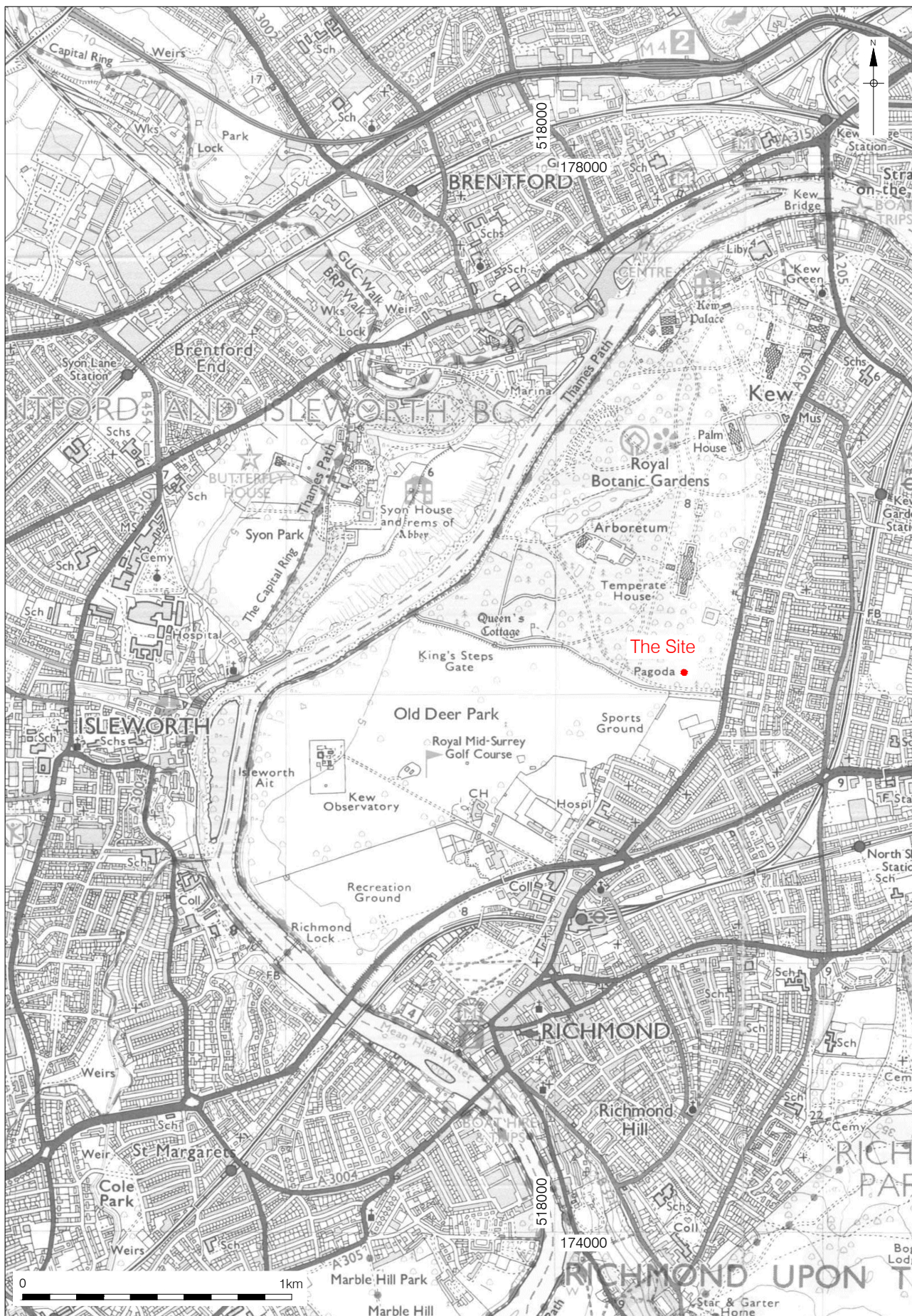
## **1 ABSTRACT**

- 1.1 This report details the results of an archaeological evaluation undertaken at The Great Pagoda, Royal Botanic Gardens, Kew, London Borough of Richmond upon Thames, TW9 3AB. The evaluation was commissioned by Historic Royal Palaces as part of initial investigation works prior to further conservation, and took place between the 24th and 25th of March 2014. The Pagoda is located in the south eastern corner of Kew Gardens.
- 1.2 An evaluation comprising a single 1m x 1m trench was excavated in attempt to find a series of steps and/or other architectural features depicted by Sir William Chambers in an elevation of the Pagoda dating to c. 1761. This image appears to show the former ground level surrounding the Pagoda at a lower height than the modern ground surface, with a series of three access steps situated on four sides of the octagonal Pagoda base. The evaluation trench was located on the south side of the Pagoda, opposite the southern arched headed doorway.
- 1.3 The evaluation trench was sealed by a metalled gravel surface which was underlain by an earlier tarmac surface and two associated bedding deposits. Beneath these modern horizons was a layer of subsoil which was most probably associated with the earlier ground surface surrounding the Pagoda. Immediately beneath the subsoil an oval cut was observed. This was filled with a chalk rubble deposit which suggested that it had been used as packing, possibly to support a scaffold post once situated within the cut and used during the construction of the Pagoda itself. Beneath this posthole was a thick deposit of redeposited natural sand which abutted the brick footing of the Pagoda. This suggested that this deposit may have represented the backfill of the construction cut for the Pagoda which extended beyond the confines of the trench.

## **2 INTRODUCTION**

- 2.1 This report details the results and working methods of an archaeological evaluation undertaken by Pre-Construct Archaeology Ltd at The Great Pagoda, Royal Botanic Gardens, Kew, London Borough of Richmond upon Thames, TW9 3AB. The evaluation took place between the 24th and 25th of March 2014.
- 2.2 The evaluation trench was located on the south side of the Pagoda which was surrounded by a metalled gravel surface at the time of the evaluation. The Pagoda itself is located in the south-eastern corner of Kew Gardens with Hoxton Lane situated to the south, the Japanese Gateway & Landscape to the west, the Pavilion Restaurant and Temperate House to the north and the Lion Gate on Kew Road to the east.
- 2.3 A Health and Safety Risk Assessment (Bradley 2014) was prepared prior to the fieldwork commencing.
- 2.4 The National Grid Reference of the site is TQ 18471 76076.
- 2.5 The project was monitored for the client by Lee Prosser (Curator - Historic Royal Palaces) and Rob Umney (Conservation Building Surveyor - Historic Royal Palaces). The fieldwork was project managed by Tim Bradley and was supervised by the author, Alexis Haslam.
- 2.6 The site archive will be deposited with the Historic Royal Palaces archive at Hampton Court under a Site Code to be issued by Historic Royal Palaces.





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Figure 1  
Site Location  
1:20,000 at A4



### **3 PLANNING BACKGROUND**

- 3.1 On the 27th of March 2012 the Department for Communities and Local Government issued the National Planning Policy Framework (NPPF). Section 12 of this policy framework is entitled 'Conserving and Enhancing the Historic Environment' and replaces Planning Policy Statement 5 (PPS5), which had previously been adopted in March 2010. PPS5 replaced the earlier Planning Policy Guidance Note 16 (PPG16). As such, Section 12 provides guidance for planning authorities, property owners, developers and others on the preservation and investigation of archaeological remains.
- 3.2 In considering any planning application for development, the local planning authority will be guided by the policy framework set by government guidance, in this instance NPPF Section 12, by current Structure and Local Plan policy and by other material considerations.

#### **ARCHAEOLOGY IN THE LONDON BOROUGH OF RICHMOND UPON THAMES AND THE DEVELOPMENT MANAGEMENT PLAN**

- 3.3 The relevant Local Development Framework is provided by the Development Management Plan which was adopted in November 2011. This plan contains policy statements in respect of protecting the buried archaeological resource. The site is subject to the Council's Archaeology Policy:

##### **Policy DM HD 4**

##### **Archaeological Sites**

**The Council will seek to protect, enhance and promote its archaeological heritage (both above and below ground), and will encourage its interpretation and presentation to the public. It will take the necessary measures required to safeguard the archaeological remains found, and refuse planning permission where proposals would adversely affect archaeological remains or their setting.**

4.3.18 Archaeology can include industrial sites, buildings, machinery, artifacts, air raid shelters and modest domestic buildings. The preservation of archaeological remains is a material consideration when determining planning applications. As set out in PPS 5, there is a presumption in favour of preservation in-situ, where the remains are of national importance. While it is desirable to treat all remains in this manner, it is recognised that it may not always be practical to do so.

4.3.19 However, regardless of their status, established procedures of consultation



and evaluation as set out in PPS 5 and other advice must be followed in preparing development proposals. Prospective developers should make an initial assessment of whether the site is known or likely to contain archaeological remains by consultation with the appropriate specialist bodies, normally English Heritage and the Greater London Archaeological Advisory Service. The Proposals Map identifies scheduled ancient monuments. The Archaeological Constraints map (Map 1) identifies areas with archaeological potential where sites of importance could exist, but not all sites of archaeological importance will necessarily be on the constraints map; developers should check the latest known information with English Heritage.

4.3.20 The Council wishes to endorse the spirit of the Code of Practice already established by The British Archaeologists and Developers Liaison Group and developers are also referred to advice published by English Heritage.

3.4 The Pagoda itself is a Grade 1 Listed Building and is therefore subject to the Council's policies regarding Listed Buildings and Scheduled Ancient Monuments:

## **Policy DM HD 2**

### **Conservation of Listed Buildings and Scheduled Ancient Monuments**

**The Council will require the preservation of Listed Buildings of special architectural or historic interest and Ancient Monuments and seek to ensure that they are kept in a good state of repair by the following means:**

- 1. consent would only be granted for the demolition of Grade II Listed Buildings in exceptional circumstances and for Grade II\* and Grade I Listed Buildings in wholly exceptional circumstances following a thorough assessment of their significance;**
- 2. retention of the original use for which the listed building was built is preferred. Other uses will only be considered where the change of use can be justified, and where it can be proven that the original use cannot be sustained;**
- 3. alterations and extensions including partial demolitions should be based on an accurate understanding of the significance of the asset including the structure, and respect the architectural character, historic fabric and detailing of the original building. With alterations, the Council will normally insist on the retention of the original structure, features, material and plan form or features that contribute to the significance of the asset. With repairs, the Council will expect retention and repair,**

**rather than replacement of the structure, features, and materials of the building which contribute to its architectural and historic interest; and will require the use of appropriate traditional materials and techniques;**

- 4. using its legal powers to take steps to secure the repair of Listed Buildings, where appropriate;**
- 5. protecting the setting of Ancient Monuments and Listed Buildings where proposals could have an impact;**
- 6. taking a practical approach towards the alteration of Listed Buildings to comply with the Disability Discrimination Act 2005 and subsequent amendments, provided that the building's special interest is not harmed, using English Heritage advice as a basis.**

4.3.6 Listed Buildings and Ancient Monuments make a major contribution to the borough's heritage and the Council has a statutory duty to protect them. The borough's three Ancient Monuments are: The Brew House, Bushy Park; Hampton Court Palace; and Kew Palace; These come under the jurisdiction of the Department of Culture, Media and Sport for planning control purposes. There are currently over 1,600 Listed Buildings in the borough, generally the Council has power to grant listed building consent for demolition or works to these; with some categories this is subject to approval by English Heritage.

4.3.7 PPS 5 sets out a general presumption in favour of the conservation of such buildings and harm or loss should be wholly exceptional. Any such proposals would be subject to the tests within HE 9.2 of PPS 5. Generally, the original use for which historic buildings were designed and built should be continued because it will have the least impact on their character or appearance. However, there may be cases where a change of use may be the only viable way to keep them in active use. Where this is the case, the onus will be on the applicant to justify the new use, and to demonstrate on balance that it will be compatible with the fabric, exterior, interior and the setting of the historic building, and will not detract from other evidential, historic, aesthetic or communal heritage values, in line with HE 9.5 of PPS 5.

4.3.8 The character of historic buildings and their contribution to the townscape can be severely diminished through insensitive alteration, extension or neighbouring development, or through neglect and dilapidation. When considering proposals for works to, or within the settings of, Listed Buildings or Ancient Monuments, special attention will be paid to:

1. conserving original architectural features such as windows, doors, chimney stacks, walls and gates;

2. the scale, proportions, design and materials of new proposals in relation to the existing heritage asset;
3. retaining original or historic garden or landscape features;
4. the effect of development on the setting of the historic heritage asset;
5. detriment to the significance of the heritage asset.

4.3.9 Detailed guidance contained within the PPS 5 Practice Guide, Guidance on Alterations to Listed Buildings, will be followed in considering suitability of proposals. Legislation places upon those who own or manage Listed Buildings an obligation to ensure that they are properly maintained and where appropriate the Council will use its powers to ensure that this is done, particularly if the asset is on the Heritage at Risk register.

4.3.10 Various bodies make loans or give grants for the repair or replacement of original features using traditional or sympathetic materials or requiring the use of specialist materials and craftsmanship, and the Council may be able to assist owners to secure such assistance.

4.3.11 The Disability Discrimination Act 2005 does not just require physical access for disabled people, but also equal access to services. It is recognised that there may be difficulties in altering a Listed Building to meet modern day access standards and that sometimes a compromise is required. However, it must be demonstrated that any works of alteration to improve the accessibility of a listed building does not harm its special interest. The English Heritage Guidance "Easy Access to Historic Buildings" is recommended as a practical guide and is available free of charge from [www.english-heritage.org.uk](http://www.english-heritage.org.uk).

4.3.12 Applications for alterations and extensions to Listed Buildings need to be to a high standard of accuracy and detail. Drawings should therefore include sufficient information to convey the exact nature of the proposals and of the existing building and should include survey drawings and plans, elevations and sections at 1:100. Further drawings at 1:20 or full size may be required in certain cases. The Council has also produced supplementary planning guidance on the repair and maintenance of historic buildings. Further advice can be obtained from "A Stitch in Time" available free of charge from [www.ihbc.org.uk](http://www.ihbc.org.uk).

3.5 Since 2003 the Royal Botanic Gardens at Kew have been classed as a Unesco World Heritage Site:

## **Policy DM HD 5**

### **World Heritage Site**

**The Council will work with others, to protect, promote, interpret, sustainably use, conserve and where appropriate enhance the Royal Botanic Gardens Kew World Heritage Site and its setting including the buffer zone by conserving its Outstanding Universal Value, integrity, authenticity and significance. Development proposals should not cause adverse impact to the World Heritage Site or its setting that would compromise its Outstanding Universal Value, integrity, authenticity and significance, and give appropriate weight to the World Heritage Site Management Plan.**

4.3.21 The Royal Botanic Gardens Kew was inscribed on the UNESCO World Heritage Site List in 2003, in recognition of its outstanding and internationally significant universal value. In accordance with Planning Policy Statement 5: Planning for the Historic Environment (2010), the outstanding international importance of the World Heritage Site is a key material consideration to be taken into account by the Council when determining planning applications and listed building consents. The site should be protected for the benefit of future generations and development proposals affecting the site or its buffer zone will require careful scrutiny for their likely effect on the site or its setting.

4.3.22 The Royal Botanic Gardens, Kew World Heritage Site Management Plan (2003) and subsequent updates provides a framework for the activities that take place in the site whilst ensuring that these activities do not conflict with the need to protect the qualities which make Kew Gardens such a special and unique place.

3.6 The Royal Botanic Gardens comprise Conservation Area 63, as designated by the London Borough of Richmond Upon Thames.

## **4 GEOLOGY AND TOPOGRAPHY**

- 4.1 The Geological Survey of Great Britain (South London – Sheet 270) shows the site as lying upon Quaternary River Terrace 1. These gravels were most probably deposited during the Saalian or Wolstonian stadial between 380,000 and 130,000 BP. They are often capped by alluvial deposits along with Aolian or wind-blown sandy brickearths.
- 4.2 The Pagoda is situated within the south-eastern corner of Kew Gardens, a relatively flat parcel of land which is cradled in a wide meander of the River Thames. The area has been cultivated for almost 300 years as a botanical and ornamental garden, with the gardens themselves comprising paths, listed buildings, glasshouses and modern structures in the form of laboratories and amenities.



## **5 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND**

### **Prehistoric**

- 5.1 The early environment of the Thames Valley is well researched, principally due to the preservation of extensive undisturbed deposits. This has established that following the retreat of the ice sheets some 13,000 years ago, the Thames formed a braided river system with tundra-type vegetation which gradually yielded to colonisation by herbaceous plants and grasses on an open steppe. It was at this point that the first Palaeolithic hunters probably began to exploit the area, although evidence for the period is problematic. Many finds, which exclusively comprise stone tools, are often found as redeposited material, while the brickearth deposits over much of the area post-date the period and have thus obscured almost all primary contexts. A single flake has been recovered to the east within the Royal Botanic Gardens, but remains the only point of reference for a wide area.
- 5.2 The Mesolithic period (c.10, 000-7000 BC) was probably one of greater activity. Pine and birch forests appeared, followed by mixed deciduous woodland as the climate became warmer. Mesolithic people hunted extensively along the Thames but lived an itinerant lifestyle. This nomadic movement coupled with a small population has left only the most ephemeral evidence. Occupation evidence is known from High Street, Brentford, with a flint-working site at Kew Bridge, but no evidence has been found within the immediate area of the site.
- 5.3 Along the Thames, the Neolithic period (7000 – 2500 BC) is characterised by a decline in elm and other woodland species coupled with an expansion of cereal cultivation, suggesting that localised areas were cleared for permanent occupation and agriculture. The wide meander which the Royal Botanic Gardens occupies is practically devoid of sites, although occupation is attested in Brentford and stone tools have been recovered at Kew Pond and from the river at Kew Bridge.
- 5.4 Cultivation and development seems to have continued or even expanded into the Bronze Age, with the extensive utilisation of the river environment for food, transport and even for religious or ritual purposes. The earliest surviving evidence of permanent landscape features in the area have been dated to this time, although are confined to the north of the river. Scattered pottery to the east suggests that some occupation took place, while a founders' hoard to the south and implements to the east indicate that there is still much to be found from the period.
- 5.5 The Iron Age (c.700 BC – 1st century AD) is poorly known throughout the London region, and corresponds to a regeneration of some woodland species in the pollen record. Environmental evidence is still under-represented but it has been suggested that frequent and extensive inundation by the Thames discouraged or even drove off any pre-existing occupation in the area. A few ditches and pits have been discovered

during evaluations to the north of the river, but otherwise the record is practically blank.

### **Roman**

- 5.6 Roman London is perhaps one of the best-known urban areas of the Roman Empire, yet even at a slight distance from the city walls the archaeological evidence diminishes. The heavy clays probably discouraged agriculture and large settlement, although extensive woodland may also be inferred by the widespread presence of tile and pottery manufactories which needed almost inexhaustible supplies of wood for charcoal. Immediately to the north of the river the road from *Calleva* (Silchester) to London was laid out in the 1st century, and roadside settlement in one form or another would be expected. Such settlement appears largely absent however. Even casual finds of scattered pottery or coins are not widely distributed across the western part of Greater London, suggesting a general paucity of activity.

### **Saxon**

- 5.7 When the region emerges into the historical record in the 7th century a series of large rural estates can be discerned, peppered with royal or ecclesiastical centres of some importance. These large villas often formed the basis for later expansion into towns and cities. The lands around Kew formed part of the great royal estate of Kingston, although archaeological finds in the vicinity have illuminated the earliest Saxon development in the area. A collection of 6th or 7th century weapons has been recovered from the Thames at Brentford, which probably lay at the first fording site up-river from the City. Scramasaxes and swords, spears, a shield boss and other items form part of a highly important assemblage for the region, though the collection was discovered in the 19<sup>th</sup> century and its context is lost. At Strand-on-the-Green to the north of Kew Bridge, pottery has been found, while axes and spears have also been recovered from the Thames at the bridge site.

### **Medieval**

- 5.8 From its earliest records, Kew or Cayho (from the Old English: a neck of land by a landing place – Weinreb *et al* 2008, 456) lay within the great royal patrimony of Kingston, which also included Maldon, Thames Ditton, Richmond and Petersham. Though it may have been an early estate, no village or nucleated settlement is recorded until after the 14th century, reinforcing its primary agricultural, and peripheral nature. Field names in the area suggest the existence of heath and woodland, although a survey of the manor of Sheen taken in 1314 (PRO SC11/638)

records large messuages or properties owned by tenants such as Richard of Cayho, Alice of Cayesho and John le Clerke of Cayesho, suggesting that a pattern of dispersed farmsteads or a small, discrete hamlet was in existence at this time. A short distance to the south, the royal palace of Sheen was to spring up in the 14th century, followed shortly by a Carthusian monastery, which in turn meant a substantial development of the landscape with deer parks and the squeezing of the agricultural land available for local farming tenants.

### **Post-medieval**

- 5.9 The proximity of Kew to Sheen and the Court meant that it became fashionable as a place of residence for the nobility, reinforced by the convenience of the river as the main route of transportation. Princess Katherine, daughter of King Edward IV (1461-1483) is the first notable person recorded as living at Kew, and many others followed.
- 5.10 It seems that houses were built as part of a speculative venture. One Thomas Byrkes divided a freehold into small plots for sale, and even sponsored the licensing of a chapel of ease for local, more convenient worship. Thereafter a number of prominent residences, all ringing the river devolved into the hands of noble families or individuals, including the Earls of Devon, Henry Norris, John Dudley and Charles Brandon, Duke of Sussex, with his wife, Mary, widow to King Louis XII of France.
- 5.11 The tenure and development of these properties is complex, and has not been completely deciphered (Cloake 2001), as many disappeared into obscurity within a relatively short space of time. Several survived however, and Kew itself continued to develop, even after the destruction of Richmond Palace and the monastery. Several families of note, including the Portman family built up consolidated estates from the various fragmented land-holdings, and the purchase of a lease by Queen Caroline in 1729 gave Kew a new social cachet which ensured success and development.
- 5.12 The subsequent development of the gardens is attested as early as 1678 when John Evelyn mentioned both the orangerie and myrtetum whilst visiting Sir Henry Capel (Weinreb *et al* 2008, 711). It was however under Frederick, Prince of Wales, and his wife Augusta that the gardens really began to evolve. In 1731 Frederick leased the White House and the grounds from the Capel family, an area which forms the northern part of the present gardens. He introduced a pleasure garden to the grounds and following his death Augusta continued with further improvements. Under the guidance of Lord Bute and the head gardener, William Aiton, she created a botanic garden of 9 acres in 1759 (Weinreb *et al* 2008, 711). The successors of Frederick and Augusta ensured the continuing prosperity of Kew in the 18th century, both as a place of recreation and an aristocratic residence. The Green developed, and became popular with French émigrés after the French Revolution, developing into an idyllic

village environment, which was greatly favoured by George III and his consort Queen Charlotte. Kew itself, always an adjunct of Richmond and Kingston was finally made into a separate parish in 1769.

- 5.13 The western part of the gardens was attached to the now vanished Richmond Lodge, a residence of George II and the grounds had been laid out by his wife, Queen Caroline under the guidance of Charles Bridgeman. At around c. 1770 the grounds of the lodge were altered and improved by Lancelot 'Capability' Brown after the property had passed to George III. It was under George II that the Lodge grounds and gardens were united (Weinreb et al 2008, 711). The abandonment of Kew as a royal residence after 1818 resulted in a certain level of decline which, coupled with the rise of industrial blight in nearby Brentford, meant that the gardens were all but abandoned by the 1830's. In 1840 the gardens were handed over to the nation as a result of a Royal Commission which led to the establishment of the Royal Botanic Gardens (Prosser 2013, 9). The gardens were opened to the public in 1899 by Queen Victoria. The last quarter of the 19th century also witnessed an unprecedented expansion of suburban development at the fringes of the gardens, with the arrival of the railway, and the development of suburban life as London expanded to incorporate the formerly rural parish. In 2003 the gardens were designated as a World Heritage site by UNESCO.

### **The Great Pagoda**

- 5.14 Based upon the Porcelain Pagoda at Nanking (Prosser 2013, 25), the Great Pagoda at Kew was designed by Sir William Chambers and was constructed within 6 months during the winter of 1761-1762 (Prosser 2013, 26). Construction of the building itself is likely to have been funded from the privy purse of Princess Augusta or of the King himself (Prosser 2013, 16) and according to Horace Walpole cost £12,000 (Prosser 2013, 26). Despite the importance of pagodas within Taoist and Buddhist theology, in Europe these structures came to represent the exotic nature of East Asia and were erected as ornamental buildings in the 'Chinoiserie' style. The Great Pagoda at Kew is no exception and was built as a folly; designed to amuse the eye, reflect the sophistication of royal patronage and to act as a prospect tower which afforded dramatic views from the top (Prosser 2013, 4).
- 5.15 The Pagoda is constructed of brick on an octagonal profile, rising through ten stories to a finial at a height of 163 feet (50m). It is punctuated at each level by glazed doors and timber balconies beneath roofs of grey slate. The brickwork is all by the noted bricklayer Solomon Brown, laid in a Flemish bond of yellow/pink fabric with fine Georgian struck jointing. The lowest roof is slightly swept at the eaves, and is supported by a colonnade of 24 slender columns. The Pagoda sits on a large plinth of

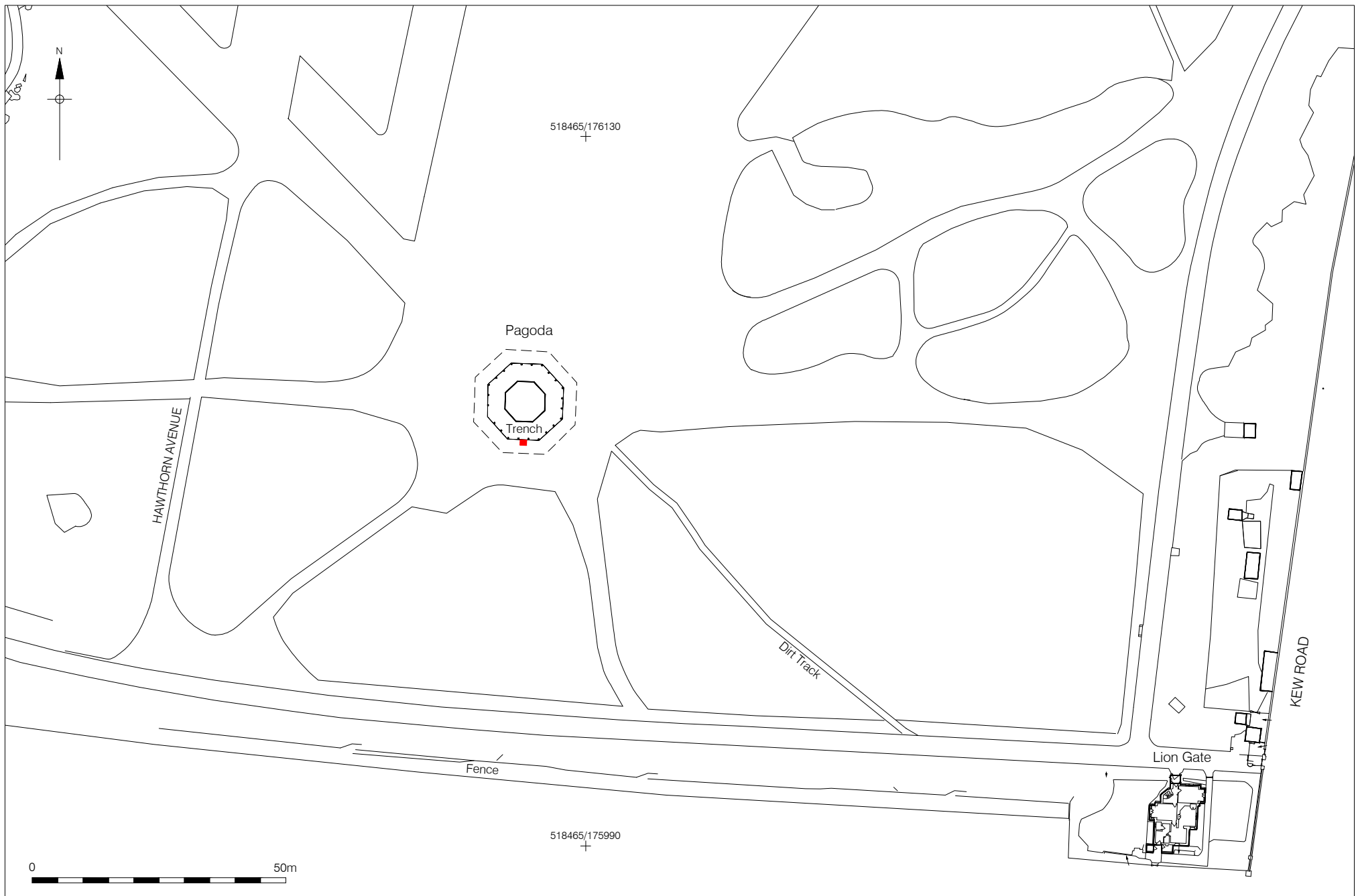
radiating Portland flags, and was once raised as a single step from the surrounding area (Prosser 2013, 11).

- 5.16 When first built, the Great Pagoda is believed to have been roofed with glazed or enamelled iron slates, with a total of 80 gilded or painted iridescent dragons individually positioned at the hips of each roof (Prosser 2013, 26). One of the earliest depictions in painting also suggests that balustrade was painted white. Change appears to have occurred quickly however, and in 1784 a coppersmith and tiler were employed to slate the roofs. It may have been during this episode of renovation that the dragons were removed (Prosser 2013, 26). Notably in February 1789 King George III, whilst suffering from his illness, attempted to ascend the Pagoda and had to be forcibly restrained by his attendants from doing so (Prosser 2013, 26).
- 5.17 Following the death of George III in 1820 the Pagoda, along with the rest of the estate was neglected. By the time the Royal Botanic Gardens were established in 1840 it was in desperate need of repair. The architect, Decimus Burton, who was working on the Palm House at the time, drew up a number of sketches and proposals, yet the estimated cost of £3,500 was deemed too dear. Some work was clearly undertaken however, as analysis of the paint suggests that it dates to this period and technical analysis implies that at least the lower two roof tiers were substantially reconstructed in the mid 19th century (Prosser 2013, 27).
- 5.18 The Pagoda was repainted in 1895 and the terminal pole was replaced in 1915. It was during this period that most of the existing red and vermilion colour schemes were first applied. During the Second World War permission was granted for the Royal Aircraft Establishment Armament Research Department to conduct model bomb dropping experiments. Holes were cut in each floor in order to facilitate the dropping of test bombs into a box of sand at the base of the tower. Research was completed in 1945 and the building was returned to the Royal Botanic Gardens. The building is believed to have again been repainted in 1953. In 1978 the Pagoda was again the subject of a restoration project but the plans did not proceed and a new coat of paint was deemed sufficient (Prosser 2013, 28). Although the building was accessible during 1960's and 1970's it has been largely closed since the 1980's. In 2006 it was briefly opened up to the public during the summer season but has not been so since (Prosser 2013, 13).



## **6 ARCHAEOLOGICAL METHODOLOGY**

- 6.1 In accordance with the Risk Assessment (Bradley 2013), a single evaluation trench was excavated in an attempt to identify a series of steps/other architectural or structural features associated with the Great Pagoda. The steps are depicted on William Chambers' elevation of 1761. The trench was also excavated in order to determine the location, form, extent, date, character, condition, significance and quality of any surviving archaeological remains.
- 6.2 The trench was opened up by hand with the use of an electric hand held vibration dampened breaker fitted with a broad chisel. The breaker was used to remove the metallised gravel surface and underlying tarmac which sealed the evaluation trench. The trench was then hand excavated with the use of hand tools. Prior to breaking and excavation the evaluation trench was CAT scanned by a trained member of the Kew Gardens Estate team.
- 6.3 The trench was hand cleaned, examined and recorded in both plan and section.
- 6.4 The single context recording system was used for recording, developed out of the Department of Urban Archaeology Site Manual. Plans were recorded at a scale of 1:20, and sections were recorded at a scale of 1:10.
- 6.5 The trench was tied in to the Pagoda off architectural plans which were provided prior to the evaluation taking place. A Bench Mark with a value of 7.57m OD was located on the Pagoda itself and was used to level the evaluation trench.
- 6.6 Digital photographs were taken where relevant.
- 6.7 No unusual health and safety issues were encountered during the evaluation. The steps for which the trench had been excavated were not identified, and once a depth of 0.80m from the surface had been reached excavation ceased. Following a request from Historic Royal Palaces the soft deposits were backfilled into the trench and the broken hard standing was left on the trench edge on top of plastic sheeting. When the site was vacated the trench was surrounded by sealed Heras fencing panels with a 'Danger, Deep Excavations' sign still in place.



## 7 ARCHAEOLOGICAL PHASE DISCUSSION

### Phase 1 – Pagoda Construction (Mid 18th century)

- 7.1 The evaluation trench measured 1m by 1m and was situated on the south side of the Pagoda. The earliest deposit encountered at the base of the trench was [4], a soft, mid brown, grey mottled silty sand with inclusions comprising occasional fragments of CBM, flecks of charcoal and small sub-angular pebbles. Observed at a highest level of 7.00m OD, [4] measured 0.92m from north to south, 1m from east to west and, although not full excavated, extended up to at least 0.54m in depth. A single sherd of pottery recovered from [4] has been dated to between 1550 and 1700.



Plate 1 – Evaluation Trench fully excavated

- 7.2 Immediately adjacent to [4] and either abutting or abutted by it was [5], the brick footing for the Pagoda. Stepping out 0.08m from the Portland kerb of the modern Pagoda external surface, the footing was 0.44m thick at 7.10m OD, 0.20m below modern ground level. It was constructed from red and purple fabric frogged bricks which were bonded with a white lime mortar. No specific bond or pattern was discernable within the five courses present, although the bricks did appear to be arranged in repeated rows of stretchers. As the relationship between [4] and [5] was unclear and no construction cut was visible, it could not be verified as to whether [5] was cut flush with [4], or whether [4] represented a backfill deposit dumped up against the footing.





Plate 2 – Pagoda Footing [5]

- 7.3 Cutting into [4] was [3], a sub-oval feature which extended into the western limit of excavation. Recorded with near vertical sides (which became concave lower down) and a flat base, [3] measured 0.32m from north to south, 0.42m from east to west and 0.16m in depth at 6.97m OD. It was filled by [2], a loose, mixed deposit of grey white chalk rubble. A single sherd of pottery recovered from [2] also dates to between 1550 and 1700.



Plate 2 – Posthole [3]

### Phase 2 - Subsoil

- 7.4 Sealing [2] was [1], a soft deposit of dark yellow brown silty sand which contained occasional small sub angular and sub rounded pebbles. Measuring 0.92m from north to south and 1m from east to west, [1] extended up to 0.09m in thickness at 7.09m OD.

### Phase 3 - Modern

- 7.5 Sealing both [1] and the stepped footing of the Pagoda itself was a layer of pink aggregate [+] which covered the area of the trench and was up to 0.09m thick at 7.18m OD. This was in turn sealed by a deposit of yellow sand and gravel aggregate [+] which measured 0.06m in thickness at 7.24m OD. Overlying the sand and gravel was modern tarmac [+] which was 0.04m thick at 7.28m OD. A modern metallised gravel surface [+] sealed the trench at 7.30m OD.



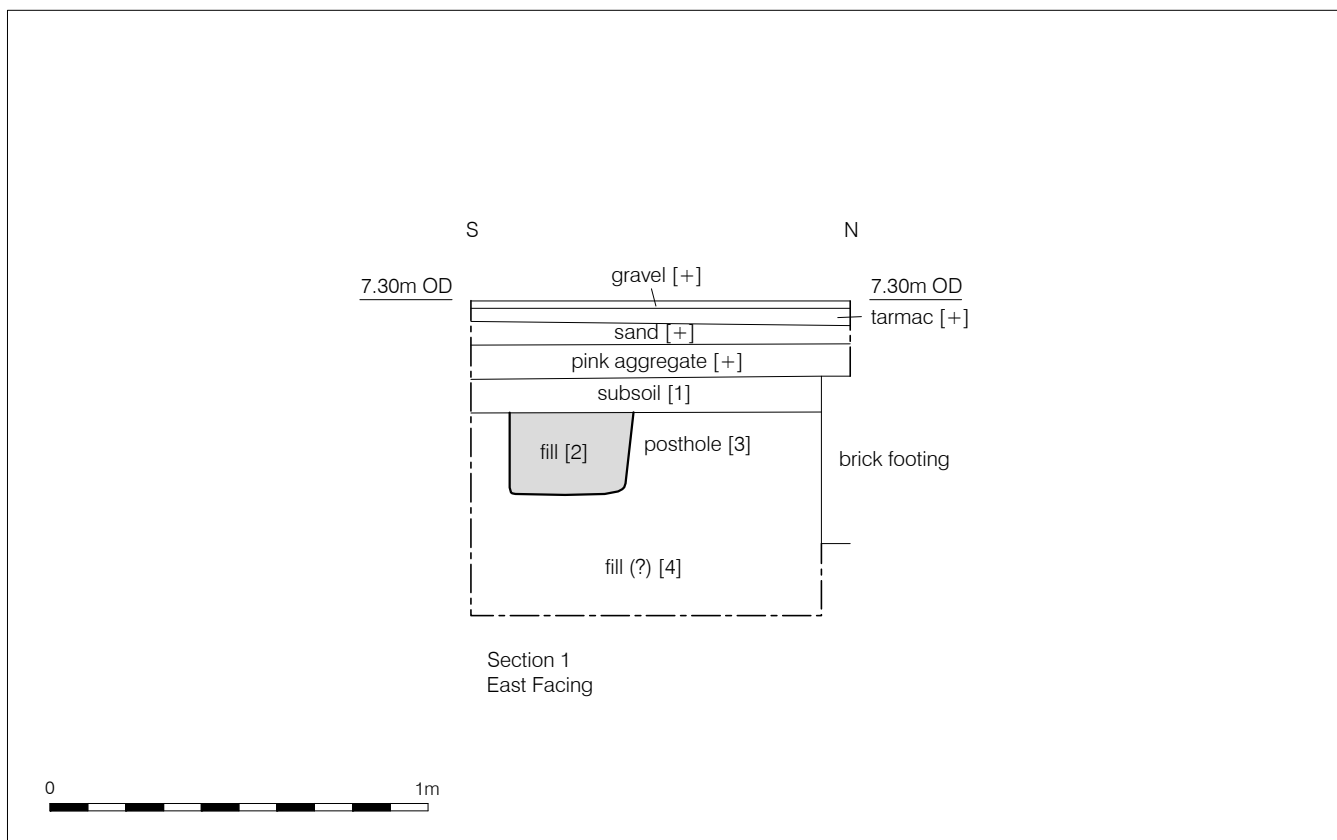
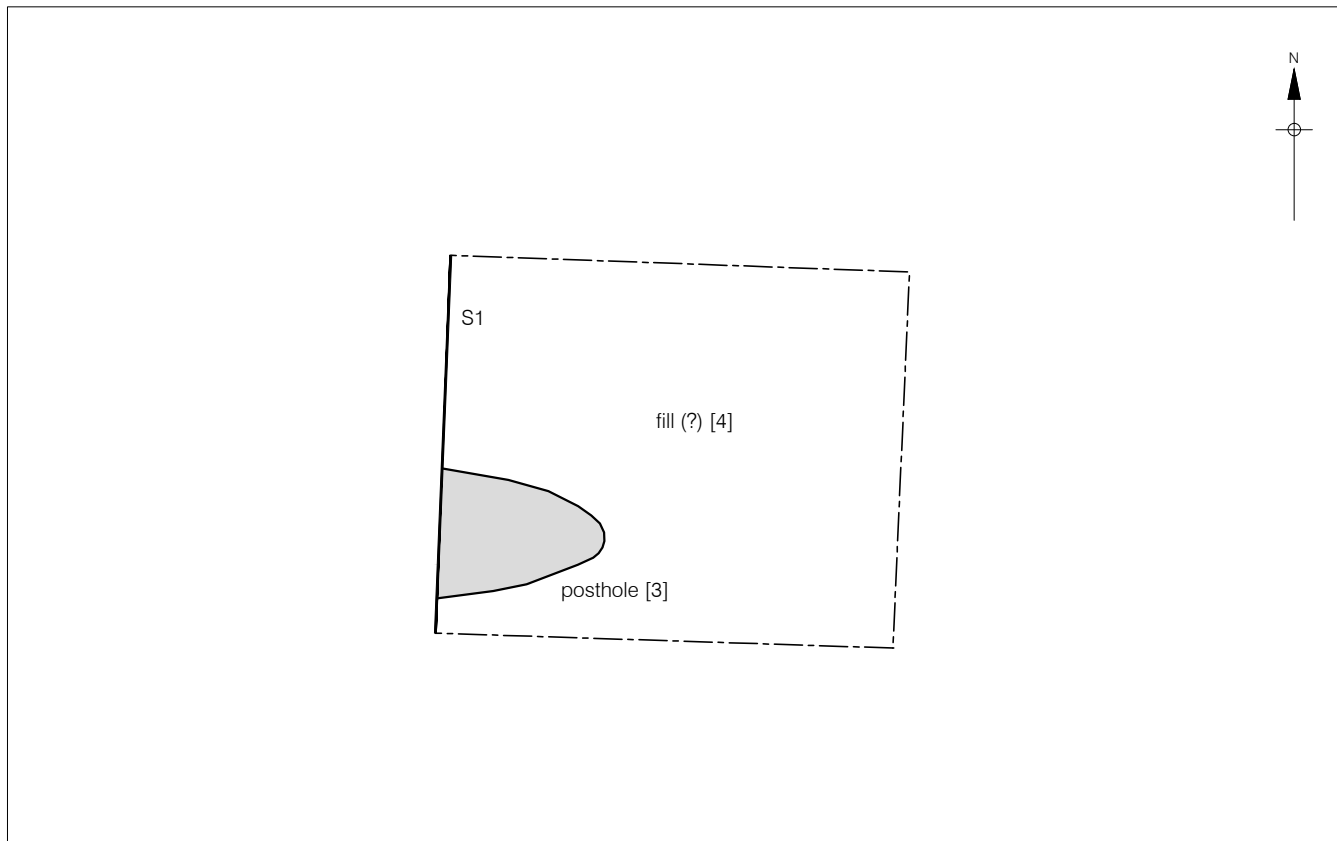


Figure 3  
Trench Plan and Section  
1:20 at A4

## **8 INTERPRETATION AND CONCLUSIONS**

- 8.1 One of the principal objectives of the archaeological evaluation was to determine whether or not the steps depicted on William Chambers' elevation of c. 1761 as descending from four sides of the pagoda base were still extant. Unfortunately these steps were not identified during the evaluation which suggested that they had either been removed when the ground level was raised up, or that rather than being positioned in front of the open doorways they were alternatively situated on the sides of the Pagoda occupied by the deep blind recesses.
- 8.2 Further objectives of the evaluation were to determine the presence or absence of archaeological activity of any period. The earliest deposit encountered during the evaluation was [4], a dirty sand deposit which appeared to have been laid down in the form of redeposited natural. Given the limited size of the trench, identifying the precise origin of this context is problematic, yet it abutted the brick foundation of the Pagoda [5] which extended up to a maximum of 0.44m in depth at 7.10m OD. With no construction cut observed in the evaluation trench this either meant that the foundation [5] was cut flush against [4], or that [4] itself was the backfill of a far larger construction cut which extended beyond the trench limits to the south.
- 8.3 A sub-oval feature which extended into the western limit of excavation was recorded cutting deposit [4]. The function of [3] also remains somewhat ambiguous, although the loose chalk fill of this feature suggested that it had been used as a packing material and that [3] may therefore represent a posthole associated with the construction of the Pagoda. Such an interpretation seems most plausible, particularly given that scaffolding would have been required to build such a large structure.
- 8.4 The layer of subsoil [1] which sealed the possible posthole is likely to have related to the original ground level surrounding the Pagoda and would have presumably been contemporary with the steps depicted on William Chambers' elevation. The make up for the tarmac and the modern metalled surface can be associated with late 20th century repairs and modifications to the upstanding structure.

## **9 ACKNOWLEDGEMENTS**

- 9.1 Pre-Construct Archaeology would like to thank Historic Royal Palaces for commissioning the work. Particular thanks are extended to Lee Prosser, Curator - Historic Royal Palaces and to Rob Umney, Conservation Building Surveyor - Historic Royal Palaces. Thanks are also expressed to Tony Cave, the Estates Operation Project Manager at Kew.
- 9.2 The author would like to thank Chris Cooper and Paul McGarrity for all of their assistance on site. Thanks also to Jennifer Simonson for the illustrations, Tim Bradley for his project management and editing and, once again, to Chris Cooper for technical and logistical support.

## 10 BIBLIOGRAPHY

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## APPENDIX 1 – CONTEXT DESCRIPTIONS

Context	Phase	Type	Trench No.	Sec No.	Description
1	2	Layer	Eval	1	Subsoil
2	1	Fill	Eval	1	Fill of [3]
3	1	Cut	Eval	1	Posthole
4	1	Fill?	Eval	1	Poss. fill of Pagoda Construction cut
5	1	Masonry	Eval	1	Pagoda Footing

## APPENDIX 2 – OASIS FORM

OASIS ID: preconst1-176033

### Project details

Project name An archaeological evaluation at the Great Pagoda, Kew

Short description of the project An archaeological evaluation was undertaken by Pre-Construct Archaeology Ltd at the Great Pagoda, Royal Botanic Gardens, Kew between the 24th and 25th of March 2014. The works encompassed the excavation of a 1m x 1m trench on the south side of the pagoda designed to establish the presence or absence of a series of brick steps depicted on an elevation dating to 1761. The steps were not discovered but a subsoil horizon, a posthole possibly associated with the construction of the Pagoda and a sandy deposit which may have formed the backfill of the Pagoda construction cut were revealed.

Project dates Start: 24-03-2014 End: 25-03-2014

Previous/future work No / Not known

Type of project Field evaluation

Site status Listed Building

Current Land use Other 2 - In use as a building

Monument type POSTHOLE Post Medieval

Significant Finds POTTERY Post Medieval

Significant Finds CLAY TOBACCO PIPE Post Medieval

Significant Finds ANIMAL BONE Post Medieval

Methods & techniques "Targeted Trenches"



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Development type	Building refurbishment/repairs/restoration
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Prompt	Conservation/ restoration
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Position in the planning process	Not known / Not recorded
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### Project location

Country	England
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Site location	GREATER LONDON RICHMOND UPON THAMES RICHMOND AND KEW The Great Pagoda, Royal Botanic Gardens, Kew
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Postcode	TW9 3AB
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Study area	1.00 Square metres
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Site coordinates	TQ 18471 76076 51.4707338474 -0.294109884531 51 28 14 N 000 17 38 W Point
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### Project creators

Name of Organisation	Pre-Construct Archaeology Ltd.
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Project brief originator	Historic Royal Palaces
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Project design originator	Tim Bradley
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Project director/manager	Tim Bradley
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Project supervisor	Alexis Haslam
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Type of sponsor/funder	Royal Botanic Gardens / Historic Royal Palaces
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g body

## Project archives

Physical Archive recipient	Historic Royal Palaces
Physical Contents	"Animal Bones","Ceramics"
Digital Archive recipient	Historic Royal Palaces
Digital Contents	"none"
Digital Media available	"Text"
Paper Archive recipient	Historic Royal Palaces
Paper Contents	"none"
Paper Media available	"Context sheet","Correspondence","Photograph","Plan","Report","Section' ','Unpublished Text"

## Project bibliography 1

Publication type	Grey literature (unpublished document/manuscript)
Title	An Archaeological Evaluation at The Great Pagoda, Royal Botanic Gardens, Kew, Richmond, Surrey TW9 3AB
Author(s)/Edito r(s)	Haslam, A.
Date	2014
Issuer or	Pre-Construct Archaeology Ltd

publisher

Place of issue  
or publication

Brockley

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Entered by Alexis Haslam (ahaslam@pre-construct.com)

Entered on 28 March 2014

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