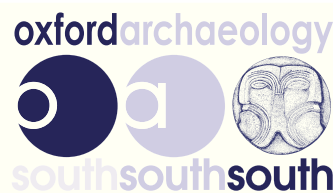


Wall 22  
(Bowling Alley Wall)  
Hampton Court Palace



**Historic Building Recording  
and Investigation**



December 2012

**Client: Historic Royal Palaces**

Issue No: 1  
OA Job No: 5431  
NGR: TQ 1581 6859



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**Document Type:** Historic Building Recording and Investigation  
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**Date:** December 2012

**Document File Location:**

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# Wall 22 (Bowling Alley Wall), Hampton Court Palace

## *Historic Building Recording and Investigation*

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## Wall 22 (Bowling Alley Wall), Hampton Court Palace

### *Summary*

*Oxford Archaeology South were commissioned by Historic Royal Palaces to undertake a programme of recording on a section of garden wall located within the private area of the grounds at Hampton Court Palace.*

*The wall was drawn and examined in detail and the bricks were compared to the Hampton Court Brick Typology. The wall as it stands comprises several sections of differing date. The earliest fabric is 16th century in date and is probably formed of Type C Henrician brickwork. This may form the western elevation of the former Henrician Bowling Alley although it is also possible that the wall was rebuilt using Tudor bricks from the former alley, possibly in the 17th century. It is clear that the structure underwent several changes including conversion to accommodation prior to its demolition in the later 18th century. It is possible that the 18th century brickwork and coping date to this period of demolition when the wall would have been retained to maintain the divisions with the garden and nursery areas.*

*The wall is clearly aligned with the western wall of the former Tudor bowling alley as pinpointed through excavation and geophysical survey in 2010 for the television programme 'Time Team'. The excavation concluded that the extant 16th-century brick footings below ground had several areas of rebuilt and later brickwork above suggesting the substantial rebuild and reworking of the structure.*

*The mixed date and bonding of the brickwork in the elevations above ground further confirms that the wall in-situ now has been substantially rebuilt from the 17th century onwards. As it is there is little surviving fabric that can clearly be described as being part of the former Tudor Bowling Alley. The wall however, remains an example of the adaptation of existing fabric to suit the changing needs of the Palace.*

## 1 INTRODUCTION

### 1.1 Project Background

- 1.1.1 Oxford Archaeology South (OAS) has been commissioned by Historic Royal Palaces (HRP) to undertake historic building recording of Wall 22 prior to works to repair the wall. The Project Manager for Historic Royal Palaces was Julia Grinham.
- 1.1.2 The recording took place in August 2012 and was carried out Alison de Turberville, Buildings Archaeology Supervisor.
- 1.1.3 Additional examination of the wall was undertaken for HRP by Emma Simpson of SBC Ltd in May 2011.

### 1.2 Aims and Objectives

- 1.2.1 The purpose of the recording and investigation was to:
  - record the wall prior to building repair works
  - identify and date where possible (with reference to the HCP Brick Typology) all the brick types evident;
  - provide a summary written phasing of the historical development of the wall;
  - Consider the wall in relation to the Tudor Bowling Alley;
  - create an ordered archive of the work for deposition with Historic Royal Palaces;

### 1.3 Location of Wall 22

- 1.3.1 Wall 22 is situated on the north eastern side of the glasshouse nursery, to the north of the main Palace buildings (Figure 1). To the east of the wall is an enclosed garden for the Real Tennis Court while to the west of the wall is the glasshouse nursery with nearby buildings providing greenhouse and storage facilities for the gardening and estate staff. The wall is situated in an area currently not accessible by members of the public.

### 1.4 Methodology

- 1.4.1 Overall the work comprised three principal elements: a photographic, drawn and written survey.
- 1.4.2 The *photographic survey* consisted of general photographs and specific details and were undertaken using an Pentax SLR camera with 35mm black and white film, digital photographs were taken using a Caplio 8 megapixel digital camera.
- 1.4.3 The *drawn survey* consisted of creating an elevation drawing for each section of wall at scale 1:20 on archivally stable permatrace with the key features and phases of brickwork indicated.
- 1.4.4 The *descriptive survey* complemented the photographic and drawn surveys and added further analytical and descriptive detail. Oxford Archaeology brick typology recording sheets were completed for analysing the brick and mortar types.

### 1.5 The Hampton Court Brick Typology

- 1.5.1 The Brick Typology, developed by Daphne Ford for English Heritage in the 1980s, was formed using a mix of visual inspection and archive evidence and establishes a typology for the bricks used at Hampton Court Palace, and includes elevation drawings of the majority of the Palace which have been phased according to this typology.



- 1.5.2 The Typology does not cover many elements of the Palace outside of the main structure and so there are no phased elevations for this wall. It was beneficial to record the garden wall brickwork measurements and description and some attempt has been made to identify the brickwork within the typology. The recording of brickwork for this investigation involved the completion of Oxford Archaeology brick data sheets. This ensured all categories included within the typology were accounted during the investigation and enabled easy cross referencing to the typology as well as other elements of the recording programme.

## 2 HISTORICAL BACKGROUND

### 2.1 The Emergence of the Royal Palace

- 2.1.1 The Knights Hospitallers acquired the manor of Hampton in 1236 and used the land as a grange. The only known buildings at this time were a great barn or hall and a stone camera. The first known occupant other than the knights was John Wode who obtained a lease for the court, the exact date of which is unknown. Alterations to the building during his time may have included the extension of the residential part of the dwelling by means of a tower. Wode died in 1484 without an heir, and it was not until 1494 that the manor was re-leased.
- 2.1.2 The next occupant of Hampton Court was Sir Giles Daubeney, who in 1494 acquired an eighty-year lease. The freehold of Hampton Court was unobtainable by Daubeney but he did however obtain a new 99-year lease in 1505. This new lease was much improved allowing him to enlarge the property. Daubeney died in 1508 and when his son came of age in 1514 he immediately gave up the lease to Thomas Wolsey, then the Bishop of Lincoln, but soon to become Archbishop of York and a Cardinal.
- 2.1.3 As with Daubeney's lease Wolsey's gave permission for alterations to be made to the fabric of the buildings. During his time at the Palace Wolsey carried out alterations to existing buildings as well as the construction of new buildings and amongst his earlier works was the construction of the ranges that form Base Court in 1514-1522. Henry VIII, who acquired Hampton Court in 1527/9, continued this building of the Palace as he embarked upon a building programme that shaped much of the Tudor Palace we see today. During this time existing buildings were removed or adapted and decorated for royal use.
- 2.1.4 Among the later alterations that are recorded, the major programme of alterations was carried out by William III, who commissioned Sir Christopher Wren to rebuild Hampton Court in 1689. Wren's original plan was to rebuild the whole of the Tudor Palace, keeping only the Great Hall. Lack of time and money meant that Wren concentrated his efforts on rebuilding the King and Queen's apartments on the south and east sides of the Palace.
- 2.1.5 After William's death in 1702 the Palace was little used by subsequent monarchs although improvements and alterations to the Palace fabric continued. The last reigning monarch to use Hampton Court was George II in 1737. After his succession in 1760, George III decided not to live at Hampton Court leaving the Palace's many rooms unoccupied. It was decided that the lodgings and other rooms in the Palace should be divided up into apartments for grace and favour residents who were granted free residency by the monarch.
- 2.1.6 In 1837 Queen Victoria declared that Hampton Court Palace should be open to all her subjects and the Palace became a tourist destination and visiting antiquarians and artists began to write about and draw the Palace on a grander scale than previously done. Parts of the Tudor Palace were gradually restored with the removal of 18th century casement

windows amongst some of the building works at this time. Changes to the Palace in the 20th and 21st centuries have primarily involved the conservation and restoration of the building fabric as well as the presentation of the Palace to visitors.

## **2.2 Historical Background**

- 2.2.1 The Bowling alley was constructed between 1530-32 and was referred to as the 'Kynges new bollying alley' indicating another alley probably built by Wolsey existed at this time. A further bowling alley was constructed to the south west of the Palace and this is referred to as the 'the Close Bowling Alley by the Temmesyde' in accounts of 1537. The accounts often do not differentiate between the different structures making identification within the accounts problematic.
- 2.2.2 The first plan of the bowling alley is shown on a plan of the Palace by Hawsmoor (c. 1689 - Figure 3) where a buttressed building is shown at a slight angle to the remainder of the Palace.
- 2.2.3 The bowling alley can be seen on a view from the East by Knyff (1703), the structure consists of a long single storey range with windows on the east facing elevation and pitched roof with gable windows. To the east of the alley two gardens can be seen indicating a similar layout to that seen today. The north end of the alley terminates at the moat ditch which was still in-situ at this time and perhaps accounts for the change in angle at the north end of the wall in-situ today.
- 2.2.4 Documentary sources indicate that 40 stone windows were removed from Rewley Abbey in Oxfordshire for use on the Bowling Alley at Hampton Court but there is no indication to which bowling alley this was for. However the quantity of openings shown in Knyff's painting are consistent with this figure.
- 2.2.5 Kipp's view of Hampton Court (1707) shows a similar structure for the bowling alley as the Knyff painting but from the west (Figure 4). Charles Bridgeman's 'General Plan of Hampton Court Palace Gardens and Parks' (1711 - Figure 5) strangely does not depict the bowling alley, although the tennis court and a garden wall are shown. A plan by the clerk of works c. 1714 (Figure 6) shows the bowling alley and its internal layout and it is clear the structure is heavily buttressed and it is depicted at right angles to the adjacent Palace wing. The John Rocque plan of 1736 (Figure 7) again shows the bowling alley but the proportions of the gardens adjacent are incorrect and there is no detail to the structure. The moat remains in-situ. A plan of Hampton Court gardens (c. 1805 - Figure 8) does not depict the bowling alley despite depicting nearby buildings (such as the new kitchen and so it is assumed the bowling alley has been demolished by this date. The plan of the estate by Henry Sayer (1841 - Figure 9) depicts the layout for the tennis court garden and glasshouse nursery similar to that seen today with the addition of the Tractor shed to the north western side of wall 22.
- 2.2.6 Research in the historic records of the Palace by Heath identifies several changes in 1636 to the bowling alley building concerning the adaptation of the structure for use by the children of the Chapel Royal Choir. The building had a chimney added and a practice room was formed. Later in 1665 more chimneys were added and it became lodgings for the Master of the Children of the Chapel Royal. In 1689 the roof was repaired and the rooms allocated to the apartments for Princess Anne of Denmark. By 1702 the old close bowling alley had thirteen rooms on the ground floor and five on the upper floor and they were not occupied. It may be at this time that the building was known as the hen house suggesting it had been used as accommodation for the maids of honour. The building was thought to have been demolished in the late 18th century (as noted in Laws book of 1885) but there is no documentary evidence for this.

## 2.3 Previous Archaeological Investigations

- 2.3.1 The bowling alley was the subject of an investigation for a 'Time Team' special in 2010 and the Archaeological Evaluation report was produced by Oxford Archaeology South in April 2010.
- 2.3.2 The location of the former bowling alley was ascertained through geophysical survey and three trenches that were placed within the eastern side of the wall – one within the Real Tennis Court Garden and two located further south within the Smokers Garden. The results were compared to the plan of the bowling alley that was produced by Thomas Fort in 1711. It was found that the Bowling alley was situated further to the east at the northern end than as depicted on the plan. but as shown on other plans The eastern wall of the bowling alley was located and examined within the trenches. The geophysical survey was laid over the existing measured plan of the garden and the wall forming the focus of this report can be seen to coincide with the western wall of the bowling alley. The excavation of the eastern wall revealed brickwork that was found to have large areas of rebuilt later brickwork over the original Henrician footings, indicating later reworking of the Bowling alley.

## 3 ARCHAEOLOGICAL DESCRIPTION

### 3.1 Introduction

- 3.1.1 For the purposes of recording, the wall was divided into three sections. The wall is situated to the north eastern end of the glasshouse garden which is a private area used by the Palace estate and gardening staff. The wall forms the boundary between the glasshouse garden and the real tennis court garden. The wall was fairly clear of foliage, although the brickwork is greatly weathered and damaged in some areas.

### 3.2 Elevation 1

- 3.2.1 Section 1 is the most northern section of wall and also the most complex in terms of phasing (Figure 8). The wall is approximately 9.5m long and 3.44m high with a rough brick coping. The east facing section of this wall faces into the real tennis court garden and is much damaged by planting and planting fixtures. Nearby trees provide some shelter. The west facing section is contained within a lean-to structure called the Tractor Shed which is used for storage and maintenance of estate vehicles. The roof structure of this building is fixed onto the wall itself and the ground level on this side of the wall is lower than for the east facing elevation and is mostly painted white.
- 3.2.2 Due to access the east facing elevation was more closely studied. The earliest part of the wall is the southern end of the wall where clear 16th-century brickwork can be seen. The bricks are red, brown and orange in colour with rough arrises and the bricks faces are quite creased. The bricks measure 218-230 x 101-118 x 56-61 and have an arris to arris measurement of 263-278mm. The bond is mostly header bond but the appearance is quite random suggesting little thought was given to the quality of this wall. There was no evidence seen for painted decoration of the brickwork and no diaperwork patterns within the elevation. The mortar is a friable pale cream coloured mortar and there are patches of black ash pointing in a paler grey colour than seen elsewhere in the Palace that is probably of 19th or early 20th century date. The overall appearance suggests these bricks are Henrician in date, probably **Type C** bricks which date the the later period of construction at the Palace by Henry VIII. This brick type would also tie in with the documented date of construction for the bowling alley wall (c.1630s).
- 3.2.3 This section of brickwork contains an infilled door opening which appears to be a later insertion. The jambs and arched brick header lintel are of mixed brick types but there are

a large quantity of reused Tudor bricks. The mortar is a different mix. Infilling this opening are **Type Q** late 18th/19th century bricks of mixed pale colours and the mortar has stone and shell inclusions and penny roll detail. The bond is again mixed, probably due to the constraint of the infill area, but is a form of English bond.

- 3.2.4 To the north of this opening a straight joint separates the 16th century brickwork from three levels of different date brickwork. The lower wall is formed of red, orange and brown coloured bricks laid in a varying English bond. There are occasional vitrified bricks but no defined pattern. The bricks measure 227-235 x 108-116 x 53-59mm and have an uneven shape. These bricks appear to be of 16th to 17th century date and it is probable that this section of wall pre-dates the 16th century brickwork to the south, however it is more likely that these bricks are slightly later in date as they have a very similar appearance to other documented 17th century brick walls within the Palace (for example the infill patch on the Vrow Walk wall). The mortar is a friable dark cream coloured mix with lime and brick chip inclusions. There are areas of black ash pointing over this mortar which again point to repairs of late 19th/early 20th century date. It is unclear as to the exact brick type as it is likely this section consists of a mix of reused bricks. There is a section of patching with an uneven shape which appears to be linked to the brickwork above.
- 3.2.5 The central layer of brickwork is laid in a Flemish bond and consists of larger sized brick with average measurements of 218 x 101 x 61mm and an arris to arris of 291mm. The arrises of these bricks are more defined suggesting a more refined manufacturing technique. The colours are more varying with plums and purple tones. The mortar is a lime based mortar with a white/greyish colour and lime inclusions. This is possibly **Type H** brickwork but is more likely to be a mix of leftover stock bricks.
- 3.2.6 Above this level is the uppermost brickwork on this elevation. It extends across the full elevation but it is deeper in this northern section consisting of 9 courses. The height of the wall meant measurements were not taken. The bricks appear to be a more mixed selection that seen elsewhere and probably dates to repairs and heightening of the wall using reused bricks and leftover stock in the 19th century. The coping above consists of mixed brick stock with a slope towards the Tractor store on the west elevation. The mortar is a mixed of modern sandy cement mortar and the bricks have clearly been reset in the recent past. There are two square shaped iron ties with metal bolt which are probable remnants of a former roof covering for the store on the rear of this elevation.
- 3.2.7 Viewed within the store on the west facing elevation the wall is higher than seen on the east facing elevation. There are timber beams inserted into the brickwork approximately halfway up the wall with the lower brickwork painted white. The lower sections of the wall was largely covered with debris and fixtures (radiators etc). The bricks appear consistent with that seen on the east facing elevation, the white paint making it difficult to see the fabric clearly. The roof structure is modern clear plastic corrugated covering on modern timber joists.

### 3.3 Elevation 2

- 3.3.1 This wall is angled 90 degrees to elevations 1 and 3 and runs east to west. The north facing elevation forms the rear of the Tractor shed and was largely inaccessible for close inspection. The south facing elevation lies within the Real Tennis Court garden and is shown as Figure 4.
- 3.3.2 This elevation largely consists of the red, orange, brown coloured 16th century **Type C** brickwork as discussed in § 3.2.2. The bricks are laid in a random bond and appear to be of mixed type, possibly utilising reused or spare stock. The bricks are extremely pitted

probably from nails fixings but also as suggested by SBC Ltd, by masonry bees, the south facing aspect being particularly good for egg germination.

- 3.3.3 The eastern end of the wall has a brick pier which has some replacement **Type Q** bricks that appear to be connected to an indented area within the brickwork, the bricks having been cut to accommodate and inserted detail, probably timber support for a temporary structure. There is a low brick plinth on this elevation. The upper section of the wall consists of mixed bricks which probably date to the 19th century. The coping is of York stone with metal cramps. The western end of the wall has a section of 16th/17th century brickwork with a section of headers on end suggesting heightening of the wall at this point, presumable to accommodate a brick stack for a lean to building within the glasshouse nursery.

### **3.4 Elevation 3**

- 3.4.1 The adjacent elevation is a long stretch of wall running north to south between the glasshouse garden and Real Tennis Court garden (Figure 10). The fabric of this wall is clearly split approximately halfway with the northern section comprising bricks with a very mixed colouring including yellow, red, orange purple and rose colours. The bricks are laid in a varying English bond and the overall shape of the bricks is sharper than seen on adjoining brickwork with sharper arrises and consistent sizing. The lime mortar is a creamy colour with large lime inclusions. The brick type is generally unidentifiable but the overall appearance and shape suggest an early to mid 18th century date for this section of the wall.
- 3.4.2 A recess exists approximately 955mm high, 915mm wide and 220mm deep. The lintel consists of a wide timber and above this a section of brick headers stacks on end. The opening has been blocked with yellow bricks which appear of 20th century date. These bricks measure 230 x 108 x 61mm and are laid in stretcher bond with hard grey coloured cement mortar. The blocking in of this opening appears to come from the other face of this wall. The purpose of this opening is unknown but may be connected to some greenhouse or garden buildings which were possibly situated within the Tennis court garden at this time
- 3.4.3 A section of whitewashed brickwork between the recess and the northern corner of the wall further emphasises this. A metal pipe with tap is located to the south of the recess and further southwards there is a wide horizontal cut within the brickwork with several holes nearby suggesting some sort of fixing in this location. This section of elevation also has a small plinth as seen on section 2.
- 3.4.4 The southern section of brickwork is clearly earlier in date, probably dating to the 17th century. The join between the two different phases is staggered rather than a straight joint. The bricks are laid in a random bond with a greater quantity of headers and it appears to be a mixed brick type utilising reused bricks and leftover stock. The colours range from light orange to red and brown tones with occasional yellow and purple coloured bricks. The arrises are rounded and the skin contains many wrinkles. The sizes vary but have an average of 225 x 111 x 58mm with an arris to arris measurement of 278mm. There is a low plinth with cut edge coping at the top. The mortar is white coloured and hard gritty textured lime mortar with small stone inclusions. There is a brick pier 700mm wide and projecting half brick from the elevation which appears structural.
- 3.4.5 To the south end of this section of wall there is a doorway providing access between the glasshouse nursery and the Real Tennis Court garden. The doorway was probably inserted into the elevation as the brick lintel and jambs are of later date, probably 19th century. The brickwork directly above the header lintel appears to also have been rebuilt

at this time. A further brick pier is located to the south of the doorway and this abuts a wall dividing the Real Tennis Court and Smokers gardens. The upper brickwork above this pier appears to be the same as seen on the northern section of this wall, the style of the rounded detail in the wall also appears to link to an 18th century date for this work.

- 3.4.6 The west facing elevation is mostly contained within a lean-to greenhouse structure which has 12 modern fixtures for the roof. There is evidence for former roof fixing still within the wall. The brickwork is covered with layers of paint and therefore making identification difficult. It would appear to be the same as seen on the east facing elevation however. The blocked opening to the northern end of the wall has the infill brickwork flush with the existing wall and it would appear that the blocking in was carried out from this side of the wall. The plinth is present on this side of the wall but has a break of approximately 980mm at the blocked in opening.

## 4 CONCLUSION

### 4.1 Summary

- 4.1.1 The wall as it stands comprises several sections of differing date. The earliest fabric is 16th century in date and is probably formed of Type C Henrician brickwork. This may form the western elevation of the former Henrician Bowling Alley however it is also possible that the wall was rebuilt using Tudor bricks from the former alley, possibly in the 17th century. It is clear that the structure underwent several changes including conversion to accommodation prior to its demolition in the later 18th century. It is possible that the 18th century brickwork and coping date to this period of demolition when the wall would be retained to maintain the divisions with the garden and nursery areas.
- 4.1.2 The wall is clearly aligned with the western wall of the former Tudor bowling alley as pinpointed through excavation and geophysical survey in 2010 for the programme 'Time Team'. The excavation concluded that the extant 16th century brick footings below ground had several areas of rebuilt and later brickwork above suggesting the substantial rebuild and reworking of the structure.
- 4.1.3 The mixed date and bonding of the brickwork in the elevations above ground further confirms that the wall in-situ now has been substantially rebuilt from the 17th century onwards. As it is there is little surviving fabric that can clearly be described as being part of the former Tudor Bowling Alley. The wall however, remains an example of the adaptation of existing fabric to suit the changing needs of the Palace.

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December 2012

## APPENDIX A. BIBLIOGRAPHY

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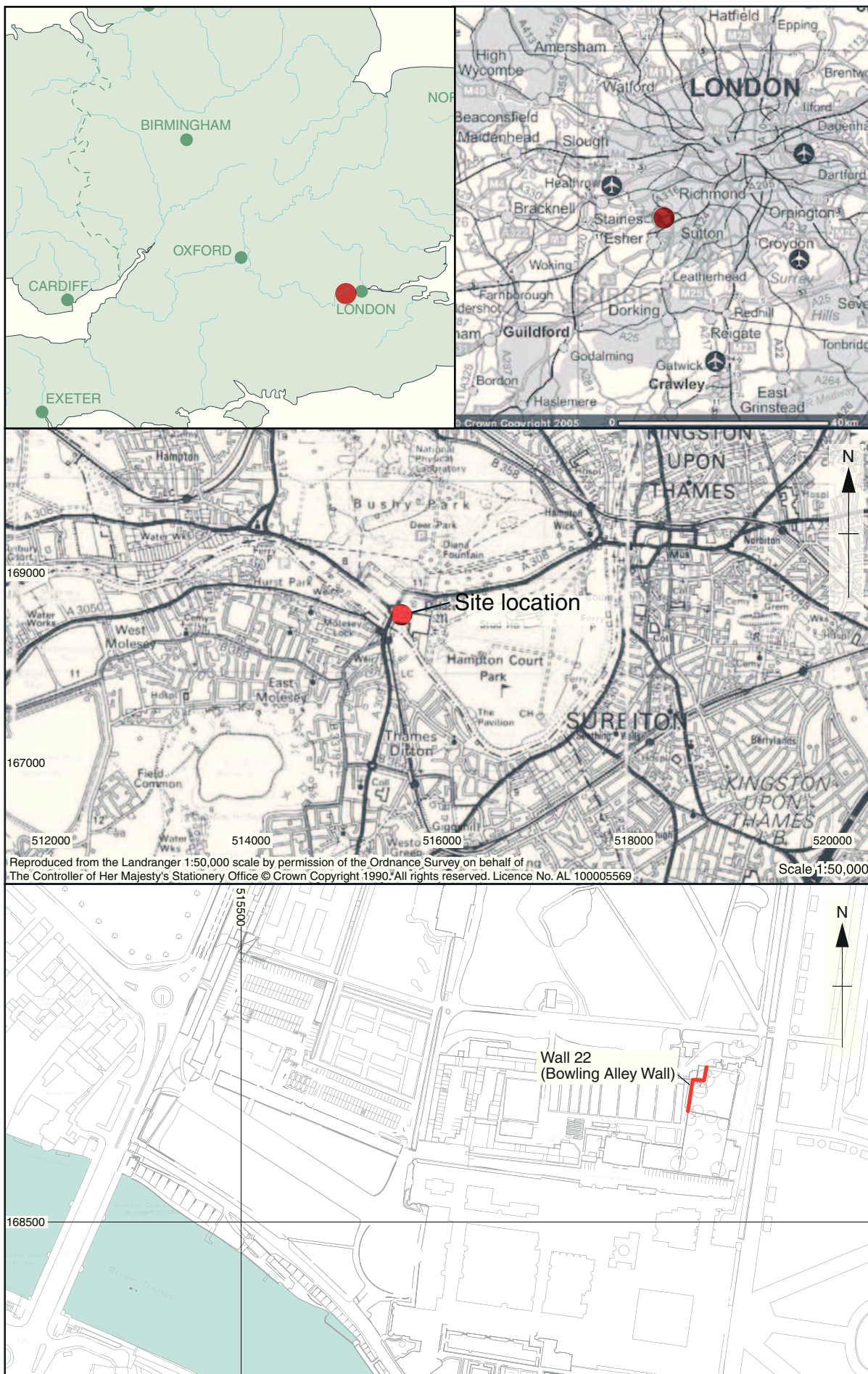


Figure 1: Site location



Figure 2: Location plan for wall within Hampton Court Palace

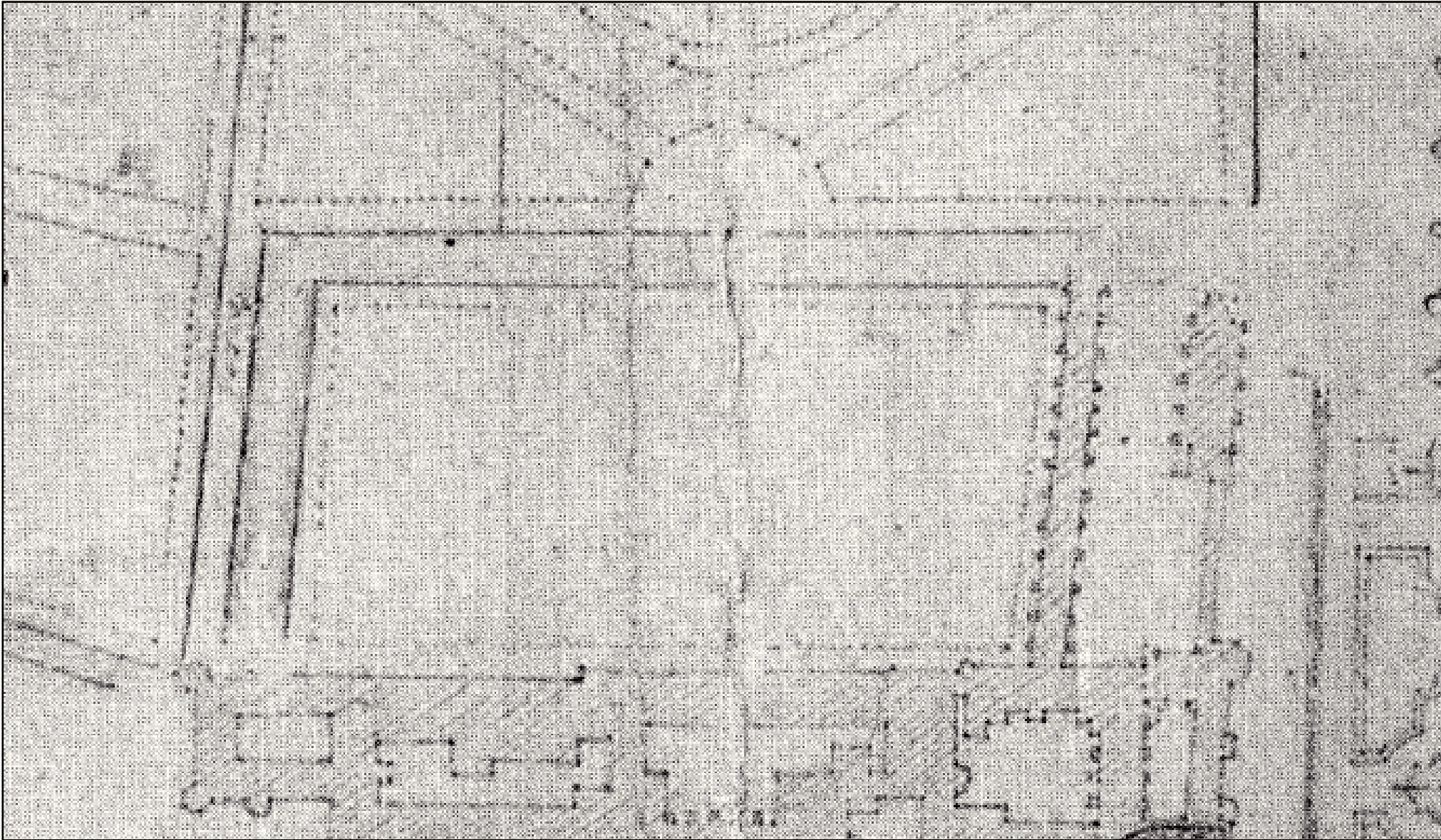


Figure 3: Extract from plan by Hawksmoor (c. 1689)

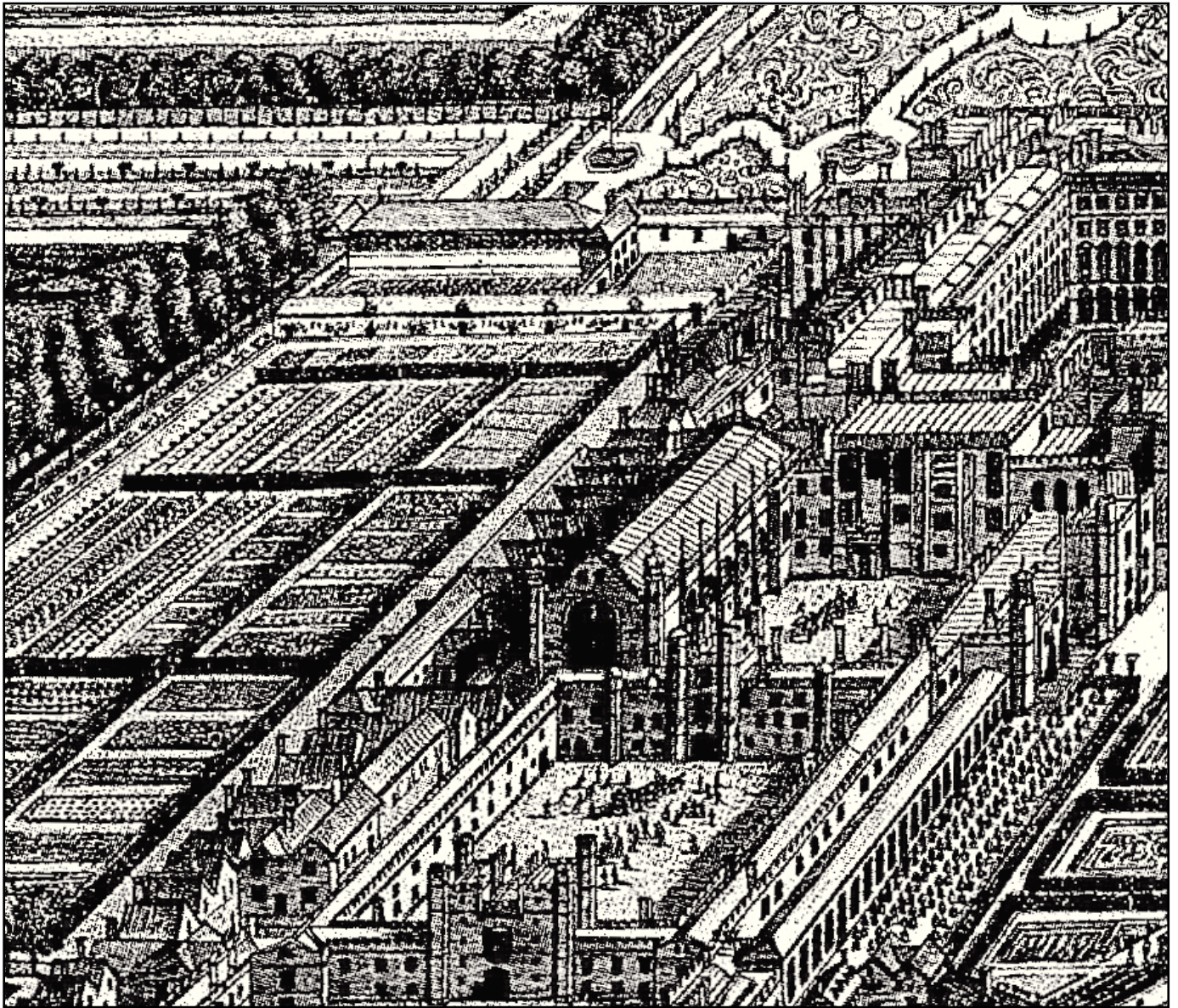


Figure 4: Extract from Hampton Court from the West by Knyff (1707)

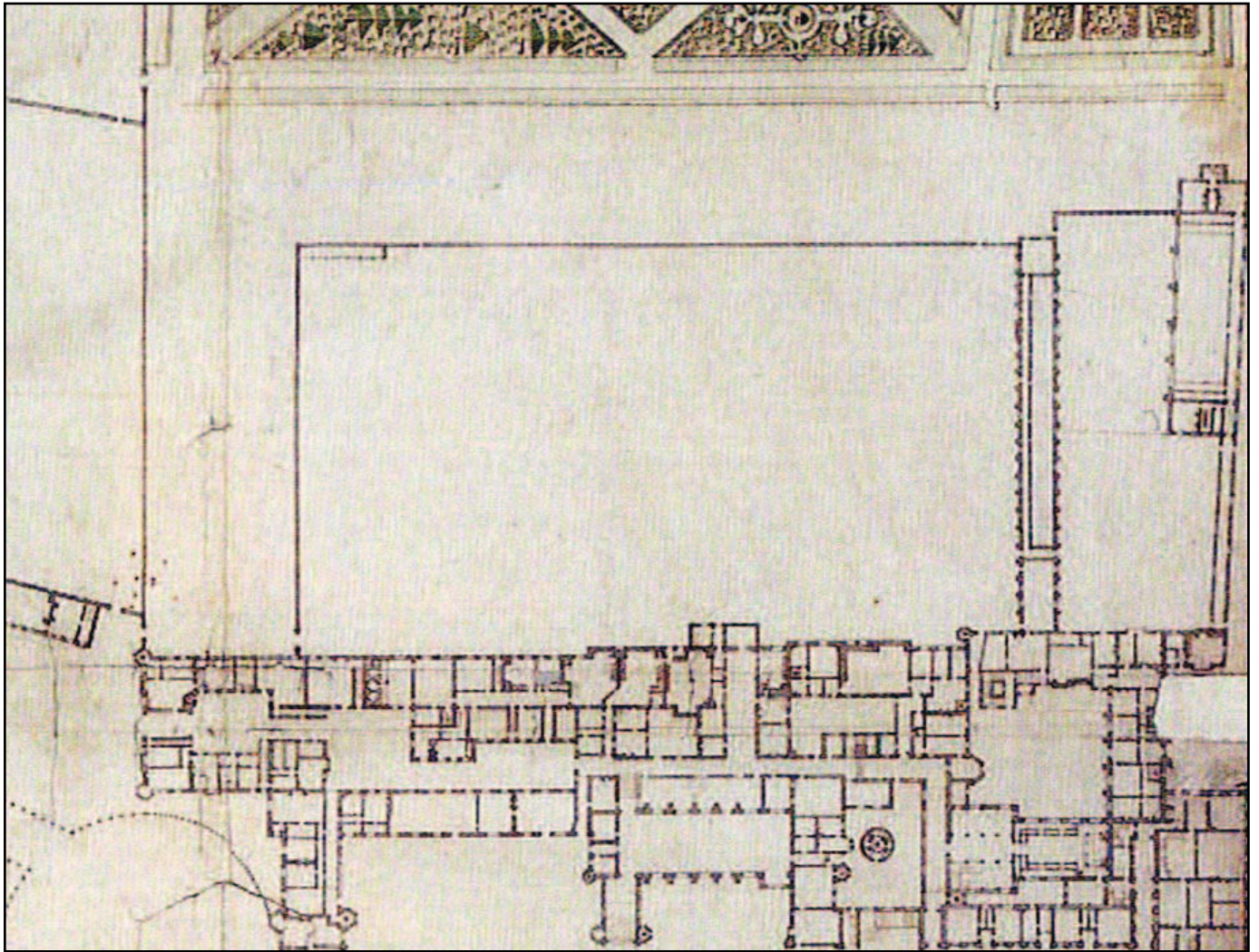


Figure 5: Extract from plan by Clerk of Works (c. 1714)

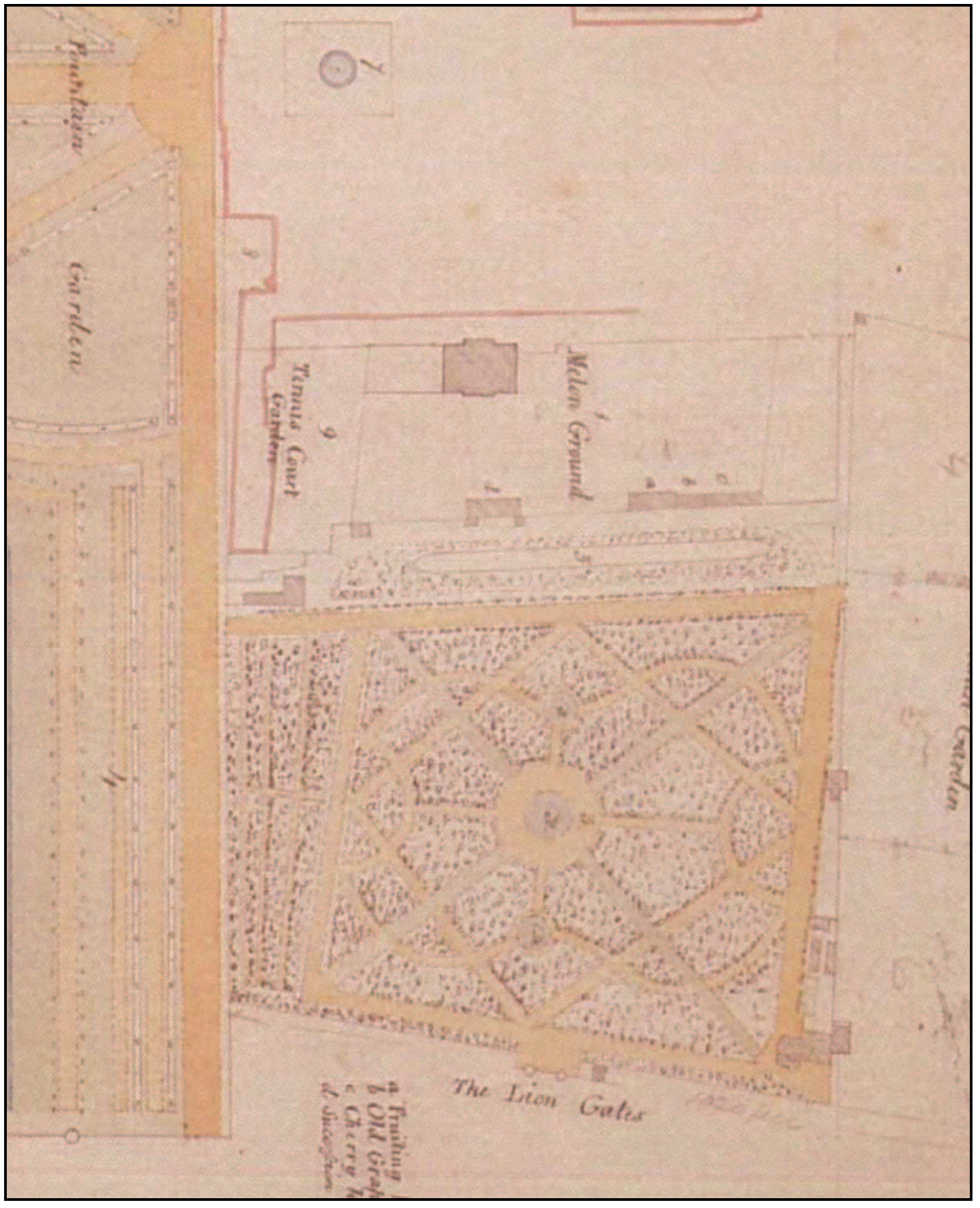


Figure 6: Plan of Hampton Court Gardens (c. 1805)



Figure 7: Extract from plan of the Hampton Court Estate by Henry Sayer (1841)

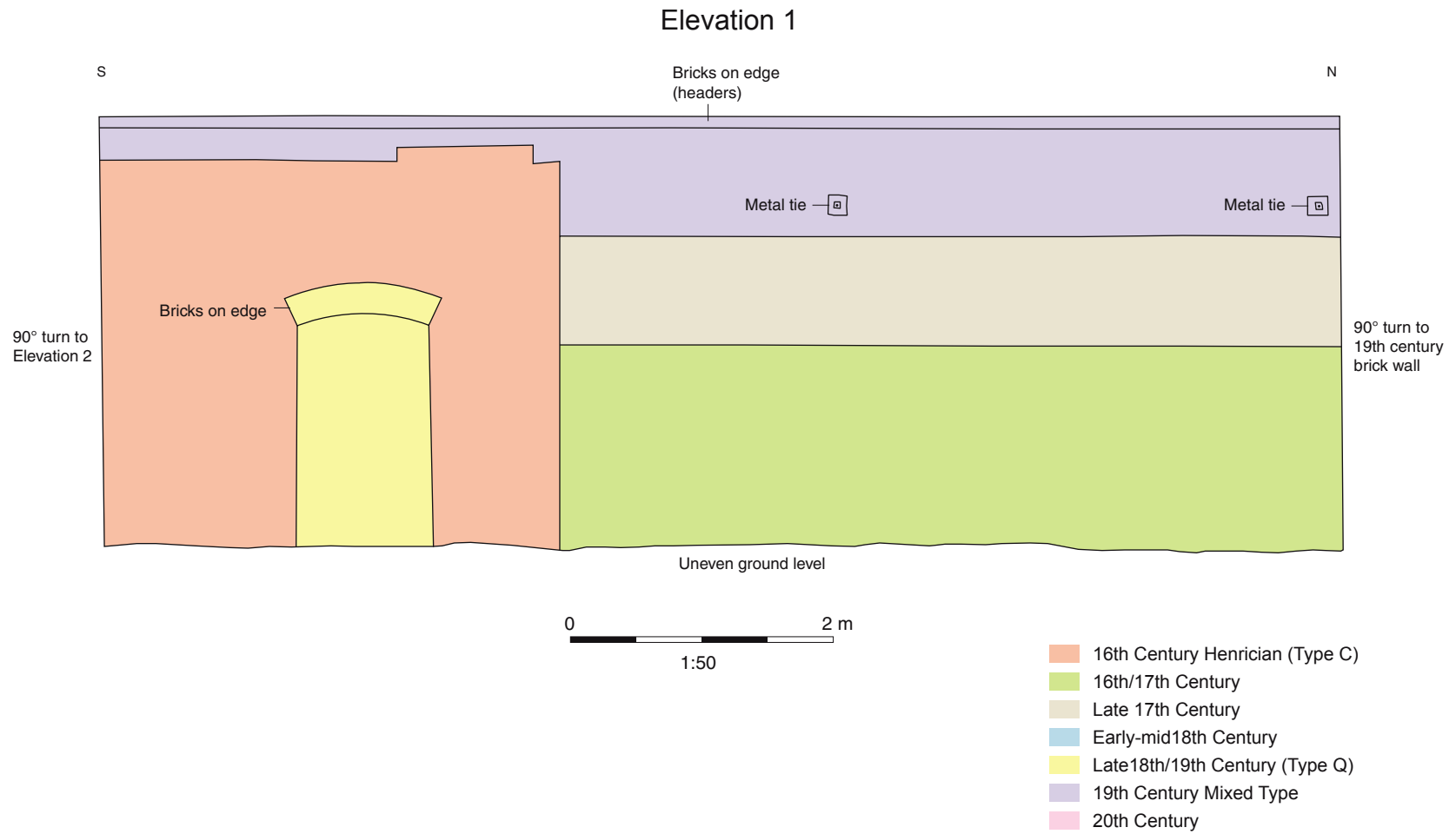


Figure 3: Wall section 1 - East Facing Elevation



### Elevation 2

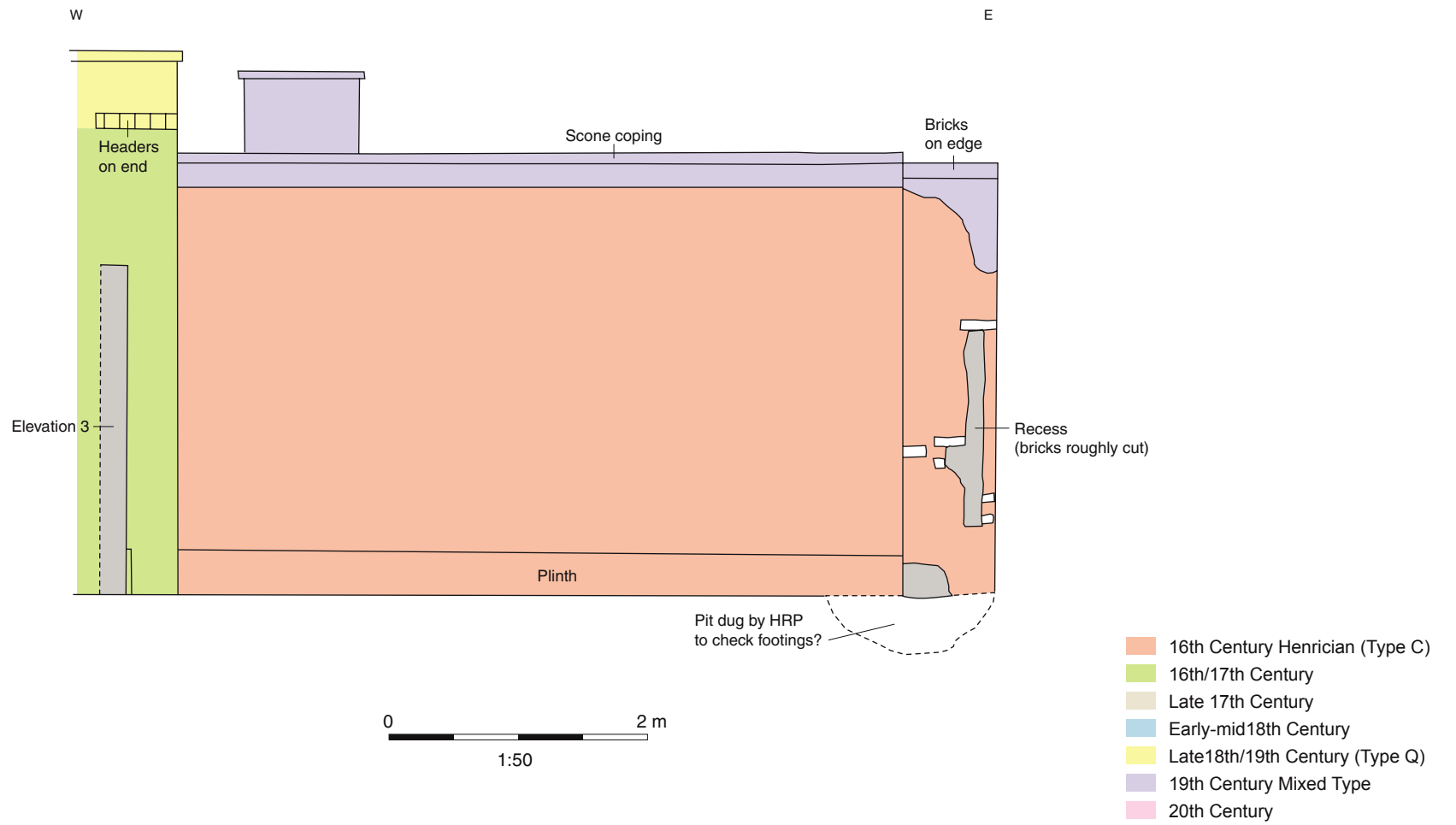


Figure 4: Wall section 2 - South Facing Elevation

# Elevation 3

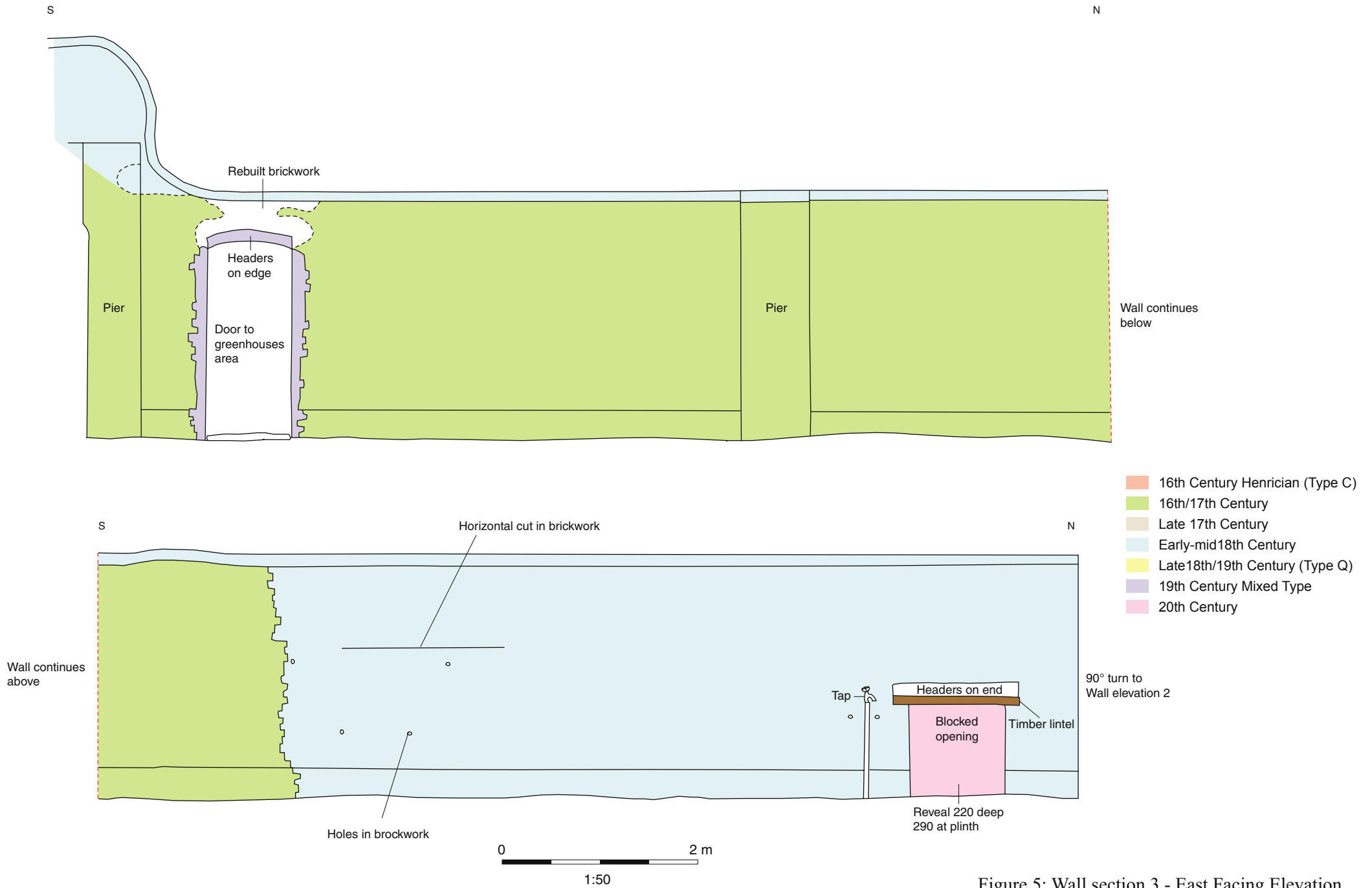


Figure 5: Wall section 3 - East Facing Elevation



Plate 1: View of section 1 east facing elevation



Plate 2: Detail of fixing for store roof on section 1 east facing elevation



Plate 3: Detail of south end of east facing elevation



Plate 4: View of section 2 south facing elevation



Plate 5: Detail of east end of south facing elevation



Plate 6: Detail of brickwork on east end of south facing elevation



Plate 7: View of west end of south facing elevation



Plate 8: View of infilled opening on section 3, east facing elevation



Plate 9: Detail of infilled opening on section 3, east facing elevation



Plate 10: View of section 3, east facing elevation



Plate 11: Detail of changing brickwork on section 3, east facing elevation



Plate 12: View of section 3, east facing elevation



Plate 13: View of section 3, east facing elevation towards gate



Plate 14: View of gate on section 3, east facing elevation



Plate 15: View of greenhouse on section 3, west facing elevation



Plate 16: View of section 3, west facing elevation



Plate 17: View of garage/store, section 1 and 2



Plate 18: View of garage/store, section 2



Plate 19: View of garage/store, section 1



Plate 20: Detail of planting fixing Section 1 east facing elevation







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