

# WINDSOR CASTLE GOVERNOR'S HOUSE (NORMAN GATE, SOUTH TOWER, FIRST FLOOR) SURVEY RECORD AND INTERPRETATION OF A MEDIEVAL TILED FLOOR

## ARCHAEOLOGICAL REPORT

Ian M Betts and Thomas G Cromwell



*This report has been prepared for use on the internet and the images within it have been down-sampled to optimise downloading and printing speeds.*

*Please note that as a result of this down-sampling the images are not of the highest quality and some of the fine detail may be lost. Any person wishing to obtain a high resolution copy of this report should refer to the ordering information on the following page.*

**WINDSOR CASTLE GOVERNOR'S HOUSE  
(NORMAN GATE, SOUTH TOWER, FIRST FLOOR)**

**SURVEY RECORD AND INTERPRETATION OF  
A MEDIEVAL TILED FLOOR**

**PART OF PROJECT 600 – WINDSOR CASTLE ROUND  
TOWER AND FIRE PROJECT ASSESSMENT**

Ian M Betts and Thomas G Cromwell

NGR SU9701277080

© English Heritage

ISSN 1749-8775

*The Research Department Report Series, incorporates reports from all the specialist teams within the English Heritage Research Department: Archaeological Science; Archaeological Archives; Historic Interiors Research and Conservation; Archaeological Projects; Aerial Survey and Investigation; Archaeological Survey and Investigation; Architectural Investigation; Imaging, Graphics and Survey; and the Survey of London. It replaces the former Centre for Archaeology Reports Series, the Archaeological Investigation Report Series, and the Architectural Investigation Report Series.*

*Many of these are interim reports which make available the results of specialist investigations in advance of full publication. They are not usually subject to external refereeing, and their conclusions may sometimes have to be modified in the light of information not available at the time of the investigation. Where no final project report is available, readers are advised to consult the author before citing these reports in any publication. Opinions expressed in Research Department Reports are those of the author(s) and are not necessarily those of English Heritage.*

Requests for further hard copies, after the initial print run, can be made by emailing:

[Res.reports@english-heritage.org.uk](mailto:Res.reports@english-heritage.org.uk)

or by writing to English Heritage, Fort Cumberland, Fort Cumberland Road, Eastney, Portsmouth PO4 9LD  
Please note that a charge will be made to cover printing and postage.

## SUMMARY

A medieval tile floor in the south tower of the Norman Gate at Windsor Castle was recorded, and the tile patterns were identified. The original floor pattern has been identified, as well as the general pattern of later repair.

## CONTRIBUTORS

The authors wish to thank Dave Fellows, Paddy O'Hara, Tony Wilmott, and especially Brian Kerr (all EH) for recording work and specialist input. The authors are also grateful to Dave Andrews and Nick Beckett of the Metric Survey Team (EH) for the rectified photo survey, and Jon Vallender (EH Graphics Team) for producing the illustrations.

## ACKNOWLEDGEMENTS

The authors are indebted to the Royal Household for the opportunity to examine and record the tile floor, and especially to David Plunkett who provided access and patiently attended the recording sessions. Steven Brindle (EH) is also to be thanked for his part in arranging access to the floor, as well as sight of draft text for the forthcoming Windsor Castle monograph. Thanks are also due to Jane Spooner of Historic Royal Palaces for the opportunity to examine the related tile floor in the Bloody Tower at the Tower of London. Finally, the authors wish to thank the Trustees of the British Museum for their kind permission to reproduce the Eames tile drawings.

## ARCHIVE LOCATION

Fort Cumberland, Portsmouth

## DATE OF SURVEY

April 2000

## CONTACT DETAILS

Dr Ian Betts, Museum of London Archaeology, Mortimer Wheeler House, 46 Eagle Wharf Road, London, N1 7ED. Tel: 0207 566 9328.

Email: [ibetts@museumoflondon.org.uk](mailto:ibetts@museumoflondon.org.uk).

Thomas Cromwell, English Heritage, Fort Cumberland, Fort Cumberland Road, Eastney, Portsmouth, PO4 9LD. Tel: 02392 856752.

Email: [tom.cromwell@english-heritage.org.uk](mailto:tom.cromwell@english-heritage.org.uk).

## CONTENTS

Introduction .....	1
Aims of the project .....	2
Recording methods .....	2
Floor Tile Types.....	3
Decorative designs.....	4
Original floor areas .....	5
Original floor design.....	6
Relaid floor areas .....	6
Conclusions .....	8
References .....	9
Tables.....	10
Figures.....	12

## INTRODUCTION

At the start of 2000, the English Heritage Centre for Archaeology (CfA) was invited to examine and record a medieval tiled floor in the southern tower of the Norman Gate that forms part of the Governor's House at Windsor Castle (Fig 1). The impetus for the recording was a programme of remodelling and redecoration following the temporary vacancy of the Governor's House. An earlier opportunity to investigate the Norman Gate occurred in 1990 under conditions of limited access, and its record consisting mainly of photographs and sketches of timber structures was built upon in 2000.

Edward III's reign saw a grand rebuilding of the upper ward starting in 1357 (Brindle and Kerr 1997, p39), and the present tower appears to have been built sometime between 1358 and 1361, depending on the interpretation of extensive but patchy contemporary construction records relating to a complex series of works. Pipe Roll records indicate the reconstruction of turrets either side of an existing gate called "la spicerie" in 1357-8 (*Pipe Roll 33 Edward III*) and materials for the construction of a new gate with two turrets ("*nova porta cum duobus turris*") in 1360-1 (*Pipe Roll 35 Edward III*), followed by fittings for the new gate in 1361 (*Pipe Roll 35 Edward III*). St John Hope (and Colvin after him) identified "la spicerie" as a gate into the Royal Apartments later replaced by Wyattville's State Entrance, and the new gate of 1360 as the Norman Gate. An alternative reading of the accounts could be that they refer to annual totals of expenditure on a single ongoing construction, with the Norman Gate being the remodelled "la spicerie" gate of 1357-8 as well as the new gate of later accounts (Brindle forthcoming, based on *Pipe Roll 33 Edward III*). In either case the tile floor is unlikely to have been laid any earlier than 1361 when records refer to nails, glass, latches, and other materials to fit out the new gate (Hope, i, pp218-9 and Colvin, ii, p879, based on *Pipe Roll 35 Edward III*). Another tantalising possibility that could push the tiling into the following year is raised in William of Mulsho's accounts for 1362-3 which indicate the construction of a number of vaults at the castle including two in the "gate with two little vaults" (PRO E101/493/11), which might refer to the Norman Gate (Colvin, ii, p878). However it seems odd that vaults were being inserted after parts of the structure were fitted out (Brian Kerr *pers comm*). Unfortunately there is no specific reference to the paving of the chambers in this tower. The accounts contain references to payments such as "To Elias the paviour for laying 6050 paving-tiles at 12d. the thousand" in 1362-3 (Hope, i, p186), and "To Elias the paviour and his fellows for laying 152500 paving-tiles in divers chambers of the King and Queen, at 14d. a thousand" in 1363-5 (Hope, i, p189). While the first of these payments appears in the same account as the payment for the two vaults in the "gate with two little vaults", it is not possible to use these accounts to date the laying of this particular floor with any confidence, and it can be dated only approximately by the completion of the building that houses it. Given that the opportunity to examine these rooms would not come up again for a number of years, a site meeting was arranged to discuss the potential for recording, and the aims stated below were produced.

The layout of the Norman Gate has two towers flanking the gate arch, linked at first-floor level by a chamber above the arch for the portcullis. There are rooms in both towers at second floor level, as well as a second-floor room above the portcullis chamber. The tower rooms are hexagonal, with vaults ceiling the ground-floor rooms and forming the principal floor. The chambers above have timber floor and roof structures. Incorporation of the north tower into the Elizabethan Long Gallery has left only the south tower and

portcullis room to serve as part of the Governor's Apartments, but in its original form the complete suite of rooms at first-floor level could have formed a small set of chambers with services (latrine and stairs) at the rear of the south tower. There is evidence in the ceiling of the first-floor south tower room that indicates a timber partition once divided it off from the portcullis room (see fig 8), and examination under the timber flooring of the portcullis room confirmed that the tile paving in the south tower did not extend beyond the edge of the room. Both the tower room and portcullis room have fine medieval fireplaces that are largely intact, although both have attracted graffiti in the form of heraldic carvings from Civil War prisoners. The two large windows in the tower room retain their original wooden shutters, and have further heraldic graffiti in the splays that was recorded and published in Morshead 1958 (Tony Wilmott *pers comm*).

## AIMS OF THE PROJECT

- The first aim was to create a complete record of each tile, since access to the floor is very rare.
- The second aim was to determine the pattern (or patterns) of the floor.
- The third aim was to determine if the floor was an original medieval feature, and to determine any recognisable sequence of repairs.
- The fourth aim was to record the medieval fireplaces in both the tower room and gateway room for comparison with other medieval fireplaces in the Castle.

## RECORDING METHODS

It was decided to make as thorough a record as possible of the floor, so the CfA agreed to create an accurate drawing of the floor to serve as a base for detailed examination of the tiles by Dr Ian Betts. The floor was recorded on 17-19 April 2000, and the tile identifications took place on 12 & 13 June 2000. The English Heritage Photogrammetry Team was also asked to create a rectified photograph of the floor (see fig 2). The floor was drawn tile-by-tile on drafting film at a scale of 1:10, using a one-metre planning frame and an arbitrary central baseline. Each tile was numbered on the plan, and this was the basis of a detailed examination of each tile's pattern. The plan and list were then combined in CAD to produce an as-found reconstruction of the floor for interpretation purposes. Oblique photographs of the floor were also taken for reference, with target points visible in each photograph that were recorded on the drawing. It should be noted that two later wooden window seats covered the extension of the floor into the splays, and that these areas were not recorded (see fig 3).

The two fireplaces were drawn as elevations at a scale of 1:10 (including splays), and were photographed. This information was added to the CfA archive of the adjacent Round Tower project (site 431), and is not presented here.

During the recording process the opportunity was taken to examine the floor surfaces of the gate room and hallway hidden by wooden board floors through gaps made by the removal of individual boards to gain access to modern services. The access was limited to chance, but revealed only rough plaster floors that suggest the tile floor ends at the edge of the tower room.

1178 separate tiles were identified and uniquely numbered on plan, which was then used to create a Microsoft Excel database of descriptions. 35 different tile types were identified, including a number of Penn, 'Westminster', and more modern types.

## FLOOR TILE TYPES

The majority of tiles used in the floor are of Penn type, but other earlier and later types are present (Table 1). There are eight decorated 13th century 'Westminster' tiles and 12 Victorian decorated tiles. Also present are 17 concrete tiles which may have been installed at the same time as the 19th century decorated examples. The remaining tiles are medieval but are too worn to identify, although most of these are almost certainly of Penn type.

### 'Westminster' tile

The term 'Westminster' is used for tiles of this type because they were first recognised at Westminster Abbey, where they are found in a number of locations notably the Muniment Room and Pyx Chamber. Some types of Westminster tiles were made at a floor tile kiln found at Farringdon Street in the 19th century, although other kiln sites may yet be found.

Tiles belonging to the 'Westminster' group can be dated to the period 1250-1300 (Betts 2002, 25). They were used extensively in monastic buildings and parish churches in the London area and other sites in Southeast England and the Midlands during the 13th century. The tiles found in the Norman Gate floor were probably reused from another floor elsewhere in the castle. 'Westminster' tiles were certainly used at Windsor during the 13th century as a number of both plain glazed and decorated examples were found during excavations at the Round Tower (Betts 1998). This includes a tile with the same decorative design as that used in the Norman Gate floor.

### Penn tile

Vast numbers of both plain and decorated floor tiles were produced at Penn in Buckinghamshire during the 14th century. They are distributed widely in the Thames Valley and were used in large numbers in London. Tile production had started at Penn by the early 1330s but it was not until after the Black Death (c1348) that floor tiles began to be produced in large numbers. There are documentary accounts of tiles (probably flooring) being transported by cart and boat from Penn to Windsor in 1356/7. Further accounts dating from 1352 describe the purchase of Penn tiles to pave the Warden's Hall, the Chapter House and the vestry of the College of Canons in Windsor Castle. A small area of the Chapter House pavement was revealed in archaeological work in 1989 and the paving of a lobby in the 14th-century King John's Tower was exposed and photographed during refurbishment work in 1992, but the only pavement currently visible is that in the Aerery laid in 1355 (Keen 2002, 220-5).

The installation of the Penn tiled floor in the Norman Gate in the later 1350s or early



1360s can be seen as part of a major period of floor installation in various buildings at the Castle during the mid 14th century. Further Penn tiles were installed in the Norman Gate floor during later repair work. These replacement tiles were probably made around the same period (two design types are also found in the Aerary floor of 1355) although a later date cannot be entirely discounted for all design types as Penn floor tiles were still available until the 1380s (Eames 1992, 57). It is also possible that tiles were salvaged from other buildings in the castle during later refurbishments such as occurred in the 1680s and were thus available for reuse in this chamber (Brian Kerr, *pers comm*).

### Victorian tile

Twelve decorated Victorian tiles were laid along the eastern edge of the floor. The 17 concrete tiles may have been installed during the same period. Considerable care was taken with those concrete tiles to match their colour with the surrounding worn Penn examples. The match is so good in certain cases that they can only be identified on close inspection of the floor.

## DECORATIVE DESIGNS

### Westminster tile

Only three different decorative designs are present (Fig 4) all of which have been published by Betts in his catalogue of "Westminster" tiles (design numbers W1, W56, and W138).

### Penn tile

There are 29 decorated Penn designs present (Fig 4), although some of these are only present in small numbers (Table 2). Two major design types are present, those which can be used on their own and can be placed in the floor in any orientation and those which have to be used in groups of either four or nine tiles to produce a circular pattern. It is the four tile groups that seem to have formed the original floor pattern.

The majority of tile designs have been published by either Hohler in his 1942 catalogue of tiles from Buckinghamshire (denoted by the letter P in Table 2), or by Eames in 1980. Design type 6 is not published in either Eames or Hohler so has been drawn using the *in situ* tiles in the floor of the Norman Gate. Design 7 is recorded in Hohler as a product of the tiling at Little Brickhill, Buckinghamshire (Hohler design LB15) but fabric analysis on tiles of this design from London have confirmed that they belong to the Penn group. Design 14 is of interest, as the Norman Gate tiles have helped to reconstruct most of the missing area in Eames publication drawing (Eames type 2864).

Two tiles (designs 22 and 23) are so worn that it is not possible to say precisely which design type is present. In each case, the design could be one of two very similar decorative types illustrated by Eames (drawings of each are included with this report).

In addition to the 609 decorated Penn tiles there are 217 plain glazed examples which are

mostly either yellow, dark green or black. The only exception is a solitary light green tile. A number of the plain yellow tiles used in the eastern floor area also have a slight greenish tinge.

### Victorian tile

The floor contains 12 Victorian decorated tiles, all of the same design. They are of small Minton type introduced about 1860 (Beulah 1987, 13, 18 fig 18 bottom row third left).

## ORIGINAL FLOOR AREAS

It is not always clear which parts of the tiled floor are original and which areas may have been re-laid at a later date. Outlining the extent of the original floor is made more difficult by the very worn nature of many of the tiles particularly those near the doorway and in the centre of the room (Fig 5).

A good indication that parts of the floor are original is the survival of two, admittedly rather mutilated, plain single tile borders. One is in the eastern half of the room, whilst the other runs just east of the centre line of the tower floor. These have the effect of splitting the eastern half of the floor into two panels, running north-south across the length of the room. Many of the tiles in the border are slightly offset in relation to the adjacent rows of decorated tiles. This is almost certainly a feature of the original floor layout, which is unlikely to have been retained if this area of floor had been re-laid.

The eastern-most border comprises a line of alternating light (plain yellow) and dark (dark green and black) tiles which separates an area of plain yellow tiles to the east from a panel of decorated tiles. The other, which seems to have consisted of just plain yellow tiles, separates two decorated panel areas either side of the centre line of the room. A single line of yellow tiles provides a more effective visual break between the decorative panels than an alternating band of light and dark tiles. However, an alternating band was needed to differentiate the plain yellow panel from the tile border.

Another good indication that the eastern area of the floor is largely original is the survival of the decorative four-tile panel arrangement on either side of the plain yellow tile border. All these tiles have the same decorative pattern (design 6) which is a further indication that these tiles here are original. The wear pattern on these tiles is also consistent with this area of floor as being original as the decorated tiles furthest from the door are, as would be expected, better preserved than those nearer the centre of the floor.

The plain yellow glazed panel is relatively unworn, which would suggest that this area of floor had been covered by a piece of furniture such as a large chest. This would be an ideal position as it would be away from the fireplace, doorway and the two window openings. It would also explain why only plain tiles were used in this part of the floor, as there was no need to install decorated tiles here if the floor was to be largely obscured from view.

## ORIGINAL FLOOR DESIGN

If the floor in the south-eastern part of the room is original, as the evidence seems to suggest, then it is possible to reconstruct the probable appearance of the complete floor.

A vital clue to the floor's original design lies with the position of the plain tile border between the decorative panels. This border lies near the mid-point of the floor, which is unlikely to be a coincidence. Its position suggests that two further plain tile borders formerly lay to the west. The complete floor therefore would have been divided into four separate panel areas (Fig 6). It seems reasonable to assume that these were all eight tiles wide, the same as the surviving decorative panel (the incomplete decorative panel to the west of the centre line must have been at least eight tiles wide). The division of the tile pavements into separate panels of decorated tiles divided by single lines of plain glazed tiles is a common design technique of the 'Westminster' tile-layers. The same technique was also employed by craftsmen laying a similar Penn tiled floor in the first-floor chamber of the Bloody Tower in the Tower of London (Keen 2002, 227) above a vault dating to 1360-62 (Cumow 1978, 59), where the four surviving panels were six tiles wide and all of the five published patterns A-E (Cumow 1978, 61) are found at the Governor's House (A=Tile 6 or 7, B=Tile 9, C=Tile 26, D=Tile 16, E=Tile 13). Payment records for Windsor show that most of the known work from 1352 to 1365 (including periods from November 1362-November 1363 and November 1363-April 1365) was by Elie or Elias the Paviour, written variously as "Elie Tilere" and "Elie paviere" in the Latin text (Green 2003) and his assistants. The authors have not found a name for the tiler at the Bloody Tower.

What is less certain is the tile arrangement along the very western edge of the room as there is insufficient floor area for another decorative panel in the location (at a spacing of eight tiles per panel there are two rows left over at the west edge). The most likely explanation is that this space was filled by plain tiles, perhaps bordered by an alternating yellow and dark green/black band, mirroring that to the east. At the edge of 13th century 'Westminster' tiled floors, such as that in the Muniment Room at Westminster Abbey, plain tiles were used where there was insufficient space for another panel.

There is no indication as to the tile designs that would have been used in the westernmost panel, although it would seem reasonable to assume that it was the same as that used in the other two decorative panels, namely a four-tile design of type 6. It is the later repair and patching which has led to the wide range of design types that are present in this area today.

## RELAID FLOOR AREAS

In some ways it is actually easier to identify repaired and re-laid areas of flooring than establish which areas are original. There are obvious signs of repair such as the inclusion of earlier 'Westminster' and later Victorian tiles, but there are also a number of features which indicate that the Penn tiles themselves have been altered or replaced. Features which can be used to indicate alteration include:

- i) The positioning of worn tiles next to tiles showing far less wear.

ii) Tiles of different design breaking a decorative sequence.

iii) Tiles of the right design but set in the floor at the wrong angle

All these features can clearly be seen in the areas of floor which are marked as re-laid in Figure 5. This includes the circular plug in the centre of the floor which is clearly a later insertion to provide access to the fixing point of a light fitting hanging from the “eye” of the vault below. Other evidence of patching includes the presence of certain decorated Penn tiles fired to a different shade of brown and yellow to the other tiles in the floor (designs 9 and 13). This suggests that they arrived at Windsor as a separate batch to the other Penn tiles present in this floor.

The wide variety of tile designs used in the patching work suggests that there were a number of separate phases of repair, although a single phase of repair with mixed stocks of salvaged tiles cannot be ruled out. Multiple phases would explain why two tiles near the western edge of the floor have had their corners cut away after firing to allow new tiles to be inserted (Fig 7). What is not clear is the chronological order of this patching work, nor is there any indication as to when this work was carried out.

In the north-west area tiles with design 19 probably represent one area of contemporary patching, whilst the area in front of the fire with designs 4 and 24 represent another. Two separate areas of the floor have a nine tile design made up of a central ‘Westminster’ tile (design 2) surrounded by eight Penn tiles (design 14); presumably both were installed at the same time.

Not surprisingly the areas of tile replacement correspond with the sections of floor which would have had most use, namely near the windows, the doorway and in front of the fire. These replacement tiles would have presumably come from other parts of the castle which were undergoing rebuilding, or perhaps represent spare tiles held in stock from other flooring work.

Penn tiles with the same design as those used to repair the Norman Gate floor have certainly been found elsewhere in the castle. Design types 24 and 28 are found in the Aerary floor, whilst no less than 12 Norman Gate designs were found during excavation between 1989-97 at Castle Hill lawn, the Round Tower and various sites in the north-east corner of the Upper Ward (Betts 1998).

One interesting hypothesis is that the patching represents a deliberate attempt to preserve the medieval character of this chamber at a time when so much of the medieval castle was being swept away by Charles II (Brian Kerr, *pers comm*). The rooms were used during the Civil Wars to hold Royalist prisoners who carved a number of coats of arms and names in the window splays and fireplace lintels such as Sir Edmund Fortescue and Sir Francis Dodington, as well as the more colourful Captain Browne Bushell. Civil War-era graffiti had also been found in the north tower in 1990, suggesting that the whole Norman Gate structure may have housed prisoners. It is possible that the chamber was preserved after the Restoration as a memorial to some of them. A number of other rooms in the castle were remodelled in the late 17<sup>th</sup> century, and may have been the source of the replacement tiles. This fits well with the “antiquarian” feel of the room,

which still retains its original fireplaces and window shutters. Indeed, several of the coats-of-arms on the window splays are well-executed renditions carved in relief and would appear to be more skilful than might be expected of the prisoners unaided. Even some of the names on these splays appear in letters worthy of commissioned monuments, suggesting they were not necessarily the idle scratchings of the nobility. While masons could have been brought in to serve the high-ranking prisoners during their incarceration, these may instead represent later “restorations” of earlier carvings or even new additions to commemorate prisoners who were not otherwise represented by the surviving Civil War graffiti.

## CONCLUSIONS

Analysis of the decorative designs, wear patterns and tile positions indicates that much of the eastern half of the floor is in its original position and therefore dates to the Norman Gate’s construction in the late 1350s or early 1360s. A large number of different decorative patterns are present, particularly on the Penn tiles, but only one design can be identified as belonging to the original floor. All the remaining decorated tile designs were added during later repair work, including the eight earlier 13<sup>th</sup>-century ‘Westminster’ tiles.

From the surviving original floor area it is possible to reconstruct the full floor pattern. Single rows of plain glazed tiles run north-south to divide the floor into four main panel areas. From east to west these were a panel of plain yellow tiles, followed by three panels of decorative tiles comprised of sets of four tiles laid in a circular pattern. Further plain tiles were probably set along the western border of the pavement.

Later additions to the floor include the installation of concrete tiles to replace missing or worn medieval examples and 12 decorated Victorian tiles in the Northeast corner of the room. There is no indication as to exactly when the central round plug was installed, but this too is a later addition.

Very few 14<sup>th</sup>-century Penn tiled floors have survived intact in England so the Norman Gate floor represents a rare, if rather mutilated, survival. Documentary and archaeological evidence indicate similar decorative tile pavements would have covered the floors of other medieval buildings at Windsor but, with the exception of that in the Aerary, these have long since been replaced. The Norman Gate floor is of particular interest in showing a complex history of repair and alteration that continued up to the 19th century.

## REFERENCES

- Beulah, K, 1987 *Church tiles of the nineteenth century*, Shire Album, 184
- Betts, I M, 1998 Windsor Castle: assessment report on decorated and plain floor tile, Museum of London unpublished archive report
- Betts, I M, 2002 *Medieval 'Westminster' floor tiles*, MoLAS Monog ser 11
- Brindle, S and B Kerr, 1997, *Windsor Revealed*, English Heritage, London
- Brindle, S, in Brindle & Kerr, *Windsor Castle* (forthcoming monograph on excavations and investigation of the Round Tower and other areas of the Upper Ward)
- Colvin, H M (ed), 1963, *The History of the King's Works*, 6 vols, London HMSO
- Cumow, P E 1978, "The Bloody Tower", in Charlton J (ed) *The tower of London: its buildings and institutions*, London HMSO, pp55-61
- Eames, E S, 1980 *Catalogue of medieval lead-glazed earthenware tiles in the Department of Medieval and Later Antiquities British Museum*, London
- Eames, E S, 1992 *English Tilers*, London
- Green, Miles, 2003 *Medieval Penn Floor Tiles*, Penn
- Hohler, C, 1942 Medieval paving tiles from Buckinghamshire, *Rec Bucks* 14, 1-49, 99-132
- Hope, W H St John, 1913, *Windsor Castle: an Architectural History*, 3 vols, London
- Keen, L, 2002 *Windsor Castle and the Penn tile industry* in Windsor: Medieval Archaeology, Art and Architecture of the Thames Valley (ed L Keen and E Scarff), British Arch Ass Conference Transactions XXV, 219-237
- Morshead, O, 1958 Royalist Prisoners in Windsor Castle, *Berks Archaeol J*, 56, 1-26

## TABLES

Table I Floor Tile types

Tile Type	Number of tiles
'Westminster'	8
Penn (decorated and possible decorated)	609
Penn (plain and possible plain)	217
Worn medieval	315
Victorian	12
Concrete	17
Total	1178

Table 2 Floor tile designs

Design no.	Tile type	Eames / Hohler design no. (Penn tiles), Betts design no. ('Westminster' tiles)	Number of tiles in floor
1	'Westminster'	Betts, W1	1
2	"	Betts, W138	3
3	"	Betts, W56	4
4	Penn	1842	17
5	"	1827 / P73	26
6	"	- (unpublished)	290 (includes 4 possible examples)
7	"	1848 / LB15	8
8	"	1833 / P109	3
9	"	1837 / P112	1
10	"	2711 / P114	1
11	"	1399 / P121	4 (includes 3 possible examples)
12	"	2819 / P139?	5
13	"	1803	12 (includes 1 possible example)
14	"	2864	7
15	"	2226 / P50	7 (includes 1 possible example)
16	"	2231 / P54	22 (includes 1 possible example)
17	"	2199 / P71	18
18	"	2200 / P69	24 (includes 5 possible examples)
19	"	2342 / P68	78 (includes 4 possible examples)
20	"	2551	6
21	"	2426 / P86	12
22	"	2537 or 2538	1
23	"	2390 / P63 or 2391	1
24	"	2395 / P62	21 (includes 1 possible example)
25	"	2394	1
26	"	2396 / P76	5
27	"	2071?	2 (includes 1 possible example)
28	"	2353 / P58	16 (includes 6 possible examples)
29	"	2328	8 (includes 1 possible example)
30	"	2027	6
31	"	2029	4
32	"	2037	3
33	"	Plain	217 (includes 2 possible examples)
34	Concrete	Plain, Victorian?	17
35	Victorian	Decorated	12



## FIGURES

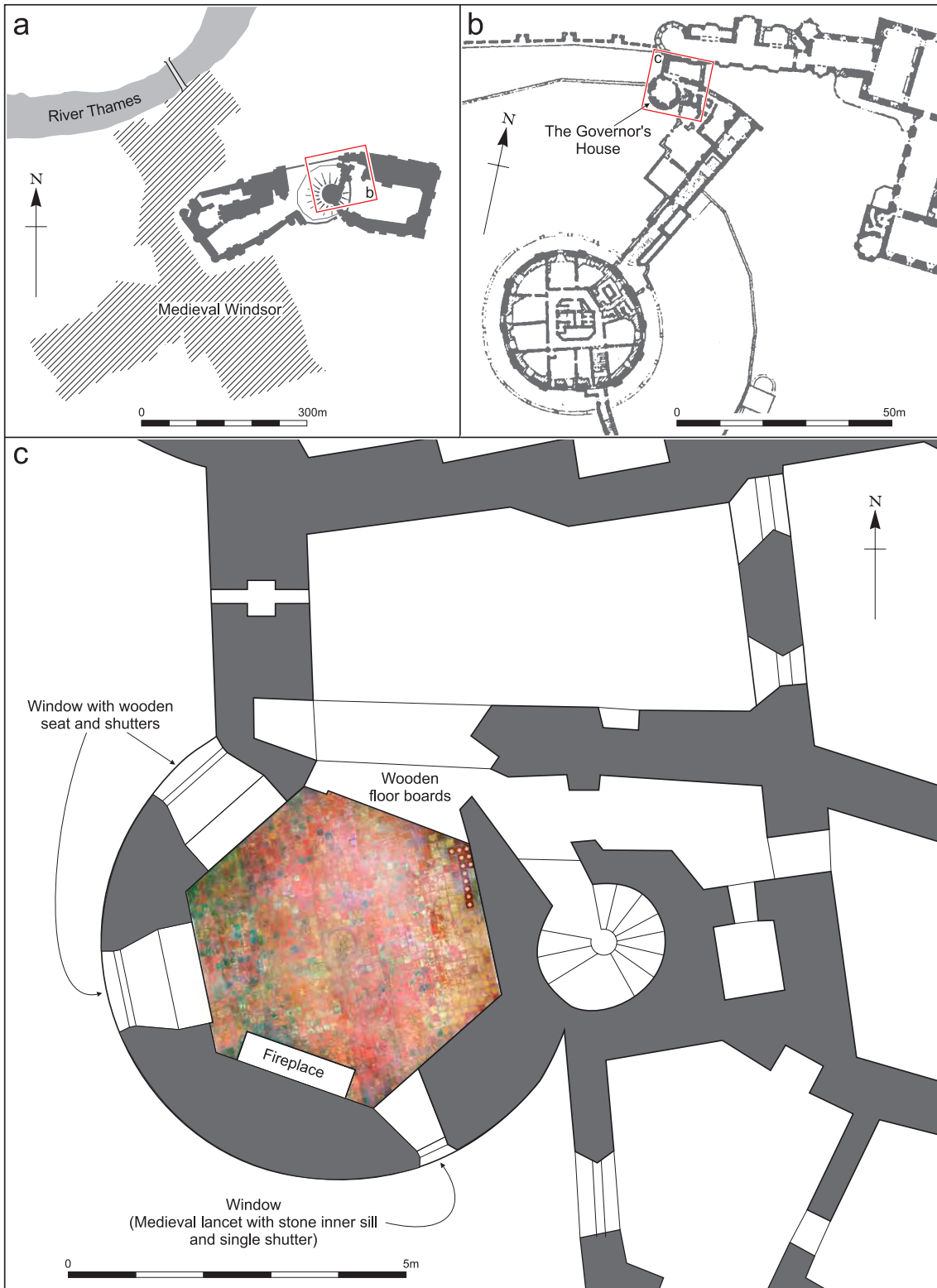


Figure 1 Maps showing the location of the tile floor in the Governor's House.

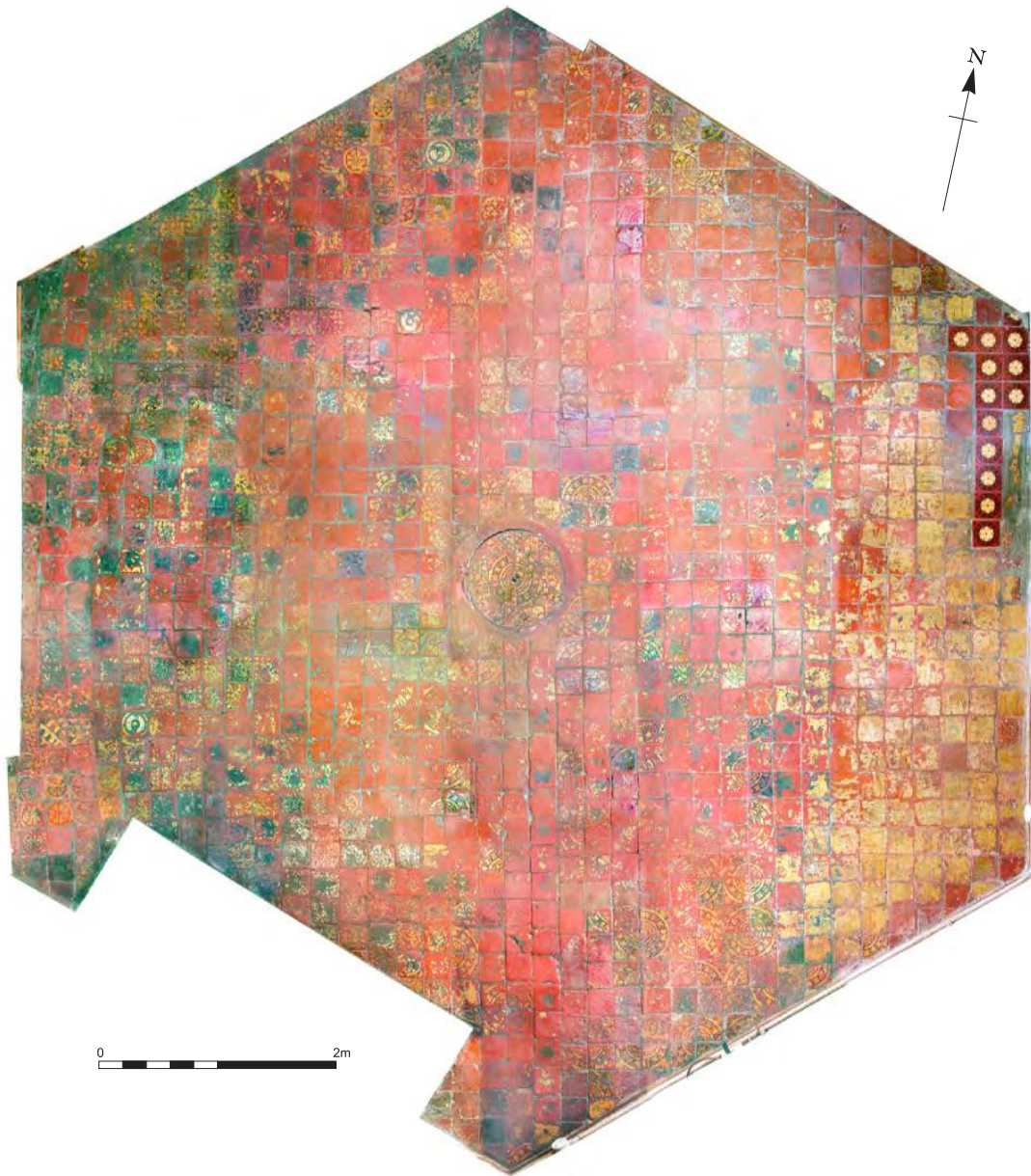


Figure 2 Rectified photograph of the tile floor.



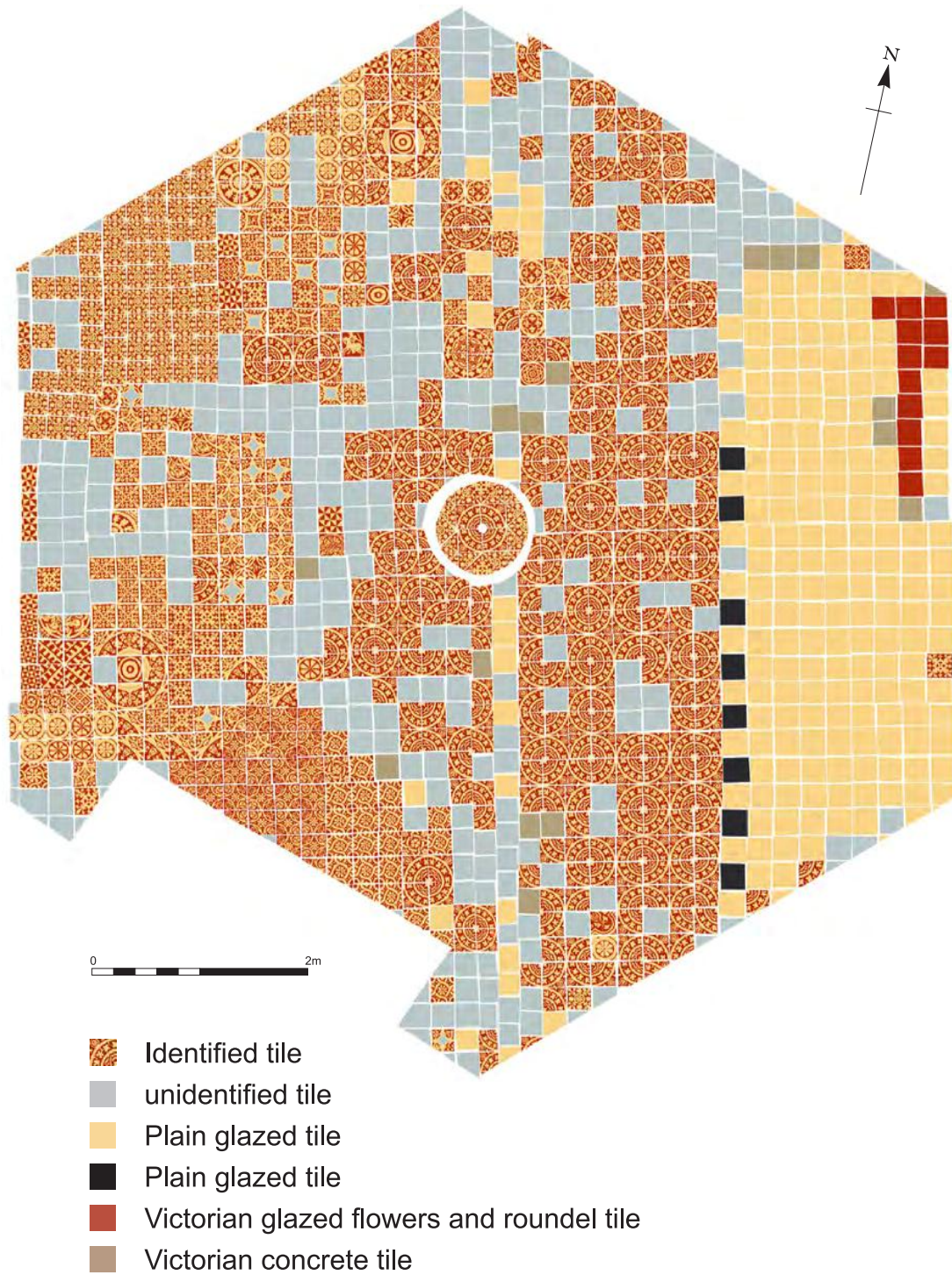


Figure 3 Drawing of the floor showing all identifiable tile designs.



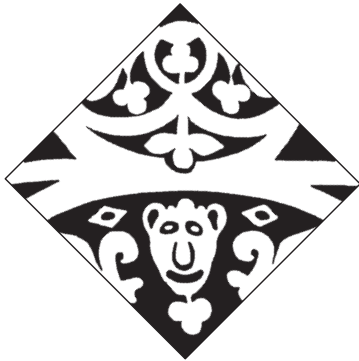
Tile 1 - Betts W1



Tile 2 - Betts W138



Tile 3 - Betts W56



Tile 4 - Eames 1842



Tile 5 - Eames 1827



Tile 6 - Unpublished



Tile 7 - Eames 1848



Tile 8 - Eames 1833



Tile 9 - Eames 1837



Tile 10 - Eames 2711



Tile 11 - Eames 1399



Tile 12 - Eames 2819

Figure 4a Key to the tile designs identified (© Trustees of The British Museum).



Tile 13 - Eames 1803



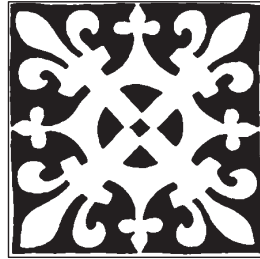
Tile 14 - Eames 2864



Tile 15 - Eames 2226



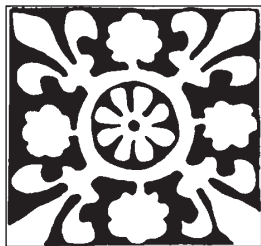
Tile 16 - Eames 2231



Tile 17 - Eames 2199



Tile 18 - Eames 2200



Tile 19 - Eames 2342



Tile 20 - Eames 2551



Tile 21 - Eames 2426



Tile 22 - Eames 2537

Or



Eames 2538

Figure 4b Key to the tile designs identified (© Trustees of The British Museum).



Or



Tile 23 - Eames 2390

Eames 2391



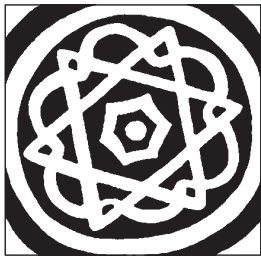
Tile 24 - Eames 2395



Tile 25 - Eames 2394



Tile 26 - Eames 2396



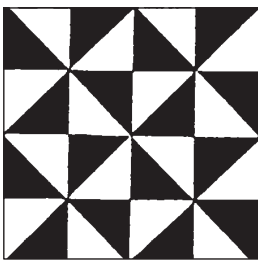
Tile 27 - Eames 2071 (?)



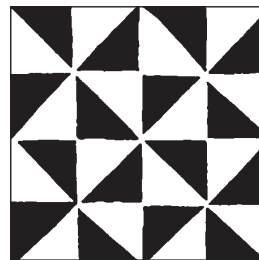
Tile 28 - Eames 2353



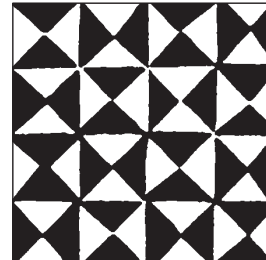
Tile 29 - Eames 2328



Tile 30 - Eames 2027/2030

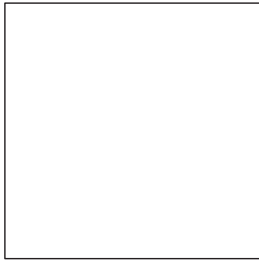


Tile 31 - Eames 2029

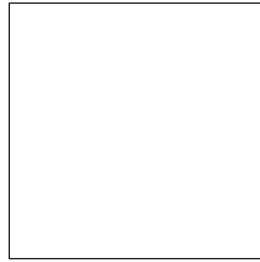


Tile 32 - Eames 2037

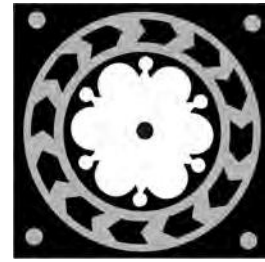
Figure 4c Key to the tile designs identified (© Trustees of The British Museum).



Tile 33 - Plain glazed



Tile 34 - Victorian concrete



Tile 35 - Victorian glazed flowers and roundel

Key to colours

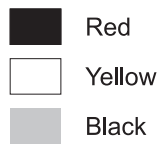


Figure 4d Key to the tile designs identified (© Trustees of The British Museum).



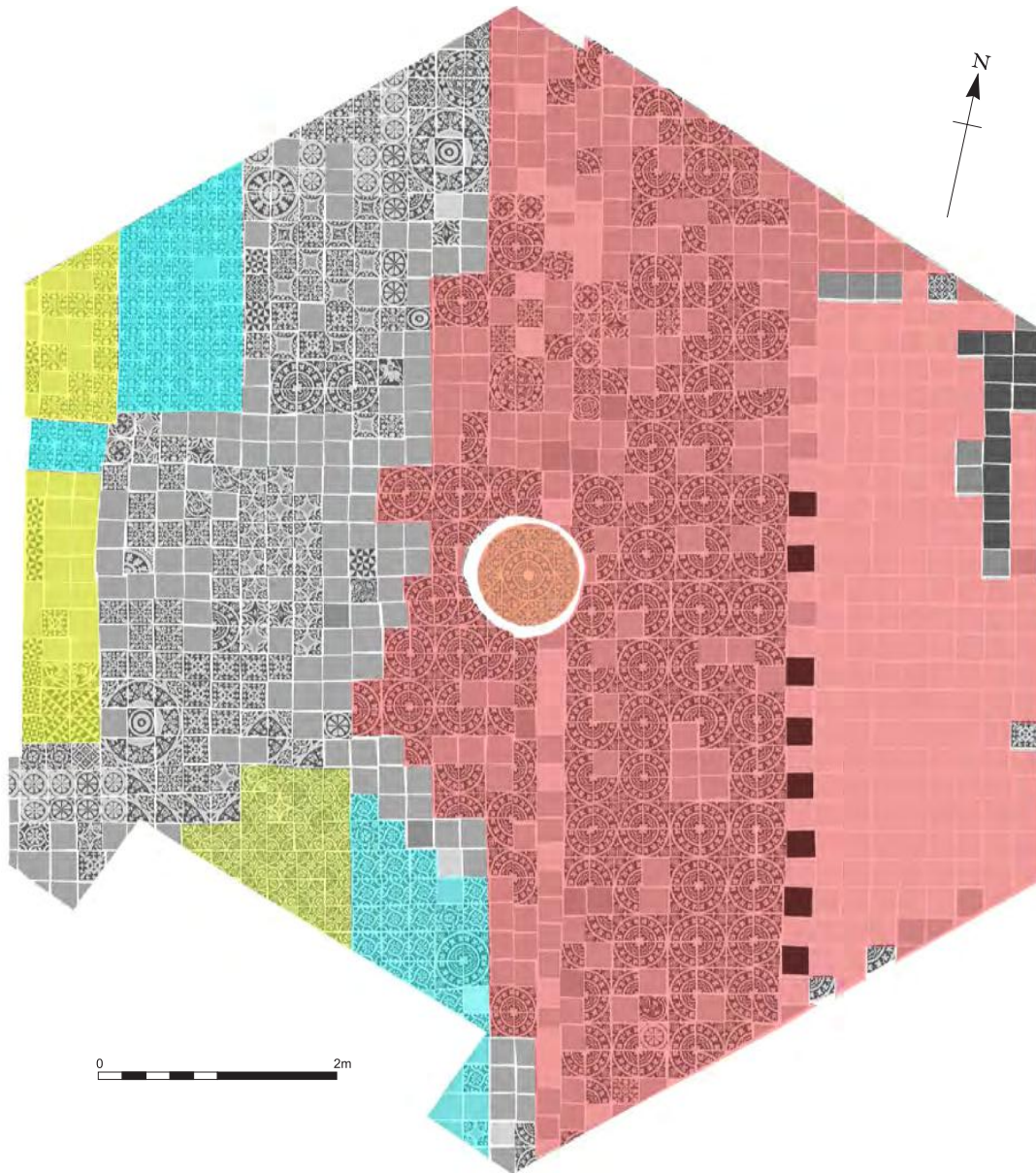


Figure 5 Recognised patches in the floor. The pink area appears to be original pattern. The grey area is too jumbled and worn to pick out definite patterns or patches.

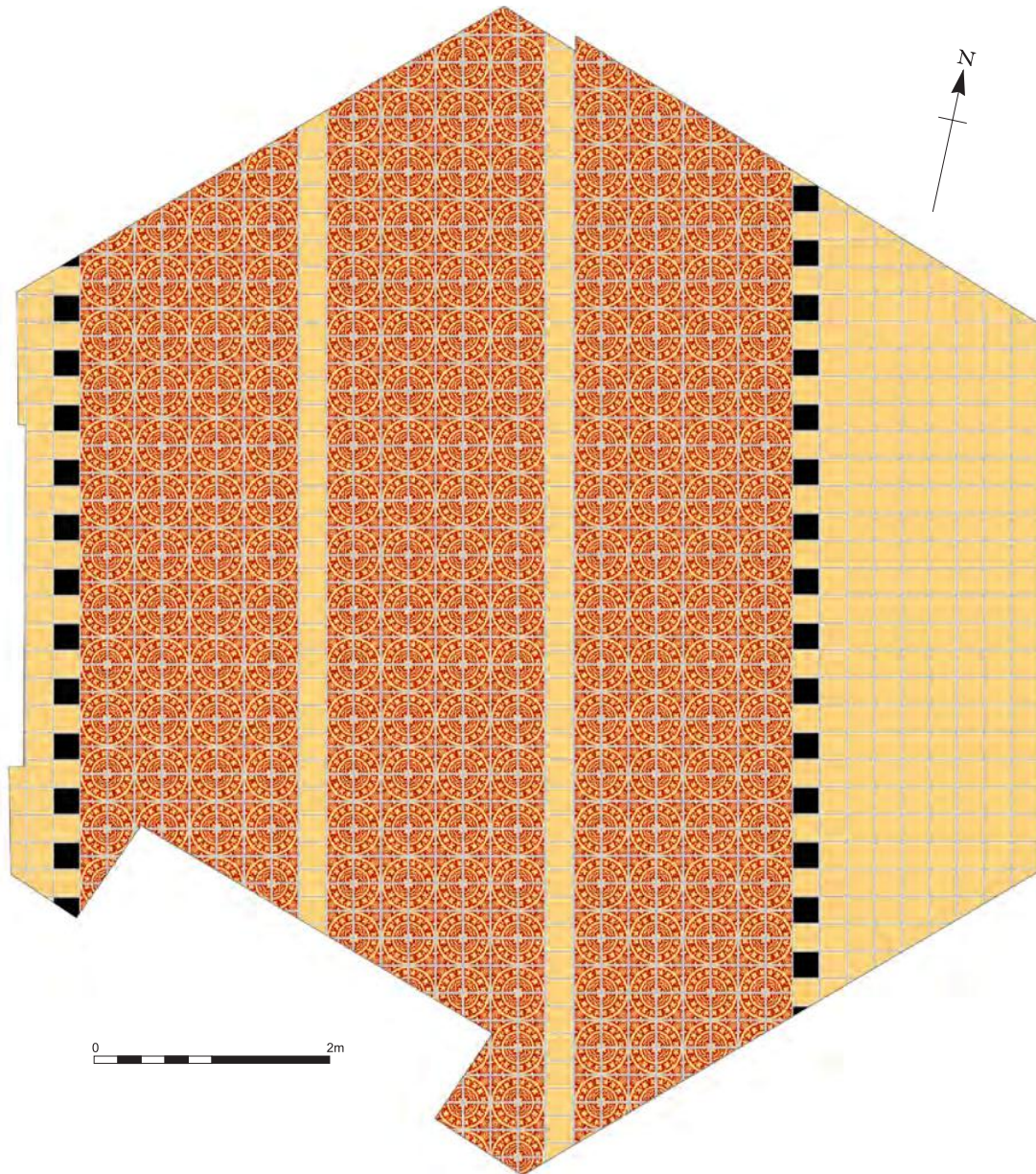


Figure 6 Reconstruction of original floor design.





Figure 7 Detail of western floor area, showing evidence of later patching.

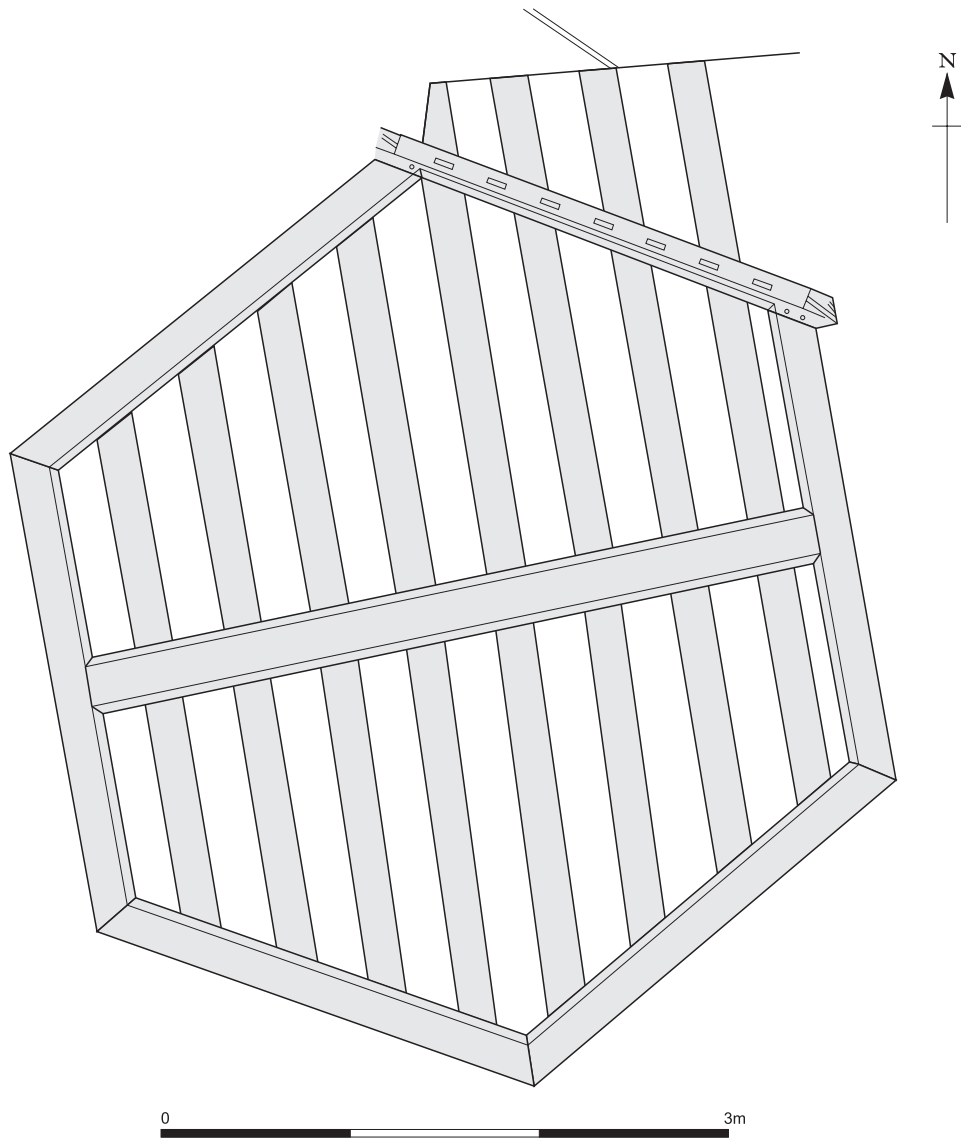


Figure 8 Reflected plan of ceiling joists, showing chamfered edges and empty mortices for screen across entrance. (After John Pigeon).



## **ENGLISH HERITAGE RESEARCH DEPARTMENT**

*English Heritage undertakes and commissions research into the historic environment, and the issues that affect its condition and survival, in order to provide the understanding necessary for informed policy and decision making, for sustainable management, and to promote the widest access, appreciation and enjoyment of our heritage.*

*The Research Department provides English Heritage with this capacity in the fields of buildings history, archaeology, and landscape history. It brings together seven teams with complementary investigative and analytical skills to provide integrated research expertise across the range of the historic environment. These are:*

- \* Aerial Survey and Investigation*
- \* Archaeological Projects (excavation)*
- \* Archaeological Science*
- \* Archaeological Survey and Investigation (landscape analysis)*
- \* Architectural Investigation*
- \* Imaging, Graphics and Survey (including measured and metric survey, and photography)*
- \* Survey of London*

*The Research Department undertakes a wide range of investigative and analytical projects, and provides quality assurance and management support for externally-commissioned research. We aim for innovative work of the highest quality which will set agendas and standards for the historic environment sector. In support of this, and to build capacity and promote best practice in the sector, we also publish guidance and provide advice and training. We support outreach and education activities and build these in to our projects and programmes wherever possible.*

*We make the results of our work available through the Research Department Report Series, and through journal publications and monographs. Our publication Research News, which appears three times a year, aims to keep our partners within and outside English Heritage up-to-date with our projects and activities. A full list of Research Department Reports, with abstracts and information on how to obtain copies, may be found on [www.english-heritage.org.uk/researchreports](http://www.english-heritage.org.uk/researchreports)*

*For further information visit [www.english-heritage.org.uk](http://www.english-heritage.org.uk)*

