

Greys Court Oxfordshire



**Historic Building Analysis
Phase II:
Internal works, the floor
structures and associated
historic fabric**

oxfordarchaeology



April 2010

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 **THE NATIONAL TRUST**

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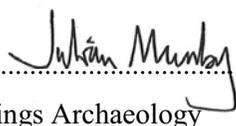
GREYS COURT

Rotherfield Greys, Henley on Thames
Oxfordshire

HISTORIC BUILDING ANALYSIS

**PHASE II: INTERNAL WORKS, THE FLOOR STRUCTURES
AND ASSOCIATED HISTORIC FABRIC**

**Oxford Archaeology
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GREYS COURT, ROTHERFIELD GREYS, OXFORDSHIRE

HISTORIC BUILDING ANALYSIS DURING PHASE II WORKS ON THE FLOOR STRUCTURES.

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GREYS COURT, ROTHERFIELD GREYS, OXFORDSHIRE

HISTORIC BUILDING ANALYSIS DURING PHASE II WORKS ON THE FLOOR STRUCTURES

SUMMARY

Oxford Archaeology (OA) has carried out a programme of archaeological analysis and recording of the floor structures at Greys Court, Rotherfield Greys, Oxfordshire for the National Trust. The main recording was carried out during 2008, with some additional work during 2009 and it was undertaken alongside a major project to lift all the floorboards through the house and remove asbestos from the voids.

The work has added to the understanding of the house gained from previous investigations including a major study undertaken by English Heritage in 2005 as well as a project to record the roof structures, undertaken by Oxford Archaeology in 2006-7. The project has also included dendrochronological analysis of a number of floor joists throughout the house, again adding to previous phases of dendrochronology, and this has provided crucial evidence in clarifying the phasing and historical development of the house.

In the medieval timber framed building the conservation works revealed the character of the medieval flooring, including the east ends of the jetty joists together with the moulded jetty fascia board. This adds to the information previously gathered about the medieval roof.

In the 16th-century East Range a consistent type of floor structure has been found with deep narrow joists with distinctive double tenon joints of a type that was being developed in the 16th century. The works also revealed that the south porch infilling the gap between the 15th and 16th century buildings was probably constructed in the early 17th century with the first floor at the level of the medieval building. A new first floor was inserted in 1759-60 at the level of the 16th century wing to which it was then connected by a doorway probably made by breaking through a former fireplace originally added in the early 17th century.

A major phase of alterations and additions to the house in the later 18th century involved floor structures throughout the building. The first floor in the north-west range was entirely renewed and enlarged and is of double construction with separate floor joists and ceiling joists joined to 'tall' joists which are almost certainly reused from the 16th century floor.

In the East Range the addition of the bow window was known to have necessitated the raising of the first floor, but removal of the floor boards revealed a consistent construction formed by re-use and replication of the 16th-century floor in the bay extension.

A number of interesting features have been temporarily revealed and recorded within floor voids, created by the raising of the first floor in several areas. The features of note have included several fragments (and larger surviving areas) of historic wall paper with decorative patterns, as well as a plaster dentil cornice and a section of earlier floor.



Overall, the study has shown the value of a close archaeological analysis of the structure as revealed by opening up, the importance of a careful consideration of the structural carpentry, and the need to calibrate findings by dendrochronology.

1 INTRODUCTION

1.1 LOCATION AND SCOPE OF WORK

- 1.1.1 Greys Court House is at the centre of a group of walls, buildings, gardens and landscape that have been in continuous use and occupation from the late 11th and 12th centuries through to the present day. Situated in the Lower Chilterns, four kilometres north west of Henley-on-Thames the building's earliest incarnation was as a substantial fortified house with towers rising over the curtain wall and central courtyard. Since then it has undergone numerous changes as the house and manor have changed hands until its most recent donation by the last family to own the house, Sir Felix and Lady Brunner, to the National Trust in 1969.
- 1.1.2 The majority of the buildings within the Greys Court complex are listed and part of the site has Scheduled Ancient Monument status. The park and gardens are on English Heritage's Register of Parks and Gardens of Special Historic Interest (no: GD2098).
- 1.1.3 The house and other buildings are well researched and reasonably well understood, but some aspects remain to be resolved. Most recently the whole complex has been the subject of an intensive study by the English Heritage Buildings and Landscapes Survey and Investigation Division which has resulted in a comprehensive report on the development of the house and associated buildings.¹ For this reason the scope of the archaeological investigations has not included new historical research but was more an advantageous opportunity to investigate and record internal structures while they were exposed.
- 1.1.4 The current recording work forms Phase II of a wider investigation associated with a range of conservation works undertaken at the house since 2006. In the first phase of work the roof structures were investigated, recorded and described, and a report on this was issued by OA in 2007.² The Phase II investigation which is reported on here focused on the floors in what is now the main house, which faces roughly east over the area of the medieval upper court. It contains remnants of buildings from the 1450s represented by the ground and first floor of the kitchen area, the 1570s when the present main front range was added, the 18th century when the north west range was added and the 19th and 20th centuries which saw alterations to several elements of the building.

¹ Barry Jones, *Greys Court, Rotherfield Greys, Oxfordshire, Vols 1-4*. English Heritage: Buildings and Landscape Survey and Investigation Division Report Series B/002/2005 (2005)

² [Jody Morris], *Greys Court, Rotherfield Greys, Oxfordshire. Historic Building Analysis During Phase I Roofing Works*, Oxford Archaeology report for National Trust (April 2007).

- 1.1.5 The main investigation and recording of the floors was undertaken during 2008, and after a delay in the conservation project, it continued in the first half of 2009. It was made possible due to removal of asbestos lagging from pipes running within the floor voids (and also below some stone floors and within walls). The work involved removing a large proportion of floor claddings in affected rooms on the ground, first and second floors of the main house. The underlying floor structures in these areas were fully cleaned and exposed to view, thus allowing a close examination of the floor structures that has not previously been possible.
- 1.1.6 The conservation programme also enabled a further series of dendro-chronological samples to be taken in order to extend the range of dated timbers from the roof to the main floor structure phases throughout the house. The samples and analysis were carried out by Dr. Dan Miles and Dr. Martin Bridge of the Oxford Dendrochronology Laboratory. Their report is appended, at the end of this report.

1.2 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND³

1.2.1 Greys Court today consists of a palimpsest of historic buildings, walls and gardens that reflect the variety of periods of occupation and development of the house and complex as a whole. The core of the house and gardens (Figure 2) rests within a 280-acre estate reduced to its present size at the beginning of the 20th century. The complex of buildings is on the south side of a hill facing down a dry valley. They consist principally of a group around the main house, aligned approximately north-south and including the well house, dairy and other subsidiary buildings. These are opposite the second group of complete buildings consisting of the ‘Cromwellian stables’ the East range and the Dower House. These two groups face each other over grass lawns and gravelled driveways. To the north east of the Cromwellian Stables are ruined remains of early structures, towers and walls. To the east of the buildings are a series of walled gardens, also incorporating ruined remains of other buildings and barns. To the south of the building groups is a ha-ha as well as the driveway that leads up from a lodge building on the road into Henley-on-Thames. This is the principal access to the site.

1.2.2 *The following summary of the development of the buildings is taken from Jones’ Report for English Heritage in 2005, and the English Heritage (EH) phases referred to here are illustrated in Jones 2005 Volume 4.*

THE DE GREYS

1.2.3 For the earliest phase of its life Greys Court and the manor of Rotherfield Grey was held by the Greys family. The earliest fabric on the site is represented by a small stretch of wall encapsulated within the western face of the ‘Great Tower’, which may represent a range constructed by Robert de Grey in the late 13th century. More substantial remains survive from the period between the late 13th and late 14th centuries. During these years two phases of building were undertaken rendering Greys Court as a defensible

³ The historical background included here is reproduced almost entirely from the previous OA report on the investigation of the roof structures.



house with large curtain walls interspersed with substantial towers, both brick and stone were used in the construction. There was most likely a base court to the south defined, on the east at least, by earlier buildings (EH Medieval phase IIa and IIb) and an upper court with lodging ranges and the principal accommodation with the large north-east and 'Great' towers on the eastern side. The western extent of the medieval phases is uncertain.

THE LOVELLS

- 1.2.4 In 1422 Greys Court and the manor of Rotherfield Greys passed into the Lovell family (Jones 2005, volume 1, 4) as the Grey line dwindled and the inheritance passed to daughters and their husbands. In the early 1450s a timber framed range was constructed within the earlier building's curtilage and forming the western side of the base court (EH medieval phase IV). Part of this range is still preserved within the main building, the range's jetty being visible within the kitchen and a single bay of the roof being part of this project's investigation. This range falls within the latter years of Alice Deyncourt (d.1455) and William Lovell (d. 1454) and may represent activity relating to the transfer of the property to their son and heir John Lovell.
- 1.2.5 In 1484 Sir Francis Lovell (son of John) had his possessions seized by the crown, Henry VI, but by this time a brick range had been constructed across the division between the upper and base courts. A small section of this range is preserved within the end wall of the Cromwellian stables as well as a doorway from the later east range of the upper court that suggests it was still in place once that was constructed.

THE KNOLLYS

- 1.2.6 Between 1495 and 1514 Greys Court remained in the hands of the Crown and was not granted to any specific person, a series of occupants lived there (including Robert Knollys in 1503) but it was not until 1514 when Robert Knollys and his wife Lettice were granted the manor, and the continued ownership of their heirs, that the next phase of comprehensive development took place at Greys Court. Robert's son Francis inherited Greys Court in 1521 but until Queen Elizabeth's accession from Mary in 1558 Francis was in self imposed exile. On his return Francis was accepted into Elizabeth's court and gained a number of important positions: Treasurer of the Chamber, Member of Parliament for Oxford as well as Stewardship for the town, and after his wife's death in 1569 Treasurer of the Household, which he held for the remainder of his life. These positions and a succession of property grants made him a wealthy and influential man, and his position was probably instrumental in allowing the development of Greys Court during the 1570s.
- 1.2.7 Sir Francis Knollys remodelled the medieval house, partly incorporating earlier buildings and partly removing them. This period saw the construction of the service range now enclosed within 'The Keep' in the south west corner (EH 16th-C Phase I), the main range of the house, which has been dated by dendrochronology to felling dates of between 1573-6 (EH 16th-C Phase II), a large lodging range on the east side of the base-court dated 1578 (EH 16th-C Phase III), the extension of a west range enclosing the earlier timber-framed range (EH 16th-C Phase IV), the well house, walls of 'The Keep' and the octagonal south-west tower enclosing the south west corner of the complex (EH 16th-C Phase V), the stable cottage in that area and a building formed

from medieval apartments in the north-east corner of the upper court (EH 16th-C Phase VI) and finally the south porch filling the oddly shaped gap between the new main range and the enclosed west range (EH 16th-C Phase VII).

- 1.2.8 Of these, the main east range of the house, a small part of the extended west range and the south porch area were examined during the recent investigation project. The central western roofs behind the main east range were shown during the recent works to be contemporary with the main range, increasing the extent of Sir Francis' construction here.
- 1.2.9 It is most likely, given the extent of the lodging range beyond the southern line of the medieval curtain wall that the base court was redefined with a new wall with a gatehouse in its centre, now only suggested by parch marks in the grass. The creation of the extended west range also further separated the service courtyards from the other courts. These phases resulted in the completion of the south front, much of which is still visible today.
- 1.2.10 Sir Francis Knollys died in 1596 and Greys Court was never again the focus of such an intense period of construction work. The 17th century indeed saw a decline in the investment in the house with the works being additions or slight alterations of existing structures. The Dower house and its extension to the rear was built between the lodging range and the south east tower and the extended south west wing was added to the east side of the timber-framed range to the main house. The north west wing of the main house, possibly including the stairs was thought to date to this period, however, the recent works and dendrochronological sampling revealed felling dates contemporary with those of the main range, dating to the 1570s, further reducing the scope of 17th-century works.

THE STAPLETONS

- 1.2.11 In 1724 Greys Court changed hands again to the Stapleton Family. The 18th-century building work at Greys court was small in scale and focussed mainly on improvements and stylistic changes to existing buildings, the interior of the house and to key spaces and points in the park and gardens. Although the architectural works may have been comparatively small in scale the works to the estate resulted in a fashionable landscape park. The Ha-Ha was constructed and the road to Henley moved to its present location away from the house.
- 1.2.12 The early phase of 18th-century work consisted of the romanticising of various existing elements with gothick details such as the new crenelations on the 'Great Tower' or the faked tracery windows on the 'Tithe Barn'. This phase may be linked to Sir Thomas Stapleton's (5th baronet) bachelor period at Greys (up to 1765) when he was associated with the Hellfire Club and Sir Francis Dashwood. Sir Thomas married Miss Mary Fane in 1765 and it is supposed that the works to the principal reception rooms were carried out in recognition of this event. This involved the addition of the two storey bow window to the northern elevation of the main east range, and the in filling and enlarging of the north west corner of the main house creating a large square reception room - the School Room' - and a bedroom above. Felling dates for the timbers of the roofs over these rooms, and for the truss associated with the bow windows, are 1758-9, obtained through dendrochronology. This suggests



that even if the timbers seasoned for a few years the building work was underway before the wedding actually took place although perhaps started in order that the rooms would be ready for the 5th Baronet's new wife. Further gothick structures were also part of this phase of work, the dairy and flint-work façade to the 16th-century western range.

- 1.2.13 During the first half of the 19th century the house continued to be occupied by Lady Mary Stapleton and then by her two daughters. The subsequent men of the Stapleton family, Sir Thomas, the 6th Baronet, and the Reverend Sir Francis Jarvis Stapleton, the 7th baronet, preferred to make their main home Mereworth in Kent. Sir Francis Jarvis Stapleton inherited Greys Court fully on Catherine Stapleton's death in 1863 but his only works were repairs and some works to the stairs and chimneys in order to ensure the house could provide a source of income; his alterations did not change the character of the house.
- 1.2.14 In 1874 the house passed to the 8th Baronet, Sir Francis George Stapleton, who did live at Greys Court. He was the last of the Stapletons to make significant alterations - most of which were subsequently removed during the 20th century. He added bay windows to the ground floor of the main house and a billiard room to its west side. He also built the Gate Lodge on the Henley road. The final alteration by the Stapletons, probably by Sir Miles Stapleton's time was the raising of a small service storey over the timber-framed wing.

MRS FLEMING

- 1.2.15 In 1935 Greys Court was sold by Sir Miles Stapleton to Mrs Valentine Fleming who, although she only owned the house for two years, made extensive alterations to the house, many of which shaped its form today. She removed the stucco from the main house as well as the Victorian porch and made many alterations to the fenestration of the house. Substantial changes were made to the service areas including the removal of the 16th century lodging range which still survived, leaving only the flint faced wall and a single storey kitchen behind it. She raised the south west wing to three storeys in height to provide additional accommodation for servants.

THE BRUNNERS

- 1.2.16 Mrs Fleming sold on Greys Court to the Brunner family who made it their family home continuing to live there even after they had gifted it to the National Trust in 1969. The compressed time span of the alterations made by Mrs Fleming and the Brunners makes it somewhat difficult to distinguish the two phases of work. In terms of the roof structures examined during phase I of the restoration programme the character of the various pieces of work are all very similar making it even more difficult to distinguish. In addition, the architect's plans that are available do not seem to cover works to the roof. For the most part the reduction in length of the 16th century south west range and the formation of the end wall of the southern roofs can be assigned to Mrs Fleming. The reduction in height of the south west range was carried out by the Brunners, but this roof was not exposed during phase I.

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- 1.2.17 The programme of repair and restoration carried out over the course of 2006 to the roof structures followed by the work on the floors in 2008-9 is the most intensive episode of works to the main house since the Brunners' time there, and will ensure the continued long life of the varied roof scape and floor structures.

1.3 ACKNOWLEDGEMENTS

- 1.3.1 Oxford Archaeology would like to thank the National Trust staff of Greys Court and Gary Marshall, National Trust Archaeologist; who commissioned the work. The staff of Able Asbestos removal contractors Ward Building contractors and Richard Oxley Conservation for help and co-operation on site. Jody Morris formerly of Oxford Archaeology undertook archaeological recording of the roof at Greys Court during phase I works and her work was an invaluable reference during phase II. Dr. Dan Miles and Dr Martin Bridge of the Oxford Dendrochronology Laboratory; Gill Saunders of the Victoria & Albert Museum for comments on wallpaper; and the former staff members of Oxford Archaeology who assisted with the site work - Nick Croxson and Rafael Martinez-Jausoro.

2 PROJECT BACKGROUND AND METHODOLOGY

2.1 AIMS AND OBJECTIVES

- 2.1.1 The principal aim of this work was to establish an understanding of the way in which the floors were constructed, and how that structure had been added to and altered over the period of the house's development.

- 2.1.2 The objectives were expressed as finding answers to key questions for the understanding of the structure of the floors of the main house:

- What was the construction and character of the different floor structures?
- What were the floor's relationships with each other and the external/internal superstructure of the house?
- How do the floor structures add to our understanding of the development of Greys Court in general?

- 2.1.3 A further objective was to provide a record of specific details of the floors that have not been visible until now. This was to cover the materials used in the construction (oak, elm, softwood), the information relating to assembly which may include all or some of the following: carpenter's marks, assembly marks, replaced or repaired or reused timbers, inserted features and the relationship of the floor structures to the existing ceilings and phasing of the floor/ceiling structures.



2.2 **METHODOLOGY USED IN RECORDING THE FLOORS AT GREYS COURT.**

2.2.1 *Circumstances of work*

2.2.2 The asbestos removal and exposure of floors was undertaken in several phases. The first being the second floor and mezzanine floor which was completed prior to the start of recording in January 2008. Other floors were examined as they became available. Unfortunately in the later stages of the project traces of asbestos were found in areas previously pronounced clear and the site was closed to sub-contractors for some time whilst areas were cleaned of asbestos again. The result was a delay in the completion of the project and the final elements of recording were not undertaken until July 2009.

2.2.3 The asbestos removal contractor, was responsible for retaining any artefactual material found during the cleaning of the floors and this was passed directly to the National Trust, due to the health and safety risks OA was not present during the actual stripping and cleaning of the floors.

2.2.4 *Investigation*

2.2.5 After the floors were stripped OA closely examined them in order to assess the archaeological evidence of floor and ceiling structure and construction, phasing, alteration etc. This included the form of construction including jointing and the use of carpenter's marks and the form of later alterations such as the attachment of battens for fixing ceiling laths, removal and replacement of joists etc. and allowed a clear assessment of the most relevant places for detailed recording.

2.2.6 *Written record*

2.2.7 A written descriptive summary of the floors, their forms and development and the relationship between the different phases of floor and the general structure of the house was compiled (the descriptive sections of this report). The written summary was based on the annotated plans and on more detailed written site notes which together with the drawings will be preserved in the site archive.

2.2.8 *Drawn record*

2.2.9 Measured plans of the floors in individual rooms were drawn at a scale 1:20 using hand drawn techniques (tapes, distance measurer etc). These plans show the room wall edges and location of all principal historic structural elements of the floors, beams and common joists and the floorboards which are still in situ. More recent additions to the floors such as pine joists used to raise the floors were not included, partly because they were modern and partly because if drawn would in many places have obscured the detail of the historic timbers. The later ceiling battens were not generally drawn because their addition would have rendered the plans unnecessarily complex when reduced for inclusion in the report; their presence was however noted and the location of those made from reused pieces of panelling were noted and where practicable indicated on the plans. The modern additions were noted and did feature in the photographic record.

- 2.2.10 The plans were marked up with all visible carpenter's and assembly marks and other indications of the construction of the floors and any significant graffiti or other marks such as those of a ritual or apotropaic nature. The plans include notes of elements and details not drawn such as early nails in the soffits of joists and later additional battens of timber added to the joists (including reused wall panel stiles).
- 2.2.11 Individual ceiling laths are not shown but different phases of ceiling construction such as repaired or inserted sections are indicated.
- 2.2.12 A cross section through the south end of the main house has been drawn to show the relationship between the medieval, 16th-century and later phases (see Figure 6). Other section details have been recorded as necessary.
- 2.2.13 All drawn records were completed by hand drawn techniques. They are to scale and in pencil on archivally stable permatrace.
- 2.2.14 Existing plans showing internal and external walls on each floor were used as a baseplan to join the individual digitised room drawings into plans of the complete floor structures' exposed during Phase 2 works' on each floor of the house. Not all floor joists were fully exposed during the work but where the location of hidden sections of joists could be safely be assumed these have been included on the drawings and figures as dashed lines.
- 2.2.15 *Photographic Record*
- 2.2.16 In order to complement the written and drawn records discussed above a photographic record was also made. This comprised black and white film and digital photography. The plates in this report are all from digital images taken during the work.
- 2.2.17 The photographic record includes both general views showing the broad structure and character of the floors within different rooms and closer views of some specific details. The photographic films and digital images have been fully indexed with the subject and direction taken of each view and will be deposited with the rest of the site archive.



3 DESCRIPTION

3.1 INTRODUCTION:

3.2 GENERAL FORM AND PHASING SUMMARY

3.2.1 For the purpose of this report the various floors examined will be discussed and described according to their phase of construction and alteration. The phasing used in the Phase I works (roof) report is that outlined in far greater detail in the English Heritage report. For the most part the evidence uncovered during the Phase I investigation did not contradict this report's conclusions; the major area where new evidence came to light was the reassigning of the central west roof to the same building campaign as the main east range (and designated as phase IIa). Investigations during Phase II works (floors and internal works) revealed a considerable number of structural phases in the historic floors which have been related to the EH phases as much as possible. These have also included some additional phases, and re-allocation of others; principally the dendrochronological dating of the south porch (formerly EH 16th century Phase VII) to the early 17th century. Due to these additions and adjustments (and particularly as the later phases were not actually given numbers by EH) the following provisional phasing for the main house is proposed and will be used in this report (provisional because the date of some of the phases is uncertain and because not all parts of the house were included in the work so the phasing will probably need future adjustment).

3.2.2 The phases can be summarised as follows:

Phase I: 1450-51 -Timber Framed Jettied Range (*EH Medieval Phase IV*) (F6-7, F10-12)

[The medieval phase consisting of ground floor jetty posts, first floor beams and joists including hidden jetty timbers, first floor north wall and reused east wall timbers]

Phase II: 1574-6 -The Main East Range (*EH Sixteenth Century Phase II*) (F3-5, S4-10)

Phase IIa: 1574-6 -The Central West Range (*EH Seventeenth Century reassigned by OA in Phase I report, following dendrochronology, to Sixteenth century Phase IIa*) (S3)

Phase III: Late Sixteenth Century ?1570s - Former South West Range (*EH Sixteenth Century Phase IV*) wallplate in F7

[Extension to the south and refronting in brick of the 15th-century timber-framed range. Only a small part of this survives as a wall immediately adjacent to the south porch]

Phase IV: c.1620 - South Porch and infill between 15th and 16th century ranges (*EH Sixteenth Century Phase VII*) (F6)

- Phase V:** 1759-60 - Major Alterations: North West Range, North End of East Range and Raising of Floor in South Porch Area 1759-60 (G1-2, F1-4, F6, S1-2)
- Phase VI:** 18th century insertions in west central range (S3 (east part), F2/9)
- Phase VII:** 19th century - main stair landings (F8 (east part), S11)
- Phase VIII:** Late 19th/early 20th century - extension to main stairs (F8 west part)
- Phase IX:** Early 20th century: reconstruction of second floor in timber-framed Range (S12-14)
- Phase X:** Mrs Fleming 1930s - Floor of reused timbers (G4), insertion of girders into first floor of east wing (F4).

- 3.2.3 The mid *15th-century* is the date of the earliest phase identified within the main house (**OA Phase I**) (English Heritage's *Medieval Phase IV*) and both roof and floor structures in the timber-framed formerly jettied range on the west side of the base court date to this phase although there are also some slightly earlier timbers here which probably imply use of stockpiled material rather than two phases of construction (see discussion and dendrochronology report).
- 3.2.4 The *16th century* saw major developments; most importantly the construction of the east range (**OA Phase II**) (English Heritage *16th century Phase II*) the adjoining central west range (**OA Phase IIa**) was part of the same programme of building. The earlier timber-framed range was extended to the south around the same time (**OA Phase III, EH 16th century Phase IV**)
- 3.2.5 The *17th century*, thought to have been a period of decline at Greys Court has been shown by the recent investigations to have included, at least in the early part of the century, some small works i.e. the south porch filling the irregular gap between the Phase I and Phase II buildings in around 1620 (**OA Phase IV, EH Sixteenth Century Phase VII**).
- 3.2.6 The *18th century* sees a resurgence of investment at Greys Court with the ownership of the Stapleton family. In 1759-60 major works were undertaken (**OA Phase V, (no EH number was given for this or subsequent phases)**). The North West Range was extended and a new semicircular north end to the East Range were added. The latter also entailed the raising of the ceiling/floor in G2/F3. A new floor was built in the room above the south porch area (F6) bringing the floor level with the floor in the east range. The floors in rooms G1 and G2 probably also date to this phase. Other 18th-century alterations are believed to include later floor insertions into a former void, possibly a staircase, in the west central range (**Phase VI, S3, F2, F9**).
- 3.2.7 The main stair landings (**Phase VII, F8 [east part], S11**) were probably rebuilt in the 19th century and in the later 19th or early 20th century the main stairs were extended (**Phase VIII F8 (west part)**).



3.2.8 The attic floor of the Phase I wing was added or reconstructed prior to 1914 (**Phase IX**) and in the mid 1930s there was a phase of repairs by Mrs Fleming (**Phase X**) which included the insertion of girders into the first floor of the east wing (F4) and, it is thought, the reconstruction of the floor in G4 with reused timbers.

<i>Greys Court: Key to Room Numbers and Phases indicating where the floors are described</i>												
HISTORICAL PHASES OF DEVELOPMENT												
	I	II	IIa	III	IV	V	VI	VII	VIII	IX	X	>1
<i>Ground Floor Rooms</i>												
G1						G1						
G2						G2						
G4											G4	
<i>First Floor Rooms</i>												
F1						F1						
F2						F2	F2					(2x)
F3		F3				F3						(2x)
F4		F4				F4					F4	(3x)
F5		F5										
F6	F6				F6	F6						(3x)
F7	F7			F7								(2x)
F8								F8	F8			(2x)
F9							F9					
F10	F10											
F11	F11											
F12	F12											
<i>Second Floor Rooms</i>												
S1						S1						
S2						S2						
S3			S3				S3					(2x)
S4		S4										
S5		S5										
S6		S6										
S7		S7										
S8		S8										
S9		S9										
S10		S10										
S11								S11				
S12										S12		
S13										S13		
S14										S14		

3.3 PHASE I: MEDIEVAL TIMBER FRAMED AND JETTIED RANGE, 1450-51

(EH MEDIEVAL PHASE IV): ROOMS F6-7 AND F10-12

3.3.1 Phase 1: summary

3.3.2 The earliest known part of the present main house is the medieval range at the centre of the south part of the house, south of the main stairs, containing the kitchen (G6), and floors above, which is now enclosed within later buildings and walls. The roof of the range was dendrochronologically dated in 2006 during Phase I of the works to the house which obtained felling dates of

- 1450/51 (Bridge and Miles 2006). The early part of the roof survives in the south bay of the range, mostly over the stairs although some timbers from this roof were possibly reused in the much later brick extension above (OA 2007).
- 3.3.3 The construction of the range falls to within the ownership of the Lovells in the latter years of Alice (Deyncourt) and William Lovell. The range would have formed the western side of the base court and it faced east with a close-studded façade and jetty with a moulded fascia board. The west wall containing the large kitchen fireplace and chimney above was of brick. The range would perhaps have provided lodgings and chambers for lesser members of the household and service accommodation.
- 3.3.4 When this range was linked to the 16th century range most of the ground floor studs were removed to create a larger kitchen and the first floor east wall framing was moved west back from the jetty line to a position above the opened up ground floor wall in order to create a usable sized room on the first floor (F6) (Plates 41-42).
- 3.3.5 Jetty posts survive in the kitchen and the undersides of the medieval joists and beams have always been exposed in the kitchen ceiling, mortices for the removed ground floor studs can be seen in the soffit of the eastern jetty beam and elements of the first floor framing have long been visible in the west wall of F6.
- 3.3.6 *Current Conservation Works*
- 3.3.7 Conservation works, as part of the 2008/9 project, exposed almost the entirety of the medieval joists and beams on the first floor when the floors were lifted in rooms F6-7 and F10-12. In F6 the east ends of the jetty joists and the moulded jetty fascia board were revealed together with later elements one metre below the existing floor level (Plate 43). Works in F11 and particularly on the first floor stair landing (F8) revealed framing and infill of the north wall of the range (Plates 48 & 52).
- 3.3.8 Dendrochronological sampling was undertaken on some of the floor timbers and one post from this range. The western beam had a felling date of winter 1443/44 some 6 to 7 years earlier than the majority of the roof timber dates (though one of the roof rafters had dated as felled in Spring 1445). The remaining two joists and post that were dated as part of phase II had felling date ranges that spanned both the 1440s and 1450s. It is possible therefore that the range was built a little earlier than previously thought but seems more likely on present evidence that the range was built in around 1450-1 using some timber that had been stockpiled for five years or so.
- 3.3.9 *Description*
- 3.3.10 The Phase I first floor extends through four main rooms (F7, F10, F11 and F12) and beneath a set of stairs (STR3) from room F12 to S12 on the second floor (Plate 41). At its eastern end the jetty joists extend into the floor void beneath what is now Room F6 (Plates 42-43).
- 3.3.11 The main oak first floor structure in F10-F12 consists of two sets of transverse (east to west) joists joined into a central axial beam. The joists are all about 14-15 cm deep and in the range of 20-23 cm wide, closely set at 24-28 cm apart and joined to the principal joist by a simple mortice and tenon joint. The



upper faces of the joists are set c.5 cm lower than the top of the principal joist and there are later levelling pieces set in line (east to west) on top of the joists. The levelling pieces are also of oak, quite old and irregular and mostly narrower than the joists (Plates 46, 50, 51, 53-54).

- 3.3.12 To the western end the medieval joists are supported by an offset in the brick wall which contains the kitchen fireplace and chimney above, while the four at the northern end of the west side rest on an inserted steel joist. To the east the joists were jettied over a plate which still supports the joists in the kitchen.
- 3.3.13 A decorative moulded jetty fascia board was attached to the east ends of the joists largely to protect the end grain. This survives in the floor void in F6, this timber is weathered and due to this, and the confined situation with the later ceiling elements partly obscuring it, the moulding profile could not be accurately recorded (Plates 42-43)..
- 3.3.14 The central beam is supported at the north end by a plate on the north kitchen wall which would seem to have been the north end wall of the medieval timber-framed range. No evidence was seen during the works of a timber frame in this wall on the ground floor but the first floor timber frame was exposed when elements of this wall facing the stairs were stripped back to reveal the structure, because it was necessary for engineers to ascertain what was supporting a large late beam dating from the west extension of the staircase (Plates 48 & 52).
- 3.3.15 The tops of the joists and the north wallplate are about 5 cm (2 inches) below the top of the central beam; this seems unusual as it has necessitated the addition of later furring pieces to the joists to level up the floor. One is tempted to assume that originally very thick floorboards took up the difference in height abutting the beam and using the top of the beam as part of the floor surface. It is difficult to think of another explanation for this unless perhaps there was a double layer of boards overlapping each other in order to prevent there being a gap between the boards directly over the kitchen (as there was probably no other form of ceiling). As the old boards in other parts of the house and medieval boards found elsewhere are generally about 2-2.5cm (1 inch) thick there would be just enough room for this, but this is purely speculative, there is no physical evidence.
- 3.3.16 The first floor north wall framing was exposed during the works as mentioned. The studs were tenoned and pegged into the wallplate and they were of similar dimensions to the joists, and closely set at about 35 cm apart (Figure 8). Old brick nogging infill survived in the wall behind the later lath-and-plaster room surfaces but this was probably a later insertion itself. The studs in the surviving east wall framing exhibit grooves for staves for wattle-and-daub type infill and this may have been the primary infill in the north wall also.
- 3.3.17 The first floor east wall would originally have sat on the east ends of the jetty joists and the moulded bressumer or fascia which survive below F6. The wall frame consists of a plain jetty bressumer at the base with posts tenoned joined into it and into a wallplate at the top. The jetty was probably therefore of the double bressumer type as defined by Harris (1990, 34, fig. 2b) in which a plain bressumer, into which the wall studs are tenoned, sits above a moulded bressumer or fascia into the which the jetty joists are tenoned.

- 3.3.18 The upper wall frame still exists but was physically moved west a short distance to create a larger space between the medieval and later range when that space was floored and closed creating room F6 (Plate 41, Figure 8). This probably happened at the time the south porch was built around 1620. The jetty bressumer plate at the foot of the frame (now the west wall of F6), is visible in the floor void; it has been truncated at one point by having a section removed to create a doorway between the first incarnation of room F6 and a former room to the west now largely occupied by a set of stairs from F12 to the second floor. On the west face of wall stud in the floor void below STR3 there is evidence of former wall finishes. Below some small pieces of green patterned paper probably of 20th century date is some earlier plaster and below this a small area of a decorative black and white design is visible this looks as though it may be painted onto the timber. Being on the west face of this medieval stud this decoration could date to Phase I or to a later phase of use, it looks quite early but as there is little of it and it is a difficult location for examination and has not yet received any specialist attention (Plate 41).
- 3.3.19 Prior to their removal in the current conservation works there were two layers of floorboards within F11, one laid directly over the other. The lower one has pine floorboards 26 cm wide by 2 cm thick, north to south aligned and dowed at their edges. On these were laid east to west pine furring strips 5cm wide by 1cm thick and varying from 16 to 20 cm apart. Directly on top of these boards were later pine boards 17 cm wide with a cork floor glued onto them. The lower boards are probably of 19th-century date and the upper ones from the first half of the 20th-century.
- 3.3.20 The ceiling below the first floor joists is of lath and plaster with the laths attached to battens fixed to the sides of joists. The ceiling therefore extends between joists rather than continuing beneath them. This ceiling was probably inserted in the late 18th or 19th century but it is very difficult to date it more precisely. Originally in Phase I it is likely that there were no ceilings as such just the floor joists and boards above them also visible from below.
- 3.3.21 Room F7 projects southwards from the rest of the Phase I building and its primary floor comprises five medieval east to west joists measuring on average 20 cm wide by 14 cm deep (Plate 46). The floor has been raised in modern times with pine joists at right angles (north to south) to the older joists. These are supported on blocks which raise the floor by c.16 cm and the floorboards are of modern tongued and grooved softwood (11.5 cm wide). The ceiling beneath is of lime plaster and laths nailed directly to the joists without battens.
- 3.3.22 The medieval joists in F7 now simply rest at their east end on a later, substantial timber plate 44 cm wide. In this area the jetty fascia board and jetty plate (surviving immediately to the north in F6) was removed when the range was refronted in brick (see Phase III) but the east ends of the joists exhibit a redundant rebated lap where the fascia would formerly have adjoined. The rebates are each c.10 cm deep which leave a 4 cm deep lap where they formerly adjoined the fascia.
- 3.3.23 The joists overlap the plate by about half its width. Approximately 26 cm of the upper surface of the plate is exposed and the remaining 18 cm is within the



first floor wall. The depth of the plate could not be seen due to the ceiling laths nailed to the underside of the joists. It likely that the ground floor wall here is wider extending west to at least the west edge of the plate. The wallplate is partially truncated for lead pipes in the south-east corner.

3.3.24 At the west end the joists continue below a later stud partition wall.

3.4 PHASE II THE MAIN RANGE EAST RANGE 1574-6

(EH SIXTEENTH CENTURY: PHASE II)
ROOMS F3-5 AND S4-10

3.4.1 *Phase II*

3.4.2 The east range roof has been dated with felling dates of *c.*1573/4 to completion by *c.*1575/6 by the two programmes of dendrochronology (Bridge and Miles 2003, 2006). This places it within the time that Francis Knollys held Greys Court shortly after he had completed his Whitehall residence in 1572. The addition of this main range represents only part of a wider scheme of aggrandisement and improvements to both the upper and base court over the latter decades of the 16th century. It had previously been suggested, after the 2003 dendrochronological results, that the construction of this range was started in preparation for the royal visit of Queen Elizabeth in July 1574. However, the more recent dendrochronology gave felling dates of *c.*1575/76 indicating that the work was not complete at the time of her visit, although it may still have been one motive in starting the work. The work at Greys Court at this time probably represented investment by Knollys while he was at the peak of his prominence at Court.

3.4.3 *Current Conservation Works*

3.4.4 Dendrochronology during the Phase II works confirmed that despite the fact that the roof and floor structures in this range do not follow the same bay rhythm and are not structurally linked (except in that the interrupted tie beams physically sit on the second floor joists) they are however part of the same construction phase dating from 1574-6. The first and second floors were exposed during phase 2 works and are largely complete and original although the first floor has undergone alterations as part of the major mid-18th century works. Many of the joints in the first and second floors were strengthened with bolted steel brackets as part of the conservation works. The timber floors in the ground floor rooms are from later phases and there was no evidence for the primary floors in these rooms.

3.4.5 *Description of First Floor*

3.4.6 *General.* The main east range first floor retains the majority of the primary contemporary floor structure but with some major later alterations. The primary floor consists of four substantial transverse oak principal joists 32 cm square (about 14") housed in sockets within the east and west walls and resting on timber plates incorporated into those walls. Between the main joists and at each end are five spans of fourteen deep and narrow ('tall') common joists, averaging about 6 cm wide by 30 cm deep, which are paired at the principal joists. The tall joists are joined into the principal joists using double tenons consisting of a diminished haunch tenon above a standard tenon This

gave the floor great strength and helped prevent lateral distortion of the tall joists. The joists are tall i.e. the same height as the principal joists for strength and in order to allow them to support the floorboards above and a fashionable (often relief decorated) plaster ceiling below which could then run flush across a room or long gallery without being disturbed by projecting beams as in earlier ceilings.

- 3.4.7 The top surfaces of the tall joists were probably all about 2cm lower than the tops of the principal joists which had a narrow rebate along each side for floorboards to fit into. Thus the top surfaces of the principal joists formed part of the floor surface flush with the floorboards. This can be seen very clearly on the second floor but on the first floor the principal joists seem to have been largely reduced back to the height of the common joists by having the surfaces adzed. Traces of the former rebates can be seen out on the principal joist in room F5.
- 3.4.8 *Room F5.* At the south end of the floor in room F5 there is no principal joist and the south ends of the common joists are partly housed in the brick wall and partly on a timber plate in the wall which is a lintel over the ground floor window. Of the three rooms currently existing on this floor only F5 has a largely unaltered Phase II floor structure (Plates 35-36). Some of the double tenon joints between the common and principal joists have opened up to a certain extent giving a good view of the profile of the joints (Plates 36 and 37). The only major alteration is that an RSJ has been inserted in the floor below the partition between this room and F4 the primary joists were cut to insert the RSJ and are now seated on the lower flanges of the steel member. This work was probably carried out in the 1930s when the ground floor partitions were removed. The ceiling of G4 attached to the floor of this room is mostly of 18th or 19th century lath and plaster fixed directly to the joists, there is a strip of newer ceiling around the edge of the room (shown by a dashed line on the plan) which might be associated with the insertion of coving in room G4 below.
- 3.4.9 *Room F4* has the main elements of the Phase II floor structure but with major alterations. Two principal oak joists span the room from east to west and the six primary central common joists between them have at some point been removed and replaced with double joists. The primary mortices for the double tenons remain in the principal joists. Some of the inserted joists are reused timbers and some very waney, the upper joists are crudely lapped into the upper surface of the principal joists. The work is typical of the 18th century and similar to the work in rooms F1 and G1 and although not dendrochronologically dated it has been assigned on typological criteria to phase V (1759-60). The date and reason for removal of the primary joists here is uncertain, they were either simply replaced for simple structural reasons i.e. they somehow became too weak or they were removed as part of an alteration the most likely being insertion of a staircase. This is supported by alterations above, on the second floor, which are discussed later, and by the presence of empty mortices in the fourth joist from the east which would have been the primary joist at the edge of the void left by removal of the other joists. The mortices might therefore have been for joining members of a staircase or other structure.



- 3.4.10 Also of phase V was the raising of the floor in F3, to achieve this the common joists were cut just north of the northern principal joist in F4 leaving short joists which were supported on the partition wall between G2 and G3. Further alteration occurred in the 1930s when the ground floor partitions were removed and these joists were supported on an RSJ inserted at the same time as that on the south side of the room mentioned above.
- 3.4.11 The east wall of room F4 formerly contained a chimney flue and fireplace which have been removed. Brick blocking of the scar of the of the flue was seen in the east wall after removal of plaster and there was a section of the east wallplate and adjacent upper sections cut out of the two eastern joists clearly to support the former chimney breast and hearth. The chimney and fireplace were therefore inserted after the construction of the range but there is no good evidence for closely dating their insertion and subsequent removal.
- 3.4.12 The ceiling of G3 attached to this floor is of lath and plaster which either dates from the time of the insertion of the later central joists i.e. phase V 1759-60, or later. The ceiling has had four panels inserted into it at the corners (marked on the plan), dating from about the 1930s, which support moulded plaster relief eagles in the entrance hall G3.
- 3.4.13 *Room F3:* The floor in F3 is largely the original phase II floor raised slightly and extended with a bow window at the northern end in 1759-60. The primary section of the floor has one oak principal joist, 33 cm wide by 29 cm deep, with a later 7 cm deep trench (N-S) at its centre (Plate 26). There are 14 pairs of axial common joists joined by double tenons to the oak principal joist. The southern set of which have been cut through at the south end of the room and raised and supported on a low brick wall which is now in turn supported by the RSJ inserted in the 1930s.
- 3.4.14 The principal joist at the north end of the room is of the same dimensions as the phase II principal joists but is of softwood and is aligned with the northern end of the 16th-century building. This timber clearly dates from when the bow window was inserted in 1759-60. The common joists in the bow window are however of oak and are joined into the principal joist with double tenons as are the phase II joists. It might therefore have been thought that these are reused 16th-century joists were it not for the fact that the dendrochronology results show six joists in the bay window area provided a range of dates from the 18th century, with three providing clear felling dates from the winter of 1756/7.
- 3.4.15 The double tenon joints have chiselled Roman numeral carpenter's marks on the north face of the oak principal which correspond to similar marks on the upper faces of the common joists. These marks probably relate to when the floor structure of this room was raised in the 18th century as no other elements of the Phase II floors have such marks. As this was part of phase V it is described in more detail in that section.
- 3.4.16 At the south end of the room the 5th-7th joists from the east have been truncated later and their southern ends removed. Three tall, reused oak joists have been inserted and lapped and nailed to the sides of the originals. The inserted members are 45mm by 280 mm while the original joists in this location are 60mm by 130 mm. The joists all project into the southern wall

with brickwork between them. The reason for the removal of the south ends of the three primary joists is unknown, the creation of an opening in the floor for access of some kind being the most likely explanation. The three inserted joists have empty laps at their north ends, some of which are 50 mm deep while others are 60 mm. The upper face of these joists (ie the current floor level) is 3-4 cm above that of the original joists so they were presumably inserted when the floor was levelled.

- 3.4.17 There are several old oak levelling strips in the central and southern sections of the floor but there are none in the area of the 18th-century bow window at the north end. At the south end of the room the westernmost joist has a reused panelling rail, 1.04 m long attached to its east side and there is a similar full length feature on the west side of the next joist east of this. These are both oak and there is also a similar rail on the west side of the ninth joist from the east; this is 1.16 m long, of softwood and with round moulding.
- 3.4.18 The internal partitions on this floor are later insertions and as there is no evidence of earlier partitions it would appear that this floor was the principal part of this range and originally one long open room or gallery. This was a fashionable form of internal space in the late 16th century. Such rooms may often have been used by owners to display their wealth, patronage and culture in the form of relief moulded plaster ceilings with classical or allegorical subjects and with tapestries, plaster reliefs or paintings on the walls.
- 3.4.19 *Description of Second Floor*
- 3.4.20 The main east range second floor is one contemporary structure essentially of the same construction as that of the first floor (Plate 59). It consists of six main east-to-west aligned beams with five spans each containing fifteen common joists. The joists are paired across the whole floor i.e. the common joists on one side of a principal joist are aligned with those on the other side and not offset. The five spans are not all of equal width however. The south span between the first two principal joists at that end is 3.8 m, the next two spans are 3 m wide, the fourth is approximately 3.15m wide and the north span between the two northern principal joists is 3.5 m. The disparity in widths may result from inaccurate measuring or division of the floor space especially if the floor timbers were mostly made elsewhere (even if nearby) and only assembled on site, or may be a due to the most economic use of the available lengths of timber.
- 3.4.21 The floor structure divisions do not relate to the current room divisions or the roof structure symmetry. The roof and floor structures only relate in that the queen struts of the roof descend to lower short ties which sit on the floor joists, these areas have all been boxed in and were not included in the main recording but were recorded as part of Phase I works. The main floor beams extend into the east and west brick walls and sit on substantial timber plates within the brick walls. The upper interrupted ties of the roof structure sit on a wallplate, on an offset of the wall, the base of which is approximately 60 cm above the floor level (see fig. 7 in OA 2007).
- 3.4.22 The main beams are approximately 32 cm square (about 14") and cross the internal width of the range, which is about 5.2 m, and then extend into the walls. On the east side of room S8 part of the lower wall offset is missing and



it can be seen that the second beam from the south end sits directly on a wallplate that is the same width as the beams. The depth of the plate could not be measured but it may be of square section as the beams. The beam extends for the whole width of the plate and appears to continue into the wall beyond so the full width of the beams is probably around 5.8-5.9 m generally. The north and south end beams are against the end wall in the case of the south and partly within the wall in the case of the north so only have joists joined to their inner faces. The north beam was probably against the wall originally but the north end gable has been altered in the 18th century and a later truss added which seems to be supported by the floor beam.

- 3.4.23 The common joists are narrow and deep, being about 6 cm wide by 30 cm deep. The joists are 2 cm less in depth than the beams, their soffits are flush with the beam soffits but the top surfaces are 2 cm lower than the beams. This is because the upper arris's of the beams are rebated to take the floorboards, the main top surface of the beams being part of the original floor surface. On most of the beams the rebates survive but on the second beam from the south the upper surface has been adzed or axed down to the level of the joists, the scar of the rebate being still just visible.
- 3.4.24 The joists span the spaces between the beams and are joined into the beams by a double tenons at either end consisting of a diminished haunch tenon above a standard tenon, which was not unusual by this date (Plate 60). The joists needed to be as deep or nearly as deep as the beams in order to allow application of ceilings which covered the joists and the beams. Thus fine decorated plaster ceilings could be created within a room without the ceiling area being broken up by a beam or beams as often occurs in lower status or older ceilings.
- 3.4.25 There have been no major alterations to the actual floor structure, but there is evidence of two openings that were made in this floor, alteration of joists to accommodate fireplaces and some other minor alterations.
- 3.4.26 In S5 adjacent 50 cm long sections have been removed from both the third and fourth joists from the east wall and the cut ends have then been taken up by trimmers made of boards which extend to the full length joists to either side. The purpose for this was presumably to create an access opening in the floor and it is above the area where three primary joists were truncated on the first floor at the south end of room F3 it seems therefore very likely that there was a small staircase or perhaps a lift or dumb waiter in this position at one time.
- 3.4.27 Similarly in room S10 large sections of the primary second and third joists from the west wall were removed. The south ends of these two joists measuring about 0.5m in length remained *in situ* and had a thin trimmer attached to their ends. The trimmer retained traces of lath and plaster. The north parts of the joists right up to the next beam to the north appear to have been removed and later replaced with two slightly narrower replacements (Plate 64). Removal of the two joists and insertion of the trimmer would have given a north-south oriented rectangular opening of approximately 1m x 2.5m which would give enough space for a small stair down to the first floor. There is no visible evidence of attachment of any stair structure. However it is possible that the empty mortices left in the beam when the two primary joists were removed were utilised for this purpose. These are now being used by the

- replacement joists therefore any evidence there is concealed. Also the joist on the east side of the opening has been reduced in two areas; at its north end adjacent to the beam the lower part of the beam 14cm deep by 1m long has been removed and at the south end of the opening the upper part of the joist of the same dimensions has been removed. The reasons for this is almost certainly connected with the opening and but the precise function of these two slots and how they relate to the construction of a former stair is unclear.
- 3.4.28 S9 is a cupboard space divided off from the lobby area S10; the floor structure here consisted of the west end of a principal joist with common joists joined to either side (Plate 63). Two of the joists on the south are the two replacements filling the former stair void in S10 mentioned above. The south partition of S9 is located where it is due to the existence of a Queen post and interrupted tie beam of the roof structure there. Indeed the entire room partitioning of the second floor has largely been dictated by the position of the roof structure and this is illustrated on Figure 9.
- 3.4.29 There are two sets of opposed sloping-based slots cut into adjacent joists, these occur in room S8 on the twelfth and thirteenth joists from the east side near the north-west corner and in room S6 on joists the third and fourth joists from the east. The slots are in both cases in line with each other and the bases slope down towards the opposite slot, each slot is about 6 x 6 cm x 5 cm deep, the purpose for these is unknown. Also in S6 two small oak blocks have been added to the lower west side of the fourth joist from the east at ceiling level. The blocks are 20 cm apart, the north one is small and irregular in shape, 4 cm high and half lapped into the base of the joist. The south one is larger being about 20 cm long and 6 cm wide and 8 cm high with chamfered corners and it is nailed to the joist. These are of some age, but their purpose is currently unknown.
- 3.4.30 The third beam from the south within S6 has had a slot cut into it at some time to house a lead water pipe which is still in situ. The fourth beam from the south runs under a modern bath in S5 and has an angled slot taking the current bath outlet and a similar empty slot perhaps for an earlier bath position.
- 3.4.31 Whole sections of joist have been removed in S6 and S5. In S6 a 60 cm section of the joist adjacent to the east wall has been removed and this coincides with removal of part of the adjacent floor offset and an area of ceiling laths, this was probably for the insertion of a chimney/fireplace now removed and is above the blocked flue visible in the east wall of F4. The hole has been later filled in with new laths.
- 3.4.32 Nearly all the joists within S8 including the second set of joists north of the second beam from the south have small pine battens of about 3 x 3 cm section or 2.5 x 2 cm attached to both sides mid way down the joists (Plate 63). These extend north into S7 and the passage west of S7 for about 1.2 m and then end in line. Most have small upright battens as stops at the north, one of which on the central joist in the passage west of S7 is made of a small reused moulded timber. Similar battens on the first floor supported thin boards and the space above the boards was filled with sawdust, on the second floor there were no boards and sawdust was placed between the joists on the ceiling laths (pers. comm. Able Asbestos Services). The sawdust and boards were removed by the asbestos contractors prior to investigation by OA. The sawdust probably acted



as both sound and heat insulation, the main intended function was perhaps sound proofing.

- 3.4.33 *Ceilings:* Most of the first floor ceilings attached to the second floor joists are of lath and plaster and in places it can be seen that at least two layers of laths i.e. two consecutive ceilings survive. In places the laths are nailed to the soffits of the joists and in places battens have been attached to the lower sides of the joists and the laths nailed to these. These lower battens have been added to level up the surface for ceiling attachment and thus in places there is a gap between the soffit of the joists and the laths and here one can feel nailheads protruding from the joist soffit, these nails would have held the laths of an earlier, probably original, ceiling which has been removed.
- 3.4.34 There are no ceiling battens in S6 and the laths are nailed to the joists. In S5 the ceiling battens are all of rough pine and approximately 3 x 8 cm in section. In S4 there are ceiling battens throughout on both sides of the joists and in S8 they occur on most joists but only on one side in most cases (Plate 62). Some of the ceiling battens in S4 and S8 are reused panel framing sections with mouldings or chamfers, rebate slots for the panels and mortices for other frame members.

3.5 PHASE IIA THE CENTRAL WEST RANGE 1574-6

ROOM S3

- 3.5.1 *Phase IIA:* The Centre West Range originally consisted of a single bay extending west from the new east range. On the ground floor and first floors this was incorporated into the north-west range extension built in 1759-60 (Phase V), and the floors renewed or rebuilt, so this phase is now only represented at attic level. On the second floor the original floor structure survives in room S3. The dendro-dating of the roof demonstrated that it was of the same period of construction as the main east range, but it seems to have been a later construction, albeit not substantially later. This range was assigned a new phase number IIA to reflect the new dating evidence (OA Phase I report 2007), as previously it had been assigned to the 17th century (Jones 2005).
- 3.5.2 *Current Conservation Works*
- 3.5.3 The floor of S3 was exposed and recorded during the works. Most interestingly it was seen that the eastern 2m of this room had no floor originally and a floor was inserted here later (Phase VI) the possible reasons for this will be discussed below.
- 3.5.4 *Description*
- 3.5.5 The oak floor structure in S3 is similar to the contemporary floor structure in the front range, consisting of transverse beams with deep axial joists. This room has three transverse beams, and two spans of thirteen joists belonging to this phase, the joists at the east end are later insertions belonging to Phase VI. The central beam is larger (26 cm wide) because it is taking mortices for joists on both sides, whereas the east and west beams only have one set of mortices. The joists are joined to the beams in the same way as in the main east range i.e. a diminished haunch tenon over a plain tenon (Plate 58).

- 3.5.6 The floorboards here appear to be primary, they are on average about 34 cm wide and 2 cm thick and are rebated along either edge to half-lap each other. The beams have no signs of being rebated to take boards as in the front range. The ceiling below the floor is mostly of modern plasterboard attached to softwood joists which are fixed to the sides of the primary joists. There is a narrow strip of lath and plaster ceiling immediately west of the west beam and the laths are fixed straight to the joists.
- 3.5.7 The eastern beam is narrow and only has joists morticed into its west side despite being about 2m from the east end of the room. This shows that there was no floor in this section originally and it must have had another function, the most likely uses would seem to be a chimney or a staircase especially as the corresponding section in the floor below seems also to have been open as it was also floored later. The floor there abuts earlier wallpaper so that would seem to rule out a chimney and makes a staircase more likely unless an early chimney was converted later.
- 3.5.8 The inserted sections on both floors are different in character and may be of different dates but as there is no strong evidence for that except that they are of different types of reused timber but that does not prove they are of different dates so provisionally they have been placed in the same phase (Phase VI) and are described in sequence below.
- 3.5.9 The other main factor to note about the phase IIa floor is that the central north-south beam which would have been supported at its north end by the north wall of the range is now supported by being strapped up to a truss inserted to support the floor and roof of the 1759-60 extension which removed the former wall and this is discussed further below (Phase V).

3.6 PHASE III: LATE SIXTEENTH CENTURY ?1570S -FORMER SOUTH WEST RANGE

(EH SIXTEENTH CENTURY: PHASE IV): ROOM F7

- 3.6.1 *Phase III:* This phase consists of an extension to the south and refronting in brick of the 15th-century timber-framed range. Only a small part of this survives as a wall immediately adjacent to the south porch.
- 3.6.2 *Current Conservation Works*
- 3.6.3 Evidence of this phase was exposed in room F7 where the former jetty joists of the 15th century phase were supported on a very substantial wallplate, in the east wall of this room which is the Phase III wall. The plate physically replaced the moulded jetty fascia board seen immediately to the north in room F6 and functionally replaced the jetty plate, brackets and posts supporting the jetty as surviving in the kitchen.
- 3.6.4 *Description*
- 3.6.5 Room F7 has five fifteenth century joists (Phase I) measuring on average 20 cm wide by 14 cm deep, these simply rest at their east end on a timber plate 44 cm wide.
- 3.6.6 The joists overlap the plate by about half its width, about 26 cm of the top surface of the plate is exposed and the remaining 18 cm is within the first floor



wall. The depth of the plate could not be seen due to the ceiling laths nailed to the underside of the joists. It is likely that the ground floor wall here is wider extending west to at least the west edge of the plate.

3.7 PHASE IV: SEVENTEENTH CENTURY-SOUTH PORCH AND INFILL OF GAP BETWEEN PHASES I AND II C.1620

(EH SIXTEENTH CENTURY: PHASE VII): ROOM F6

3.7.1 *Phase IV:* In the early 17th century the two storey south porch was constructed, probably in order to conceal the mismatched join between the earlier and refaced timber framed range and the east range of the main house. This porch survives today along with the oriel window at first floor level and its brick gable that rests directly on the timbers of the extended roof of the 15th century range. This extended roof covers the first floor chamber, which now extends into the first floor space of the earlier timber-framed wing. This phase was currently thought to be of the late 16th century but dendrochronology has dated a first floor porch floor joist to 1619.

3.7.2 *Current Conservation Works*

3.7.3 The porch first floor timbers were revealed during the Phase II works about 1m below the south end of the present, later, floor in room F6 (from the Phase V raising of the floor) (see figures 6 and 8). Two of the porch joists were sampled and dendrochronologically tested. One of these had a final complete sapwood ring formed in 1618 and was felled in summer 1619, so the porch probably dates from shortly thereafter.

3.7.4 *Description:* The porch floor at the south end of the lower floor in F6 consists of five north-south aligned joists of up to 2.2 m in length, averaging 14 cm wide. At their south end they simply rest on the brick wall of the porch and at the north are simply supported on an east west joist. The next section of floor to the north consists of five joists aligned east west and tenoned into a north south joist to the east. The latter abuts small area of brickwork that projects from the west wall of the Phase II wing into F6 and is at the level of the Phase I floor and the porch floor (Plate 44).

3.7.5 Above this brickwork is the existing doorway connecting the current room F6 with room F5 in the Phase II wing. The brickwork is supported by a semi-arch of brick voussoirs projecting from the west face of the west wall of Phase II which became visible during the works when holes for services were made in the ceiling of the kitchen passage area. The most likely explanation for this brick arch is that it supported the base of a projecting chimney breast built onto the Phase II wall when the porch was built so as to provide heating in the newly created original version of room F6. This is immediately south of a chimney breast with fireplaces facing east in the Phase II structure.

3.7.6 Then, probably when the present floor in F6 was built during Phase V, the chimney breast was demolished and a doorway made through the back of the flue connecting the new higher room F6 with F5 at the same level.

3.7.7 North of the section of floor abutting the brick arch is an area of modern (20th-century) repairs to the ceiling below (i.e. when this was no longer a floor, and then further east a series of probably 17th century joists. These

were probably added at the same time as the dated porch floor was added at the south end of the room and have been included in this phase but no joists in this part of the floor or in the section abutting the brick arch have been tree-ring dated. There are empty sockets in the brickwork of the east wall in the floor void where former joists have been removed and replaced with the modern ceiling support timbers.

- 3.7.8 All along the west side of F6 there is a regular series of medieval joists that run through to Room F10. Lying on these at the north end is a board showing that this was a properly floored space. Along the west side of this space there are the remains of timber wall framing with rendered infill, with some remnant patches of early wallpaper attached (this is the original Phase I wall from above the jetty that has been moved westwards). Towards the north end of this wall the lower plate has formerly been truncated to create a doorway linking the earlier incarnation of room F6 with a former room to the west. This doorway was later blocked with brickwork, probably as part of the Phase V work when the floor was raised (Figure 8).
- 3.7.9 The lower wallpaper is a heavy dark flock paper of an irregular 'black-and-white' pattern (in dark green/black) and above this is a coloured floral pattern with a white and hatched background and a border strip. The lower paper may be quite an early flock paper of *c.*1700 the upper paper is later; probably from around *c.*1740 (Plates 38-39).
- 3.7.10 The current higher floor, as mentioned, was inserted as part of Phase in 1759-60 V (see below) which raised the floor and focus of this area from the Phase I level to the Phase II level.

3.8 **PHASE V: MAJOR EIGHTEENTH CENTURY ALTERATIONS: THE NORTH WEST RANGE , NORTH END OF EAST RANGE AND RAISING OF FLOOR IN SOUTH PORCH AREA 1759-60**

ROOMS G1, G2, F1, F2, F3, F4 F6 S1, S2

- 3.8.1 *Phase V:* In the 18th century, after 1724, Greys Court was held by the Stapleton family after Sir William Stapleton, 4th baronet, married Catherine Paul, who was heiress to Greys Court. The Stapletons found Greys Court a comparatively antiquated house and their alterations were focussed on improving and enlarging the principally Elizabethan house. A bow window was added to the north end of the main east range, contemporary with the decorative plaster work ceiling found on the interiors, and at the same time, the north west corner was extended forming the 'school room' on the ground floor and the library on the first floor. In addition the floor in the South Porch area is believed to have been raised and re-boarded in this period.
- 3.8.2 Dendrochronological dating has confirmed that the roofs over both the north-western block and the bow window were constructed from timbers with felling dates of 1759-60, shortly after Sir Thomas Stapleton, fifth baronet, had inherited the house from his mother and moved there (Bridge and Miles 2006).
- 3.8.3 *Ground Floor:* The Phase V works at Ground floor level comprises alterations to the drawing room (G2) and the School Room (G1).



- 3.8.4 Room G2 was originally laid out as part of the construction of the main east range and this was then altered in 1759-60 through the insertion of a large bow window, which necessitated the raising of the previously low ceiling height and an extensive programme of redecoration (see EH report 2005). As outlined in the English Heritage report on Greys Court the principal rooms in the 16th-century building were at first floor level and the ground floor rooms in the main range of this building had relatively low ceilings.
- 3.8.5 The suspended floor in G2 comprises a central (N-S), oak, principal joist and 22 pairs of common joists (E-W), some of oak and some of softwood, spanning to the side walls. Many of the members appear consistent with a 16th-century date (when this room was originally laid out) but evidence suggests that the floor was probably substantially or entirely reconstructed, presumably at the same time as the 1759-60 works. It may be that the previous floor in this room was solid and that the suspended floor was inserted to reflect the higher status of the room when it became a drawing room in the 18th century (Plates 5-7).
- 3.8.6 The main evidence suggesting that the floor is a secondary construction is the fact that there is no clear distinction in the floor construction between that of the main room and that in the secondary bow window. In particular the central principal joist continues northwards into the bow window beyond the end of the 16th-century building. Unfortunately in the southern two-thirds of the room the principal joist, as well as the inner ends of the common joists, remained obscured during the conservation works beneath boards. It was however visible at the northern end at the northern end with the bow window (Plates 5 & 7).
- 3.8.7 Many of the common joists have an irregular and waney character and those that are visible at the northern end are largely half-dovetailed over the principal. Many of the joist ends do not fit the half-dovetailed tenons in the principal, which suggests reuse and reconstruction, as does the fact that they are fixed with large nails (consistent with an 18th-century date).
- 3.8.8 At their western ends the joists are supported on an oak bearer on a dwarf brick wall immediately in front of a flint and mortar wall off set from the main wall above. At their eastern ends the joists are similarly supported by a bearer plate which also supports the western ends of a series of short joists which extend east to create a small projecting bay. In several areas modern pine patching has been inserted, in particular three joist ends at the south-eastern corner and support to a member at the north-western corner.
- 3.8.9 The conservation works also revealed that the base of the fireplace is of brick.
- 3.8.10 Room G1, similarly to G2, was also originally established in the 16th century (Phase II) but then extended northwards, by c.3.2 m, in the Phase V alterations. Also similarly to G2 the exposed floor in G1 does not show any clear distinction between the main southern part and the northern extension, and it strongly appears that the whole floor was constructed (or reconstructed) in the 1759-60 works. The 2005 English Heritage report states that in the 1750s works the north-west wing (G1 at ground floor) was established as a back parlour

- 3.8.11 The floor comprises two north to south principal joists which support east to west common joists in each of the three bays. The principal joists extend across the full width of the room and beyond the line of the previous north end of the building. The common joists are a combination of softwood and older, reused oak members and many have an irregular waney character. They are generally 12 x 8 cm wide and the large majority are half-dovetailed to the principals with additional (hidden) tenons beneath. Large handmade nails through the dovetails additionally fix the joists to the principals (Plates 1, 3-4).
- 3.8.12 Many of the joists have small square holes in their upper faces to allow square pegs to fix the floor boards to joists. The oak boards are c.22 cm wide by 4 cm deep and they have small circular holes along their sides to allow each board to be secured fixed with dowels to the adjacent board. The boards also have step-profiled ends to also allow the ends of each board to be slotted together.
- 3.8.13 At the eastern side of the room the joists sit on a masonry plinth beneath the main wall while along the western side they are supported by a secondary plate. Towards the north end of the west wall some joists have had additional short oak joists fixed to their sides to reach the plate; these are old and may be contemporary with the rest of the floor and it was simply a case of using the available timber or they may be a later repair (Plate 2). Towards the southern end of the west bay there are two new oak joists inserted as part of the Phase 2 conservation works (Nos 2 & 3 from the south end).
- 3.8.14 In the central bay there is a brick vault immediately beneath the joists while in the side bays there is a compacted surface beneath. The brick vault is presumably the top of a cellar, and there is a small air shaft to it in the north west corner of the room (Plate 1). The cellar was not investigated as part of the Phase 2 works.
- 3.8.15 *First floor:* At first floor level Phase V comprises works in a number of rooms: F1 (Study), F2 (Bedroom), F3 (Bedroom), F4 (Bedroom) and F6 (Bathroom).
- 3.8.16 *Room F3:* The main alteration to F3 in this period was the creation of the bow window at the north end of the room but as referred to above this also necessitated the raising of the first floor to reflect the higher status of the ground floor reception room (Drawing Room) in the 18th-century building. As detailed above in the description of Phase II, dendrochronology suggests that rather than being replaced in 1759-60, when the window was added and the floor was raised, the main floor structure was merely dismantled and re-erected at a higher level. Therefore the description of the floor in the main room has been included in Phase II above, while the description of that within the bow window is included here together with an explanation of how the floor raising may have been achieved.
- 3.8.17 The Phase V section of floor in F3 comprises a transverse (E-W) principal joist, on the line of the previous north end of the room, and 14 axial (N-S) common joists extending from the principal to the curved wall (Plates 28-30). The principal is of softwood (unlike the oak principal to the south in the main 16th-century part of the room) and it is 29 cm deep by 31 cm wide. The Phase V common joists are of oak as the 16th century joists and are joined to the principal by pegged double tenons. These joists have Roman numeral



carpenter's marks on their upper face. However unlike with the 16th-century oak principal joist to the south there are no corresponding marks on the north face of the softwood principal joist. The north ends of the Phase V joists rest on a timber wallplate set in the offset curved brick wall of the extension (Plate 28).

- 3.8.18 All the joists have ceiling battens on their lower west sides and puggin board battens immediately above. There are two examples of reused panel members on the tenth and twelfth joists from the east, although the mouldings are not visible on either as they are covered by later ceiling battens. Both have the creamy beige paint also seen on the second floor examples. That on the tenth joist has two mortices and a rebate (mortices 39 cm apart and at 46 cm centres). The twelfth joist batten has a single mortice.
- 3.8.19 *Floor raising:* The double tenon joints on the adjacent phase II joists have chiselled Roman numeral carpenter's marks on the north face of the oak principal which correspond to similar marks on the upper faces of the common joists (Plate 27). These marks probably relate to the raising of the floor structure of this room in the 18th century as no other elements of the Phase II floors have such marks. As it was only the floor in this room that was raised it would have been possible to dismantle and rebuild it as the joists at the south end were cut and now rest on a brick plinth wall rather than being tenoned into a timber member therefore they could have been slotted into the raised oak principal joist easily. This principal joist could have been raised in situ by excavating channels in the wall above it, lifting it with ropes and pulleys and bricking up the old sockets and channels beneath. The old north joists were then slotted into the north face of the raised beam and then the new softwood beam slotted onto the tenons at the north ends of those joists and sat on the wall of the new bay. Finally the new oak bow window joists were slotted into the north face of the new softwood beam with their south ends seated on the plate on the wall of the bow window before the wall was extended further upwards.
- 3.8.20 The other main alteration in Phase V was the northward extension of the north-west range to almost double its footprint. This area comprises rooms F1 and F2 at first floor level.
- 3.8.21 *Room F1:* The floor in F1 is essentially of double construction comprising a central north to south softwood principal joist (36 x 30 cm) which supports tall oak east to west floor joists (10 x 28 cm) as well as shallower, intermediate floor joists (c.8 x 12 cm) which also span east to west. The arrangement of the joists is relatively regular, generally with two shallow joists to every full depth joist, and the taller joists then support north to south ceiling joists (c.7 x 10 cm) spanning beneath the shallow members (Plates 11, 15, 17, 19-20).
- 3.8.22 The full depth joists are housed in the principals with double tenons (diminished haunch above normal tenon) similar to those found in the Phase II floors and pegged from above. The overall character of the floor is irregular using a combination of well-cut, probably reused members and less regular, non-squared timbers for the lesser members some of which have very waney edges.

- 3.8.23 There are Roman numeral carpenter's marks, starting from the east, on the upper face of the principal and the corresponding upper face of the eastern ends of the joists in the western bay (Plate 16). Long battens are fixed to the sides of the joists (both the main floor joists and the shallower ones) which would have supported short boards above them with pugging laid on the boards between the joists, only one piece of this pugging board survives.
- 3.8.24 Towards the western side of the room there are two full depth joists (east to west), c. 2.5m long with a connecting north to south full-depth joist and an iron bolt which passes through both joists and is forelocked at either end near the west wall (Plate 12). Short joists span the space between the north-south joist and the west wall (Plate 15). The second of these from the south has a pair of square mortise holes in its vertical face. The long bolt and north-south joist are suggestive of there having been an opening for a former narrow flight of stairs up from the ground floor. However the ceiling joists appear single phased across this area and it may be that the floor construction simply reflects the best way of using the available timber including integrating the full depth timbers re-used from Phase II. It is also useful to note that forelock bolts were used in the construction of the roof of this phase (see OA Phase 1 report Pl. 35 and paragraphs 2.9.6-2.9.7)
- 3.8.25 Another feature in the floor of some interest is the use of chase (or 'sliding') tenons which are found in the sides of a number of full depth floor joists to house the ends of ceiling joists. These were common features used widely in the 18th century and they allowed ceilings to be added after the main floor structure had been constructed. One end of the ceiling joist would have been inserted into a conventional mortice in a floor joist and the other end would have been slid sideways into a long chase tenon (Plate 18).
- 3.8.26 During the programme of works a section of the floorboards was lifted which temporarily exposed a concealed section of a dentil cornice, associated decorative plasterwork and a blue-painted plaster wall beneath in the north-west corner of the room (Plate 14). This is therefore a surviving piece of the former wall decoration at the north end of the west wall of room G1 now concealed behind later walling. The current works have also exposed the underside of a reused medieval beam in the ceiling above F1 (Plate 13). This is an east to west joist which forms a plate between Rooms S1 and S3 and is further detailed later in the description of the Second Floor. This reused joist has a series of empty mortices in its upper and lower surfaces, probably for wall studs and it appears that the member was possibly a rail or a wall plate that has either been re used twice or had timbers joined into both sides at one time.
- 3.8.27 *Room F2:* The floor in the northern three-quarters of F2 follows the general form of the floor in F1 with three re-used tall transverse joists which span between the main principal joist to the west (beneath the partition between F1 and F2) and a plate along the east wall (Plate 22). The east face of the principal joist has empty mortices for diminished haunch tenons below the shallow floor joists and is probably a re-used 16th century piece (Plate 24). Shallower oak common floor joists also span east to west and beneath these are lower ceiling joists (north to south) between the full depth joists (Plate 23). In the southern bay these ceiling joists are morticed into the full depth joists but in the northern two bays they are half-lapped to the underside of the deep



joists. Also in the eastern bay the floor includes four waney ceiling battens fixed to the soffit of the full depth joists.

- 3.8.28 *Room F6:* An important part of the house where the current conservation works have revealed a complex development has been the South Porch area, including the area beneath room F6. Earlier phases in this area have been detailed above (particularly Phase IV) but in Phase V a new higher floor was inserted, 1m above the older joists, to correspond with the higher floor level in the main eastern range (Phase II) (Plate 45). Dendrochronology samples taken of the timbers in the higher section of floor have provided a clear felling date of 1757-9, confirming that these alterations were undertaken at the same time as the rest of Phase V.
- 3.8.29 A doorway cut into the lower plate of the partition on the west side of F6 which is the Phase I first floor east wall moved west in Phase IV was blocked probably when the floor of F6 was raised during the Phase V works (Figure 8).
- 3.8.30 The current floor joists in F6 are those of Phase V. The floorboards are of softwood, 25 cm wide and are probably later replacements, the softwood joists, measuring on average 20cm deep by 7cm wide, are aligned east to west spanning the room. The joists are supported at their ends by simple softwood rails bolted to the earlier structure.
- 3.8.31 *Room F4:* Room F4 also saw a number of significant alterations which are believed to date from the 18th century and have some of the characteristics of other Phase V work and have therefore been included here as part of Phase V. However unlike some of the other elements of Phase V dendrochronology samples have not been taken from the relevant timbers and a firm date cannot be ascribed to these alterations.
- 3.8.32 F4 forms part of the continuous first floor of the east range and essentially forms part of Phase II (detailed above) but in the central section there are 6 joists (5th to 10th from east wall) which are insertions and there are double sets of thinner joists (a floor joist above a ceiling joist) rather than the full depth joists found elsewhere in the range. Constructional similarities with other works undertaken in Phase V suggest that this insertion probably dates from the 18th century (Plate 31).
- 3.8.33 The secondary inserted ceiling joists are of well-squared oak and were new when inserted but the inserted upper joists are more crude and at least four of these are reused with empty mortices in them. As referred to above there are carpenter's marks on the upper face of the east to west principal joists which traverse this room and corresponding marks on some of the floor joists. However, although there are marks along the full length of the southern principal joist there are none on the upper faces of the secondary inserted joists.
- 3.8.34 The numbering sequence is probably secondary and relates to the 18th century work as does similar numbering in F3; none of the unaltered elements of Phase II anywhere have carpenter's marks. Double mortices are visible in the opposing faces of the principal joists and these were made for 16th century tall joists and have only been partly and crudely reused for the later joists. Therefore presumably a central section of the 16th-century joists was

removed, possibly for an inserted staircase from the lobby below, and then the stairs were removed in the 18th century and the floor re-instated. Joists were also removed in S10 above to create an opening above the west side of F4 which could have taken a single stair from F4 up to the second floor (as described in the Phase II section above).

- 3.8.35 The fourth joist from the east has mortices in the south end of the west face which may relate to a structure by which stairs from below would have been secured. One of these mortices (near the south end of the joist) is for a diminished haunch over a standard tenon, similar to others found elsewhere in the building in the current works, which suggests that one of the original joists was reused and inserted east to west from this joist parallel to the principal, perhaps to create a landing area along the edge of the stairs. There are also three conventional mortices north of this in the joist which could have been for attaching further joists or for fixing elements of the putative stairs or other structure that was here (Plates 32-34).
- 3.8.36 The east wall of this room formerly contained a chimney flue and fireplace which have been removed. Brick blocking of the scar of the of the flue was seen in the east wall after removal of plaster and there was a section of the east wallplate and adjacent upper sections cut out of the two eastern joists clearly to support the former chimney breast and hearth. The chimney and fireplace were therefore inserted after the construction of the range but there is no good evidence for closely dating their insertion and subsequent removal but they might well belong to Phase V and certainly are unlikely to have been built prior to Phase V when this floor was open in the centre and in use as a staircase or gallery.
- 3.8.37 *Second Floor:* The 1759-60 extension at the north-western corner of the house comprises two rooms at second floor level: S2, the larger room to the west, and S1. The floor construction is essentially the same throughout the two rooms and comprises 13 oak joists orientated north to south supporting east to west pine boards (Plate 55). The joists are 17 cm high by, on average, 7 cm wide and some are slightly waney. Nine of the joists have small additional short joists side-butted to their south ends which extend under the adjacent partition to abut the north ends of joists from S3. The floorboards are butted with no lap or rebate and are mostly 21 cm wide x 2.5 cm (1 inch) thick. The floor construction is essentially single phased and there is a contemporary plaster ceiling for the first floor fixed straight to the oak joists with no battens or trimmers.
- 3.8.38 At their north ends the joists are pegged to a contemporary (1750s) plate which is c.10 cm deep. At their south ends these joists, as well as 16th-century beams from S3 to the south, sit on a reused medieval timber plate which has birdmouth mortices in its upper surface, possibly for rafters or studs. In addition there are also conventional mortices in its soffit for studs which cut through into the upper birdmouths suggesting that it was probably previously reused once prior to its reuse as a ceiling beam. The reused plate is c.13 cm thick by 17 cm wide and much 'weathered'. The main beam from S3 is 26 cm wide and is half lapped (13cm) over the reused plate. The 16th-century principal joists from S3 and the reused medieval plate are strapped and pinned to the tie beam of a truss inserted as part of the Phase V works which runs immediately above and in line with the reused plate (Plate 56).



3.8.39 The bow window which also forms part of the 1759-60 phase only projects from the main house at ground and first floor level. Therefore whereas at ground and first floor the rooms at the north-eastern corner of the building do form part of Phase V that at Second Floor level does not.

3.8.40 Several fragments of historic wallpaper were exposed in F2 at the south-east corner of the room (detailed further below).

3.9 PHASE VI: LATER INSERTIONS IN WEST CENTRAL RANGE

ROOMS F2, F9 & S3

3.9.1 *Phase VI:* This comprises a further phase of alterations believed to date to the 18th century, with insertions in the west central range (S3 (east part), F9 and the south part of F2).

3.9.2 As detailed above the floor construction in the northern three quarters of Room F2 is believed to form part of Phase V (1759-60) and is essentially the same as that in the adjacent Room F1. However, the floor in the southern quarter is distinct from this and is presumably a secondary alteration probably undertaken in the later 18th century at the same time as the alterations in the adjacent F9. The floor at the southern end of F2 comprises three east to west oak joists on which have been added secondary pine joists to raise the floor level to that of the rest of F2. It may be that this was previously a small landing with a slightly lower floor level.

3.9.3 The eastern ends of the joists are supported on a rough flint masonry wall within a recess. This walling is built over wallpaper on a plastered wall behind at current floor level. The wallpaper is a repeated symmetrical design with geometric and floral elements in black white and mustard colour on a cream paper (Plate 21) this type of paper generally dates to the mid to late 18th-century.

3.9.4 F9 is a lobby and its floor is believed to be contemporary with that at the southern end of F2. It is of single construction with five east to west joists (15 cm deep x 10 cm wide) supporting ceiling laths directly beneath and floor boards above (Plate 49). At their east ends they are supported by a wall plate (8 cm deep by c.22 cm wide) which rests on a brick wall. Along the southernmost joist there is a reused section from a billet moulded panelling which now acts as a support for the ceiling laths (Plate 25) and towards either end of the floor there is an inserted structure to support the curved edges of the ceiling below. This ceiling is principally supported by short triangular shaped struts.

3.9.5 The evidence of the wallpaper in the F2 recess and the presence of adjacent Phase V shows that the Phase VI flooring was inserted after the paper was laid and after the Phase V works were completed and so probably dates to the later 18th century or perhaps the early 19th century. The wallpaper also shows that the space was previously clearly not a chimney stack or low status space but a part of the house of enough status to be decorated; a stair well seems to be the most likely interpretation.

- 3.9.6 *Second Floor:* The east part of the attic room S3 in the west central range has some reused medieval timbers in the floor, beneath modern softwood joists, and filling a space that was not floored in the 16th century but was between two areas of Phase II period flooring. The floor here consists of five large oak joists lying north to south (average 13 x 14 cm wide) that are probably reused medieval timbers but lacking any apparent redundant joints. A lath and plaster ceiling contemporary with the reuse of the joists is attached directly to them (Plates 57-58). Two of the joists are scarfed over smaller later inserted joists at the north end.
- 3.9.7 This area is directly above the floors just described in F2 and F9 and clearly covers a former void that must be related to the void in the floor below and for this reason has been assigned to the same phase. However none of the timbers in either floor have been tree ring dated or have any particularly datable features.
- 3.10 **PHASE VII: 19TH CENTURY - EXISTING MAIN STAIR LANDINGS**
ROOMS F8 (EAST PART), S11
- 3.10.1 *Phase VII:* Following Sir Francis Jarvis Stapleton's inheritance of Greys Court on Catherine Stapleton's death in 1863 he undertook some incomplete building works that seem to have included alteration to the stairs. These can be identified with the two areas or reworking identified on first and second-floor landings.
- 3.10.2 *First Floor:* The landing on the east part of F8 has a central N-S beam, with E-W floor joists joined to either side of the beam (but not paired). On the east side the joists rest on a plate in the wall, and on the west side they rest on the stair bressumer beam. The common joists are lapped to the top of the beam (and obscured by floorboards in plan). There is a lower set of small scantling ceiling joists to which the ceiling laths are fixed (Plate 47).
- 3.10.3 Some of the common joists were reused studs or joists with lath and plaster marks, some were reused with empty joints, some were quarter sawn oak, and there was one piece of reused green painted panelling as in F9.
- 3.10.4 *Second Floor:* The stair landing (S11) at second-floor level has a series of oak and softwood joists running between the stair bressumer beam and the wall. As on the floor below the joists include reused material with marks of laths indicating that they were former studs; there are also smaller joists beneath them giving support to the ceiling (Plate 65).
- 3.10.5 The back stairs (STR3) leading from room F12 up to the corridor S12 which opens on to the main stair landing S11 may have been constructed or reconstructed at about the same time; the joists below the stair area and above the Phase 1 joists are of machine cut softwood (Plate 41). Stripping of part of the east stair wall revealed vibrant red and black 19th century wallpaper (Plate 67).



3.11 **PHASE VIII: LATE 19TH/EARLY 20TH CENTURY- EXTENSION TO MAIN STAIRS**

ROOM F8

- 3.11.1 *First Floor:* In the late 19th or early 20th century an extension to the main stairs was undertaken in the west part of F8. The landing and passage was supported on a series of plain softwood joists, with softwood boards, all of late 19th-century appearance.

3.12 **PHASE IX: EARLY 20TH CENTURY-SECOND FLOOR IN TIMBER-FRAMED RANGE**

ROOMS S12, S13, S14

- 3.12.1 *Phase IX:* Before 1914 the ‘nursery’ or ‘linen room attic, was added to the Phase I medieval, timber-framed range.⁴ The floor structure is a double floor in the 18th century style containing softwood floor joists and oak ceiling joists and therefore almost certainly contains much reused material. The oak joists have diminished haunch tenons and therefore may have a 16th century origin.
- 3.12.2 *Second Floor:* The mezzanine level corridor (S12) has a mixture of two oak joists (14 x 8 cm wide) and six softwood joists (12 x 6 cm wide) running east-west, with a covering of softwood butt-jointed floorboards. The ceiling laths are fixed directly on to the joists; the ceiling plaster may be lime but is very hard and grey so perhaps not very old.
- 3.12.3 The larger adjacent room S13 has a ‘Double’ floor (continued into S14). The lower series of oak ceiling joists (12cm high x 6 cm wide) run east-west (and are distinct from those in the corridor described above). They are tenoned (with a diminished-haunch joint) to a secondary north-south beam (24 x 18 cm wide) which is tenoned and double pegged to a principal east-west joist (26 x 24 cm wide). The soffits of the lower joists are flush with the beam soffits and make a level for attaching the ceiling. The lath and plaster ceiling is fixed directly to the oak joists. The joists on the west are supported in the brick wall and there appears to be no wallplate.
- 3.12.4 The floor joists are of softwood and are aligned with, but not directly over, the oak ceiling joists. They are not tenoned, but are half-lapped over the secondary beam to bring the floor level up to the top of the principal joist (Plate 66).

3.13 **PHASE X: MRS FLEMING 1930S - INSERTIONS INTO FIRST FLOOR AND ALTERATIONS TO GROUND FLOOR**

ROOMS G4 AND F4

- 3.13.1 *Phase X:* Mrs Fleming, although she lived at Greys Court for only a short time (1935-37) made considerable alterations to the house and also demolished the majority of the western base court range. With regards to floor, the internal works in the main house seem only to have impinged in two areas.

⁴ Jones (2005) Volume 3 Page 51.

- 3.13.2 *Ground Floor:* On the ground floor the removal of all the boards in the Dining Room (G4) revealed a base of reused timbers (lying N-S) resting on bricks (in E-W rows) (Plates 8-10). The bricks are laid flat, and they are laid on a cementitious mortar (or that has been used to fill between them). Oak joists are laid on their sides, six of 3.5 m length in the south end, and shorter ones in the north end, and slightly different ones on the east side. The longer ones, several of which have regular peg holes, would appear to have been previously used as purlins (with rafter pegs), presumably from one of the recently demolished parts of Greys Court. This floor was completely renewed during the Phase 2 conservation works and a few of the re-used medieval timbers from the old floor were placed loose between the new joists.
- 3.13.3 In the east window recess an irregular brick and stone foundation below the floor seems to represent the continuation of the front wall through the window.
- 3.13.4 *First Floor:* On the first floor two I-section girders were inserted to support the partition walls on the north and south sides of Room (F4) as the ground floor partitions were removed to create a one long open room, this change was later reversed by Sir Felix and Lady Brunner.
- 3.13.5 The joists on the south were cut to insert the girder and the cut ends of the joists were supported on the lower flanges of the girder. To the north the joists had already been cut in the 18th century for the raising of the floor in F3 and it was the existing short south ends of those joists that were supported by the north girder.

4 DISCUSSION

- 4.1.1 Greys Court is a nationally important site with extensive ruins and surviving structures from various periods and a principal mansion house which has developed in a series of phases from the medieval period to the present day. The house and wider complex have been subject to considerable research, particularly in the last decade which has seen a thorough investigation of the site by English Heritage as well as two phases of intrusive investigation by Oxford Archaeology during conservation works. The first phase was undertaken during repairs to the roof in 2006 while the second phase, which is the subject of the current report, has principally focussed on the floor structures within the building. The recording has taken the opportunity afforded by works which have involved lifting floorboards throughout the building to remove asbestos lagging from pipes.
- 4.1.2 The works have provided an invaluable opportunity to enhance our understanding of the development of the building through the exposure of parts of the structure which are usually hidden and which would have been obscured during the English Heritage survey. As well as providing an outline archive record of the nature of the floor structures the current work has also confirmed and clarified our understanding of the development of the building without fundamentally contradicting the main conclusions reached in previous phases of investigation. The work has also included a phase of



dendrochronology and this has provided conclusive dating evidence relating to a number of phases of the building.

- 4.1.3 In the surviving medieval core of the house the work has confirmed that the original 15th-century oak floor survives with wide common joists housed in an axial principal joist with plain mortice-and-tenon joints. The main other features of interest revealed in this area relate to the former jetty on the east side of the medieval building. The eastern ends of a series of jetty joists were temporarily exposed within voids beneath the first floor (Room F6) and in the northern section a decorative moulded jetty fascia was also found to survive. Further to the south the former jetty fascia has been lost but in the weathered ends of the joists in this area it was possible to identify a rebate for fixing the fascia. The former first floor east wall above the jetty survives as a partition wall having been moved westwards when the gap between the 15th and 16th century wings was infilled by the south porch in the early 17th century. The close-studded timber north end wall of this range with later brick nogging infill was found fossilised behind later wall finishes in the south wall of the main stair extension. The roof of this range had previously been recorded in the Phase I works.
- 4.1.4 The investigative works have confirmed a generally consistent type of floor structure throughout the 16th-century ranges of some interest. These are of single joist construction with deep joists, contrasting sharply with the horizontally set medieval joists, supporting both floorboards above and ceilings below. These common joists are housed in principal joists with distinctive double tenon joints (diminished haunch tenons above conventional tenon).
- 4.1.5 In the wider development of historic carpentry the use of deep floor joists with double tenons appears to have been a 16th-century development and therefore their use at Greys Court is of some interest. In his groundbreaking study *English Historic Carpentry* Cecil Hewett states that double diminished haunch tenons appear to have been first used for the Great Standing at Chingford in Essex, constructed in c.1543 for Henry VIII. Hewett also notes their use for the ground floor of the Great Hall at the Middle Temple in 1561. The origins of this floor type, which must be associated with the increasing use of plaster ceilings, remains to be discovered.
- 4.1.6 Diminished-haunch tenons, believed by Hewett to have been developed in Cambridge in the early 16th century were a form that has been noted in the Oxford region in buildings from the first half of the 15th century (Abingdon, East St Helens c.1430; All Souls College, Oxford 1440s and Lincoln College 1450s), and by the second quarter of the 16th century it was widely used in many buildings. They have also recently been noted during a project OA undertook to investigate a building at Marcham Priory probably of the 1570s. This was however a lower status house without ceilings and the joists here have a single diminished haunch tenon, but the diminished haunch was regularly used in the paired tenons used for deep joists.
- 4.1.7 In the early 17th century, about 1620, the south porch was constructed filling in the uneven gap between the medieval and the 16th century wings. The floors in the wings were at different heights and the porch was built with a first floor abutting the medieval jetty and indeed the frame of the medieval

east wall above the jetty was moved west to enlarge the space. A fireplace and chimney breast for the newly created first floor were built into the east wall of the 16th century wing, projecting slightly from it and supported on a brick half-arch which was revealed during the conservation works. The brick south wall of the new porch incorporated a canted oriel window on the first floor corbelled out from just above the doorway. The window must have been raised when the Phase V floor was added but probably the original corbelling was used thus resulting in the long lower brick section of the bay as it now exists.

- 4.1.8 The next major phase of extensive alterations occurred in the later 18th century and has been tree ring dated to 1759-60 (Phase V). This principally comprised the northward extension of the north-west range and the addition of the bow window at the north end of the main 16th-century house. The first floor in the north-west range appears to have been entirely renewed in the 18th-century works, rather than merely extending the pre-existing 16th-century structure, and this floor is of double construction with separate floor joists and ceiling joists. The structure does however appear to incorporate reused 'tall' joists and some principal joists from the 16th-century floor.
- 4.1.9 The construction of the bow window in Phase V was already known to have necessitated the raising of the first floor in this part of the building, in order to reflect the higher status of the ground floor rooms in the 18th-century house as opposed to that of the 16th-century where the principal rooms were on the first floor. The removal of the floor boards in the current works revealed an apparently relatively consistent construction through both the main room and the bow window and it would be easy to assume that the entire floor was replaced in the 18th century when the semi-circular window was added. However, dendrochronological samples provided clear evidence confirming that whereas the joists in the bow window dated from *c.*1756-7, the one taken from the main room dated from the 16th century. Presumably when the main area of floor was raised the previous structure was reused and the new floor in the bow window was constructed to broadly match the older fabric excepting that a new principal joist was made of softwood rather than oak. This confirms the great value of dendrochronology to the study of historic buildings in providing conclusive dating evidence and it also has a wider relevance for the establishment of a reference sequence for the area.
- 4.1.10 It appears that although the floor was continuous across the room (F4) in the 16th century building a section was then removed, possibly to allow for a staircase from the lobby below, and that the floor was reinstated in the 18th century alterations. There is also evidence of a former opening created by removing joists in S10 above the west end of F4 which would have allowed for a single stair from that room up to the second floor.
- 4.1.11 At a later date former voids in the first and second floors north of the current main staircase were floored over (Phase VI) and in room F2 this floor was built against walling with mid to late 18th century wallpaper. The void above in room S3 clearly dates from the 16th century construction. The former void may therefore have been a stairwell although it seems unusual to have had another substantial stair immediately adjacent to the main stair which together with the other putative former stair in G3/F4/S10 makes three substantial stairs in use at various times. Unfortunately the precise function and phasing



of these is cannot be fully understood from the present available evidence. The current main stair has been rebuilt at various times but does occupy a part of the building that was clearly constructed for a stair and thus the existence of the primary void in the floor in S3 is difficult to explain.

- 4.1.12 Further small openings were made by the removal of sections of joists in the first floor at the south end of F3 and above this in S6, these may have been for another albeit small stair that was later removed and the openings blocked, but the dates of opening and of blocking these cannot be tied down closely.
- 4.1.13 Other features revealed have included a number of fragments of historic wall paper surviving within floor voids, as well as a section of a dentil cornice with decorative plasterwork in room G1 which also dates from the main 18th century alterations. Many examples were seen of moulded pieces of former panelling being reused as ceiling battens. These were generally attached to the sides of earlier floor joists to create a level surface for the attachment of ceiling laths. This was particularly evident in the Phase II floor especially on the second floor. The pieces of panel stile and/or rail were probably taken from 16th century panelling belonging to the Phase II decoration which was removed and reused during the major 18th century Phase V alterations.
- 4.1.14 Overall, the study has shown the value of a close archaeological analysis of the structure as revealed by opening up, the importance of a careful consideration of the structural carpentry, and the need to calibrate findings by dendrochronology.

Oxford Archaeology
April 2010

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6 SUMMARY OF SITE DETAILS

Site name: Greys Court, Rotherfield Greys.

Site code: ROGRGC08

Type of evaluation: Building Analysis and Recording

Date and duration of project: Intermittent sitework Jan 2008 - July 2009

Summary of results:

The investigation focussed on the suspended timber joist floor structures throughout the house and recorded the types of floor construction in each distinct phase. The medieval phase revealed primary horizontally set joists while the 16th-century part of the house had deep joists with double tenons (diminished haunch above conventional tenons). The 18th-century alterations included the northward extension of the north-west wing, the addition of the bow window at the north end of the main east range and the raising of the first floor associated with the new bow window. A number of other features were also revealed including fragments of wallpaper, a dentil cornice and a moulded jetty bressumer or fascia board from the 15th-century building.

Location of archive: The archive is currently held at OA, Janus House, Osney Mead, Oxford, OX2 0ES.

APPENDIX I - FINDS RECOVERED DURING PHASE 2 CONSERVATION WORKS

The artefacts listed here were recovered during the works and retained by the National Trust (information supplied by The National Trust)

Archaeology Event no. ENA4206

Finds no. FNA5210

Bottle bases/neck *c.*1750-70 (room G2)

Clay pipe bowl *c.*1640-60 (room G4)

Fragments of wallpaper *c.* mid to late 18th century (room F2)

All other items not identified by room due to asbestos:

Clay pipe bowl (first floor)

Stoneware (?) pot (first floor)

Letter from Harrods to Lady Stapleton 1898 (second floor)

Torn letter on mourning paper, possibly 19th century (second floor)

Assorted 20th century cigarette packets, newspapers and general detritus.

APPENDIX II - DENDROCHRONOLOGICAL REPORT

Oxford Dendrochronology Laboratory
Report 2008/38

**THE TREE-RING DATING OF
FURTHER TIMBERS FROM
GREYS COURT,
ROTHERFIELD GREYS,
OXFORDSHIRE
(NGR SU 724 834)**

SUMMARY

An initial 16 timbers were sampled in 2003, with a further 38 sampled in 2006 whilst the roofs were being repaired. This work established dates of 1450/51 date for the roof over the staircase tower to the south of the kitchen range, and the dating of the main east front range was refined from 1573/4 to 1575-6. The middle western wing roof produced one precise felling date of winter 1573/4, suggesting that it too was part of the same building campaign. The dating also showed that the attic floor structure is part of the same phase of works. Samples from the northern end extension of the east front range, the north-west wing, and the short linking roof in between, all date to the same phase of construction which was probably completed between 1759 and 1760.

This report dates more timbers to the mid-15th century phase, including a ceiling beam in the larder located in the south-west wing which is a few decades later; the 1570s phase and the 1759/60 phase, as well as finding a new date for timbers over the front porch, felled in summer 1619. Two new site masters formed from all the dated timbers at the site are well replicated and will be of great value in dating subsequent buildings in the region.

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October 2008

**The Tree-Ring Dating of Further Timbers from Greys Court,
Rotherfield Greys, Oxfordshire (NGR SP 681 364)**

BACKGROUND TO DENDROCHRONOLOGY

The basis of dendrochronological dating is that trees of the same species, growing at the same time, in similar habitats, produce similar ring-width patterns. These patterns of varying ring-widths are unique to the period of growth. Each tree naturally has its own pattern superimposed on the basic 'signal', resulting from genetic variations in the response to external stimuli, the changing competitive regime between trees, damage, disease, management etc.

In much of Britain the major influence on the growth of a species like oak is, however, the weather conditions experienced from season to season. By taking several contemporaneous samples from a building or other timber structure, it is often possible to cross-match the ring-width patterns, and by averaging the values for the sequences, maximise the common signal between trees. The resulting 'site chronology' may then be compared with existing 'master' or 'reference' chronologies.

This process can be done by a trained dendrochronologist using plots of the ring-widths and comparing them visually, which also serves as a check on measuring procedures. It is essentially a statistical process, and therefore requires sufficiently long sequences for one to be confident in the results. There is no defined minimum length of a tree-ring series that can be confidently cross-matched, but as a working hypothesis most dendrochronologists use series longer than at least fifty years.

The dendrochronologist also uses objective statistical comparison techniques, these having the same constraints. The statistical comparison is based on programs by Baillie & Pilcher (1973, 1984) and uses the Student's *t*-test. The *t*-test compares the actual difference between two means in relation to the variation in the data, and is an established statistical technique for looking at the significance of matching between two datasets that has been adopted by dendrochronologists. The values of '*t*' which give an acceptable match have been the subject of some debate; originally values above 3.5 being regarded as acceptable (given at least 100 years of overlapping rings) but now 4.0 is often taken as the base value. It is possible for a random set of numbers to give an apparently acceptable statistical match against a single reference curve – although the visual analysis of plots of the two series usually shows the trained eye the reality of this match. When a series of ring-widths gives strong statistical matches in the same position against a number of independent chronologies the series becomes dated with an extremely high level of confidence.

One can develop long reference chronologies by cross-matching the innermost rings of modern timbers with the outermost rings of older timbers successively back in time, adding data from numerous sites. Data now exist covering many thousands of years and it is, in theory, possible to match a sequence of unknown date to this reference material.

It follows from what has been stated above that the chances of matching a single sequence are not as great as for matching a tree-ring series derived from many individuals, since the process of aggregating individual series will remove variation unique to an individual tree, and reinforce the common signal resulting from widespread influences such as the weather. However, a single sequence can be successfully dated, particularly if it has a long ring sequence.

Growth characteristics vary over space and time, trees in south-eastern England generally growing comparatively quickly and with less year-to-year variation than in many other regions (Bridge, 1988). This means that even comparatively large timbers in this region often exhibit few annual rings and are less useful for dating by this technique.

When interpreting the information derived from the dating exercise it is important to take into account such factors as the presence or absence of sapwood on the sample(s), which indicates the outer margins of the tree. Where no sapwood is present it may not be possible to determine how much wood has been removed, and one can therefore only give a date after which the original tree must have been felled. Where the bark is still present on the timber, the year, and even the time of year of felling can be determined. In the case of incomplete sapwood, one can estimate the number of rings likely to have been on the timber by relating it to populations of living and historical timbers to give a statistically valid range of years within which the tree was felled. For this region the estimate used is that 95% of oaks will have a sapwood ring number in the range 9 – 41 (Miles 1997).

GREYS COURT

Previous studies (Miles 2003, and Miles and Bridge 2006) investigated timbers from the front (east) range and kitchen (south) ranges of the main house, as well as the ‘Cromwellian Stables’, the Donkey Wheel House, and The Keep. The house consists of various phases of construction, and the 2003 study concentrated on the staircase tower to the south of the kitchen, dating to 1450/51, as well as some samples from the east front, with felling dates of winter 1573/4. These results for these 16 timbers sampled are summarised in the Appendix.

During 2006 and 2007 a major programme of repairs to all the roofs were undertaken. This exposed the roof structures over the following six areas: the south wing (sampled and dated in 2003), the roof over the kitchen range, the east front range with the three gables, the western middle range, the northern extension to the east front range, and the north-west wing. In addition, there was a question as to whether the attic floor structure was in fact an earlier structure over which the present east range roof structure was constructed, and there was an interesting trussed beam between the western middle range and the north-west wing.

SAMPLING

Sampling took place in March and April 2008, during renovation works on the site. All the samples were of oak (*Quercus* spp.). Core samples were extracted using a 15mm diameter borer attached to an electric drill. They were numbered using the prefix **gct**, following on from sample number **gct88** from the 2006 dendrochronological study. They were removed for further preparation and analysis. Cores were mounted on wooden laths and polished with progressively finer grits down to 1000 to allow the measurement of ring-widths to the nearest 0.01 mm. The samples were measured under a binocular microscope on a purpose-built moving stage with a linear transducer, attached to a desktop computer. Measurements and subsequent analysis were carried out using DENDRO for WINDOWS, written by Ian Tyers (Tyers 2004).

RESULTS

Figures 1 – 3 show the floor plans with room numbers referred to in the text. The approximate locations of several of the samples taken are shown in Figures 4 – 9.

The dating of the samples from this part of the Greys Court dendrochronological study was handled rather differently to the usual case, where one slowly builds a site chronology from matching samples and then dates this against a dataset of reference series. As well-replicated site chronologies already existed for phases of work at Greys Court from the previous dendrochronological work, series of sufficient length could be dated directly against these chronologies. Where any doubt was encountered, or the matching was poorer than expected, the matching positions were conformed by matching against the independent dataset. Information about the samples taken is given in Table 1. In the field, cores were assigned a temporary code, which was later replaced by a **gct** code to match in with previous samples from the site. Some results of particular interest were released using these temporary codes before this final report was written. Table 1a therefore gives both codes used.

Samples **gct 89-92** all came from the floor of the bay window in the northern extension of the east range. Some of these series were rather short, but could be cross-matched very readily with the longer series. The statistical matches between this group are shown in Table 2. The four series were combined to make a single intermediate site master curve that matched the existing **GREYSCT4** chronology with a value of $t = 9.2$ with 75 years of overlap.

A joist further toward the south end of Room F3 was also sampled, and found to have been felled in 1557-1589. A single joist in Room F4 was sampled and found to have been felled in winter 1574/75.

Further samples from Rooms F4 and S5 had ring patterns with unusual anomalies, mostly in the form of rapid growth declines. Five series did not match against each other, neither did they date against existing Greys Court chronologies, nor against independent datasets.

Timbers in the south range kitchen area were sampled, including some from room F6 above, and some in the G8 larder in the south-west wing where a ceiling had been removed to allow repairs to pipework. Four of the G8 ceiling timbers and posts dated (see Table 3). One retained complete sapwood and was found to have been felled in winter 1443/44, the other three having estimated felling dates that incorporated this date.

A single ceiling timber in the small room to the west (G8 larder) matched against **GREYSCT1** with a t -value of 4.5 with an outer year of 1467. This date was confirmed against independent reference material. It retained some sapwood and was found to have been most likely felled in the period 1476-1508.

A ring width series from a long timber, intermediate between the ceiling of the ground floor and the floor level in the first floor (F6) bedroom was dated to the period 1496-1550 ($t = 7.3$ against **GREYSCT3**, and confirmed against reference material), with a likely felling date period of 1559-1591.

Two timbers from the ceiling of the porch area, accessible in the floor of F6, dated. One had a heartwood/sapwood boundary of 1589 ($t = 6.1$ against **GREYSCT2**), the other had a final complete sapwood ring formed in 1618 ($t = 8.1$ against **GREYSCT2**) and was felled in summer 1619.

Three timbers from the floor of F6 dated against **GREYSCT4** ($t = 5.7, 7.0$ and 4.0 respectively). One was found to have been felled in winter 1757/58 and two in winter 1758/59. This phase is seen again in the joists to the north extension bay window, the timbers having been felled in winter 1756/57.

Two new site master chronologies were formed from all the dated timbers, **GREYSCTA** covering the period 1319–1618, and **GREYSCTB** 1640–1758. These two chronologies match very well with reference material, the best results being shown in Tables 3 and 4 respectively.

Figure 10 shows the relative positions of overlap of the samples dated in this report.

INTERPRETATION AND DISCUSSION

The earliest dated timbers were found in the kitchen range, where one timber with a precise felling date of winter 1443/4 was found for the axial beam. A post and a joist from the same structure did not have sapwood remaining, but produced felling date ranges of 1432-64 and 1441-73 respectively. However, interpretation of these dates are complicated by a precise felling date of summer 1450 and two more from winter 1450/51 for the roof of the staircase tower to the south of the kitchen range. This roof also had a rafter dating slightly earlier, to the spring of 1445, which must have been stockpiled. One possible interpretation is that the kitchen range was constructed about 1444-5, and the staircase tower added five years later in 1451 or shortly thereafter, incorporating one or more timbers left over from the kitchen range. An alternative theory is that the kitchen range and staircase tower were constructed together in about 1451 using some timbers stockpiled for five years. Careful study of the framing will be required to resolve this.

A chance access to the south-west wing revealed a number of timbers in the ground floor ceiling structure. One of these timbers dated, produced a felling date range of 1476-1508. There was not enough of the floor structure visible to be able to interpret the relationship of the timbers, and they could easily have been reused in a later rebuilding of the wing. The roof structure over this wing is relatively modern. However, there is a very early door between the kitchen and the south-west wing which is set within a heavy frame, and typologically probably dates from the fifteenth century. Therefore, it is quite possible the core of the south-west wing actually dates the turn of the fifteenth century, and should any future work be planned for this section, an allowance should be made for recording and further dating of the structure in this area, including the early connecting door and frame.

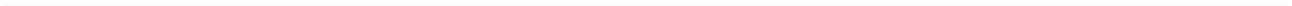
A further timber from the east range falls into the already established construction date of 1574, but the range was previously seen not to have been completed until at least 1576 when the gables to the east front were finished.

More eighteenth century timbers confirm the extent of the remains of the 1758/59 phase in the north extension to the east range. Three joists to the bow window over the drawing room date from the winter 1756/7, whereas timbers comprising the roof structure above the rounded end of north range above dated variously from winter 1755/6 to spring 1759 would suggest that a certain amount of material had been stock-piled. Therefore, it would appear that the house was extended to the north with a bow-fronted projection, the roof to the north-west reconstructed, and the bathroom floor in F6 raised, all in about 1758-9.

The two new site masters will be of great value in dating future material from the area.

ACKNOWLEDGEMENTS

The dendrochronology was commissioned by Gary Marshall on behalf of the National Trust. Simon Underdown of Oxford Archaeology provided drawings adapted from National Trust drawings to help locate the timbers sampled. Ward and Company facilitated access on site during the renovation works. We also wish to thank our fellow dendrochronologists for permission to use their data.



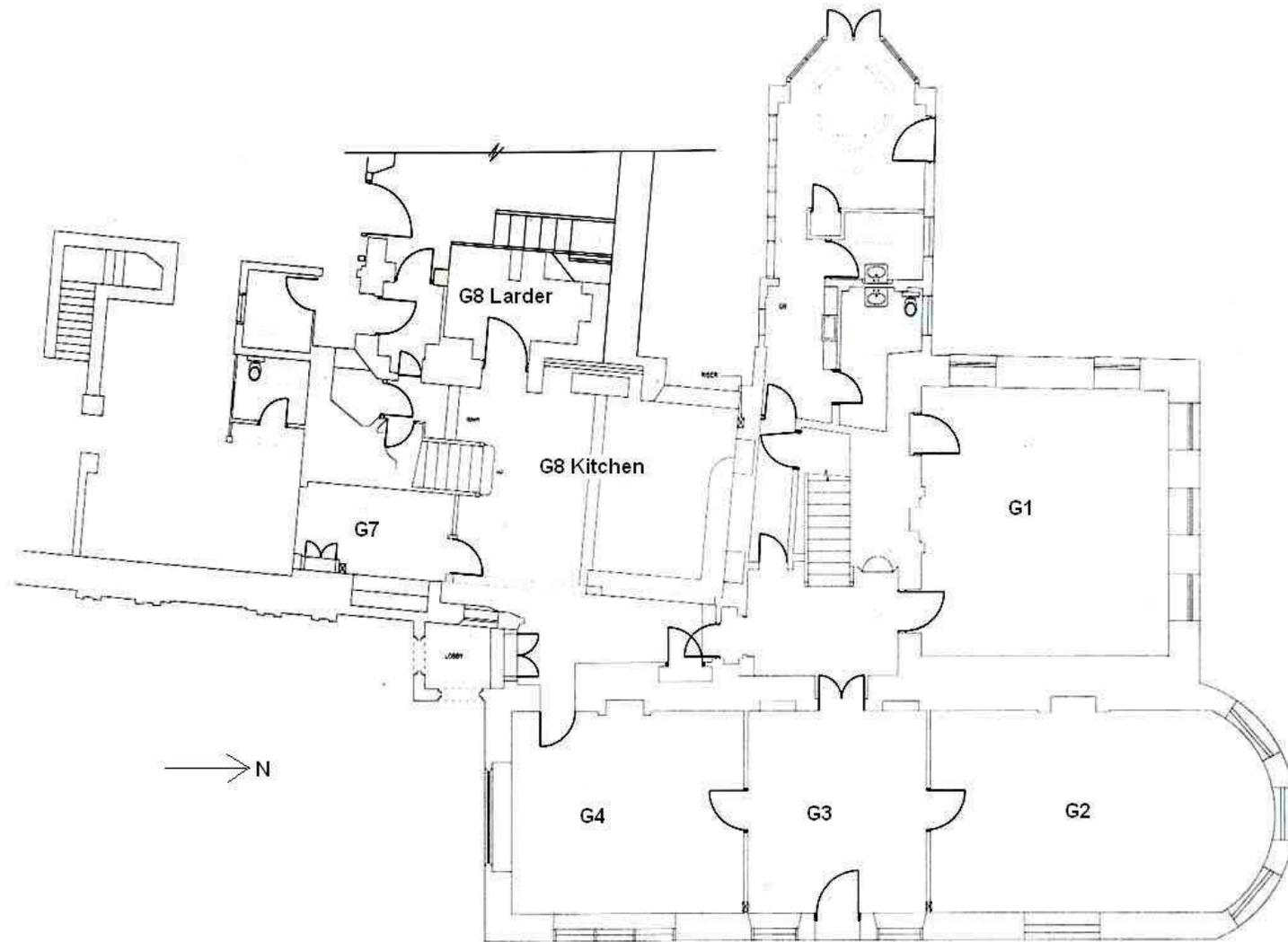


Figure 1: Ground Floor plan of Greys Court, showing the room numbers referred to in the text.

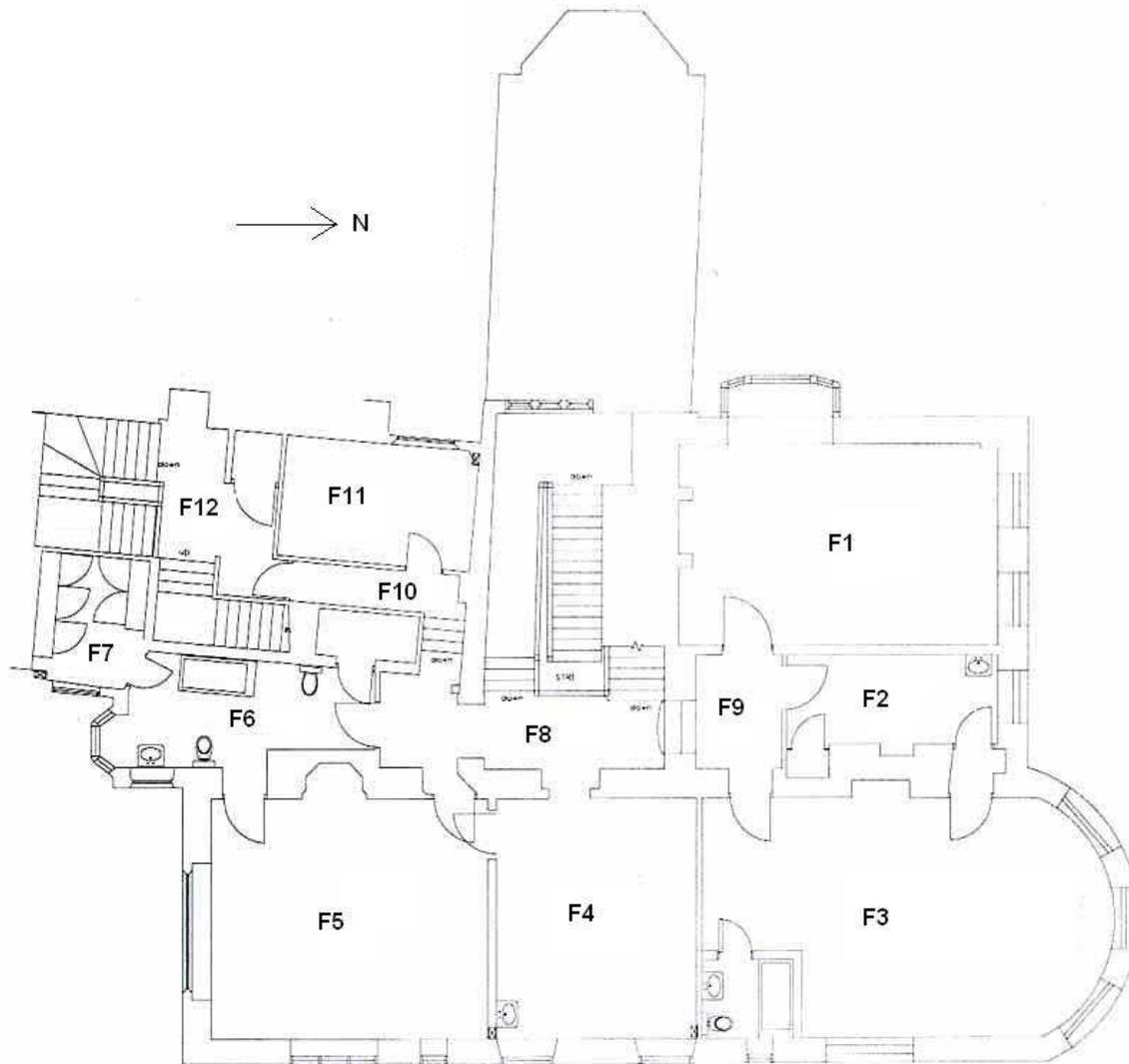


Figure 2: First-floor plan of Greys Court, showing the room numbers referred to in the text

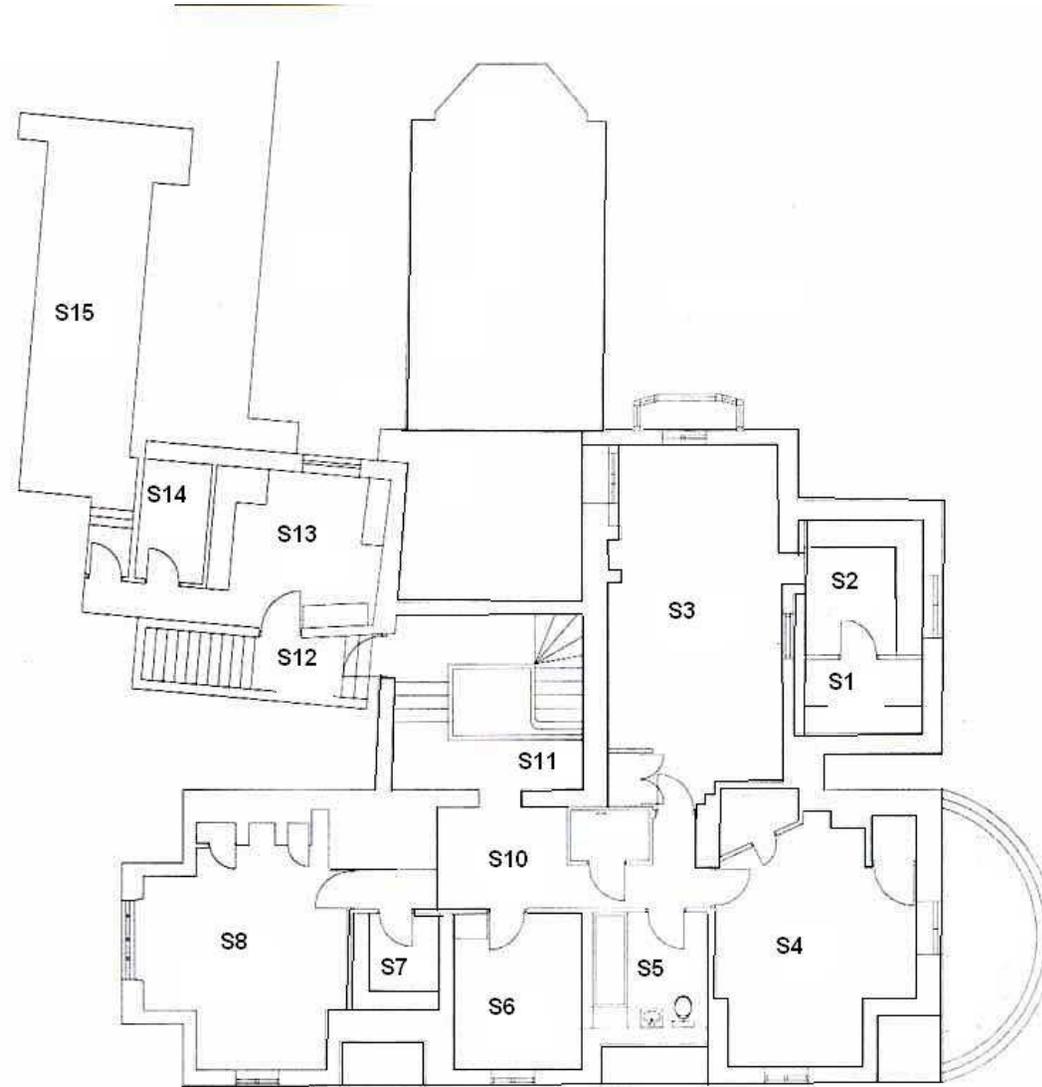


Figure 3: Second-floor plan of Greys Court, showing the room numbers referred to in the text.

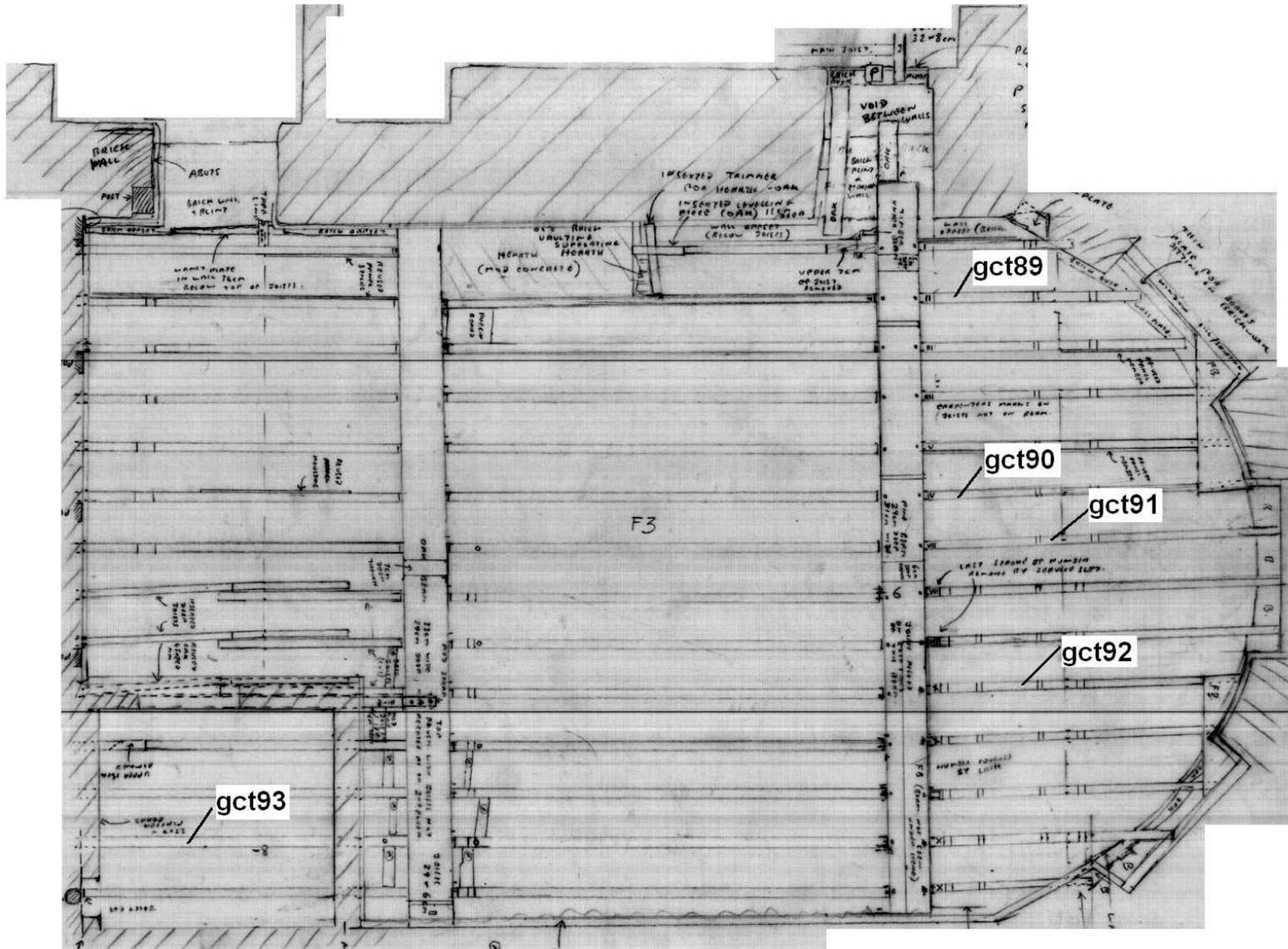


Figure 4: Room F3 floorplan, showing some of the timbers sampled for dendrochronology

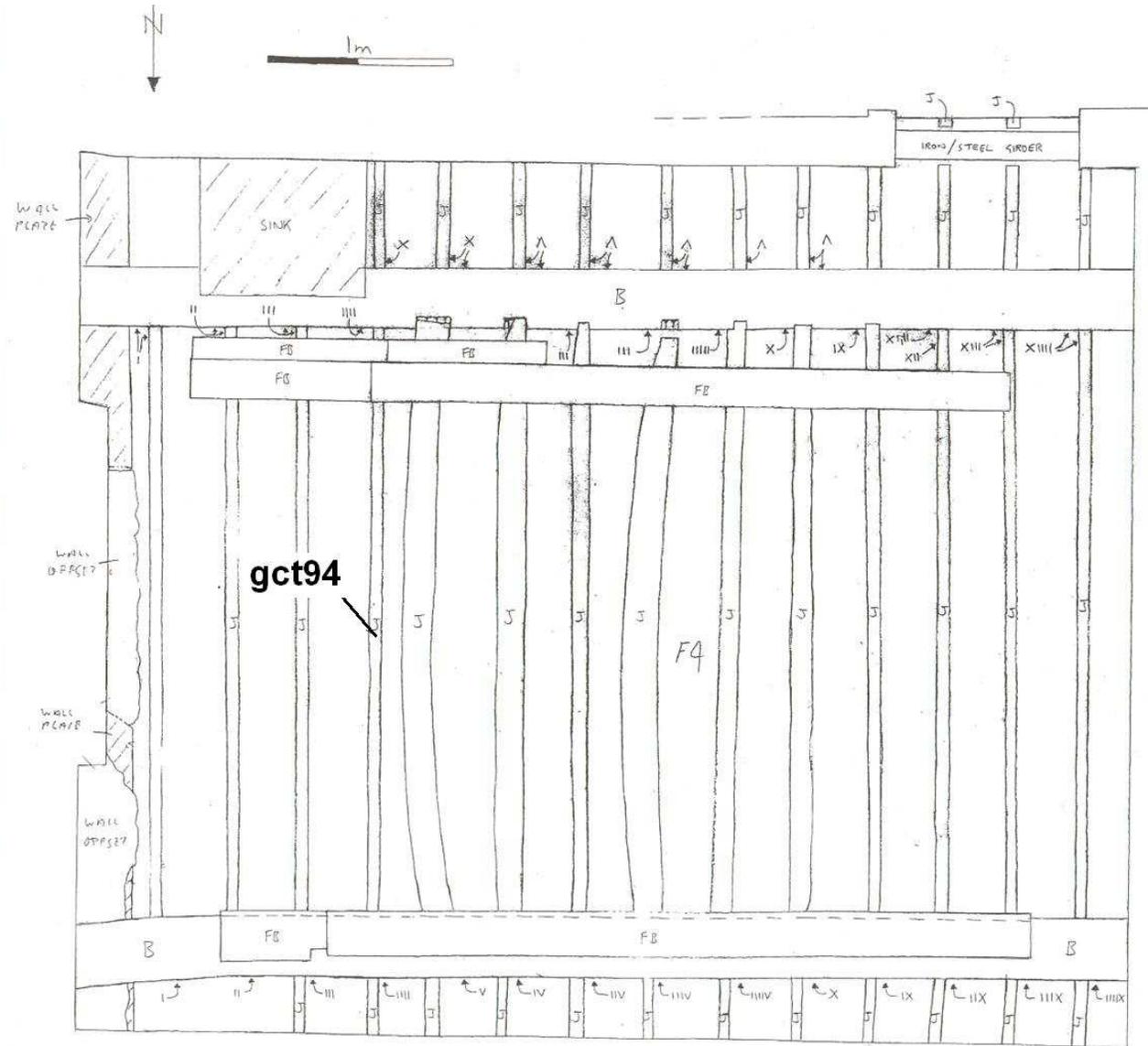


Figure 5: Floor plan of room F4, showing the timber sampled for dendrochronology

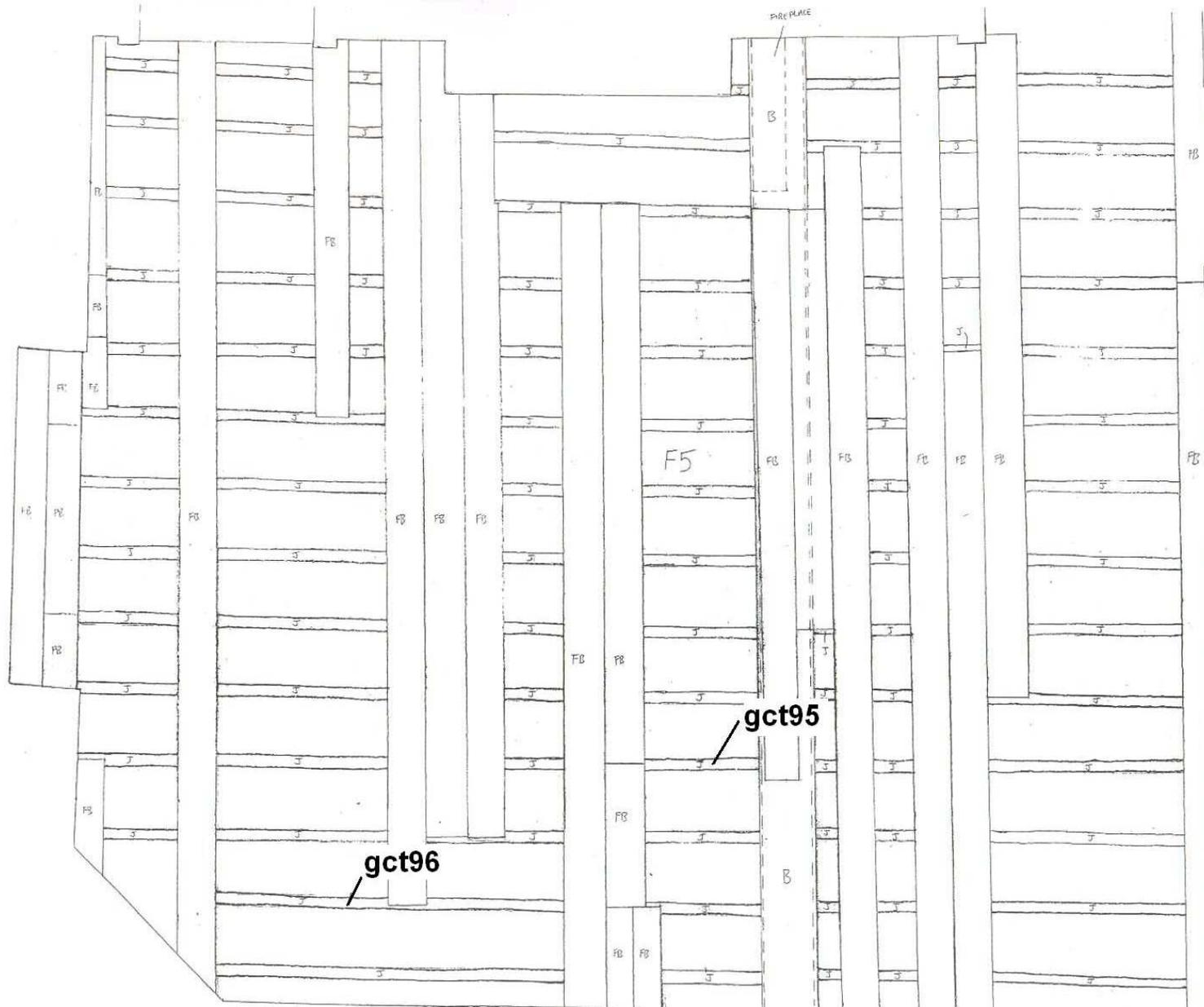


Figure 6: Floor plan of room F5 showing the timbers sampled for dendrochronology

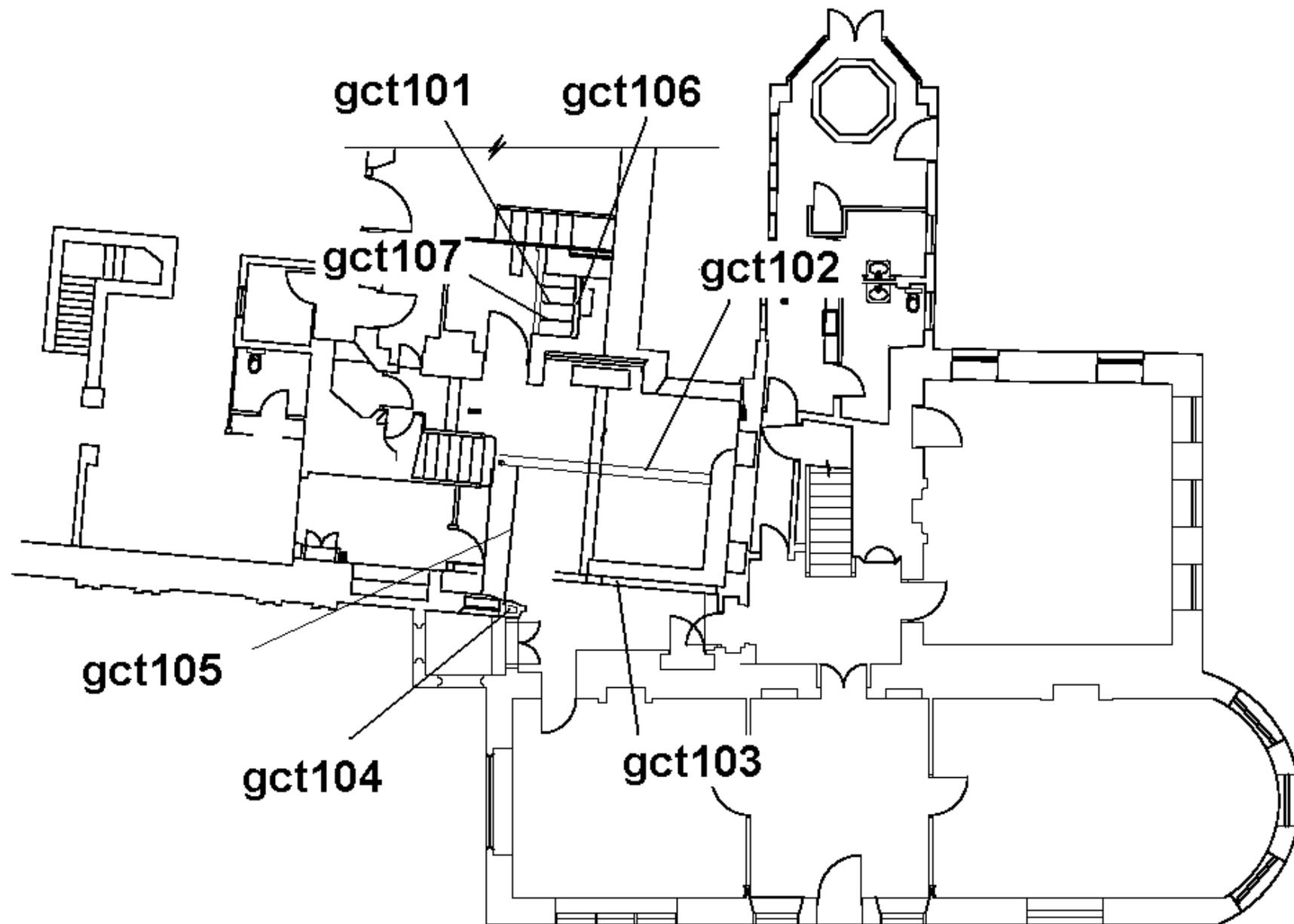


Figure 7: Greys Court ground floor plan showing the approximate whereabouts of some of the timbers sampled for dendrochronology.

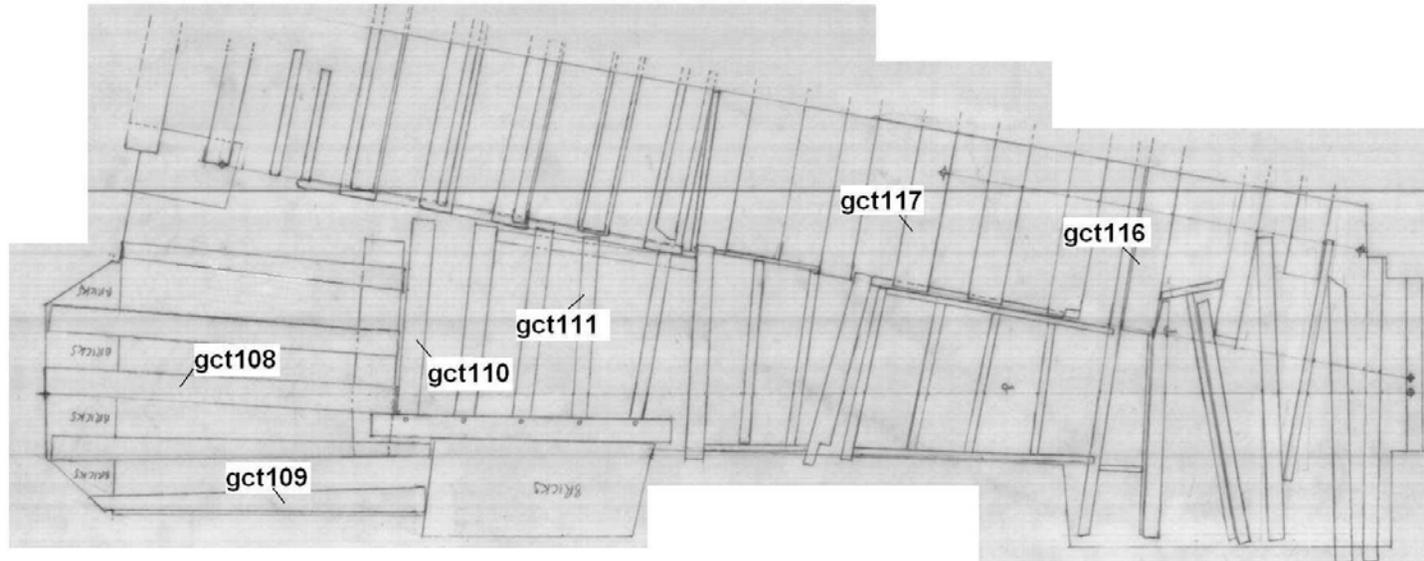


Figure 8: Floorplan of the lower floor to room F6, showing timbers sampled for dendrochronology

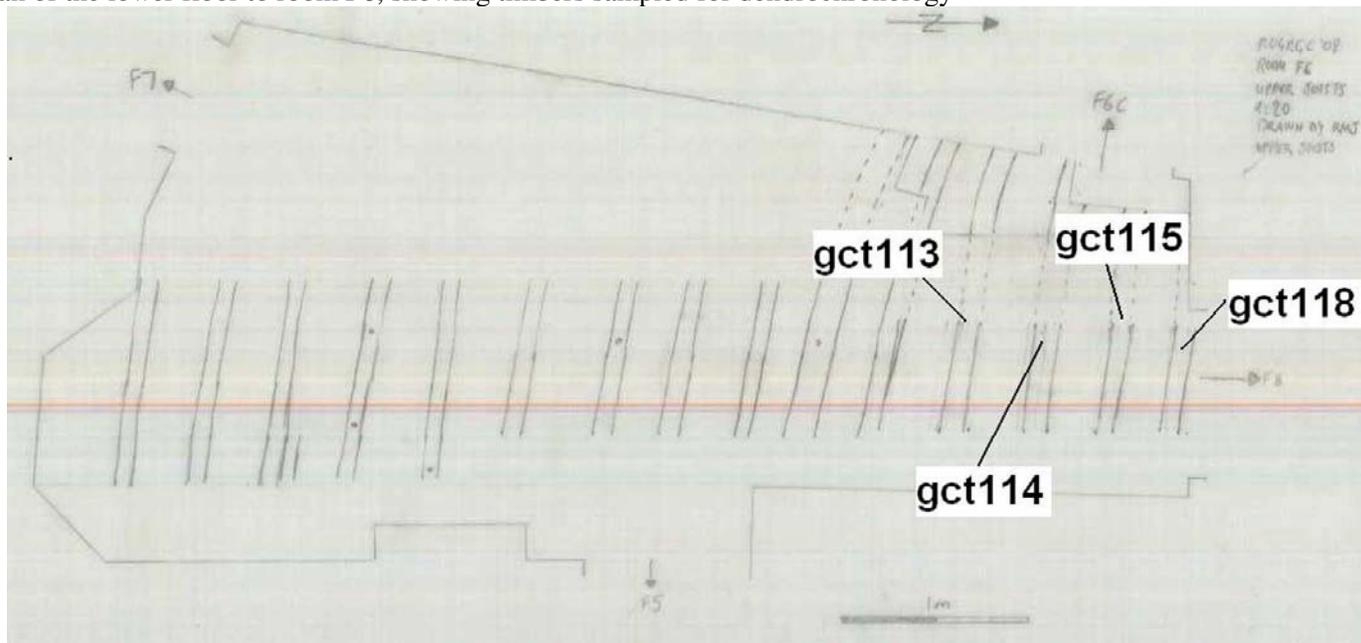


Figure 9: Floorplan of the upper floor level to room F6, showing timbers sampled for dendrochronology

6.1.1 TABLE 1: DETAILS OF SAMPLES TAKEN FROM THE MAIN HOUSE, GREYS COURT

Sample number	Timber and position	Dates AD spanning	H/S bdry	Sapwood complement	No of rings	Mean width mm	Std devn mm	Mean sens	Felling seasons and dates/date ranges (AD)
North End Extension to East Front Range – F3 floor									
gct89	Joist II in bay window	1683-1737	1737	H/S	55	1.42	0.29	0.166	1746-1778
gct90	Joist VI in bay window	1712-1756	1738	18C	45	1.49	0.29	0.174	winter 1756/57
gct91a	Joist VII in bay window	1682-1717	-	-	36	1.14	0.38	0.249	
gct91b	<i>ditto</i>	1718-1756	1738	18C	39	1.69	0.50	0.233	
gct91	gct91a + gct91b	1682-1756	1738	18C	75	1.42	0.53	0.239	winter 1756/57
gct92	Joist X in bay window	1721-1756	1739	17C	36	2.63	1.09	0.245	winter 1756/57
Front (East) Range F3									
gct93	Joist, second from front wall	1478-1548	1548	H/S	71	1.54	0.53	0.207	1557-1589
Front (East) Range F4									
gct94	Joist	1496-1574	1557	17C	79	1.31	0.42	0.207	winter 1574/75
Front (East) Range F5									
gct95	Joist	undated	-	17C	103	1.90	0.91	0.249	unknown
gct96	Joist	undated	-	17C	91	1.26	0.73	0.198	unknown
Front (East) Range S4									
gct97	Joist	undated		23½C	77	1.16	0.95	0.288	unknown
gct98	Joist	undated		19C	73	1.85	1.00	0.289	unknown
gct99	Joist	undated	-	13C	72	2.21	0.97	0.192	unknown
Kitchen (South) Range G8									
gct101	G8 larder, Joist	undated	-	-	48	1.78	0.77	0.184	unknown
gct102	Western north-south beam	1387-1443	1431	12C	57	2.84	1.04	0.198	winter 1443/44
gct103	Eastern north-south beam	undated	-	-	51	2.21	0.97	0.203	unknown
gct104	Post on west side of door	1341-1423	1423	H/S	83	2.10	0.91	0.271	1432-1464
gct105	Joist	1387-1432	1432	H/S	46	2.88	1.48	0.241	1441-1473
gct106	G8 larder, north ceiling beam	1416-1467	1467	H/S	52	1.54	0.57	0.195	1476-1508
gct107	G8 larder, joist	undated	-	-	NM	-	-	-	unknown
gct119	Post in F8, adjacent to F9	undated	-	3	46	2.30	0.77	0.183	unknown
First Floor Bathroom – F6									
<i>Timbers over front porch</i>									
gct108	3 rd joist from east side	1530-1589	1589	H/S	60	1.37	0.56	0.215	1598-1630

gct109 1st joist from east side 1528-1618 1593 25½C 91 1.28 0.53 0.192 summer 1619 *continued over*

Table 1 continued:

Sample number	Timber and position	Dates AD spanning	H/S bdry	Sapwood complement	No of rings	Mean width mm	Std devn mm	Mean sens	Felling seasons and dates/date ranges (AD)
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6.1.2

First Floor Bathroom – F6

Lower floor level/ partly ceiling to G7

gct110	1 st east-west joist from south end	undated	-	6	36	1.83	0.91	0.212	unknown
gct111	4 th east-west joist from south end	undated	-	-	NM	-	-	-	unknown
gct116	West side, wide beam	1374-1424	1424	H/S	51	2.08	0.59	0.179	1433-1465
gct117	West side, wide beam	undated	-	-	NM	-	-	-	unknown

Intermediate level

gct112	East-West beam between two levels	1496-1550	1550	H/S	55	2.45	0.95	0.267	1559-1591
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Upper floor level

gct113	Joist 12	1688-1758	1735	23C	71	0.88	0.23	0.224	winter 1758/59
gct114	Joist 13	1655-1757	1743	14C	103	1.03	0.32	0.193	winter 1757/58
gct115	Joist 14	undated	-	-	NM	-	-	-	unknown
gct118	Joist 16	1667-1758	1734	24C	92	1.02	0.39	0.192	winter 1758/59

First Floor landing F8

gct119	Post at top of stairs	undated	-	3	46	2.30	0.77	0.183	unknown
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Table 1a: Temporary codes used on site and their final report equivalents

A	gct89	G	gct95	M2	gct102	M8	gct108	M14	gct114
B	gct90	H	gct96	M3	gct103	M9	gct109	M15	gct115
C	gct91	I	gct97	M4	gct104	M10	gct110	M16	gct116
D	gct92	J	gct98	M5	gct105	M11	gct111	M17	gct117
E	gct93	K	gct99	M6	gct10	M12	gct112	M18	gct118
F	gct94	M1	gct101	M7	gct107	M13	gct113	M19	gct119

Table 2: Cross-matching between the floor joists from the bay window

<i>t</i> -values			
Sample	gct90	gct91	gct92
gct89	1.8	6.1	2.6
gct90		5.7	6.0
gct91			4.5

Table 3: Cross-matching of G8 ceiling timbers with existing site chronologies

Sample No	<i>t</i> – value against GREYSCT1
gct102	7.8
gct104	5.0
gct105	6.2
gct116	5.1

Table 4: Dating evidence for the site chronology **GREYSCTA** AD 1319–1618 – Regional multi-site chronologies are in **BOLD**

<i>County or region:</i>	<i>Chronology name:</i>	<i>Short publication reference:</i>	<i>File name:</i>	<i>Spanning:</i>	<i>Overlap (yrs):</i>	<i>t-value:</i>
Southern England	Southern England Master	(Bridge 1998)	SENG98	944-1790	300	14.8
Hampshire	Hampshire Master Chronology	(Miles 2003)	HANTS02	443-1972	300	14.2
Oxfordshire	Oxfordshire Master Chronology	(Haddon-Reece <i>et al</i> 1993)	OXON93	632-1987	300	14.0
East Anglia	East Anglia Master Chronology	(Bridge 2003)	ANGLIA03	944-1789	300	13.1
London	London Master Chronology	(Tyers pers comm)	LONDON	413-1728	300	13.1
Berkshire	Windsor Castle kitchen	(Hillam and Groves 1996)	WC KITCH	1331-1573	243	12.5
Oxfordshire	Upper House Farm, Nuffield	(Haddon-Reece <i>et al</i> 1989)	NUFF	1404-1627	215	11.7
Hampshire	Chawton House	(Miles and Worthington 1998)	CHAWTON3	1446-1582	184	11.1
Buckinghamshire	Medmenham	(Miles and Worthington 2001)	MEDMNHM1	1430-1564	135	10.9
Hampshire	St Olaf's Pond Cottage, Wonston	(Miles and Worthington 1997)	STOLAFS	1376-1535	160	10.7
Buckinghamshire	Chenies Manor	(Miles <i>et al</i> 2004)	CHENIES1	1370-1551	182	10.5

Table 5: Dating evidence for the site chronology **GREYSCTB** AD 1640–1758 – Regional multi-site chronologies are in **BOLD**

<i>County or region:</i>	<i>Chronology name:</i>	<i>Short publication reference:</i>	<i>File name:</i>	<i>Spanning:</i>	<i>Overlap (yrs):</i>	<i>t-value:</i>
Buckinghamshire	Medmenham	(Miles and Worthington 2001)	MEDMNHM2	1627-1784	119	8.6
Oxfordshire	95 Bell St, Henley	(Miles <i>et al</i> 2008)	HENLEY2	1668-1758	91	7.7
Oxfordshire	New Farm, Mapledurham	(Miles and Worthington 2000)	MDM15c	1658-1739	72	7.2
Oxfordshire	Step Cottage, Mapledurham	(Miles and Worthington 1998)	STEPCOTT	1688-1809	71	7.0
Hampshire	Hampshire Master Chronology	(Miles 2003)	HANTS02	443-1972	119	6.9
Oxfordshire	Oxfordshire Master Chronology	(Haddon-Reece <i>et al</i> 1993)	OXON93	632-1987	119	6.9
London	White Tower, Tower of London	(Miles 2007)	WHTOWR9	1629-1782	119	6.8
Wiltshire	Salisbury Cathedral	(Miles <i>et al</i> 2005)	SARUM13	1557-1719	80	6.7
Southern England	Southern England Master	(Bridge 1998)	SENG98	944-1790	119	6.5
Buckinghamshire	Brill Windmill	(Miles <i>et al</i> 2007)	BRILL	1585-1759	119	6.4
Oxfordshire	New Farm, Mapledurham	(Miles and Haddon-Reece 1995)	MDM15	1684-1758	75	6.4

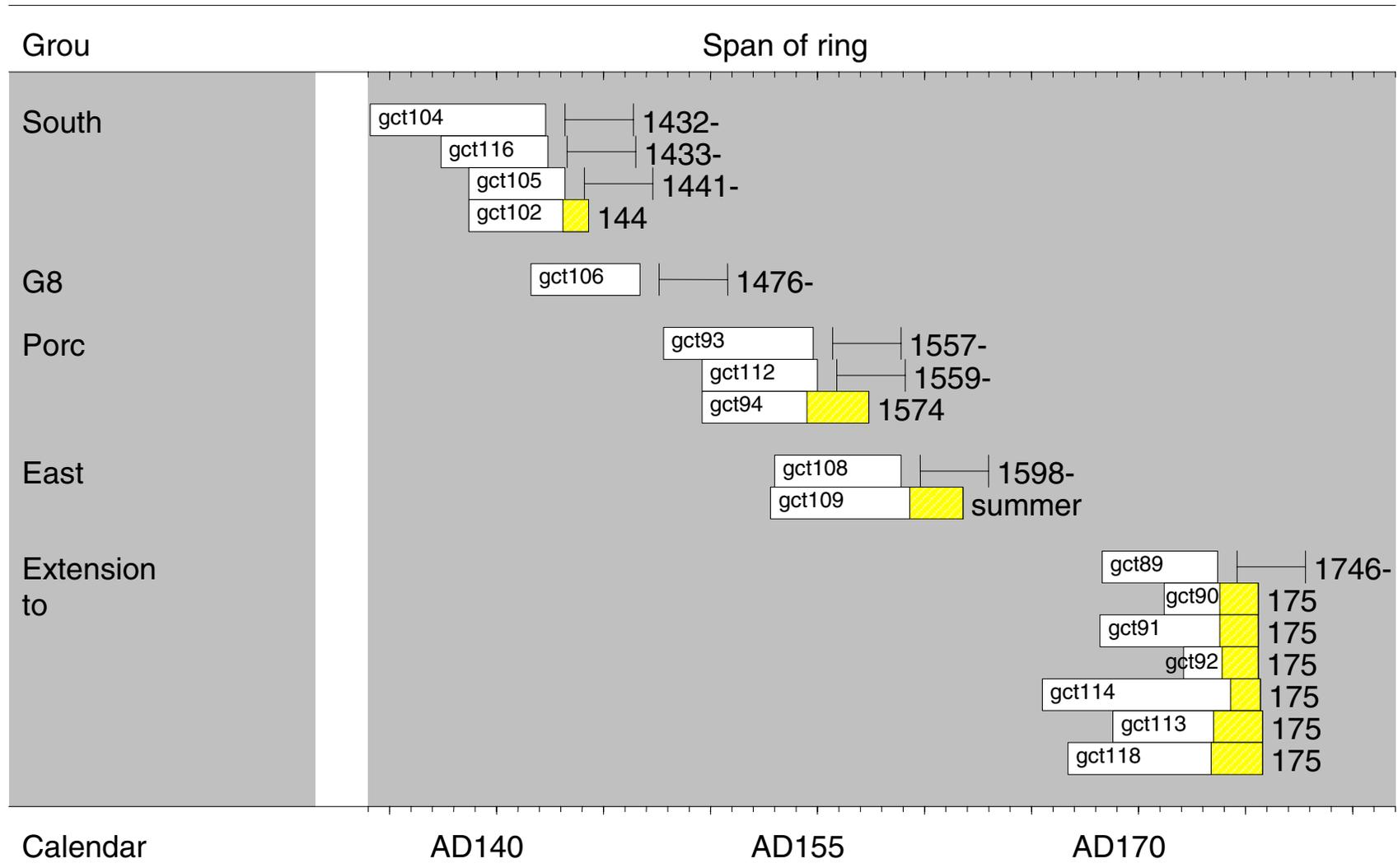


Figure 10: Bar chart showing the relative positions of overlap of the dated samples with their felling dates or date ranges, yellow portions of the bars represent sapwood rings

APPENDIX – results from previous dendrochronological studies

Table A1: Greys Court timbers sampled during 2003 (Miles 2003a)

Sample number	Timber and position	Dates AD spanning	H/S bdry	Sapwood complement	No of rings	Mean width mm	Std devn mm	Mean sens	Felling seasons and dates/date ranges (AD)
Main House – Staircase tower to south of Kitchen Range									
<i>gct31a</i>	c E queen strut	1319-1433	1433	H/S	115	1.61	1.02	0.187	
<i>gct31b</i>	c ditto	1386-1449	1434	15½C	64	1.51	1.22	0.195	
† <i>gct31</i>	Mean of <i>gct31a</i> + <i>gct31b</i>	<i>1319-1449</i>	<i>1434</i>	<i>15½C</i>	<i>131</i>	<i>1.55</i>	<i>1.08</i>	<i>0.190</i>	<i>Summer 1450</i>
† <i>gct32</i>	c W queen strut	1370-1432	1432	H/S	63	2.14	0.94	0.209	1441-73
<i>gct33</i>	c Collar	-			63	2.66	0.97	0.137	
† <i>gct34</i>	c E principal rafter	1402-1450	1432	18C	49	2.63	1.22	0.245	Winter 1450/51
† <i>gct35</i>	c W principal rafter	1382-1449	1432	17	68	1.46	0.84	0.234	1450-73
† <i>gct36</i>	c W purlin	1387-1436	1436	H/S	50	1.33	0.57	0.201	1445-77
† <i>gct37</i>	c 2nd E rafter S from truss	1373-1444	1419	25¼C	72	1.32	0.80	0.261	Spring 1445
† <i>gct38</i>	c 4th E rafter S from truss	1372-1448	1408	40	77	0.94	0.50	0.219	1448-9
† <i>gct39</i>	c 5th E rafter S from truss	1393-1450	1432	18C	58	1.40	1.00	0.240	Winter 1450/51
Main House - Front (East) Range									
* <i>gct41</i>	c W principal rafter T2	1470-1573	1543	30C	104	1.82	0.70	0.243	Winter 1573/4
<i>gct42a</i>	c W principal rafter T3	1469-1536			68	1.90	0.83	0.257	
<i>gct42b</i>	c ditto	1433-1509			77	2.34	1.40	0.256	
<i>gct43a</i>	c E principal rafter T3	1478-1531			54	2.67	1.07	0.245	
<i>gct43b</i>	c ditto	1441-1509			69	2.47	1.09	0.221	
* <i>gct423</i>	Mean of <i>gct42a</i> + <i>gct42b</i> + <i>gct43a</i> + <i>gct43b</i>	<i>1433-1536</i>			<i>104</i>	<i>2.47</i>	<i>1.20</i>	<i>0.232</i>	<i>after 1545</i>
<i>gct44</i>	c W purlin bay 4	-		1	49	1.12	0.36	0.168	
* <i>gct45</i>	c 2nd W rafter N from T4	1469-1573	1544	29C	105	1.08	0.46	0.196	Winter 1573/4
* <i>gct46</i>	c W principal post T4	1456-1553	1545	8	98	1.81	0.68	0.235	1554-86
<i>gct47a1</i>	c W interrupted tie T4	1447-1556	1546	10	110	1.67	1.37	0.174	
<i>gct47a2</i>	c ditto	1541-1573	1540	33C	33	0.48	0.10	0.173	
<i>gct47</i>	Mean of <i>gct47a1</i> + <i>gct47a2</i>	<i>1447-1573</i>	<i>1543</i>	<i>30C</i>	<i>127</i>	<i>1.51</i>	<i>1.34</i>	<i>0.171</i>	<i>Winter 1573/4</i>

Table A2: Sixteenth-century timbers sampled from Greys Court sampled during 2006

Sample number	Timber and position	Dates AD spanning	H/S bdry	Sapwood complement	No of rings	Mean width mm	Std devn mm	Mean sens	Felling seasons and dates/date ranges (AD)
East Front Range									
gct48	c East rafter, N side, N gable, east front	undated		-	66	1.93	0.77	0.235	
gct49	c Wallplate, centre gable, east front	undated		13C	85	2.64	1.22	0.275	
gct50ai	c Stud	<i>undated</i>		H/S	85	0.72	0.25	0.164	
gct50aii	c <i>ditto</i>	<i>undated</i>		32C	32	0.72	0.14	0.136	
♣ gct50b	c <i>ditto</i>	1502-1571	1535	36	70	0.59	0.14	0.143	1572-77
gct51a	c 2 nd joist from east	1464-1563		8	100	1.00	0.59	0.234	
gct51b	c <i>ditto</i>	-			26	1.63	0.48	0.197	
gct51c	c <i>ditto</i>	1543-1573		14C	31	1.94	0.55	0.252	
♣ gct51	Mean of gct51a + gct51c	1464-1573	1559	14C	110	1.11	0.69	0.240	Winter 1573/4
gct52	c Stud	undated		H/S	59	1.09	0.81	0.205	
gct53	c 1 st joist from east	undated		5	63	1.25	0.55	0.201	
♣ gct54	s Wall plate, east end truss	1481-1558	1543	15	78	1.52	0.49	0.174	1559-84
♣ gct55	s 1 st rafter from S on east side	1470-1574	1549	25½C	105	1.24	0.49	0.188	Summer 1575
♣ gct56	s 1 st stud from end	1436-1555		14	120	1.00	0.48	0.190	1556-92
gct57	c 1 st joist from W, south end bay	undated		-	96	1.37	0.68	0.232	
gct58a	c 1 st rafter S from west side	1488-1554	1553	1	67	1.08	0.37	0.191	
gct58b	c <i>ditto</i>	1501-1574	1545	29C	74	0.96	0.38	0.208	
♣ gct58	Mean of gct58a + gct58b	1488-1574	1545	29C	87	1.00	0.40	0.200	Winter 1574/5
♣ gct59	s South rafter, S gable, east end, east front	1485-1575	1554	21C	91	1.11	0.37	0.154	Winter 1575/6
Western Middle Range									
gct61	c 4 th rafter from W, north side	undated		18C	62	1.78	0.90	0.176	
gct62	c 5 th rafter from W, north side	undated		15C	59	1.90	0.87	0.211	
gct63	c 6 th rafter from W, north side	undated		8	44	1.65	0.82	0.218	
gct6123	Mean of gct61 + gct62 + gct63	undated		N/A	62	1.90	0.89	0.173	
gct64	c 11 th rafter from W, north side	undated		H/S?	42	2.03	1.01	0.237	
♣ gct65	c 12 th rafter from W, south side	1523-1573	1552	21C	51	1.52	0.50	0.210	Winter 1573/4
gct66	c 14 th rafter from W, north side	undated		H/S	69	1.42	0.70	0.252	
gct67	c 16 th rafter from W, north side	undated			<10	NM			
gct68	c 18 th collar from west	undated		H/S?	69	1.35	0.84	0.205	
♣ gct69	c 19 th collar from west	1467-1545	1545	H/S	79	0.97	0.31	0.152	1554-86
♣ = included in Site Master	GREYSCT3	1436-1575			140	1.21	0.37	0.134	

Table A3: Eighteenth-Century Timbers sampled from Greys Court sampled during 2006

Sample number	Timber and position	Dates AD spanning	H/S bdry	Sapwood complement	No of rings	Mean width mm	Std devn mm	Mean sens mm	Felling seasons and dates/date ranges (AD)
North End Extension to East Front Range									
* gct71	c East brace	1662-1747	1731	18+8	86	1.19	0.61	0.193	1756-70
* gct72	c East post	1666-1732	1731	1	67	1.97	0.75	0.146	1740-72
gct73a	c West post	1669-1729	1729	+22	61	1.54	0.42	0.209	
gct73b	c ditto	1693-1751	1738	13	59	1.30	0.30	0.202	
gct73	Mean of gct73a + gct73b	1669-1751	1738	13	83	1.40	0.41	0.201	(winter 1756/7)
gct74a	c Tie beam	1649-1739	1734	5	91	1.56	0.43	0.206	
gct74b	c ditto	1657-1752	1734	18+6¼C	96	1.33	0.61	0.191	
* gct74	Mean of gct74a + gct74b	1649-1752	1734	18+6¼C	104	1.41	0.35	0.182	spring 1759
gct75a	c Tie beam north end	1640-1744	1743	1	102	1.30	0.61	0.249	
gct75b	c ditto	1640-1741	1741	H/S	55	0.97	0.26	0.211	
* gct75	Mean of gct75a + gct75b	1640-1744	1743	1	105	1.24	0.62	0.241	1753-85
* gct76	c East queen strut	1713-1755	1742	13C	43	1.93	0.46	0.183	winter 1755/6
gct77a	c West queen strut	1658-1753	1741	12	96	1.19	0.48	0.233	
gct77b	c ditto	1700-1753	1743	10	54	1.31	0.32	0.197	
* gct77	Mean of gct77a + gct77b	1658-1753	1731	12	96	1.18	0.43	0.225	1753-82
* gct78	c East bridging joist	1681-1750	1742	8+7¼C	70	1.38	0.45	0.230	spring 1758
gct79a	c West bridging joist	1687-1750	1736	14	64	1.74	0.49	0.172	
gct79b	c ditto	1685-1748	1736	12	64	1.78	0.48	0.178	
* gct79	Mean of gct79a + gct79b	1685-1750	1736	14	66	1.76	0.48	0.167	1751-77
North-West Wing									
gct81	c East upper purlin	1664-1757	1735	22	94	1.16	0.34	0.207	winter 1758/9
gct82	c West upper purlin	1651-1758	1735	23C	108	1.44	0.85	0.202	winter 1758/9
* gct8182	Mean of gct81 + gct82	1651-1758	1735	23C	108	1.38	0.72	0.188	winter 1758/9
* gct83	c 2 nd full rafter from hip, east side	1691-1756	1737	19C	66	1.19	0.45	0.199	winter 1756/7
* gct84	c 4 th full rafter from hip, east side	1661-1725	1716	9+10	65	1.21	0.43	0.187	1735-57
* gct85	c 3 rd ceiling joist from south end	1659-1757	1729	38C	99	0.85	0.46	0.189	winter 1757/8
* gct86	s West principal rafter, north truss	1657-1740	1740	H/S+14	84	1.19	0.44	0.228	1755-81
* gct87	s East principal rafter, north truss	1656-1756	1744	12½C	101	1.24	0.50	0.240	summer 1757
gct88	c Middle rafter, north of chimney	1676-1756	1736	20C	81	1.18	0.35	0.222	winter 1756/7
* gct7388	Mean of gct73 + gct88	1669-1756	1737	19C	88	1.33	0.40	0.200	winter 1756/7
* = included in site chronology GREYSCT4		1640-1758			119	1.43	0.50	0.148	

Key: *, †, § = sample included in site-master; c = core; mc = micro-core; s = slice/section; g = graticule; p = photograph; ¼C, ½C, C = bark edge present, partial or complete ring; ¼C = spring (last partial ring not measured), ½C = summer/autumn (last partial ring not measured), or C = winter felling (ring measured); H/S bdry = heartwood/sapwood boundary - last heartwood ring date; std devn = standard deviation; mean sens = mean sensitivity

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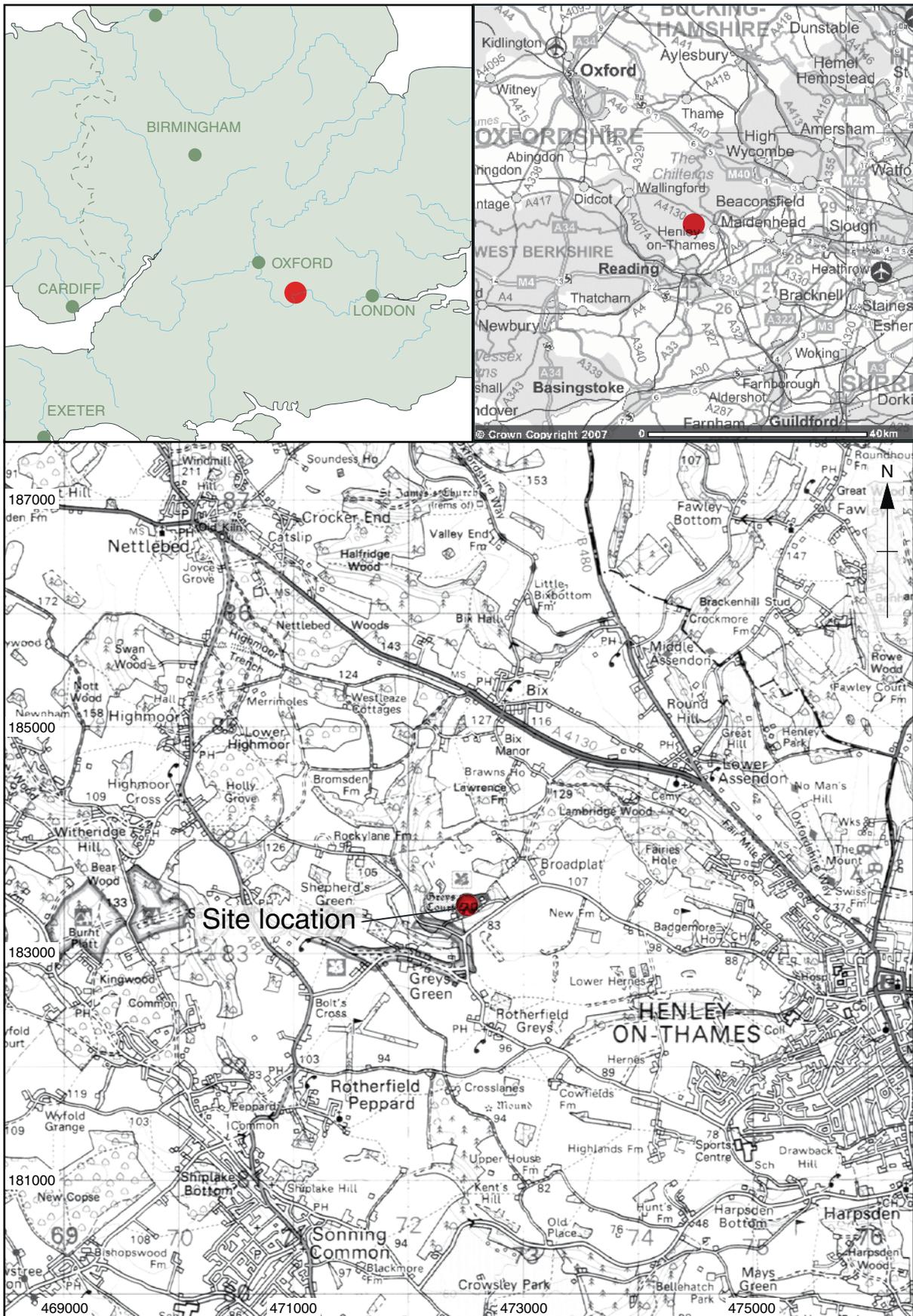
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Figure 1: Site location

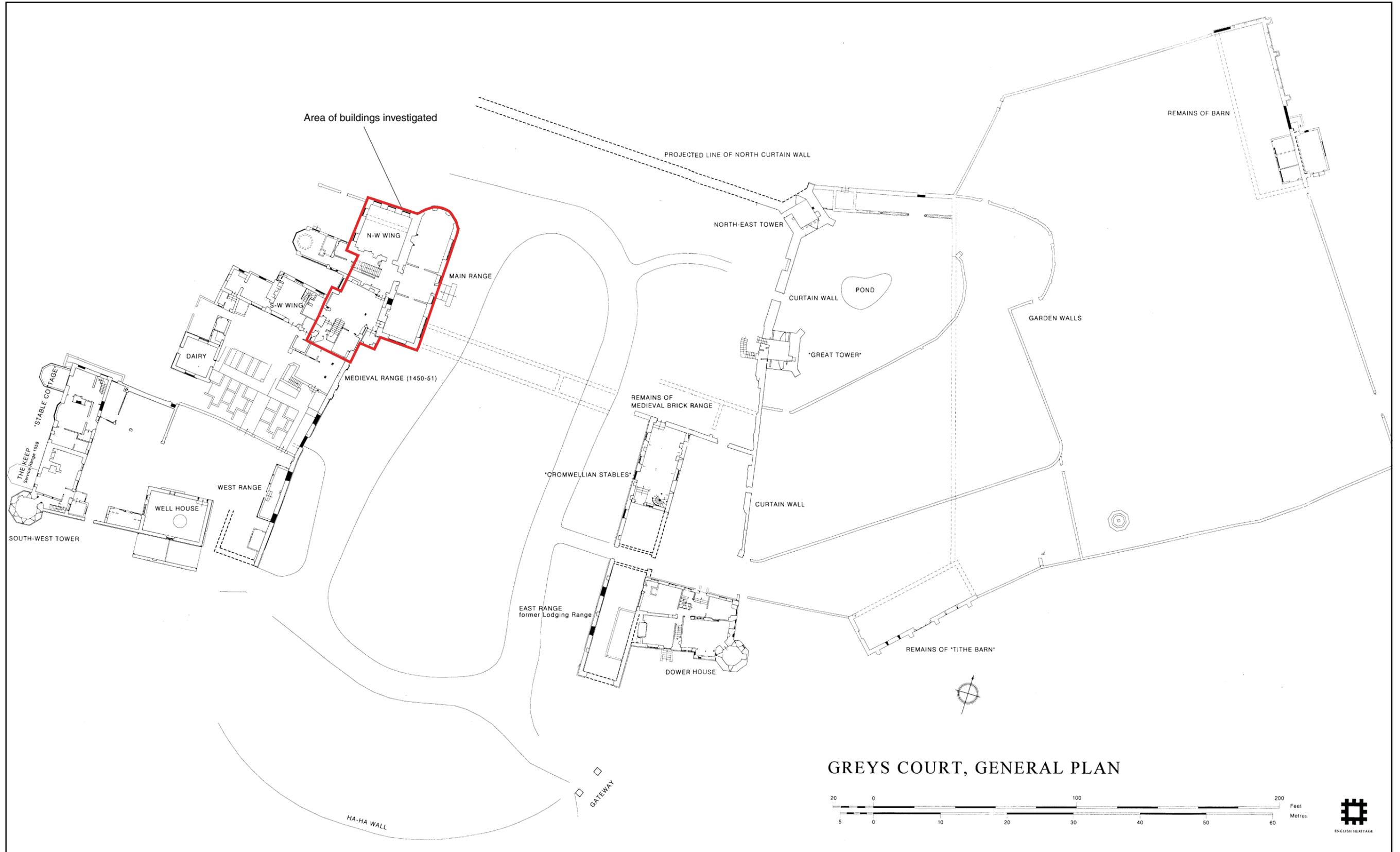


Figure 2: Plan of Greys Court, main house, other structures, and gardens. Reproduced from Jones 2005, vol. 4.



Greys Court, Oxfordshire Phase II, Building Analysis

- OA outline —
- Architect's outline —
- Historic timbers —
- Timbers not seen but assumed - - -

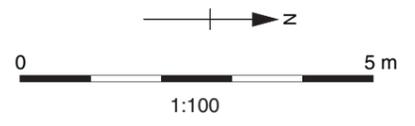
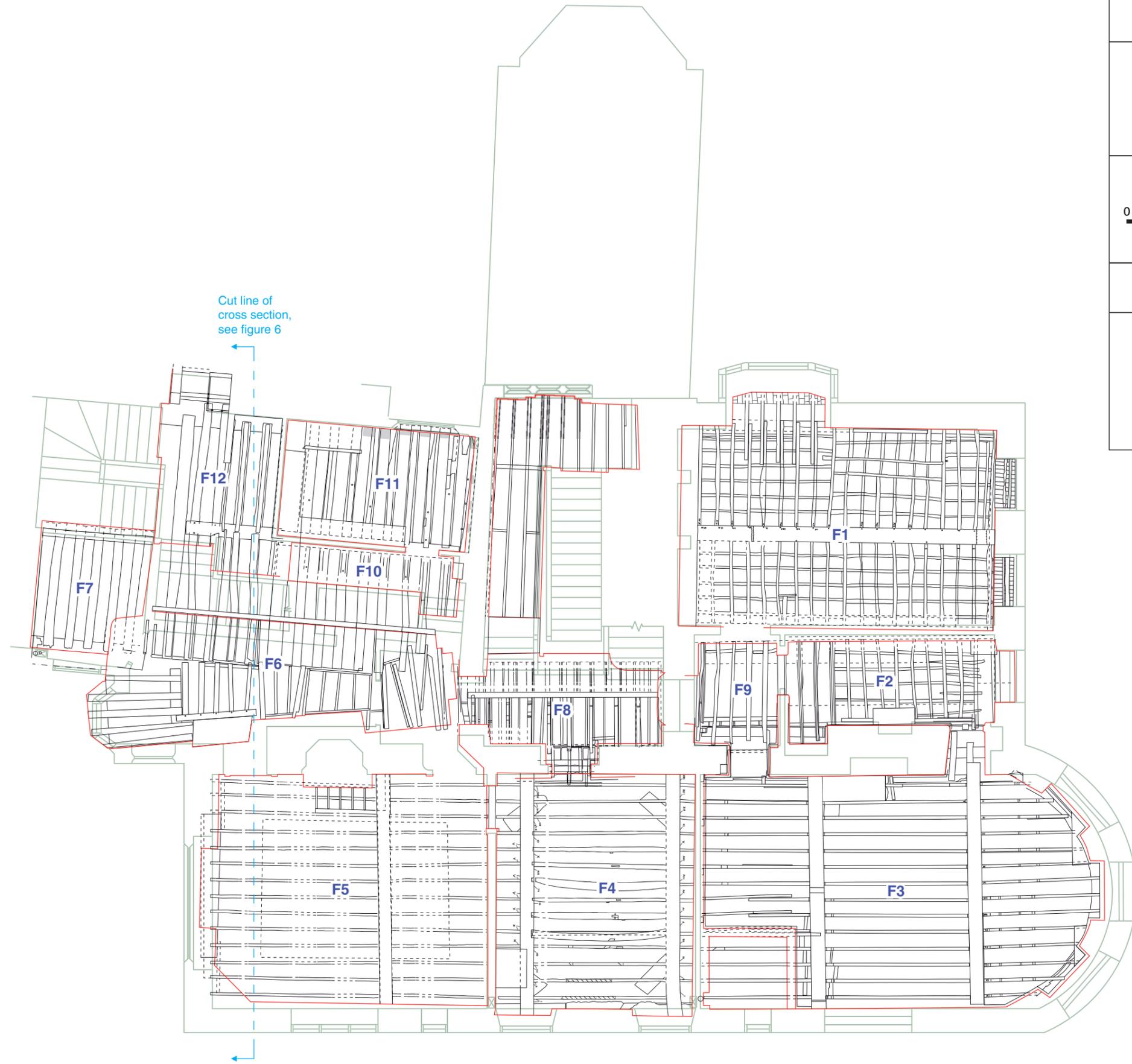


Figure 3: Ground Floor





Greys Court, Oxfordshire
Phase II, Building Analysis

- OA outline —
- Architect's outline —
- Historic timbers —
- Timbers not seen but assumed - - -

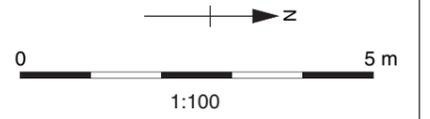


Figure 4: First Floor





Greys Court, Oxfordshire Phase II, Building Analysis

- OA outline —
- Architect's outline —
- Historic timbers —
- Timbers not seen but assumed - - -

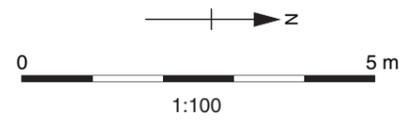
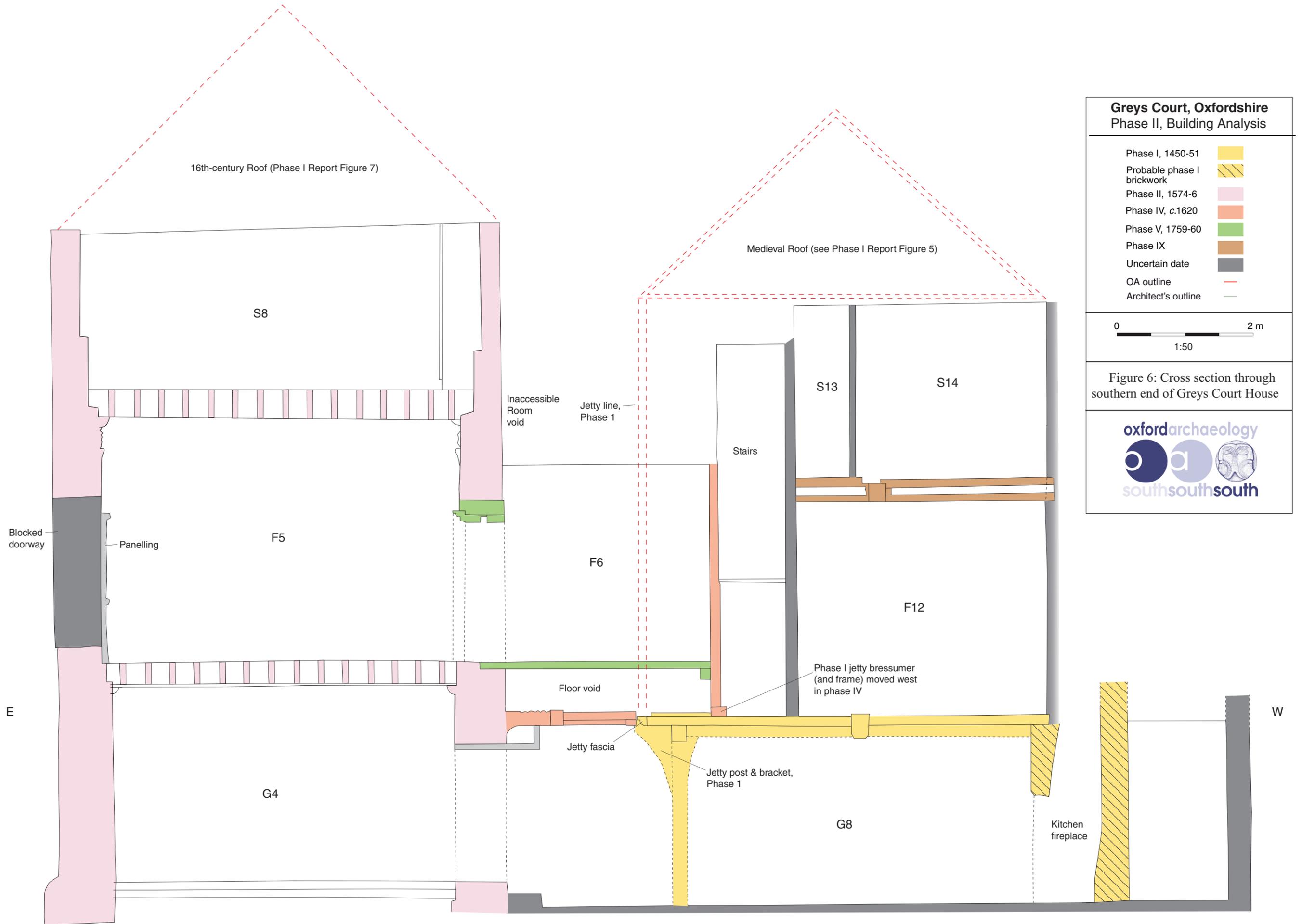


Figure 5: Second Floor





Greys Court, Oxfordshire
Phase II, Building Analysis

Phase I, 1450-51	
Probable phase I brickwork	
Phase II, 1574-6	
Phase IV, c.1620	
Phase V, 1759-60	
Phase IX	
Uncertain date	
OA outline	
Architect's outline	



Figure 6: Cross section through southern end of Greys Court House



Greys Court, Oxfordshire

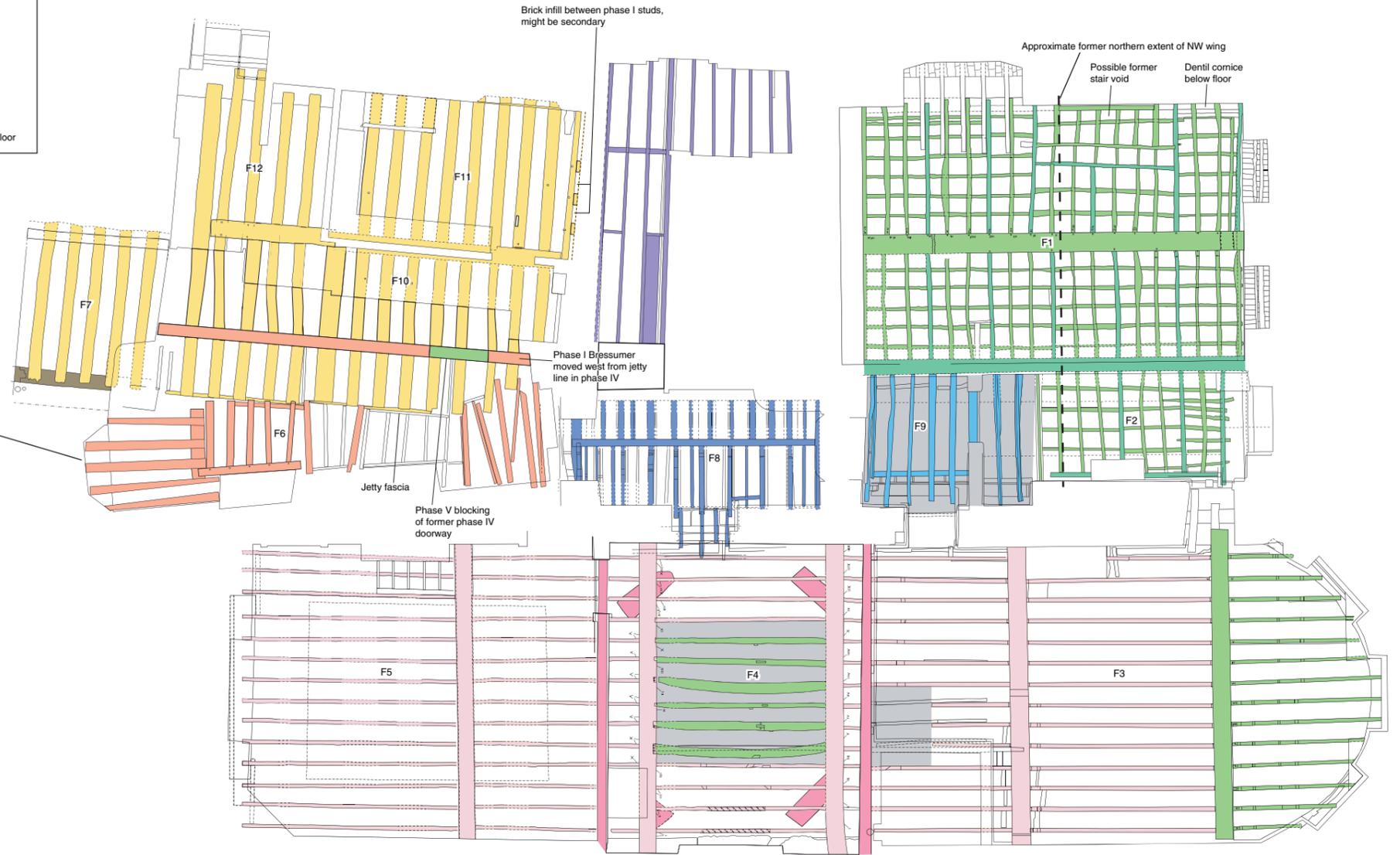
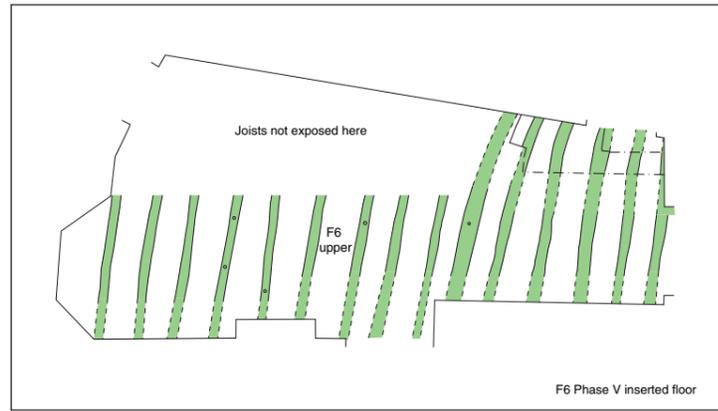
Phase V, 1759-60	
Phase X, 1930s insertions and floor reconstruction	
Phase X, Re-used Medieval timbers	
Brick dwarf walls	

0 ———— 5 m
1:100

Figure 7: Ground floor phasing

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southsouthsouth





Greys Court, Oxfordshire

Phase I, 1450-51	
Phase II, 1574-6	
Phase III, c.1570s	
Phase IV, c.1620	
Phase V, 1759-60	
Phase V, 16th-Century timbers re-used	
Phase VI, 18th-Century	
Phase VII	
Phase VIII, late 19th to early 20th-Century	
Phase X, 1930s insertions	
Former voids or areas where floor timbers have been removed/replaced	

0 ————— 5 m
1:100

Figure 8: First floor phasing



Greys Court, Oxfordshire	
Phase II, 1574-6	
Phase IIa, 1574-6	
Phase V, 1759-60	
Phase VI, 18th-Century	
Phase VII	
Phase IX	
Former voids or areas where floor timbers removed/replaced	
Approximate positions of Queen posts in roof trusses	
<p>1:100</p>	
<p>Figure 9: Second floor phasing</p>	



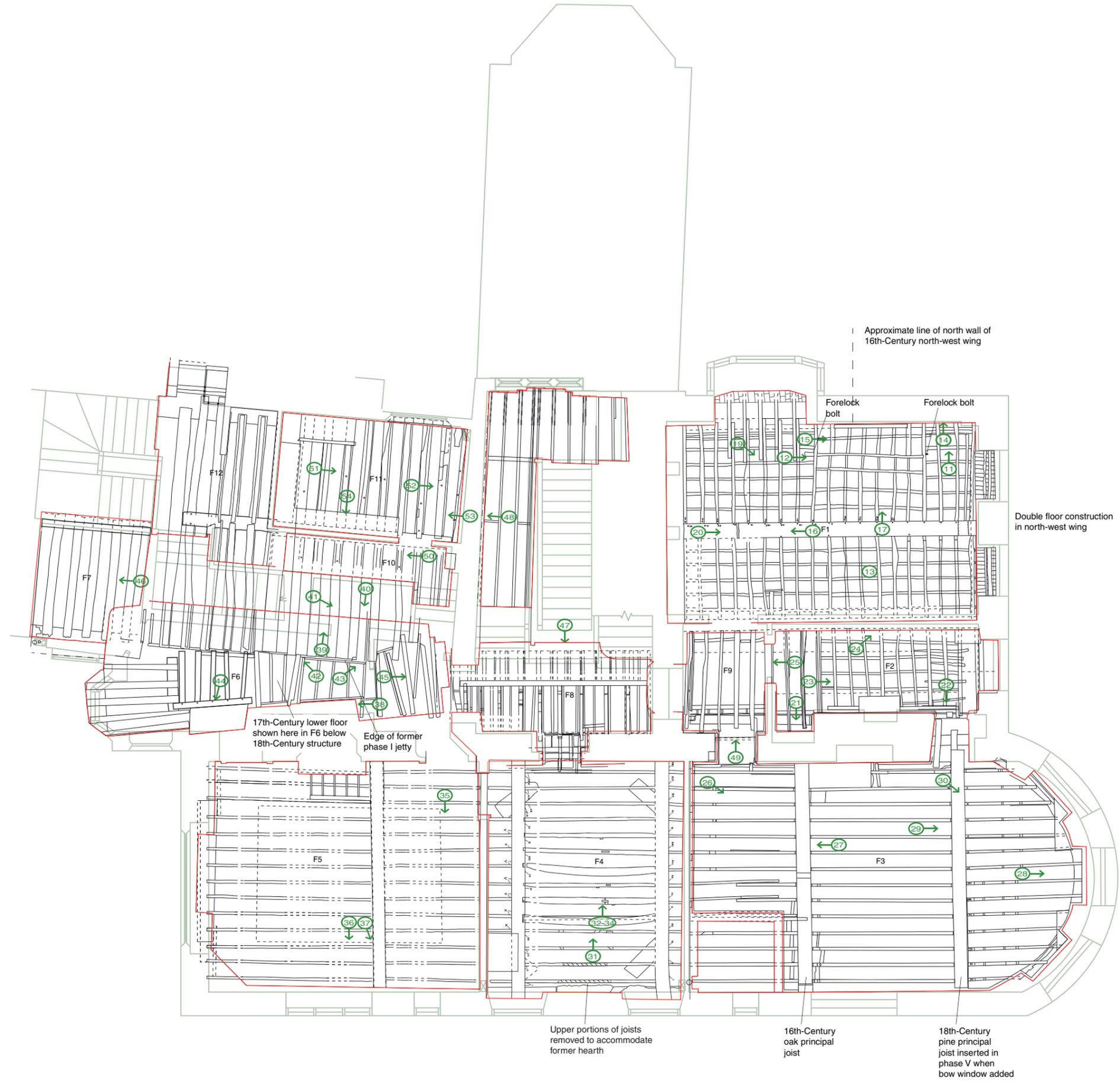
Greys Court, Oxfordshire

OA outline	—
Architect's outline	—
Historic timbers	—
Timbers not seen but assumed	- - -
Plate location	⑨ →

0 ——— 5 m
1:100

Figure 10: Ground Floor
Plate Locations

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southsouthsouth



Greys Court, Oxfordshire

- OA outline ———
- Architect's outline ———
- Historic timbers ———
- Timbers not seen but assumed - - - - -
- Plate location (9) →

0 ——— 5 m
1:100

Figure 11: First Floor Plate Locations

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southsouthsouth



Greys Court, Oxfordshire

- OA outline ———
- Architect's outline ———
- Historic timbers ———
- Timbers not seen but assumed - - - - -
- Plate location (6)→

0 ——— 5 m
1:100

Figure 12: Second floor photo locations

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Plate 1: View within Room G1 looking south showing brick vault beneath floor



Plate 2: Secondary members added to primary joists at west side of Room G1 looking south



Plate 3: General view in Room G1 looking north-west



Plate 4: Detail of half dovetailed joists in Room G1 looking west



Plate 5: Joists at northern end of Room G2 looking east



Plate 6: General view of Room G2 looking south



Plate 7: Detail of joist ends at northern end of Room G2 looking east



Plate 8: General view of joists in Room G4 looking south



Plate 9: View in Room G4 looking north



Plate 10: Floor at north-western corner of Room G4 looking north



Plate 11: Double floor construction in Room F1 looking west



Plate 12: Forelock bolt in F1 looking north



Plate 13: Exposed underside of reused beam (E-W) in ceiling of F1



Plate 14: Fragment of dentil cornice revealed in floor void beneath F1 looking west



Plate 15: General view of floor in F1 looking north along west wall



Plate 16: Detail of carpenters marks in F1 looking south



Plate 17: Central west section of floor in F1 looking west



Plate 18: Example of chase or 'sliding' tenon in F1



Plate 19: General view of floor in F1 looking north-east

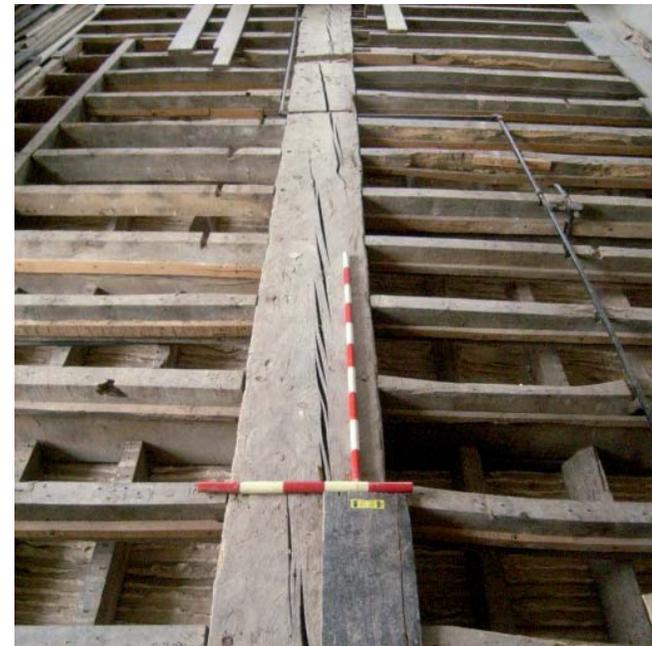


Plate 20: Principal joist in F1 looking north



Plate 21: Fragment of wallpaper revealed in F2 looking east



Plate 22: Joists at north-east corner of F2 looking east



Plate 23: View looking north in F2



Plate 24: Detail of empty tenon in F2 looking north-west



Plate 25: Detail in F2 looking south



Plate 26: Joists at south end of F3 looking north east



Plate 27: Carpenter's mark on oak principal joist in F3 looking south



Plate 28: View in F3 looking north



Plate 29: Detail of upper face of pine principal joist in north bay of F3



Plate 30: General view of floor at north end of F3



Plate 31: General view of floor in F4 looking west



Plate 32: Detail of reused beam in F4



Plate 33: Detail of reused member in F4



Plate 34: Detail of member in F4



Plate 35: General view of floor in F5 looking east along north wall



Plate 36: Joists detail in F5 looking south



Plate 37: Detail of double-tenon joints in F5



Plate 38: Fragment of early flock wallpaper revealed in void below F6 looking south



Plate 39: 18th century wallpaper exposed below F6 looking west



Plate 40: Post with painted decoration, plaster and later wallpaper in medieval partition between stairs and F6 looking east



Plate 41: Medieval partition between F6 and stairs in floor void looking north east



Plate 42: Medieval jetty rafters and bressummer below F6 looking west



Plate 43: Medieval jetty rafters and bressummer below F6 looking north west



Plate 44: Top of brick arch in south wall of 16th century wing abutted by timbers of possible former link now part of lower floor of F6 looking east



Plate 45: Void below F6 showing earlier and later floors looking north



Plate 46: General view of floor in F7 looking south



Plate 47: View from above showing floor in F8 (east) looking east



Plate 48: Studs of medieval north wall of phse I with later brick infill behind later plaster F8 (west) looking south



Plate 49: Floor in F9 looking west

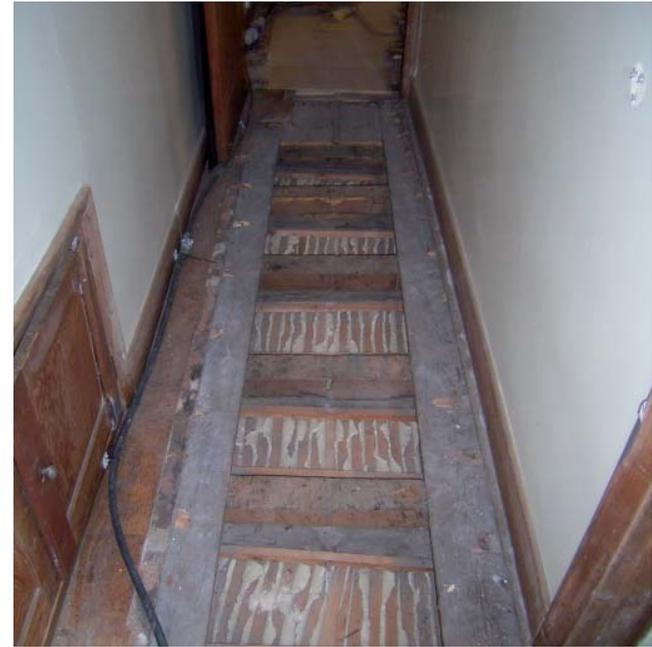


Plate 50: Joists in F10



Plate 51: General view of joists in F11 looking north



Plate 52: Medieval plate and wall studs in north wall of F11 looking north



Plate 53: Showing junction and difference in height of medieval joists (centre) and main beam (on left) in F11 east side looking south



Plate 54: Joists and double floorboards (lower boards doweled) in F11 looking east



Plate 55: Floor in S2 looking south



Plate 56: Detail of reused plate and joists strapped to 18th century truss room S2 looking south



Plate 57: Joists at eastern end of S3 looking east



Plate 58: General view of S3 looking west



Plate 59: General view in S4 looking south-east



Plate 60: Detail of double-tenon joints in S4



Plate 61: General view of joists in S8 looking south



Plate 62: Joists in S8 showing reuse of moulding bars from panelling looking west



Plate 63: Joists in S9 looking west



Plate 64: View in S10 looking south



Plate 65: View of joists in S11 looking north



Plate 66: Floor in S13 looking north-west



Plate 67: Fragment of wallpaper exposed in floor of stairs (STR3) looking east



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