Winchester City Mill

(NGR: 448608 129321)

INTERPRETIVE HISTORIC BUILDING SURVEY

Commissioned by
THE NATIONAL TRUST

National Trust Event No. ENA7986
Site Code HA-WCM15

2016

Prepared by

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WINCHESTER CITY MILL
Bridge Street
Winchester
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Archaeological Standing Building Recording Report

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Summary

This report presents the findings of a building survey undertaken by MOLA (Museum of London Archaeology) at Winchester City Mill, Bridge Street, Winchester SO23. It is bounded by a property boundary to the north, Water Lane to the east, Bridge Street to the south and the River Itchen to the west. The centre of the site lies at National Grid Reference 448608 129321 (Fig 1).

The survey was commissioned by Winchester City Mill and the National Trust to satisfy the conservation standard asked for by the National Trust. The present building of the Grade II City Mill has a construction date of 1744, though it probably utilises earlier components. The survey focused on the eastern extension built c1748 which included the ground floor structure of the main east-west orientated section of the building; from Water Lane in the east to the main bridging beam located above the River Itchen to the west. The purpose of the survey was to make a record of the timber-frame structure prior to a conservation project which will require the replacement of a number of joists and strengthening to the main beams.*

The survey revealed the flooring was nearly half composed of reused timbers dating from the medieval period to the 17th century, with the other half being a mix of original and replacement timbers.

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Fig 16 Timber [105], looking south-west, the timber with the most potential for a successful dendrochronology date. Sap wood can be observed near where the unpainted and painted portions of the timber meet.

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1 Introduction

1.1 Site background

1.1.1 A standing building survey was carried out by MOLA at Winchester City Mill, Bridge Street, Winchester, Hampshire, SO23 9BH between the 8th and 11th of December 2015. The site comprises a multiphase, L-shaped, two storey building. It is bounded by a property boundary to the north, Water Lane to the east, Bridge Street to the south and the River Itchen to the west (Fig 1). This document is the report on the results of the standing building survey to satisfy the conservation standard demanded by the National Trust.

1.2 Planning Background

1.2.1 A record of the existing structure prior to conservation was required as the building is grade II* listed (entry number 1095347) and a scheduled ancient monument (monument number 610112) and is part of the Winchester Conservation Area.

1.3 Scope of the survey

1.3.1 The scope of the archaeological work was set out in detail in the Written Scheme of Investigation (WSI MOLA 2015). The investigation does not conform to a specific level of record however all work was carried out in accordance with Historic England specifications in *Understanding historic buildings: a guide to good recording practice* (EH 2006) and other applicable standards and guidance (e.g. CIFA Standard and guidance for archaeological investigation of standing buildings or structures, 2014).

1.3.2 The National Trust commissioned MOLA to undertake a standing building survey of the ground floor structure of the main east-west orientated section of the building from Water Lane in the east to the main bridging beam which is located above the River Itchen to the west. The purpose of the survey was to make a record of the timber-frame structure prior to a conservation project which will require the replacement of a number of joists and strengthening to the main beams. The scope of works was arranged through a series of email correspondence with Gary Marshall of the National Trust and a site visit by Michael Smith of MOLA.

1.4 Organization of the report and conventions used

1.4.1 The report is organized in line with the scope of the original WSI, providing a brief written account, a table listing individual timbers, scaled drawings, and a photographic record. Only a selected number of photographs have been presented in the report. However, all photos taken on site will be archived with the National Trust, and a list of all photographs with their description and archive identifier has been added at the back as appendix 3 of this report.

1.4.2 The building is orientated slightly from north-east to south-west, but for the sake of simplicity of description in the text of this report the orientation is taken to be running from east to west. All maps and plans show true north. Measurements may be given in both metric and imperial measurements where appropriate.

1.4.3 The main body of the report has been divided into 6 main sections covering the recorded timbers. Appendices have been attached to the back of the report which includes the Oasis report, the site archive, the Timber Specialists notes and the CAD drawings.

1.5 Research Aims

1.5.1 The specific objectives and research aims of the Standing Building Survey are defined fully in the WSI (MOLA, 2015). The overall aim of the programme of work was to elucidate and reconstruct on paper the successive major builds and episodes of construction evident in the fabric of the floor frame.

1.5.2 The standing building recording work had the following main components:

- A full measured survey of the first floor structure from below (approximately covering 20 x 7 metres in area.
- Analysis of the relationships between the timber floor and the supporting walls
- A full descriptive record of individual timbers using context numbers and providing an inventory
- Descriptive record of first floor floorboards
- Photographic record of all timbers of the floor frame
- Overall interpretation of the structure detailed according to bays
- A descriptive and photographic record of vertical posts due to be removed
- A descriptive and photographic record of the ground floor walls
- Scoping for a dendrochronological survey

1.6 Building survey methodology

1.6.1 In addition to the Historic England and CIfA guidance mentioned above, the standing building survey was carried out in accordance with the WSI (MOLA, 2015) and the methods specified in the Museum of London Archaeological Site Manual (MoLAS, 1994).

Physical investigation

1.6.2 An investigation of the fabric of the building was undertaken on-site in December 2015 prior to conservation. The physical investigation was selective and aimed at establishing the significant details of the floor frame's fabric, function and use, along with the methods of construction and the building's development over time.

Written records

1.6.3 Hand-written descriptive notes were made on-site to record the findings of the on-site analysis of the building. The notes recorded details such as fabric, form and function, along with evidence of alterations to the building and its development over time.

Drawn records

1.6.4 Sketch plans were created on site to be combined in to CAD (Drawings 1-4) using the relevant historic building conventions as described by Historic England (EH, 2005a and 2006).

Photographic records

1.6.5 Photographs were taken using a 12.1 megapixel digital camera to record general shots of the exterior and interior fabric of the building. Only a selected number of photographs taken on-site have been presented in this report. All photographs taken on-site have been archived in the MOLA Oracle database and a list of their description and unique archive identifier, together with the digital image files, will be deposited with the National Trust.

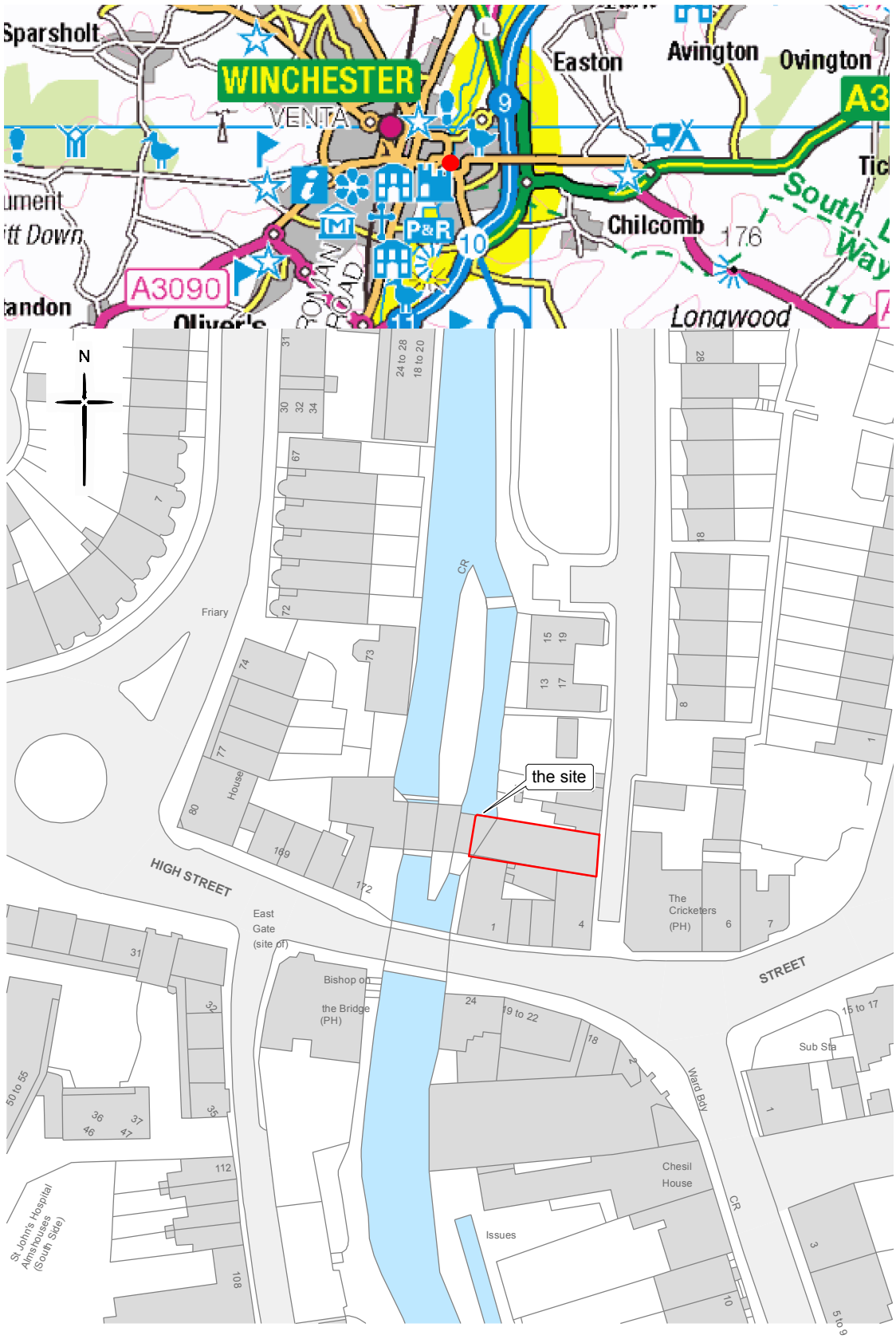

Fig 1 Site location

2 Analytical description of the floor frame

2.1 Overall description of the building

Use in association with Drawings 1-4

2.1.1 The survey of the building compiled a descriptive and photographic record of the timbers located in the first floor timbers. A total of 108 were recorded.

2.1.2 The timbers were divided into different areas based on internal divisions created by bridging beams and cross beams. The portion of the building looked at was composed of 5 bays and it was broken into 17 areas, A-Q.

2.1.3 Though many of the general features of the carpentry of the floor frame were visible the previous use of very thick black paint and areas of plasterboard ceiling, combined with ancient erosion and wear had removed many of the fine details of the carpentry that would normally survive to be recorded, such as joint layout and level marks etc. Many of these features are also likely to have been originally made on the upper face of the frame which lay obscured under the current flooring of the first floor. This would have been the 'upper' face of the floor frame during pre-fabrication in the framing yard of the carpenter(s) in charge.

2.1.4 Many of the timbers full height and length could not be measured due to plasterboard obscuring the height between timbers; the length could not be fully measured due to the timbers insertion in the walls.

2.1.5 The basic layout of the floor frame is illustrated in the main plan (See Drawing 1) and comprises four substantial oak bridging beams each c. 6m long, set across the width of the building. Thus, these beams could also have acted to a limited extent as tie beams. Each end of these beams is embedded into the brick walls, often supported by timber chocks. Unsurprisingly decay has taken place at several of these locations with some recent steel reinforcement being carried out locally. Tenoned into these roughly N-S bridging beams were a total of five, similar sized or slightly smaller, E-W secondary bridging beams which supported the internal ends of the common joists, except in the eastern entrance corridor where they were set in the brick walls either side (See main floor plan). These E-W beams were also boxed heart beams of oak except for beam [103] which was a composite beam including sawn conifer timber later than the initial framing work. This basic form of framing is commensurate with what would be expected of a mid-18th industrial building in the south of England.

2.1.6 All timbers recorded were of oak, except for a few later additions to the structure.

Areas A-P

2.1.7 Area A had no visible timbers.

2.1.8 Area B was composed solely of short joists on a N-S alignment. A large proportion of the timbers in this area are reused timbers with some of the oldest timbers observed here.

2.1.9 Area C along the southern half did not have the same pattern as seen throughout most of the structure. Here the timbers were organised into smaller areas of perpendicular timbers creating a grid work pattern. Many of the timbers appeared to be original timbers, so it appears the older joists were recut to be used in this new pattern. This pattern was likely created to either reinforce a weak part of the flooring or cover over an old opening or hatch area.

2.1.10 Area D was not seen due to plasterboard being in place during the survey.

2.1.11 Area E was composed of recently added timber joists running N-S. These are part of a larger rebuild seen here and in areas G and F.

2.1.12 Area F has several long recently added N-S aligned joists that extend to this area

and area G. These joists rest on top of the modern bridging beam [103] and are part of a large area of reconstruction within areas F, G and E.

2.1.13 Area G had a continuation of the recently added long joists seen in area F. Further to the north it had normal length N-S aligned joists which along with all joists in this area rested upon modern bridging beam [103] instead of inserting into it.

2.1.14 Area H was not seen due to plasterboard being in place during the survey, however an apparently modern opening of unknown use was present next to the northern staircase.

2.1.15 Area I was partially obscured by plasterboard still intact but most of the timber joists could be seen. They appeared to mainly be original N-S aligned timber joists inserted in the brick wall to the south and bridging beam [107] to the north.

2.1.16 Area J was composed solely of N-S aligned timber joists with a number of supporting timber corbels and doubling beams where the joists insert into the south brick wall. To the north the timber joists insert into bridging beam [107].

2.1.17 Area K was composed of N-S aligned joists with the north ends inserting into the brick wall to the north and inserting into bridging beam [107] to the south. There were a number of reused roofing timbers in this area.

2.1.18 Area L was composed of N-S aligned joists running from the brick wall to the south into a bridging beam to the north. There are a few modern replacement joists within the area and all joists sit in iron cradles resting on brick corbels along the south wall. Here the bays change from having one central bridging beam to having two bridging beams and three areas per bay.

2.1.19 Area M was composed of N-S aligned timber joists with the north ends inserting into bridging beam [110] and the south ends inserting into bridging beam [109]. The area had a mixture of original, modern and reused timbers.

2.1.20 Area N was composed of N-S aligned timber joists with the north ends inserting into the brick wall and the south ends inserting into bridging beam [110]. This area had a majority of reused timbers.

2.1.21 Area O was composed of N-S aligned timber joists inserted into bridging beam [109] to the south and [110] to the north. The timbers in this area were generally original timbers.

2.1.22 Area P was composed of N-S aligned timber joists inserted into the brick wall over the river at the north end and into bridging beam [110] to the south. This area is a mix of reused and modern timbers.

2.2 Reused timbers

2.2.1 The timbers were broken down into 5 categories of use. Reused, Probable reuse, possible reuse, original to the 1748 structure, and modern/replacement.

2.2.2 In total there were 108 recorded timbers of which:

- 34 were deemed to be original to the 1748 floor i.e. cut and prepared specifically for the 1748 construction.
- 29 timbers by virtue of redundant construction marks and features were deemed to be reused timbers, having previously been used in another building or construction prior to 1748.
- 11 timbers were probably reused timbers but because there was no definitive evidence there remains some doubt.
- 13 timbers were possibly reused timbers, this meant they had a suspicious extra mark or feature that could suggest reuse but a definite conclusion could not be reached.
- 21 timbers were either relatively modern replacement timbers or dated

timbers that were added after the original construction for extra support.

2.2.3 It should be noted that of the 34 timbers thought to have originated during the 1748 construction it is likely some of them were reused timbers where the obvious reuse features could not be seen or had been removed.

2.2.4 Of the 29 definite reused timbers; 11 were originally used in a roof structure. Most having been parts of wall plates. Many of the other timbers were clearly reused but their original use was unclear.

2.2.5 A selection of the more interesting reused timbers were described in greater detail by the Timber Specialist on site:

- A large reused wall plate – beam Timber [101] The largest reused timber in the floor was E-W bridging beam, Timber [101], which was of boxed heart oak over 250mm (10”) deep and c. 5.0m long. In addition to the later mortises for common joists, it also had earlier redundant joints on its south face showing it had been a wall plate in a large building. These joints included typical rafter seating joints which had been filled with resin towards the east end. Also visible was a half lap dovetail such as were typically used for tie beams. Because the north face was obscured with plasterboard it could not be seen whether, what would have been the lower face in the parent building joined a timber framed or of masonry wall, i.e. whether any post or stud mortises survived. However, the nearly square section of the timber does suggest a probable origin in a building with timber framed walls (This could be checked when the remaining plaster board to the north is removed.). The original use of the timber could span the late medieval to 17th century period, and it would have come from a large building.

Fig 2 Reused wall plate timber beam [101] showing the half lap dovetail joint

- A reused, octagonal crown post- post Timber [200] at the west end of the bridging beam [101] an octagonal oak post had been inserted as a prop where the joint with beam [102] was weak. This item, Timber [200], was neatly hewn and planned down to the diagnostic 8 sided cross section except at the ends where it was left square with a carefully made chamfer stop. Such a carefully made

timber was clearly originally a decorative post in a roof structure, almost certainly a crown post. Such timbers were usually used to support central 'collar purlins' and would originally have been joined to light braces connecting them to the collar purlin and adjacent rafters and a tie beam below. The jointed end or ends of this example had been cut off for its reuse as a simple prop timber. This timber is unlikely to have been taken from an earlier roof on the mill site itself and must be of late 13th to c. early 15th century date, one of the very oldest associated with the floor. Should the post become redundant after the repairs are made it would be worth retaining for display with an explanatory diagram.

Fig 3 Timber post [200], likely a reused crown post.

- A reused mid-wall plate or bridging beam- post Timber [206].This boxed heart beam had two chamfered corners and a set of redundant 'bare faced soffit mortises' that would have originally been for common joists (Hewett 1980 p.282). It is likely that this timber is of c. 17th to early18th century date.

Fig 4 Timber [206], facing east

- A reused building timber with a simple lap joint- Joist Timber [03] One of the first joist timbers visible when approaching from the eastern, Water Lane end, Timber [03], was a particularly weathered oak timber with a simple lap joint in an original hewn face , now set facing east. The lap joint was originally secured with one large peg and traces of 'in cuts' from a broad chisel or possibly a 'twybill' could be seen around the edges of the lap joint. Such features suggest an origin in medieval roof carpentry.

Fig 5 Timber [03], second from top, facing east

- A reused building timber with mortises for close set studs and wattle stave holes for a lighter wall above- Joist Timber [05] Resawing of two faces of this timber exposed single pegged mortices on the west face and crude tapering sockets for light staves on the east face. Presumably it was once part of a much larger beam sawn lengthwise into three elements for reuse The close set mortises exposed by re-sawing the west face, as found, seem to be relics of close studding i.e. the tenoning in of close set regular studs into a horizontal mid wall plate. On the east face the crudely drilled and carved sockets exposed must have been for the feet of light infill staves used to support either wattle infill or laths rendered over. Thus, even though the timber was extensively reworked for reuse we can visualize it as part of the wall of a late medieval to c. 16th century timber framed building, of reasonable size and status that once stood in the town. The cost of transporting second hand timber over any great distance in a moderately well wooded area implies that it was likely to have been fairly locally sourced.

Fig 6 Timber [05], second from the top, showing multiple split mortises, facing east

- Timber [51] was another complex reused oak joist. This joist was also originally clearly a horizontal beam in a building. It had relict augured and chiselled small, un-pegged mortises set at regular intervals on its current soffit which must have once held light studs in place. These probably used to support nailed on laths covered with render. A larger double pegged mortise was also visible that would presumably, have held the tenon of a larger post, such as a door jam in a partition wall. A broadly c. 16th century dating seems likely for the first use of this timber.

Fig 7 Timber [51], third labelled timber from the bottom, facing west

2.3 Later Inserts

2.3.1 There are 21 timbers listed on the timber register that are later inserts or possibly repurposed original timbers. These have been added for one of a few reasons detailed below:

2.3.2 Several are standard replacement timbers, where a joist or beam was likely too rotten or had too much borer damage to adequately support the floor. These have been replaced by new oak timbers. See Fig 11 third joist from the right.

2.3.3 Some areas with later timbers appear to have been altered as part of a planned reconstruction. This can be seen in areas C, G, E and F. It is possible that these areas were reworked due to a large area of rot/ borer damage, or put in place to cover over a previously open area such as a trap door (Area K). These are a mix of older and newer timbers.

2.3.4 A few of the later timbers were brought in to act as doubling beams for timbers that have suffered heavy borer damage and appear weak. These have generally been attached using nails or bolts. See Fig 10.

2.3.5 There are a few timbers that have been added for additional support to failing timber ends. Several of these are corbels to support the rotten end of a joist; a group of these were recorded in the southern wall of Area J. See Fig 7.

2.3.6 None of the timber posts appear to be in their original settings. They were probably altered when the concrete floor was added. While several may be original to the structure, they have all been moved from their initial positions, possibly shortened, and then replaced.

Fig 8 Showing a typical added corbel to support a joist likely too rotten at the end to stay within the wall.

Fig 9 Area C arraigned in a different pattern to the rest of the floor, likely to strengthen a weak area.

Fig 10 Recently added joists in area G, supported by modern bridging beam [103] and [104] to the left and right respectively.

Fig 11 Timber doubling beam [47], looking north-east. Third joist from the top.

2.4 The Ground Floor walls

2.4.1 Generally throughout the structure the walls are composed of brick with the majority of the timber joists and all of the crossbeams being inserted into them.

2.4.2 The brick walls were built in a stretcher bond where observed from the interior. However much of the exterior brickwork throughout the building was in Flemish bond. Several of the ground floor internal areas displayed repaired and reworked brick. Much of the altered brickwork surrounded the area where the timbers inserted into the walls. It is likely that just the interior skin of bricks were altered to gain access to the ends of the timbers, with the exterior wall being left intact.

Relationship between ground floor walls and timber floor.

2.4.3 The majority of the timber joists and all of the crossbeams were inserted into the brick walls. Where the timbers were observed inserted into the walls there appeared to be a mixture of tenons and whole timbers making that connection. In both cases the timbers had undergone extensive decay where the tenons inserted into the wall, likely due to moisture.

2.4.4 In Area B the brick walls were not the exterior walls and it is unclear how much further the timber joists would have extended past these walls. The connection between these timbers and the wall was hard to observe due to render surrounding their ends.

2.4.5 In area C where the eastern hallway opens into a larger space, the southern wall heads south and faces west. Halfway up along this west facing wall there is a small square blocked opening with a stone lintel and sill. The use of this opening is unclear (*Fig 14*)

2.4.6 Along the southern walls the timber joists insert directly into the brick walls with many of the timbers having their ends obscured partially by render. Where the timber ends can be seen they display decay within the wall. Much of the southern wall is rendered, where the brick can be observed in Area C it appears to be original. A single blocked timber battened door sits in the southern wall (Area C) with a timber lintel; the joists above the door insert into the wall and rest upon the timber lintel. The window to the south wall in Area G appears to be a modern addition

2.4.7 A door way leading to a lean-to toilet addition has been added fairly recently to the south wall in Area J.

2.4.8 The entire south-west portion of the brick wall (Areas O and L) appears to have undergone extensive reworking within the last 50 years. Here all of the timber joists along the southern end where they insert into the brick wall sit in iron cradles which are supported by brick corbels.

2.4.9 Along the northern wall in area K the wall appears to be original brick work with a number of recent repair patches (*Fig 12*). The brickwork around the timbers is very poor and appears to be altered but not properly repaired. This may have been done to assess the timber ends and perhaps attempt to repair some of them. Where the ends of the timbers are visible they are heavily decayed. A former door opening had been partially bricked-up to form a window.

2.4.10 Along the north wall in Area N the brick wall has been recently rendered including around the ends of the timbers. Not much of the relationship was observed.

2.4.11 The N-S aligned wall dividing the interior of the surveyed area with the external surveyed area did not support the timbers. This was primarily just a dividing wall.

2.4.12 The north-west wall over the River Itchen had joists inserted directly into the brick wall. The one modern timber also had a brick corbel supporting it along the wall, suggesting some reworking of the wall when the new timber was installed.

Fig 12 Area L, showing later added timbers and iron cradles supported by brick corbels.

Fig 13 Showing the northern wall in Area K with several repairs and poor brickwork surrounding the timbers, facing north

Fig 14 Showing typical decay where the timber joist inserts into the brick wall, facing north-west. Timber [70]

Fig 15 Showing the blocked opening along the southern wall in Area C, bottom corner of photo, facing east.

2.5 Floorboards

In the case of all the floor boards that could be seen reasonably clearly from below and were not covered in thick paint etc., they were of conifer timber probably imported Baltic pine and of c. later 19th century date. No typical gauged and recessed hand-sawn floor boards (Where the boards vary a little in thickness and are gauged with a plough plane and then recessed to the gauge mark with a hatchet or adze on the lower, hidden face, where they sit on the joists) were seen nor any clearly of oak, elm or black poplar, historically native timbers used for floor boards. This means that either the boards were unusually accurately pit-sawn or more likely the earliest were sawn by early water, wind or steam powered reciprocating saws. In some areas of the floor, clearly modern pine boards were used, and in some places the floorboard soffits were still hidden. In sum the floor boards visible at the time of the visit appear to be of little historic value. See Fig 11.

2.6 Scope for Dendrochronology

2.6.1 As has been recognised for some time and further documented in this survey, most of the framing timbers of the floor are reused timbers with many lacking well preserved sapwood. Therefore finding several timbers with sufficient annual rings (50 +) and sapwood for tight tree-ring ('Dendro') dating is very unlikely. One possible candidate is N-S timber bridging beam Timber [105]. This was clearly younger than the other oak timbers with relatively unweathered faces baring traces of pitsawing. It was made from a whole oak of medium to largish dimensions of apparently medium growth rate and included several areas of sapwood to the waney or 'bark edge'. Thus, it is likely to have at least 60-70 annual rings and could be potentially datable. However, the sapwood has been much attacked by furniture beetle, larger boring insects and rodent gnawing and is very fragile. If two core samples were taken from near each end and an area of sapwood consolidated prior to sampling it might just be possible to obtain a close felling date. The advice of an experienced tree-ring specialist is essential here.

2.6.2 More generally if a policy of keeping the sawn-off ends of labelled timbers created during the repair works was adopted it might be possible to build up a tighter picture of the broad dating of the original timbers used in the construction of the floor, if this were deemed important.

Fig 16 Timber [105], looking south-west, the timber with the most potential for a successful dendrochronology date. Sap wood can be observed near where the unpainted and painted portions of the timber meet.

3 Conclusions

3.1 Results

3.1.1 A descriptive and photographic survey of the timber elements of the ground floor extension of The Winchester City Mill was completed prior to redevelopment. Recording and analysis of the fabric and construction of the flooring has been carried out through photography and the production of annotated drawings and on-site notes. A detailed register and plan of the individual timbers has also been created. These corresponded to the requirements set out by the National Trust.

3.1.2 The results of the survey have revealed that although the flooring has undergone numerous changes throughout its history, it appears to maintain much of its original character and form. Timbers have been replaced and repaired with only two major patches having been rebuilt in new patterns (parts of areas C, G and F).

3.1.3 Nearly half of all the timbers within the flooring are reused timbers from earlier structures. Many of which retain clear signs of having been wall plates or other roofing components, including an attractive crown post. Dates for the reused timbers range from possibly as early as the 13th century to the 17th century.

3.1.4 All the original beams and joists were of oak worked by hand. This is quite surprising because in industrial carpentry of c. mid-18th century date we would normally expect much more use of cheap, imported conifer timber, mostly pine from various Baltic countries. The timber of the various native elms was also commonly substituted for oak in cost conscious carpentry at this time. It is also sometimes claimed that elm was particularly often used in mills but none was visible in this case. Although nearly all the joist and beam timbers were of oak, almost certainly one of our two native oaks or their hybrids. The exception for the larger beams was repairs to beam [103] made in conifer timber.

4 Publication and archiving

4.1 Publication

4.1.1 In view of the potential of the material it is suggested that a summary of the results of the Standing Building Recording project should appear in the Proceedings of the Hampshire Field Club & Archaeological Society

4.1.2 Information on the results of the survey will be made publicly available by means of a database in digital form, to permit inclusion of the site data in any future academic research.

4.2 Archive

4.2.1 The site archive of records will be deposited in accordance with the WSI (MOLA, 2015) with the National Trust office at Micheldever, Hampshire within 12 months of the end of the survey. They will be stored under the site code HA-WCM15.

4.3 Copyright

4.3.1 Under the Copyright, Designs and Patents Act 1988, MOLA retains the copyright to this document, and grants the client and their agents a licence to use the original text and illustrations in connection with redevelopment of the site. Copyright in other material rests with the existing copyright holder.

4.3.2 Note: within the limitations imposed by dealing with historical material and maps, the information in this document is, to the best knowledge of the author and MOLA, correct at the time of writing. Further archaeological investigation or more information about the nature of the present building may require changes to all or parts of the document.

5 Acknowledgements

MOLA wishes to thank Gary Marshall of the National Trust for commissioning the work, Ric Weeks and his team at the Winchester City Mill for facilitating access and making us very welcome during fieldwork. Greg Laban and James Wright recorded the buildings and contributed to the report. Michael Smith was the project manager.

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7 Appendix 1: OASIS

OASIS ID: molas1-240023

Project details	
Project name	Winchester City Mill, Bridge Street, Winchester, Hampshire SO23
Short description of the project	A standing building survey was carried out. The site comprises a multiphased, L-shaped, two storey building. The survey the survey focused on the ground floor structure of the main east-west orientated section of the building; from Water Lane in the east to the main bridging beam located above the River Itchen to the west. The purpose of the survey was to make a record of the timber-frame structure prior to a conservation project which will require the replacement of a number of joists and strengthening to the main beams. The survey revealed the flooring was composed of a mixture of 18th century timbers and quite a few earlier reused timbers.
Project dates	Start: 08-12-2015 End: 11-12-2015
Previous/future work	No / Not known
Any associated project reference codes	HA-WCM15 - Sitecode
Any associated project reference codes	ENA7986 - Museum accession ID
Type of project	Building Recording
Site status	Listed Building
Site status	Scheduled Monument (SM)
Site status	Conservation Area
Current Land use	Community Service 2 - Leisure and recreational buildings
Monument type	WATER MILL Post Medieval
Significant Finds	NONE None
Methods & techniques	'"Annotated Sketch"',"'Photographic Survey"',"'Survey/Recording Of Fabric/Structure"'
Prompt	Conservation/ restoration

Project location	
Country	England
Site location	HAMPSHIRE WINCHESTER WINCHESTER Winchester City Mill

Postcode	SO23 9BH
Study area	140 Square metres
Site coordinates	SU 48608 29321 51.060632764962 -1.30630383071 51 03 38 N 001 18 22 W Point

Project creators

Name of Organisation	MOLA
Project brief originator	National Trust
Project design originator	MOLA
Project director/manager	Michael Smith
Project supervisor	Greg Laban
Project supervisor	James Wright
Type of sponsor/funding body	Charitable body
Name of sponsor/funding body	National Trust

Project archives

Physical Archive Exists?	No
Digital Archive recipient	National Trust
Digital Archive ID	ENA7986
Digital Contents	"Industrial","Survey"
Digital Media available	"Images vector","Spreadsheets","Survey","Images raster / digital photography"
Paper Archive recipient	National Trust
Paper Archive ID	ENA7986
Paper Contents	"Industrial","Survey"
Paper Media available	"Context sheet","Drawing","Microfilm","Notebook - Excavation"," Research"," General Notes","Report","Survey "

Project bibliography 1

Publication type	Grey literature (unpublished document/manuscript)
Title	Winchester City Mill, Bridge Street, Winchester, Hampshire SO23: Archaeological Standing Building Recording Report
Author(s)/Editor(s)	Laban, G.
Author(s)/Editor(s)	Wright, J.
Author(s)/Editor(s)	Goodburn, D.
Date	2016
Issuer or publisher	MOLA
Place of issue or publication	London
Description	Unpublished client report
Entered by	Vince Gardiner (vgardiner@mola.org.uk)
Entered on	5 April 2016

9 Appendix 2: Historic Timber Specialist Notes

Notes on aspects of the carpentry of the first floor of Winchester City Mill

(Site code HA-WCM15)

DM Goodburn BA PhD Archaeological Woodwork Specialist MOLA 20/12/2015

Purpose of these summary notes
These notes are intended to function as an addition to the general and detailed recording carried out by members of the MOLA Standing Buildings Team (J. Wright and G. Laban) who carried out the vast bulk of the recording work. Readers should refer to the main report text for more details of the background to the project, the key plan made and an annotated index of the principal timbers of the floor. Sections of these notes may be edited into the main report and/or used as an appendix.

The central purpose of the MOLA recording was to record the layout and component timbers of the floor ahead of major repairs required by the National Trust, owners of the mill. These notes deal with elements of the recording brief such as describing the raw materials used evidence for reuse of earlier timbers, jointing methods and suitability for tree ring dating.

The mill – some key facts for essential orientation of readers
The mill is sited on the edge of the historic core of Winchester straddling a canalised arm of the River Itchen on, or close to, the site of a watermill documented from the 10th century (R. Weeks *pers. com.*). It lies just north of Bridge Street and has under gone many phases of modification and rebuilding during its long history. At the time of the site visit it was thought that most of the buildings structure was of the mid 18th century with some earlier and later components. It was also already known that the basement surveyed during the MOLA site survey contained some reused timbers but their origin and likely dating was uncertain. It was specifically suggested that 'current understanding is that the floor was built in 1748', this dating being based on documentary evidence (G. Marshall *pers com*).

The use of the basement area of the mill as a youth hostel for many years, proximity of the watercourse and covering up of historic walls and timbers has led to localised areas of damage by decay, borer attack and rodent gnawing in the sealed off ceiling space. The combined damage has resulted in the temporary use of several 'acro props' at locally weak positions in the floor framing and is the reason major structural carpentry repairs are scheduled.

Note on likely earlier dating of the main high pitched roof with its gable facing Bridge Street

During the site visit it was possible to see that the basic carpentry of this roof in the City Mill had features suggesting that it was substantially earlier than the mid-18th century;

1) The roof pitch was unusually steep for a mid-18th century building which aroused initial suspicions of a likely earlier original date.
2) The vast bulk of the roof framing to the west and east slopes appears contemporary and of oak without much obvious reuse of timbers from earlier buildings. In the mid-18th century we would generally expect much of the material used to be cheap imported conifer timber such as Baltic pine perhaps mixed with reused earlier oak and local elm timbers.
3) The pattern of the framing of the roof with multiple curved wind braces also appears more typical of an earlier period, perhaps of the 16th century or just possibly earlier still.

However, it must be recorded that these are just brief initial comments and that close inspection of the timbers was not possible. It must also be noted here that the opinion of regional specialists in mill and agricultural buildings would also be useful to refine the suggestions made above. Some of the oak timber of that roof may also be suitable for tree-ring dating but closer inspection with suitable lighting would be required to properly assess how viable that might be. The current lighting faces downward making it difficult to see the timbers very clearly due to dazzling.

The key focus of the recording brief addressed in part in these notes and more so in the main report and accompanying plans and photographs

The main purpose of the examination and recording of the floor framing and component timbers was specifically to;

1) Further investigate and record any reused timbers.
2) Assess the timbers for potential tree-ring ('Dendro') sampling and dating, distinguishing those timbers likely to have been used as 'new' in the current floor.
3) To check existing engineers basic plans of the first floor and provide one with more detail showing all timbers currently visible where ever possible (Some were still obscured by plaster board at the time of the visit). Basic record of other historic fabric was also required such as the outline recording of the brick walls, beyond the scope of these notes.
4) To provide basic descriptions of each main timber on timber sheets as some were likely to be replaced, in part or wholly including some of the supporting 'samson posts' or props.
5) The record was also to cover descriptions of jointing and raw materials used etc.

Methodology

Here readers are referred to the main report for an explanation of how the floor framing was recorded, but we may note that this principally relied on the use of detailed measured sketch plans which were to be used to create a scale 'CAD' plan off site. These were supported by extensive photography and descriptions on pro-forma timber sheets with additional sketches of details in some cases. This writer was able to contribute to these records adding comments on features not already noted and offering interpretation of the origins of some timbers and features such as

alterations to the floor framing etc. Each timber had been labelled with a stapled on tag for individual identification during the MOLA recording.

The carpentry of the floor framing in general

Though many of the general features of the carpentry of the floor frame were visible the previous use of very thick black paint and areas of plasterboard ceiling, combined with ancient erosion and wear had removed many of the fine details of the carpentry that would normally survive to be recorded, such as joint layout and level marks etc. Many of these features are also likely to have been originally made on the upper face of the frame which lay obscured under the current flooring of the first floor in any case. This would have been the 'upper' face of the floor frame during pre-fabrication in the framing yard of the carpenter(s) in charge.

The basic layout of the floor frame is illustrated in the main plan compiled by J Wright....., and comprises four substantial oak bridging beams each c. 6m long, set across the width of the building. Thus, these beams could also have acted to a limited extent as tie beams. Each end of these beams is embedded into the brick walls, often supported by timber chocks. Unsurprisingly decay has taken place at several of these locations with some recent steel reinforcement being carried out locally. Tenoned into these roughly N-S bridging beams were a total of five, similar sized or slightly smaller, E-W secondary bridging beams which supported the internal ends of the common joists, except in the eastern entrance corridor where they were set in the brick walls either side (See main floor plan). These E-W beams were also boxed heart beams of oak except for beam [103] which was a composite beam including sawn conifer timber later than the initial framing work. This basic form of framing is commensurate with what would be expected of a mid-18th industrial building in the south of England.

At several points the moderately regular pattern of framing had clearly been altered at several times, principally to form openings in the floor to allow material to be moved up into the main body of the mill. Some of these remodelled areas were clearly for the hauling up of sacks as they had been made with a wider lower opening that narrowed upward in the manner of a funnel. For example, the west end of the north face of beam [107] had been smoothly and deeply, chamfered back opposite an inclined reused conifer timber plank to create a funnel shaped opening for a sack chute. This would have allowed material to be easily hoisted upward through an opening in the floor at that point (* See note on draft CAD plan, .all potential chute openings to be colour coded?) Later this chute opening was blocked.

The typical joint used between the common joists and E-W bridging beams was a form of housed tenon cut towards the base (or soffit) of the common joist and secured with single oak pegs. The tenons seem close to those described as '... tenon with diminished haunch, housed.' (Hewett 1980 p 282, Fig 306). His Essex examples cited were of the 17th century. Thus, this approximate dating would fit with the historically defined build date of 1748 in broad terms, but there are now likely to be better dated local examples. Such parallels could be explored in due course should it be required.

The timber raw materials used in the floor framing visible at the time of the visit (=c. 80% of the total.)

Although many of the major floor beams and common joists were covered in rather thick black paint and other finishes characteristic features of their grain could be

seen, especially in bare areas that indicate that all the original beams and joists were of oak worked by hand. This is quite surprising in some ways in industrial carpentry of c. mid-18th century date where we would normally expect much more use of cheap, imported conifer timber, mostly pine from various Baltic countries. The timber of the various native elms was also commonly substituted for oak in cost conscious carpentry at this time. It is also sometimes claimed that elm was particularly often used in mills but none was visible in this case. Although nearly all the joist and beam timbers were of oak, almost certainly one of our two native oaks or their hybrids, the exception for the larger beams were repairs to beam [103] made in conifer timber.

The surfaces of the beam and joist timbers bore few clear tool marks but where they existed it could be seen that they had a mix of mainly pit-sawn with some hewn surfaces. The very oldest timbers reused timbers appeared hewn out originally but were then sub-divided for reuse by pit-sawing (Below).

The oak used appeared to be very largely 'reused' (Or second hand) as could be seen from the relict joints and more subtly different freshness of various faces of the timbers where they had been re-sawn (By pit sawing) for use in the mill. This evidence clearly suggests that when the floor frame was made money saving was paramount, and imported conifer timber, bought in by water, was not yet much cheaper. It is quite possible that some of the oak timber came from earlier phases of the mill but the variation in much of the material suggests multiple sources. One common joist near the west end on the north side, over the water channel (joist [82]) had a curious semi-circular recess cut in its west face, perhaps indicating a 'machinery' origin.

Brief notes on the selected 'reused' (or second hand) timbers found in the floor framing

It is not possible to list all the clearly, or probably, reused (or second hand older timbers) timbers in the floor frame here (See the individual Timber sheets and Timbers index for the project). Therefore, several examples of typical reused timbers are briefly listed and discussed which illustrate the range of reused building timber elements found. It should be noted that no timbers with features of nautical origin were found reused, even though such have been found in other Georgian watermills, both in Hampshire and at Three Mills in East London . All the reused framing timbers were of oak. There appeared to be a particularly high proportion of clearly reused timbers towards the eastern edge of the floor.

A large reused wall plate – beam Timber [101]

The largest reused timber in the floor was E-W bridging beam, Timber [101], which was of boxed heart oak over 250mm (10") deep and c. 5.0m long. In addition to the later mortices for common joists, it also had earlier redundant joints on its south face showing it had been a wall plate in a large building. These joints included typical rafter seating joints which had been filled with resin towards the east end. Also visible was a half lap dovetail such as were typically used for tie beams. Because the north face was obscured with plasterboard it could not be seen whether, what would have been the lower face in the parent building joined a timber framed or of masonry wall, ie whether any post or stud mortices survived. However, the nearly square section of the timber does suggest a probable origin in a building with timber framed walls (This could be checked when the remaining plaster board to the north is removed.). The

original use of the timber could span the late medieval to 17th century period, and it would have come from a large building.

A reused, octagonal crown post- post Timber [200]
At the west end of the bridging beam [101] an octagonal oak post had been inserted as a prop where the joint with beam [102] was weak. This item, Timber [200], was neatly hewn and planned down to the diagnostic 8 sided cross section except at the ends where it was left square with a carefully made chamfer stop. Such a carefully made timber was clearly originally a decorative post in a roof structure, almost certainly a crown post. Such timbers were usually used to support central 'collar purlins' and would originally have been joined to light braces connecting them to the collar purlin and adjacent rafters and a tie beam below. The jointed end or ends of this example had been cut off for its reuse as a simple prop timber. This timber is unlikely to have been taken from an earlier roof on the mill site itself and must be of late 13th to c. early 15th century date, one of the very oldest associated with the floor. Should the post become redundant after the repairs are made it would be worth retaining for display with an explanatory diagram (See thumb nail reconstruction sketch of its likely original use on the Timber sheet... could be used as a diagram in the report?? And see Appendix 5 in Hewett 1980).

A reused mid wall plate or bridging beam- post Timber [206]
Just to the west another post had been inserted that was also reused from another earlier building, Timber [206]. This boxed heart beam had two chamfered corners and a set of redundant 'bare faced soffit mortices' that would have originally been for common joists (Hewett 1980 282). It is likely that this timber is of c. 17th to early 18th century date.

A reused building timber [79] with a diagonal mortice for a brace
One of the common joists over the east side of the Itchen channel had a redundant sloping mortice in it from attachment to a brace in its first use. It could not be approached closely from the bridge over the channel but could be seen to be of oak, and was most likely either a rafter or possibly a stud in a timber framed wall.

A reused building timber with a simple lap joint- Joist Timber [03]
One of the first joist timbers visible when approaching from the eastern, Water Lane end, Timber [03], was a particularly weathered oak timber with a simple lap joint in an original hewn face, now set facing east. The lap joint was originally secured with one large peg and traces of 'in cuts' from a broad chisel or possibly a 'twybill' could be seen around the edges of the lap joint. Such features suggest an origin in medieval roof carpentry.

A reused building timber with mortices for close set studs and wattle stave holes for a lighter wall above- Joist Timber [05]
Re-sawing of two faces of this timber exposed single pegged mortices on the west face and crude tapering sockets for light staves on the east face. Presumably it was once part of a much larger beam sawn lengthwise into three elements for reuse. Initially a rather different interpretation of the origin of this building timber was suggested, but on reflection off-site the following seems much more likely.

The close set mortices exposed by re-sawing the west face, as found, seem to be relics of close studding i.e. the tenoning in of close set regular studs into a horizontal mid wall plate. On the east face the crudely drilled and carved sockets exposed must

have been for the feet of light infill staves used to support either wattle infill or laths rendered over. Thus, even though the timber was extensively reworked for reuse we can visualize it as part of the wall of a late medieval to c. 16th century timber framed building, of reasonable size and status that once stood in the town. The cost of transporting second hand timber over any great distance in a moderately well wooded area implies that it was likely to have been fairly locally sourced.

A reused building beam with evidence of a light partition probably abutting a doorway opening – joist Timber [51]
Further to the west another complex reused oak joist was clearly visible, Timber [51]. This joist was also originally clearly a horizontal beam in a building, in first. It had relict augered and chiselled small, un-pegged mortices set at regular intervals on its current soffit which must have once held light studs in place. These probably used to support nailed on laths covered with render. A larger double pegged mortice was also visible that would presumably, have held the tenon of a larger post, such as a door jam in a partition wall. A broadly c. 16th century dating seems likely for the first use of this timber.

Reused morticed beam with shell auger 'dibits' in the redundant mortice – joist Timber [03]
Though the preservation of tool marks and fine carpentry marks is generally poor on the exposed faces of the timbers that could be viewed during the MOLA visit a few tool marks could be seen in protected locations such as inside joints, as noted above. In weathered, hewn oak joist Timber [03] near the east edge of the floor characteristic auger marks could be seen and felt in a redundant mortice in its east face. The auger used to cut the end of the mortice produced a flat to slightly convex ended hole, rather than a concave one. Such marks are typically left by the use of shell augers with lipped cutting ends rather than earlier spoon bits. Currently we have documented the use of them from the early to mid-16th century carpentry work on the London waterfront and in the Mary Rose they were used near the beginning of the 16th century. The timber is likely to be of 16th century date.

Possible presence of timber contemporary with the documented major rebuild of the 18th century?
As has been recognised for some time and further documented in this survey, most of the framing timbers of the floor are reused timbers with many lacking well preserved sapwood. Therefore finding several timbers with sufficient annual rings (50 +) and sapwood for tight tree-ring ('Dendro') dating is very unlikely. One possible candidate is N-S timber bridging beam Timber [105]. This was clearly younger than the other oak timbers with relatively unweathered faces baring traces of pitsawing. It was made from a whole oak of medium to largish dimensions of apparently medium growth rate and included several areas of sapwood to the waney or 'bark edge'. Thus, it is likely to have at least 60-70 annual rings and could be potentially datable. However, the sapwood has been much attacked by furniture beetle, larger boring insects and rodent gnawing and is very fragile. If two core samples were taken from near each end and an area of sapwood consolidated prior to sampling it might just be possible to obtain a close felling date. The advice of an experienced tree-ring specialist is essential here.

More generally if a policy of keeping the sawn-off ends of labelled timbers created during the repair works was adopted it might be possible to build up a tighter picture

of the broad dating of the original timbers used in the construction of the floor, if this were deemed important**.**

Aspects of the floorboards visible from below

{ More than one layer of boards was visible in some areas...*}

In the case of all the floor boards that could be seen reasonably clearly from below and were not covered in thick paint etc., they were of conifer timber probably imported Baltic pine and of c. later 19th century date. No typical gauged and recessed hand-sawn floor boards (Where the boards vary a little in thickness and are gauged with a plough plane and then recessed to the gauge mark with a hachet or adze on the lower, hidden face, where they sit on the joists) were seen nor any clearly of oak, elm or black poplar, historically native timbers used for floor boards. This means that either the boards were unusually accurately pit-sawn or more likely the earliest were sawn by early water, wind or steam powered reciprocating saws. In some areas of the floor, clearly modern pine boards were used, and in some places the floorboard soffits were still hidden. In sum the floor boards visible at the time of the visit appear to be of little historic value.

Acknowledgements

The further background information and tour provided by Ric Weeks of the NT were useful. None of these notes could have been produced without the initial recording work of the MOLA Standing Buildings team James Wright and Greg Laban particularly, to whose report this is an appendix only.

A select general reference

Hewett, C, 1980 English Historic Carpentry - has some illustrations of Georgian watermill carpentry, joist joint details etc.

10 Appendix 3: Site archive

Table 1 List of photographs taken on site (HA-WCM15)

Archive Number	Description	Direction of Photo
003816001	SOUTH -EASTERN WALL IN HALLWAY	SE
003816002	SOUTH -EASTERN WALL IN HALLWAY	SW
003816003	SOUTH -EASTERN WALL IN HALLWAY	SW
003816004	NORTHERN WALL OF EAST HALLWAY	NW
003816005	VIEW DOWN EASTERN HALLWAY	E
003816006	SOUTHERN WALL IN EAST HALLWAY	SE
003816007	SOUTHERN WALL WITH WINDOW	S
003816008	SOUTHERN WALL WITH WINDOW AND DOOR	S
003816009	SOUTHERN WALL WITH DOOR AND WINDOW	S
003816010	SOUTHERN WALL WITH WINDOW	S
003816011	LATER PARTITION WALL ATTACHED TO SOUTHERN WALL	W
003816012	SOUTHERN WALL BY AREAS I AND J	S
003816013	SOUTHERN WALL BY AREA L	S
003816014	WESTERN WALL WITH COVERED WINDOW PANES	W
003816015	WESTERN WALL WITH COVERED WINDOW PANES AND DOOR	W
003816016	NORTH-WEST CORNER OF WESTERN WALL WITH DOOR	W
003816017	NORTHERN WALL BY AREA N	N
003816018	NORTHERN WALL WITH WINDOW BY AREA K	S
003816019	NORTHERN WALL WITH WINDOW BY AREA K	N
003816020	NORTHERN WALL WITH WINDOW BY AREA K	N
003816021	NORTHERN WALL SHOWING LATER STAIRWELL PARTITION	NE
003816022	NORTHERN WALL WITH WINDOW BY AREA D	N
003816023	EAST WALL	E
003816024	NORTHERN WALL AND STAIRWELL PARTION	NW
003816025	EXTERIOR OF WESTERN WALL WITH DOOR	E
003816026	EXTERIOR OF WESTERN WALL WITH DOOR	E
003816027	EXTERIOR OF WESTERN WALL WITH DOOR	NE
003816028	TIMBER 1	W
003816029	TIMBER 1	W
003816030	TIMBERS 1, 2	E
003816031	TIMBERS 2, 3	W
003816032	TIMBER 3	E
003816033	TIMBER 4	W
003816034	TIMBER 4	E
003816035	TIMBER 5	W
003816036	TIMBER 5	E
003816037	TIMBER 6	W
003816038	TIMBER 6	E
003816039	TIMBER 6	E
003816040	TIMBER 7	W

003816041	TIMBER 7	E
003816042	TIMBER 8	W
003816043	TIMBER 9	W
003816044	TIMBER 9	E
003816045	TIMBER 9	E
003816046	TIMBER 10	NW
003816047	TIMBER 11	W
003816048	TIMBER 11	E
003816049	TIMBER 12	W
003816050	TIMBER 12	E
003816051	TIMBER 13	W
003816052	TIMBER 13	E
003816053	TIMBER BEAM 100	W
003816054	TIMBER BEAM 100	E
003816055	TIMBER 14	NW
003816056	TIMBER 15	N
003816057	TIMBER 16	W
003816058	TIMBER 17	N
003816059	TIMBER 18	W
003816060	TIMBER 18	
003816061	TIMBER 19	E
003816062	TIMBER 19	E
003816063	TIMBER 20	NW
003816064	TIMBER 20	NW
003816065	TIMBER 21	W
003816066	TIMBER 22	SW
003816067	TIMBER 22	E
003816068	TIMBER 23	SW
003816069	TIMBER 23	E
003816070	TIMBER 24	SW
003816071	TIMBER 24	E
003816072	TIMBER 25	W
003816073	TIMBER BEAM 101	N
003816074	TIMBER BEAM 101	N
003816075	TIMBER BEAM 101	N
003816076	TIMBER BEAM 101	N
003816077	TIMBER BEAM 101	N
003816078	TIMBER BEAM 101	SE
003816079	TIMBER BEAM 101	S
003816080	TIMBER BEAM 101	SW
003816081	TIMBER BEAM 102	W
003816082	TIMBER BEAM 102	W
003816083	TIMBER BEAM 102	NW
003816084	TIMBER BEAM 102	E
003816085	TIMBER BEAM 102	SE
003816086	TIMBER POST 200 AND 206	N

003816087	TIMBER POST 200 AND 206	W
003816088	TIMBER POST 200 AND 206	N
003816089	TIMBER POST 200 AND 206	E
003816090	TIMBER BEAM 208	N
003816091	TIMBER BEAM 208	W
003816092	TIMBER BEAM 208	W
003816093	TIMBER BEAM 102	W
003816094	TIMBER BEAM 102	E
003816095	TIMBERS 30, 31, 32, 33	NE
003816096	TIMBERS 30, 31, 32, 33	E
003816097	TIMBERS 30, 31, 32, 33	E
003816098	TIMBERS 30, 31, 32, 33	W
003816099	TIMBER BEAM 104	S
003816100	TIMBER BEAM 104	N
003816101	TIMBER 29	S
003816102	TIMBERS 26, 27, 28	SW
003816103	TIMBERS 34, 35, 36	W
003816104	TIMBERS 34, 35, 36	E
003816105	TIMBERS 34, 35, 36	SE
003816106	TIMBERS 37, 38, 39	SW
003816107	TIMBERS 37, 38, 39	NE
003816108	TIMBERS 37, 38, 39	E
003816109	TIMBER BEAM 105	SW
003816110	TIMBER BEAM 105	W
003816111	TIMBER BEAM 105	NE
003816112	TIMBER BEAM 105	E
003816113	TIMBER BEAM 105	E
003816114	TIMBER BEAM 105	NE
003816115	TIMBER POST 202	E
003816116	TIMBER POST 202	S
003816117	TIMBER POST 202	E
003816118	TIMBER POST 202	E
003816119	TIMBER POST 202	S
003816120	TIMBERS 40 AND 41	W
003816121	TIMBERS 40 AND 41	E
003816122	TIMBER 42	E
003816123	TIMBER BEAM 106	SW
003816124	TIMBER BEAM 106	NE
003816125	TIMBERS 43, 44, 45, 46, 47, 48 AND 49	W
003816126	TIMBERS 43, 44, 45, 46, 47, 48 AND 49	SW
003816127	TIMBERS 43, 44, 45, 46, 47, 48 AND 49	SE
003816128	TIMBERS 43, 44, 45, 46, 47, 48 AND 49	SE
003816129	TIMBERS 43, 44, 45, 46, 47, 48 AND 49	E
003816130	TIMBERS 43, 44, 45, 46, 47, 48 AND 49	W
003816131	TIMBERS 59, 60, 61, 62, 63, 64	W
003816132	TIMBERS 59, 60, 61, 62, 63, 64	SW

003816133	TIMBERS 59, 60, 61, 62, 63, 64	SE
003816134	TIMBERS 59, 60, 61, 62, 63, 64	E
003816135	TIMBER BEAM 108	W
003816136	TIMBER BEAM 108	NW
003816137	TIMBER BEAM 108	W
003816138	TIMBER BEAM 108	NW
003816139	TIMBER BEAM 108	W
003816140	TIMBER BEAM 108	W
003816141	TIMBER BEAM 108	SW
003816142	TIMBER BEAM 108	W
003816143	TIMBER BEAM 108	W
003816144	TIMBER BEAM 108	E
003816145	TIMBER BEAM 108	E
003816146	TIMBER BEAM 107	NE
003816147	TIMBER BEAM 107	NW
003816148	TIMBER BEAM 107	S
003816149	TIMBER BEAM 107	SE
003816150	TIMBER BEAM 107	S
003816151	TIMBER BEAM 107	SW
003816152	TIMBERS 50, 51, 52	W
003816153	TIMBERS 50, 51, 52	W
003816154	TIMBERS 50, 51, 52	E
003816155	TIMBERS 50, 51, 52	E
003816156	TIMBERS 50, 51, 52	NE
003816157	TIMBERS 50, 51, 52, 53, 54, 55, 56, 57, 58	E
003816158	TIMBERS 53, 54, 55, 56, 57, 58	W
003816159	TIMBERS 53, 54, 55, 56, 57, 58	W
003816160	TIMBERS 53, 54, 55, 56, 57, 58	E
003816161	TIMBERS 53, 54, 55, 56, 57, 58	E
003816162	TIMBERS 53, 54, 55, 56, 57, 58	W
003816163	TIMBERS 70, 71, 72, 73, 74, 75, 76	SW
003816164	TIMBERS 70, 71, 72, 73, 74, 75, 76	E
003816165	TIMBERS 70, 71, 72, 73, 74, 75, 76	W
003816166	TIMBERS 70, 71, 72, 73, 74, 75, 76	NW
003816167	TIMBERS 65, 66, 67, 68, 69	W
003816168	TIMBERS 65, 66, 67, 68, 69	S
003816169	TIMBERS 65, 66, 67, 68, 69	SW
003816170	TIMBERS 65, 66, 67, 68, 69	W
003816171	TIMBER BEAM 109	S
003816172	TIMBER BEAM 103 AND 109	SE
003816173	TIMBER BEAM 103 AND 109	NW
003816174	TIMBER BEAM 103	NE
003816175	TIMBER BEAM 103	NE
003816176	TIMBER BEAM 103	W
003816177	TIMBER BEAM 103	SW
003816178	TIMBER BEAM 203	W

003816179	TIMBER BEAM 203	S
003816180	TIMBER BEAM 203	E
003816181	TIMBER BEAM 203	NW
003816182	TIMBER BEAM 204	NW
003816183	TIMBER BEAM 204	W
003816184	TIMBER BEAM 204	S
003816185	TIMBER BEAM 204	E
003816186	TIMBER BEAM 201	S
003816187	TIMBER BEAM 201	E
003816188	TIMBER BEAM 201	W
003816189	TIMBER BEAM 110	NW
003816190	TIMBER BEAM 110	N
003816191	TIMBER BEAM 110	SW
003816192	TIMBER BEAM 110	SE
003816193	TIMBER BEAM 205	E
003816194	AREA P OVER THE RIVER ITCHEN	NE
003816195	BRIDGING BEAM 111	E
003816196	BRIDGING BEAM 111	SE
003816197	AREA O OVER THE RIVER ITCHEN	NW
003816198	CROSS BEAM 111	E
003816199	AREA O AND CROSS BEAM 111	S
003816200	AREA O AND CROSS BEAM 111	S
003816201	AREAS O AND Q AND BRIDGING BEAM 109	S
003816202	CROSS BEAM 110	NE
003816203	TIMBERS 79, 80, 81	E
003816204	TIMBERS 79, 80, 81	NE
003816205	TIMBERS 79, 80, 81	NW
003816206	TIMBERS 82, 83, 84	S
003816207	TIMBERS 82, 83, 84	N
003816208	TIMBERS 77 AND 78	SE
003816209	AREA P OVER THE RIVER ITCHEN	N
003816210	AREA O AND BRICK WALL OVER THE RIVER ITCHEN	S
003816211	SOUTH-WEST GABLE, EXTERIOR OF BUILDING	N
003816212	SOUTH-WEST GABLE, EXTERIOR OF BUILDING	NE
003816213	VIEW FROM THE CANAL LOOKING NORTH	N
003816214	OUTFLOW UNDER THE MILL	NE
003816215	INTERIOR OF WESTERN PITCH ROOF	W
003816216	INTERIOR OF WESTERN PITCH ROOF	S
003816217	INTERIOR OF WESTERN PITCH ROOF	E
003816218	ROOF TIMBERS IN WESTERN PITCH	SW
003816219	ROOF TIMBERS IN WESTERN PITCH	SW
003816220	INTERIOR OF MILL, RECENT TIMBERS	NE
003816221	INTERIOR OF MILL	S
003816222	TIMBER 50	E
003816223	TIMBER 50 SHOWING REUSED TIMBER WITH AUGER HOLES AND MORTISE	NW
003816224	TIMBER CORBELS 48 AND 49	SW

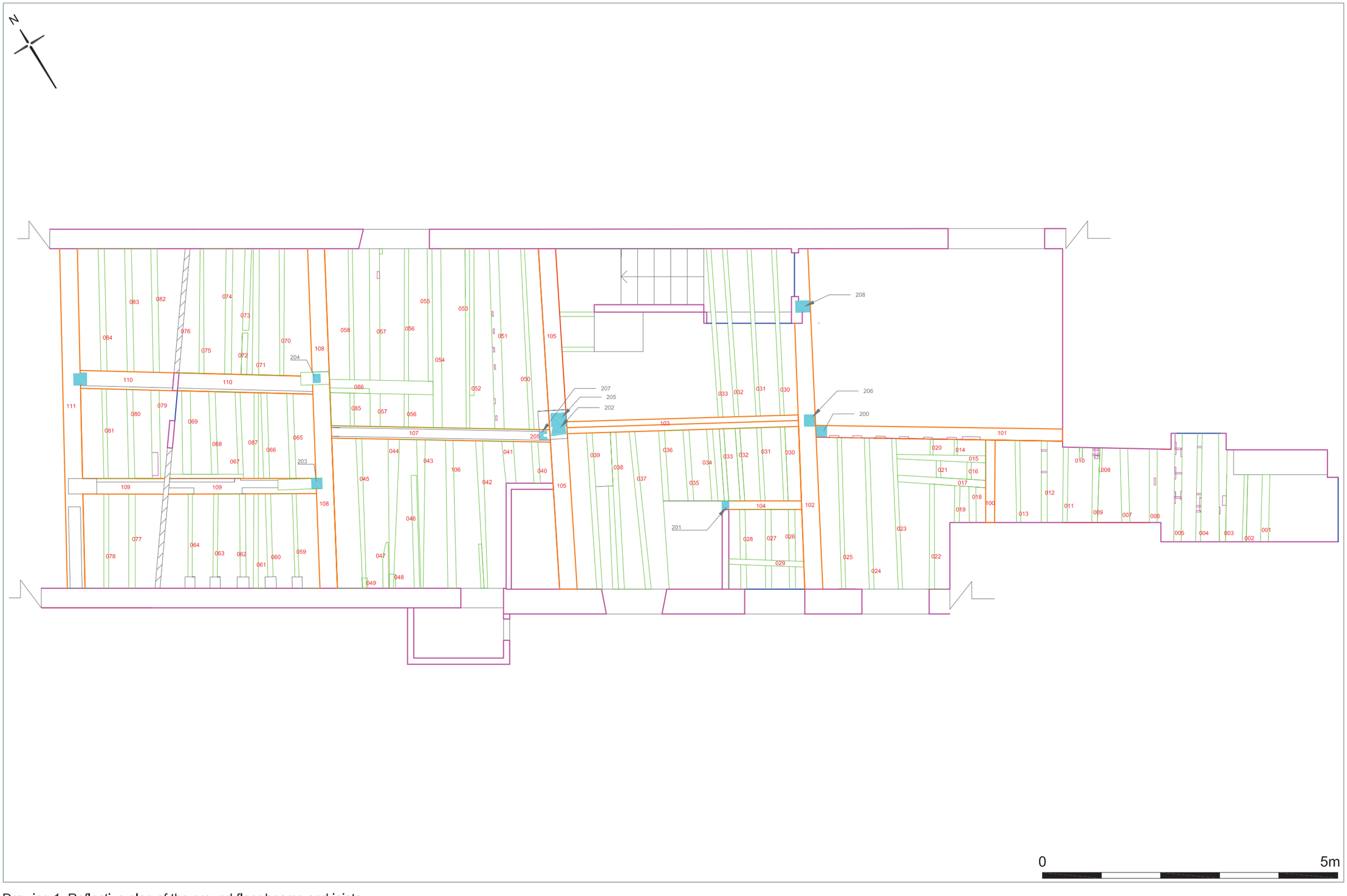
003816225	TIMBER COVERING EARLIER CHUTE AREA	W
003816226	TIMBER COVERING EARLIER CHUTE AREA	S
003816227	TIMBER 64 WITH POSSIBLE CARPENTER MARKS	S
003816228	TIMBER 64 WITH SAW MARKS	S
003816229	MODERN TIMBERS WITH METAL CRADLES SITTING ON BRICK CORBELS	SE
003816230	TIMBER 70	W
003816231	TIMBER 70 IN NORTH WALL	NW
003816232	TIMBER 70 IN NORTH WALL	NW
003816233	TIMBERS 72 AND 73 WITH UNCLEAR RELATIONSHIP	NW
003816234	TIMBER 75 WITH DETAIL OF DOVETAIL LAP JOINT	NW
003816235	TIMBER 57	W
003816236	TIMBER 57 SHOWING DETAIL OF MORTISES	NW
003816237	TIMBER 57 WITH MORTISE	E
003816238	TIMBER 57 WITH MORTISE	SE
003816239	TIMBER 56	NW
003816240	TIMBER 56 WITH A POOR FITTING TENON	S
003816241	TIMBER 56 SHOWING POSSIBLE REUSE	NE
003816242	AREA C, REPLACEMENT TIMBERS	NE
003816243	AREA C, REPLACEMENT TIMBERS	W
003816244	AREA C, REPLACEMENT TIMBERS	E
003816245	TIMBER 5	W
003816246	TIMBER 5 SHOWING SPLIT MORTICES	NW
003816247	TIMBER BEAM 101, SHOWING MORTICES	NW
003816248	TIMBER POST 200, REUSED CROWN POST	N
003816249	TIMBER POST 200, REUSED CROWN POST	NW
003816250	TIMBER BEAM WITH CIRCULAR CUT	NE
003816251	TIMBER BEAM WITH MORTISE	NW
003816252	EXAMPLE OF HEAVY BORER DAMAGE	N
003816253	AUGER HOLE	N
003816254	TIMBER 59	W
003816255	EXAMPLE OF TENON AND MORTISE TYPE	NE
003816256	OLD WATERWHEEL DISPLAY	NE
003816257	OLD WATERWHEEL DISPLAY	NE
003816258	WATERWHEEL AND SLUICE	NE
003816259	WATERWHEEL AND SLUICE	NE
003816260	WATERWHEEL AND SLUICE	NE
003816261	WATERWHEEL GEARS	NE
003816262	WATERWHEEL GEARS	NE
003816263	WATERWHEEL	NE
003816264	LOOKING TOWARDS SURVEY AREA FROM WEST	E
003816265	LOOKING TOWARDS SURVEY AREA FROM WEST	NE
003816266	AREA WEST OF WATERWHEEL OUTSIDE SURVEY	NW
003816267	WATERWHEEL	NE
003816268	WATERWHEEL	E

Table 2 List of drawings and notes made on site

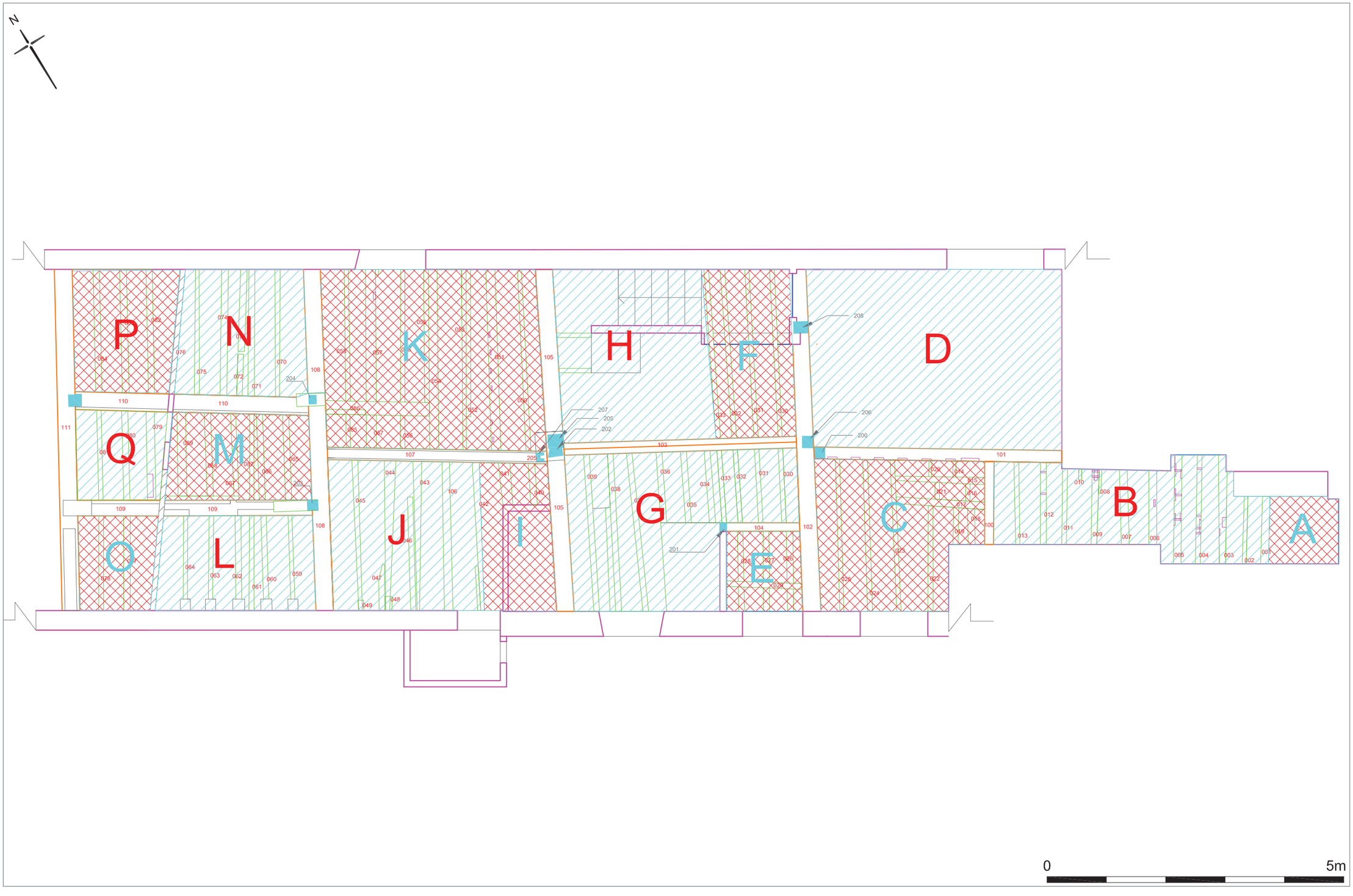
1	Overall Area plan
2	Detailed Plan of Areas A and B
3	Detailed Plan of Area C
5	Detailed Plan of Areas E and G
6	Detailed Plan of Areas I, J, and K
7	Detailed Plan of Areas D, F and H
8	Detailed Plan of Areas L, M and N
9	Detailed Plan of Areas O, P and Q
10-118	108 Timber Context Sheets

11 Appendix 4: Annotated AutoCAD drawings

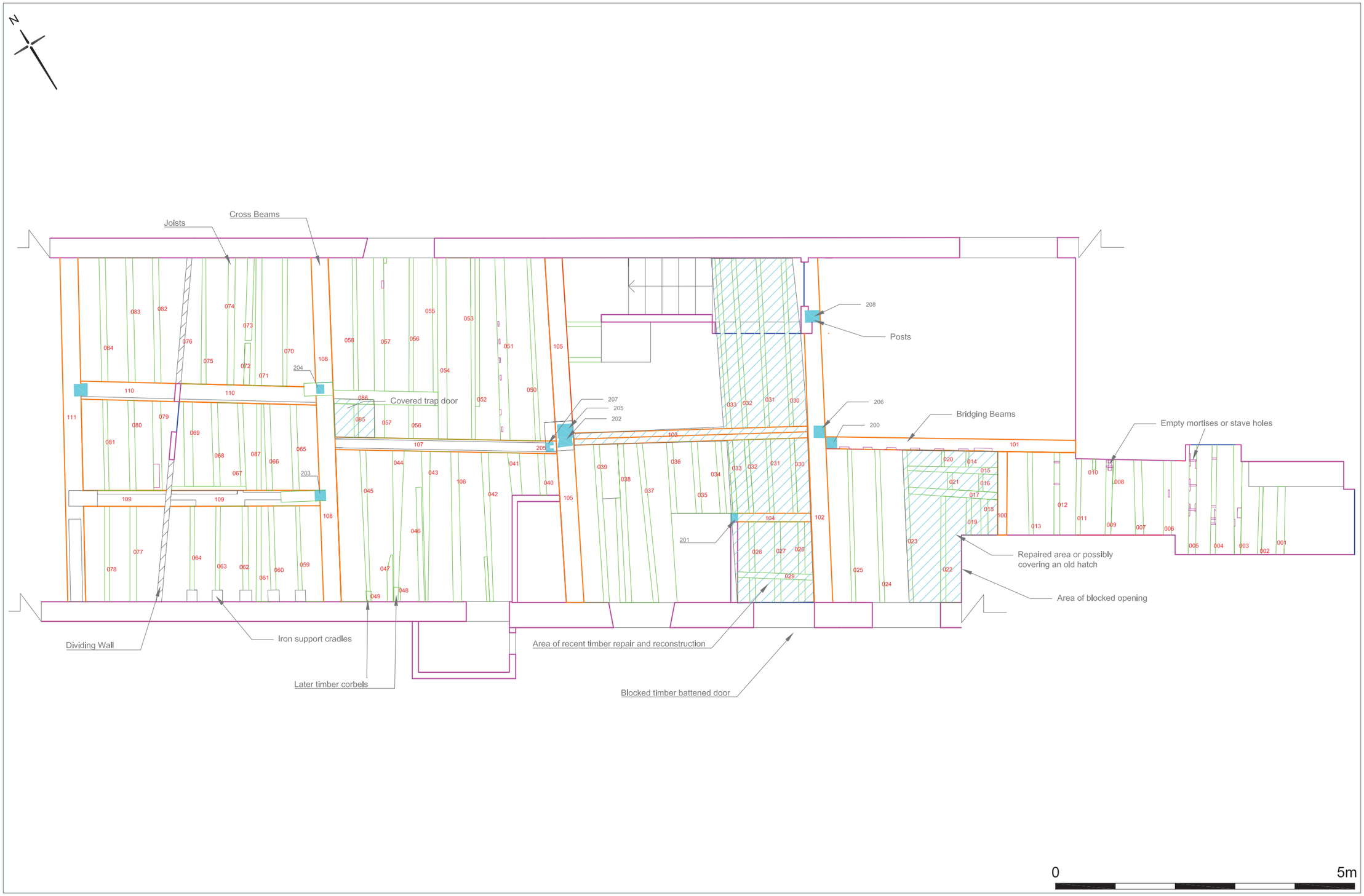
Drawings 1-4



Drawing 1 Reflective plan of the ground floor beams and joists



Drawing 2 Plan of Ground Floor showing individual areas



Drawing 3 Reflective plan of the ground floor beams and joists with annotations

Drawing 4 Reflective plan of the ground floor showing reuse patterns

12 Appendix 5: Timber Register

Timber Number	Type	Description	Size	Area
	Probable reuse	**11**		
	Original	**34**		
	Reused	**29**		
	Possible reuse	**13**		
	Modern/After 1748 construction	**21**		

1	Joist	Unknown if reused, Chamfers to both underside corners. Some borer damage. Full length and height not fully seen. Thick black paint obscures much of the finer detail.	Length: 1.19m Width: 0.12m Height: 0.10m	B
2	Joist	Unknown if reused. It is pit sawn in a post medieval style. Full length and height not fully seen. Some borer damage. Thick black paint obscures much of the finer detail.	Length: 1.19m Width: 0.07m Height: 0.11m	B
3	Joist	Reused timber with a large simple lap joint in the south east elevation having a flat ended shell bit auger hole. Traces of broad chisel marks could be seen in the lap joint. Possibly medieval in date, from a roof structure. Original hewn east face. Some borer damage. Full length and height not fully seen. Thick black paint obscures much of the finer detail.	Length: 1.50m Width: 0.11m Height: 0.17m	B
4	Joist	Reused timber that has been resawn. The east elevation has a split mortise joint with peg hole and three separate evenly spaced peg holes. It is not clear what the original use of this timber was. Probably Medieval timber resawn for reuse. Some borer damage. Full length and height not fully seen. Thick black paint obscures much of the finer detail.	Length: 1.52m Width: 0.08m Height: 0.12m	B
5	Joist	Reused timber now resawn on the underside and west elevation. Originally a First floor wall plate. Resawing of two faces of this timber exposed single pegged morts on the west face and crude tapering sockets for light staves on the east face. Once part of a much larger timber likely dating to the late medieval to c.16th century.Some borer damage. Full length and height not fully seen. Thick black paint obscures much of the finer detail.	Length: 1.30m Width: 0.13m Height: 0.11-0.13m	B
6	Joist	Reused timber joist, empty mortise to underside not pegged suggesting 16th century or later. Some borer damage. Full length and height not fully seen. Thick black paint obscures much of the finer detail.	Length: 1.30m Width: 0.13m Height: 0.11-0.13m	B
7	Joist	Possibly reused timber, suggested by weathered surfaces. Single iron nail in east face. Some borer damage. Full length and height not fully seen. Thick black paint obscures much of the finer detail.	Length: 1.26m Width: 0.13m Height: 0.135m	B
8	Joist	Possibly reused, not a full joist. Pit sawn. Minor borer damage. Full length and height not fully seen. Thick black paint obscures much of the finer detail.	Length: 0.40m Width: 0.07m Height: 0.015m	B
9	Joist	Reused timber. Resawn underside with truncated mortise having two truncated peg holes running trough the east and west sides. Some borer damage. Full length and height not fully seen. Thick black paint obscures much of the finer detail.	Length: 1.26m Width: 0.11-0.12m Height: 0.125m	B
10	Joist	Unknown use, not a full joist probably a modern timber support. Full length and height not fully seen. Thick black paint obscures much of the finer detail.	Length: 0.19m Width: 0.05m Height: 0.05m	B
11	Joist	Possibly reused. Pit sawn possibly 16-17th century maybe into 18th century. Relict nail holes of unknown use on east face. Some borer damage. Full length and height not fully seen. Thick black paint obscures much of the finer detail.	Length: 1.45m Width: 0.08m Height: 0.115m	B
12	Joist	Reused timber. Pit sawn, not weathered. 2 large pegs holes go through side elevations. Some borer damage. Full length and height not fully seen. Thick black paint obscures much of the finer detail.	Length: 1.19m Width: 0.096m Height: 0.11m See plan	B
13	Joist	Possibly. Some borer damage. Full length and height not fully seen. Thick black paint obscures much of the finer detail.	Length: 1.36m Width: 0.08m Height: 0.11m	B
14	Joist	Probably reused and recently added to the overall construction. Likely originally part of a timber joist but cut to create this much smaller partial joist. Part of a larger area of repair or reinforcement. Height not fully seen. Minor borer damage. Thick black paint obscures much of the finer detail.	Length: 0.25m Width: 0.05m Height: 0.08m	C

15	Joist/beam	Probably reused. This timber acts as a bridging beam for several other joists but tenons into a joist and beam itself. Likely originally part of a timber joist but cut to create this much smaller partial joist. It appears recently added to the overall construction and part of a larger area of repair or reinforcement. Height not fully seen. Thick black paint obscures much of the finer detail.	Length: 0.25m Width: 0.05m Height: 0.08m	C
16	Joist	Probably reused and recently added to the overall construction. Likely originally part of a timber joist but cut to create this much smaller partial joist. Part of a larger area of repair or reinforcement. Height not fully seen. Minor borer damage. Thick black paint obscures much of the finer detail.	Length: 0.29m Width: 0.07m Height: 0.07m	C
17	Joist/beam	Reused timber with empty mortise at north end. This timber acts as a bridging beam for several other joists and tenons into a joist and beam itself. Likely originally part of a timber joist but cut to create this much smaller partial joist. It appears recently added to the overall construction and part of a larger area of repair or reinforcement. Height not fully seen. Minor borer damage. Thick black paint obscures much of the finer detail.	Length: 1.24m Width: 0.115m Height: 0.095m	C
18	Joist	Possibly reused timber. Part of a larger area of repair or reinforcement. Height and length not fully seen. Minor borer damage. Thick black paint obscures much of the finer detail.	Length: 0.66m Width: 0.13m Height: 0.09m	C
19	Joist	Possibly reused timber. Part of a larger area of repair or reinforcement. Height and length not fully seen. Minor borer damage. Thick black paint obscures much of the finer detail.	Length: 1.20m Width: 0.09m Height: 0.075m	C
20	Joist	Probably reused and recently added to the overall construction. Likely originally part of a timber joist but cut to create this much smaller partial joist. Part of a larger area of repair or reinforcement. Height not fully seen. Minor borer damage. Thick black paint obscures much of the finer detail.	Length: 0.275m Width: 0.075m Height: 0.075m	C
21	Joist	Probably reused and recently added to the overall construction. Likely originally part of a timber joist but cut to create this much smaller partial joist. Part of a larger area of repair or reinforcement. Height not fully seen. Minor borer damage. Thick black paint obscures much of the finer detail.	Length: 0.25m Width: 0.05m Height: 0.08m	C
22	Joist	Possibly reused timber. Part of a larger area of repair or reinforcement. Roughly hewn on east face and underside, sawn on west face. Height and length not fully seen. Minor borer damage. Thick black paint obscures much of the finer detail.	Length: 1.77m Width: 0.086m Height: 0.10m	C
23	Joist	Possibly reused timber. Saw marks on underside and east and west faces. Two mortised on east face support joists, not a typical arrangement for a joist. Part of a larger area of repair or reinforcement. Height and length not fully seen. Minor borer damage. Thick black paint obscures much of the finer detail.	Length: 2.56m Width: 0.07m Height: 0.105m	C
24	Joist	Appears original to the construction, tenons into beam (101) to north. Height and length not fully seen. Minor borer damage. Thick black paint obscures much of the finer detail.	Length: 2.56m Width: 0.085m Height: 0.105m	C
25	Joist	Appears original to the construction, tenons into beam (101) to north. Height and length not fully seen. Minor borer damage. Thick black paint obscures much of the finer detail.	Length: 2.56m Width: 0.07m Height: 0.10m	C
26	Joist	Modern timber, probably added as part of the repairs that replaced beam (104) and (105). This timber does not tenon into any others but sits on them. Thick black paint obscures finer detail.	Length: 1.46m Width: 0.105m Height: 0.11-0.12m	E
27	Joist	Modern timber, probably added as part of the repairs that replaced beam (104) and (105). This timber does not tenon into any others but sits on them. Thick black paint obscures finer detail.	Length: 1.46m Width: 0.12m Height: 0.10m	E
28	Joist	Modern timber, probably added as part of the repairs that replaced beam (104) and (105). This timber does not tenon into any others but sits on them. Thick black paint obscures finer detail.	Length: 1.46m Width: 0.105m Height: 0.12m	E
29	Joist/support	Modern support timber added to hold up modern services. Does not appear structural.	Length: 1.33m Width: 0.095m Height: 0.07m	E
30	Joist	Modern timber, probably added as part of the repairs that replaced beam (104) and (105). This timber does not tenon into any others but sits on them. Thick black paint obscures finer detail.	Length: 4.52m Width: 0.075m Height: 0.145m	G
31	Joist	Modern timber, probably added as part of the repairs that replaced beam (104) and (105). This timber does not tenon into any others but sits on them. Thick black paint obscures finer detail.	Length: 4.52m Width: 0.075m Height: 0.145m	G
32	Joist	Modern timber, probably added as part of the repairs that replaced beam (104) and (105). This timber does not tenon into any others but sits on them. Thick black paint obscures finer detail.	Length: 4.52m Width: 0.075m Height: 0.14m	G
33	Joist	Modern timber, probably added as part of the repairs that replaced beam (104) and (105). This timber does not tenon into any others but sits on them. Thick black paint obscures finer detail.	Length: 4.52m Width: 0.075m Height: 0.14m	G
34	Joist	Appears original to the construction, sits on replacement beam (103) to north. Height and length not fully seen. Minor borer damage. Thick black paint obscures much of the finer detail.	Length: 1.10m Width: 0.10m Height: 0.10-0.12m	G

35	Joist	Appears original to the construction, sits on replacement beam (103) to north. Height and length not fully seen. Chamfer on north-east underside edge, probably to remove sap wood. Minor borer damage. Thick black paint obscures much of the finer detail.	Length: 1.10m Width: 0.10m Height: 0.11m	G
36	Joist	Appears original to the construction, sits on replacement beam (103) to north. Height and length not fully seen. Minor borer damage. Thick black paint obscures much of the finer detail. Unpainted to south side. Broken lathe and plaster attached to underside of unpainted portion.	Length: 2.73m Width: 0.10m Height: 0.10-0.11m	G
37	Joist	Appears original to the construction, sits on replacement beam (103) to north. Height and length not fully seen. Minor borer damage. Attached timber to west face possibly to cover area of borer damage. Thick black paint obscures much of the finer detail. Unpainted to south side. Numerous empty nail holes from where lathe and plaster attached to underside of the unpainted portion.	Length: 2.73m Width: 0.095m Height: 0.10-0.14m	G
38	Joist	Appears original to the construction, sits on replacement beam (103) to north. Height and length not fully seen. Minor borer damage. Large chamfer with plain stops to underside centre west corner, probably to remove a patch of rot or sap wood. Thick black paint obscures much of the finer detail. Unpainted to south side. Numerous empty nail holes from where lathe and plaster attached to underside of the unpainted portion.	Length: 2.73m Width: 0.10m Height: 0.12-0.13m	G
39	Joist	Appears original to the construction, sits on replacement beam (103) to north. Height and length not fully seen. Minor borer damage. Thick black paint obscures much of the finer detail. Unpainted to south side. Numerous empty nail holes from where lathe and plaster attached to underside of the unpainted portion.	Length: 2.73m Width: 0.10m Height: 0.12-0.13m	G
40	Joist	Appears original to the construction, no reuse seen. Height and length not fully seen. Minor borer damage. Thick black paint obscures much of the finer detail. Much of timber obscured by plaster board to south side. Presumed to tennon into beam (107) to north but is obscured by plaster.	Length: 0.71m Width: 0.12m Height: 0.11m	I
41	Joist	Appears original to the construction, no reuse seen. Tenon fits fairly well into mortise of beam (107) to north. South end stops short of brick wall with modern timber attached to joist and inserted into wall. Some chamfering along east underside face, probably to remove sap wood. Full length of tenon unseen. Minor borer damage. Thick black paint obscures much of the finer detail.	Length: 2.55m Width: 0.20m Height: 0.10m	I
42	Joist	Appears original to the construction, no reuse seen. Tenon fits poorly into mortise of beam (107) to north. South end barely inserts into brick wall to south with a modern timber attached to joist and inserted into wall for support. North end also supported by modern timber. Full length of tenon unseen. Major borer damage to either end. Thick black paint obscures much of the finer detail.	Length: 2.55m Width: 0.12m Height: 0.12m	I
43	Joist	Large timber appears original to the construction, no reuse seen. Tenon fits well into mortise of beam (107) to north. Tapers quickly to the south. South end barely inserts into brick wall to south with timber (46) inserted into wall for support. Saw marks to west face and underside. Full length of tenon unseen. Some borer damage. Thick black paint obscures much of the finer detail.	Length: 2.55m Width: 0.145m Height: 0.12m	J
44	Joist	Appears original to the construction, no reuse seen. Tenon fits well into mortise of beam (107) to north. Tapers quickly to the south. South end is supported by timber corbel (46) which inserts into wall for support. Full length of tenon unseen. Some borer damage. Thick black paint obscures much of the finer detail.	Length: 2.51m Width: 0.14m Height: 0.115m	J
45	Joist	Probable reused timber. Two empty lap joints to underside, possibly added after construction of floor. Tenon fits poorly into mortise of beam (107) to north, with lots of room in mortise. Tapers quickly to the south. South end inserts into brick wall and is supported by timber corbel (49) which also inserts into the brick wall. Full length of tenon unseen. Some borer damage. Thick black paint obscures much of the finer detail.	Length: 2.55m Width: 0.095m Height: 0.14m	J
46	Joist	No reuse seen, may have been added sometime after original construction of floor. Acts as a joist but only inserts into the southern brick wall. Helps stabilise timber joist (43). Full length of timber unseen. Some borer damage. Thick black paint obscures much of the finer detail.	Length: 1.94m Width: 0.09m Height: 0.07m	J
47	Joist	Added doubling beam, supports timber joist (46) along its western edge, likely due to borer damage or decay. Later addition. Inserts into the south brick wall. Full length of timber unseen. Minor borer damage. Thick black paint obscures much of the finer detail.	Length: 0.78m Width: 0.10m Height: 0.10m	J
48	Joist	Timber corbel supports timber joist (44). Protrudes from southern brick wall. Full length of timber unseen. Minor borer damage. Thick black paint obscures much of the finer detail.	Length: 0.23m Width: 0.09m Height: 0.13m	J

49	Joist	Timber corbel supports timber joist (45). Protrudes from southern brick wall. Full length of timber unseen. Minor borer damage. Thick black paint obscures much of the finer detail.	Length: 0.40m Width: 0.125m Height: 0.12m	J
50	Joist	Reused timber. Fits poorly into mortise of beam (107) to south. Appears to have been resawn down the centre. Originally may have been a wall plate, as it has several split recesses for infill staves and one mortise that has been split down its centre with two peg holes. Fits poorly into brick wall to north. Some borer damage. Full length not seen at either end.	Length: 3.06m Width: 0.12m Height: 0.10m	K
51	Joist	Reused timber. Fits poorly into mortise of beam (107) to south with the tenon being small for the mortise. Originally may have been a wall plate, as it has six visible recesses for infill staves. A larger double pegged mortise was also visible that would presumably, have held the tenon of a larger post, such as a door jam in a partition wall. A broadly c. 16th century dating seems likely for the first use of this timber.Pronounced bend at north end. Fits poorly into brick wall to north. Some borer damage. Full length not seen at either end.	Length: 3.06m Width: 0.165m Height: 0.145m	K
52	Joist/ doubling	No reuse seen. Doubling beam added after floor construction to provide support to timber joist (53). Minor borer damage.	Length: 2.44m Width: 0.08m Height: 0.14m	K
53	Joist	Reused timber. Two timber pegs in underside. Unclear what it may originally have been. No longer tenons into beam (107), borer damage may have removed this connection. It is now supported by more recent timber (52) along its north-eastern side. Large amounts of borer damage. Full length not seen.	Length: 3.06m Width: 0.10m Height: 0.125m	K
54	Joist	Possible reused timber. Flat auger hole in the east face, but may have been added after the floor is constructed. The tenon fits well in the mortise of beam (107). The north end of the timber no longer fits well in the north end and is propped up by modern metal posts. Large amounts of borer damage. Full length not seen.	Length: 3.06m Width: 0.17m Height: 0.145m	K
55	Joist	No reuse seen. Relatively modern timber added to support timber joist (54). Inserts into brick wall to north but does not tenon into beam (107). Full length not seen.	Length: 2.48m Width: 0.08m Height: 0.115m	K
56	Joist	Reused timber. May have been a wall plate or sill beam, as it has several stave mortises that have been split down the middle likely when this was converted into a joist. Tenon has been heavily bored away at south end. The north end fits into the brick wall at the north end and sits on timber window lintel. Large amounts of borer damage. Full length not seen.	Length: 3.06m Width: 0.08m Height: 0.14m	K
57	Joist	Reused timber. Originally was a wall plate or sill beam, as it has several stave mortises and post mortises. Tenon has been heavily bored away at south end. The north end fits into the brick wall at the north end and sits on timber window lintel. Hewing marks to underside. Large amounts of borer damage. Full length not seen.	Length: 3.06m Width: 0.17m Height: 0.14m	K
58	Joist	Possible reused timber. Appears to be several stud mortises that have been split possibly when this was converted into ta joist. Its possible that this timber was a later addition to accommodate a trap door to the south. The north end sits on a timber window lintel. The south end rests against a slanted timber plank that would have accommodated the trap door. Some borer damage. Full length not seen at north end.	Length: 2.24m Width: 0.075m Height: 0.135m	K
59	Joist	Possible reused timber suggested by a number of nails holes in the west face. The timber has a slightly smaller tenon for mortise in beam (109). South end sits in an iron cradle within the brick wall to south. Some borer damage.	Length: 1.60m Width: 0.075m Height: 0.155m	L
60	Joist	No apparent reuse, appears original with a tight fit into mortise of beam (110). Some borer damage. Sits in a iron cradle within the brick wall to south.	Length: 1.60m Width: 0.09m Height: 0.12m	L
61	Joist	No apparent reuse. Appears to have been added slightly later. It sits in a high mortise to the north almost on top of the beam, and is located between two joists of normal spacing. Similar later joists were seen in bays M and N. Large amounts of borer damage.	Length: 1.60m Width: 0.08m Height: 0.07m	L
62	Joist	Modern oak timber, tenons into beam (109) poorly. Sits in a iron cradle within the brick wall to south.	Length: 1.60m Width: 0.10m Height: 0.115m	L
63	Joist	Reused timber. Lap joints to underside and an empty mortise to east face. Mortise in beam (109) appears slightly too big for this timber. Sits in a iron cradle within the brick wall to south. Some borer damage.	Length: 1.60m Width: 0.075m Height: 0.165m	L
64	Joist	Reused timber. Possibly originally a wall plate, but split for reuse. Stud mortise to west face and small mortise to north end. Saw marks along east face. Sits in a iron cradle within the brick wall to south.	Length: 1.57m Width: 0.08m Height: 0.165m	L
65	Joist	No apparent reuse, appears original with a tight fit into mortise of beam (110). Large patch of rot and borer damage to centre east face. Full length and height not fully seen.	Length: 1.50m Width: 0.10m Height: 0.14m	M

66	Joist	Modern oak timber, tenons into beam (109) poorly to south . Sits on added plank of beam (110) to north.	Length: 1.50m Width: 0.10m Height: 0.155m	M
67	Joist	No apparent reuse. Appears original to the structure. Tenons into beam (110) to north and beam (109) to south. Some borer damage. Some parts painted black obscuring detail.	Length: 1.50m Width: 0.10m Height: 0.135m	M
68	Joist	Reused timber. Appears to have been split to turn it into a joist. The east elevation displays a split mortise. Tenons fits well in beam (109) to south. Borer damage has destroyed much of the northern tenon and it now sits on the added southern elevation cladding plank of beam (110). Large amounts of borer damage in spots.	Length: 1.50m Width: 0.10m Height: 0.135m	M
69	Joist	Modern oak timber, tenons into beam (109) poorly to south . Sits on added plank of beam (110) to north.	Length: 1.50m Width: 0.10m Height: 0.15m	M
70	Joist	Unknown if reused. Several iron nails in east face. Tenons into beam (110) to south with a poor fit. Sits in brick/concrete wall to north, possibly on top of the remains of the original joist. Large amount of borer damage.	Length: 2.24m Width: 0.09m Height: 0.14m	N
71	Joist	Appears original to structure. Tenons into beam (110) to south with a good fit. Sits in brick/concrete wall to north with a tight fit. Some borer damage.	Length: 2.24m Width: 0.10m Height: 0.135m	N
72	Joist	Reused timber. A large open mortise at north end and a small lap joint to underside. Ends abruptly at north end after only a short distance, related to timber (73). Appears to have been added slightly later. It sits in a high mortise to the south almost on top of the beam, and is located between two joists of normal spacing. Large amounts of borer damage. Similar to joist (63).	Length: 2.24m Width: 0.10m Height: 0.135m	N
73	Joist	Reused timber. A large open mortise at south end appears to be a continuation of timber (72). Three empty mortises to underside and one east face with peg holes to west face. Probably originally part of a wall plate with studs and joists attached to it. Appears to have been added slightly later. It sits in the brick/concrete wall to the north, and is located between two joists of normal spacing. Large amounts of borer damage. Similar to joist (63).	Length: 1.44m Width: 0.12m Height: 0.14m	N
74	Joist	Reused timber. Dove tail lap joint to east elevation. Fits well in mortise of beam (110) to south, and slots into brick/concrete wall to north. May not be original to the structure because of recent white paint and the southern tenon isn't cut tot fit the chamfer of the beam (110) like other original joists. Some borer damage.	Length: 2.24m Width: 0.11m Height: 0.13m	N
75	Joist	Possibly reused. Old nails affixed to east elevation and possible lap joint to base. Tenon fits poorly into beam (110) to south. Sits on wall to north end. Iron bolts added later for support. Some borer damage.	Length: 2.24m Width: 0.09m Height: 0.14m	N
76	Joist	Appears original to structure. Tenons into beam (110) to south with a good fit. Not fully seen due to west exterior wall covering the north end. Some borer damage.	Length: 2.24m (likely) Width: ? Height: 0.125m	N
77	Joist	Appears to be modern oak joist. North end tenons in beam (109) to north, south end sits in iron cradle supported by brick corbel. Full measurements unavailable due to its location over the river.	Length: 1.59m Width: 0.11m Height: unavailable	O
78	Joist	Appears original to the construction with no reuse. North end tenons in beam (109) to north, south end sits in iron cradle supported by brick corbel. Full measurements unavailable due to its location over the river.	Length: 1.19m Width: 0.078m Height: unavailable	O
79	Joist	Reused timber. Diagonal mortise to west elevation, may have originally been part of a tie beam. May have been split on top side. Tenons into Beams (109) and (110). Some minor borer damage.	Length: 1.58m Width: 0.135m Height: 0.135m	Q
80	Joist	Possible reused timber. Several nail holes to underside. Tenons into (109) and (110). Some minor borer damage.	Length: 1.58m Width: 0.11m Height: 0.135m	Q
81	Joist	Possibly reused. Rounded cut to base may have been to remove a patch of rot or sap wood. Recent doubling beam is attached to west elevation for support. Moderate amount of borer damage.	Length: 1.58m Width: 0.08m Height: 0.135m	Q
82	Joist	Reused timber. Half circular cut to north end of the west elevation. May have been located to allow for a circular gear. It may have been taken from another part of the previous mill or other industrial site. Tenons into beam (110) to the south and inserts into brick wall to north. Not fully observed or recorded due to its location over the river.	Length: 2.07m Width: 0.109m Height: unavailable See plan	P
83	Joist	No reuse seen. Chamfer to south-west bottom corner, probably to remove sap wood. Attached plank to west elevation. Tenons into beam (110) to the south and inserts into brick wall to north. Not fully observed or recorded due to its location over the river.	Length: 2.07m Width: 0.10m Height: unavailable See plan	P
84	Joist	Set of two joists no reuse seen. One modern oak doubling an older very rotted with major borer damage joist. Both tenon into beam (110) to the south and insert into brick wall to north. Not fully observed or recorded due to their location over the river.	Length: 2.07m Width: 0.11m Height: unavailable. See plan	P

85	Joist	No reuse seen. Small joist added at later date to cover and support what was likely a trap door. It continues in the same path as joist (58). Abuts timber (86) to south.	Length: 0.70m Width: 0.04m Height: 0.135m	K
86	Chute timber	No reuse seen. Small support timber attached at a slant. May have been attached to create a splayed opening for hauling bags from the basment area to the ground floor The angle matches that of a large matching chamfer in beam (107). Does not appear to be original as beam (107) has an open mortise suggesting a large joist would have originally covered over the space of the trap door. Some borer damage.	Length: 0.71m Width: 0.12m Height: 0.10m	K
87	Joist	No apparent reuse. Appears to have been added slightly later. It sits in a high mortise to the north almost on top of the beam, and is located between two joists of normal spacing. Similar to joist (61). Large amounts of borer damage.	Length: 1.50m Width: 0.115m Height: 0.07m	M

100	Cross Beam	Reused Cross beam. Large crack along eastern elevation obscures probable mortises. Tenons into beam (101) at north end. Length and height not fully seen. Major borer damage. Thick black paint obscures much of the finer detail.	Length: 1.38m Width: 0.16m Height: 0.17m	
101	Bridging Beam	Large east-west bridging beam. Clear signs of reuse. Originally would have been a wall plate . It has 9 rafter seatings (3 filled in), and one large empty dovetail mortise for a tie beam. Now holds multiple joists for the current floor arraignment, however some of these are no longer in use due to a later rearrangement of the floor joists. Moderate borer damage. Thick black paint obscures much of the finer detail.	Length: 4.00m Width: 0.25m Height: 0.22m	
102	Cross Beam	Large north-south cross beam spanning the width of the building. No signs of reuse. Possible hewing marks on west elevation. Some areas of chamfering likely to remove sap wood. Recent cut into base of north end for unknown purpose. Appears to have rotted or bored away at south end and then cut, so the south end now sits in iron cradle within the brick wall. The centre is supported by modern beam (103) underneath which is then supported by posts (206) and (208). Inserts into brick wall to north. Large amounts of borer damage. Thick black paint obscures much of the finer detail. Full length not fully seen.	Length: 6.45m Width: 0.27m Height: 0.25m	
103	Bridging Beam	Modern replacement east-west bridging beam . Actually composed of two long beams bolted together, one to the north and one to the south. They have a lap joint on each end that allows the crossbeams ((102) and (105) to rest upon them. All current joists rest on top of these beams not tenoned in. Presumably machine cut but, thick black paint obscures much of the finer detail.	Length: 4.63m Width: 0.21m together Height: 0.21m	
104	Bridging Beam	Small east-west bridging beam, appears relatively modern. Supports newer joist (30-33) and older joist (26-28). All joists rest upon the this beam, they do not tenon into it. Probably part of a large repair in flooring.	Length: 1.47m Width: 0.16m Height: 0.08m	
105	Cross Beam	Large north-south cross beam spanning the width of the building. No signs of reuse. Saw marks on east and west elevations, hewing marks to underside. Some areas of chamfering likely to remove sap wood. Recent cut into base of north end for unknown purpose. Relatively recent iron straps added to chamfers for decorative function. A few small recent timbers attached to sides, unknown function. Rests within brick wall to north and south ends. Supported by beam (103) under the centre and beam (107) tenons into it. Post (202) and (205) support its centre. This timber represents one of the best opportunities for dendrochronological dating, as some sap wood appears to remain. Large amounts of borer damage. Thick black paint obscures much of the finer detail.	Length: 6.01m Width: 0.29m Height: 0.26m	
106	Joist	A large reused joist. Unclear what this timber was originally used for. It may originally been part of a large beam but has been split or sawn several times. Large lap joint on east elevation with a partial timber peg within it, may be a split mortise. Large lap joint to underside, also may have been split. Iron hook and nail attached to east elevation. Tenon has been bored away at north end by beam (107). Connects into brick wall at south end. Large amounts of borer damage. Thick black paint obscures much of the finer detail.	Length: 2.56m Width: 0.13m Height: 0.22m	
107	Bridging Beam	Large east-west bridging beam. It is likely original to the structure. It has mortises for 7 joists to the north and south elevations. Many of theses do not fit properly but that may have been due to cutting the mortises to one size only. The north-east elevation has a large chamfer in it possibly to accommodate a chute for lifting sacks from the ground to first floor. Long chamfers at both corners likely to remove sap wood. Large amounts of borer damage and cracking. Thick black paint obscures much of the finer detail.	Length: 3.70m Width: 0.25m Height: 0.25m	

108	Cross Beam	Large north-south cross beam spanning the width of the building. Possibly Reused . Saw marks on east and west elevations, hewing marks to underside. Some areas of chamfering likely to remove sap wood. Recent cut into base of north end for unknown purpose. A few small recent timbers and metal hooks attached to sides for unknown functions. Rests within brick wall to north and south ends. Bridging beams (107), (109) and (110) tenon into it. Large amounts of borer damage. Thick black paint obscures much of the finer detail.	Length: 5.68m Width: 0.28m Height: 0.26m
109	Bridging Beam	Large east- west aligned bridging beam. No reuse observed. The timber tenons into beam (108) to east and (111) to west. It has 10 joists tenoned into either side. The timber is located inside the cellar area and extends to Many areas were sap wood appears to have been hewn away. Hewing marks along underside. Iron strap has been added to the underside of the timber to reinforce the connection between it and beam (111). A small thin timber has been attached at the base of several of the western joists to keep them from slipping. Moderate amount of borer damage. Thick black paint obscures much of the finer detail along its eastern portion.	Length: plan Width: 0.25m Height: 0.29m
110	Bridging Beam	Large east- west aligned bridging beam. No reuse observed. The timber tenons into beam (108) to east and (111) to west. It has 10 joists tenoned into either side. The timber is located inside the cellar area and extends to Many areas were sap wood appears to have been hewn away. Hewing marks along underside. Large support planks have been added to the south elevation and underside, likely due to borer damage. Thick black paint obscures much of the finer detail along its eastern portion.	Length: plan Width: 0.24m Height: 0.27m
111	Cross Beam	Large north-south cross beam spanning the width of the building. Possibly reused, not clear . 14 joists sit in mortises along its west elevation. Recent metal supports to south end. Recent doubling beam to add support along west elevation. Some areas of chamfering likely to remove sap wood. Iron nails and one auger hole in east side for unknown purpose. Rests within brick wall to north and south ends. Bridging beams (109) and (110) tenon into it. Moderate amounts of borer damage.	Length: plan Width: 0.26m Height: 0.265m

200	Post	Reused timber. Appears to be a cut down octagonal crown post with the top definitely reduced and missing ornamentation. The bottom has some of the original decoration but appears to have been reduced as well.Currently supports bridging beam (101) at its west end. Some minor borer damage. Thick black paint obscures much of the finer detail. Likely dates to the late 13th to early 15th century.	Diameter: 0.19m Octagonal faces:0.09m wide Height: 1.77m
201	Post	Reused timber. May have been added at a later date during repairs to the floor. It has a large empty recess that would have held a metal strap, unclear what original use was. A metal bot with square nut go through the timber. Minor borer damage. Thick black paint obscures much of the finer detail. Similar to timber (207).	Width: 0.145m Thickness:0.115 Height: 1.83m
202	Post	No reuse seen. Post sat on brick plinth supporting beam (103). Does not appear to be original to the floor structure, probably added or modified when beam (103) was added. Large amounts of borer damage and possible rot.	Width: 0.23m Thickness:0.18 Height: 1.09m
203	Post	Reused timber. Sat on stone plinth with timber spreader to top. Timber has a single diagonal lap joint which suggest it may have originally been a purlin in a roof structure. Several large hammer divets along the north side. Several modern nails are stuck in all sides. Some minor borer damage and partially painted black. Appear to have been recently fit into this position.	Width: 0.14m Thickness:0.12 Height: 1.64m
204	Post	Probably reused. A single diagonally recessed lap joint suggest it may have originally been a purlin in a roof structure. Post sat on timber plinth with timber spreader above. The post may have been reused in the original structure but it appears to have been recut at the top and bottom and fit into this spot recently. Some minor borer damage.	Width: 0.14m Thickness:0.12 Height: 1.64m
205	Post	Possible reuse. Almost completely covered by modern boards, very little observed. Sits on a brick plinth.	Width: 0.23m Thickness:0.18 Height: 1.09m
206	Post	Reused timber. It has four bare face soffit mortises for joists, suggesting it was a mid wall plate or bridging beam. It has been cut at the base and the top to fit in this position. The corner opposite the mortises has a chamfered edge. Minor borer damage. Partially painted black, unclear if this timber was originally somewhere else in the building.	Width: 0.23m Thickness:0.18 Height: 1.09m
207	Post	Reused timber. Similar to (201) with recess for iron strap and iron bolt with square nut on opposite side. Unclear what original use was. Now sits on modern brick plinth. Some borer damage to top. Thick black paint obscures much of the finer detail	Width: 0.15m Thickness:0.12 Height: 1.47m

208	Post	Reused timber post. Possible hewers mark on east elevation. Single lap joint cut into south elevation. Chamfer along north-east corner. Chamfer along base of south-east corner likely to remove sap wood. Minor borer damage. Thick black paint obscures much of the finer detail. Full thickness unavailable, obscured by later walls.	Width: 0.195m Thickness: Unknown Height: 1.76m